Cameroon Population-based HIV Impact Assessment

CAMPHIA 2017-2018

FINAL REPORT

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CAMPHIA A DROP THAT COUNTS
CAMEROON POPULATION-BASED HIV IMPACT ASSESSMENT

Ministère de la Santé Publique

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Cameroon Population-based HIV Impact Assessment
CAMPHIA 2017-2018

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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 will know their HIV status; 90% of all people with diagnosed HIV will receive sustained antiretroviral therapy (ART); and 90% of all people receiving ART will have viral load (VL) suppression (VLS).

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

Adolescents: Unless otherwise noted, for the purposes of this report, individuals aged 10-14 years are referred to as young adolescents; individuals aged 15-19 years are referred to as older adolescents.

Adults: Unless otherwise noted, for the purposes of this report, the survey population aged 15-64 years are collectively referred to as adults (adult men and women).

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

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

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

Children: Unless otherwise noted, for the purposes of this report, individuals 0-14 years of age are collectively defined as children.

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

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

Head of Household: The person who is recognized within the household as being the head and is age 18 years or older or is considered an emancipated minor (less than the age of 18 years who is married or is free from any legally competent representative) as defined by law in Cameroon.

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

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

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

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

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

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

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

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

Prevention of Mother-to-Child Transmission (PMTCT): In order to prevent HIV-positive women from passing HIV to their babies during pregnancy, labor, delivery or breastfeeding, the World Health Organization recommends a four-pronged approach: (1) primary prevention of HIV infection among women of childbearing age; (2) preventing unintended pregnancies among women living with HIV; (3) preventing HIV transmission from women living with HIV to their infants; and (4) providing appropriate treatment, care, and support to mothers living with HIV and their children and families.

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

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

Tuberculosis: 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.

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

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

LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARV	Antiretroviral
CAMPHIA	Cameroon Population-based HIV Impact Assessment
CDC	U.S. Centers for Disease Control and Prevention
CD4	CD4+ T-cell
CI	Confidence Interval
CREMER	Centre de Recherches sur les Maladies Emergentes, Re-Emergentes et la Medicine Nucleaire
DBS	Dried Blood Spot
DROS	Division of Health Operations Research
EA	Enumeration Area
EIA	Enzyme Immunoassay
EID	Early Infant Diagnosis
HbsAg	Hepatitis B Surface Antigen
HBTC	Home-Based Testing and Counseling
HBV	Hepatitis B Virus
HIV	Human Immunodeficiency Virus
ICC	Intra-Cluster Correlation (ICC)
ID	Identification Number
INS	National Institute of Statistics
IPV	Intimate Partner Violence
LAg	Limiting Antigen
mL	Milliliter
µL	Microliter
MDRI	Mean Duration of Recent Infection
MICS	Multiple Indicator Cluster Survey
MOS	Measure of Size
MTCT	Mother-to-Child Transmission
NNRTIs	Non-Nucleoside Reverse Transcriptase Inhibitors
NRTI	Nucleoside Reverse Transcriptase Inhibitors
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
PMTCT	Prevention of Mother-to-Child Transmission
POC	Point of Care
PSU	Primary Sampling Unit
QA	Quality Assurance
QC	Quality Control
RR	Response Rate
RRC	Result Returning Coordinator
RSE	Relative Standard Error
SMS	Short Message Service
STI	Sexually Transmitted Infection
T	Time Cutoff
TB	Tuberculosis
TNA	Total Nucleic Acid
TWG	Technical Working Group
UNAIDS	Joint United Nations Programme on HIV and AIDS
VL	Viral Load
VLS	Viral Load Suppression
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organization

EXECUTIVE SUMMARY/ SUMMARY OF KEY FINDINGS

KEY FINDINGS

- The annual HIV incidence in Cameroon was 0.24% (95% confidence interval [CI]: 0.11%-0.37%) among adults (defined as those aged 15-64 years) (corresponding to approximately 31,000 new cases per annum) (Table 5.B).
- In Cameroon, the HIV prevalence was 3.7% among adults (corresponding to approximately 500,000 adults living with HIV [95% CI 452,860–546,866]). The prevalence was 5.0% among women and 2.3% among men in 2017-2018 (Table 6.A).
- The burden of adult HIV infection varied across regions. HIV prevalence among adults ranged from 1.5% in Far North region to 6.3% in South region (Table 6.A).

The Cameroon Population-based HIV Impact Assessment 2017-2018 (CAMPHIA) was a nationally representative, cross-sectional, population-based survey of households in Cameroon. Conducted between July 2017 and February 2018, the survey focused on measuring key biological endpoints to provide direct estimates of HIV risk and burden, and the effectiveness and population-level impact of HIV-related prevention, care, and treatment interventions implemented in the country.

The primary objectives of CAMPHIA were to estimate the national-level annual HIV incidence among adults (defined as those aged 15-64 years), and the subnational prevalence of viral load (VL) suppression (VLS) (HIV RNA less than 1,000 copies/mL) among HIV-positive adults. Secondary objectives of CAMPHIA were to measure national and regional adult HIV prevalence; national and regional distribution of CD4 counts; detection of antiretrovirals (ARVs) in blood; national prevalence of transmitted HIV drug resistance; national pediatric HIV prevalence; progress toward the "90-90-90" targets defined by the Joint United Nations Programme on HIV and AIDS (UNAIDS); and national prevalence of hepatitis B. The "90-90-90s" refer to targets for 2020 set by UNAIDS to achieve control of the HIV epidemic by 2030 and are defined as: 90% of all people living with HIV will know their HIV status; 90% of all people diagnosed with HIV will receive sustained antiretroviral therapy (ART); and 90% of all people receiving ART will have VLS. The survey also collected information on behaviors associated with HIV acquisition and transmission, common HIV comorbidities, and other health conditions.

CAMPHIA used a two-stage, stratified cluster sample design, in which census enumeration areas (EAs) [clusters] were selected in the first stage and households in the second stage. The sample was stratified by the 12 geographical regions within Cameroon, including separate stratifiers for Douala and Yaounde. The survey interviewed 11,623 households. In the households surveyed, 28,635 adults and 8,018 children (those aged 0-14 years) (5,718 children aged 0-9 years and 2,300 young adolescents [those aged 10-14 years]) were eligible to participate in the survey.

Altogether, 27,085 (95%) of the eligible adults were interviewed. Among those adults who were interviewed, 94.7% of men and 94.6% of women also had their blood drawn to determine HIV status. Among children aged 0-9 years, 88% of both boys and girls had their blood drawn to determine HIV status. Of the eligible young adolescents, 97% of boys and 96% of girls had their blood drawn. To obtain a national estimate of acute or chronic hepatitis B prevalence, hepatitis B testing was performed in a subset of 1,962 adults using a hepatitis B surface antigen (HBsAg) rapid diagnostic test, indicative of acute or chronic hepatitis B virus (HBV) infection.

Home-based HIV testing and counseling (HBTC) with return of results was conducted for HIV results, and point-of-care (POC) CD4 count was measured for those who tested HIV positive. All HIV VL results and results showing active HBV infection were returned to participants through health facilities of their choice. The estimates generated from CAMPHIA have been weighted to account for sample selection probabilities and adjusted for nonresponse and noncoverage. Analysis weights accounted for sample selection probabilities and were adjusted for nonresponse and noncoverage.

KEY FINDINGS

- The annual HIV incidence in Cameroon was 0.24% (95% confidence interval [CI]: 0.11%-0.37%) among adults (corresponding to approximately 31,000 new cases per annum) (Table 5.B).
- In Cameroon, HIV prevalence was 3.7% among adults (corresponding to approximately 500,000 adults living with HIV [95% CI: 452,860–546,866]). The prevalence was 5.0% among women and 2.3% among men in 2017-2018 (Table 6.A).
- The burden of adult HIV infection varied across regions. HIV prevalence among adults ranged from 1.5% in Far North Region to 6.3% in South Region (Table 6.A).

UNAIDS 90-90-90 TARGETS

Adults:

- Results of 90-90-90 goals: Based on self-report and ARV-detection data, it is estimated that in Cameroon:

90-90-90 target for adults (Table 10.B)

- **Diagnosed:** 55.6% (57.5% of HIV-positive women and 51.4% of HIV-positive men) were aware of their HIV-positive status.
- **On treatment:** Of those diagnosed, 93.1% were receiving ART (92.6% of women and 94.2% men).
- **Viral load suppression:** Of those on treatment, 80.1% had VLS (79.6% of women and 81.1% of men).

Among **all HIV-positive** adults (Table 10.C)

- **Diagnosed:** 55.6% (57.5% of all HIV-positive women and 51.4% of all HIV-positive men) were aware of their HIV-positive status.
- **On treatment:** 51.7% of all the adults living with HIV in the country were receiving ART (53.3% of all HIV-positive women and 48.4% of all HIV-positive men).
- **Viral load suppression:** 41.4% of all the adults living with HIV in the country had VLS on treatment (42.4% of all HIV-positive women and 39.3% of all HIV-positive men).

OTHER KEY FINDINGS AMONG ADULTS

- Among adults of reproductive age (ages 15-49 years), HIV prevalence was 3.4%, 4.8% among women and 2.0% among men (Table 6.B). By five-year age bands, HIV prevalence among adults ranged from 0.7% among older adolescents (ages 15-19 years) and 1.7% among young adults aged 20-24 years to a peak of 7.4% among adults aged 40-44 years. HIV prevalence among adults aged 50-54 years, 55-59 years and 60-64 years were 6.8%, 4.8%, and 4.4%, respectively (Table 6.C).
- HIV prevalence among men residing in urban and rural areas was lower (2.2% [95% CI: 1.9%-3.0%] and 2.5% [95% CI: 1.9%-2.6%], respectively) compared to that of women (5.5% [95% CI: 4.7%-6.2%] and 4.5% [95% CI: 3.8%-5.2%], respectively) (Table 6.A). HIV prevalence among women was higher than among men in all age groups, but significantly so among ages 15-29 and 35-49 years (with non-overlapping CIs—data not shown) (Table 6.C).

- By relationship or marital status, HIV prevalence was highest (11.4%) among widowed adults and lowest (0.4%) among those who said they never had sex (Table 6.A).
- Among adults, 59.3% reported that they had ever tested for HIV and received their results (65.9% of women and 52.5% of men), while HIV testing and receipt of results in the 12 months preceding the survey was only reported by 29.0% (31.3% of women and 26.6% of men) (Tables 7.A, 7.B, and 7.C).
- Among adults residing in urban areas, 69.0% reported that they had ever tested for HIV and received their results (76.4% of women and 61.8% of men), as compared to those residing in rural areas, of whom 48.4% reported that they had ever tested for HIV and received their results (54.6% of women and 41.9% of men) (Tables 7.A, 7.B, and 7.C).
- Among adults residing in urban areas, 35.4% (37.6% of women and 33.3% of men) reported HIV testing and receipt of results in the 12 months preceding the survey, as compared to those residing in rural areas, of whom 21.8% reported HIV testing and receipt of results in the 12 months preceding the survey (24.6% of women and 18.9% of men) (Tables 7.A, 7.B, and 7.C).
- The proportion of adults who had ever tested and received their results varied across regions, ranging from 24.0% in Far North Region to 76.5% in Douala. A similar pattern was observed for those who reported HIV testing and receipt of results in the 12 months preceding the survey (Table 7.C).
- The proportion of adults who had ever tested and received their results and those who reported HIV testing and receipt of results in the 12 months preceding the survey increased with the level of education and wealth index score. For instance, the prevalence of ever testing and receiving results was 25.7% among those with no education, and 77.4% among those with more than secondary education; while only 24.6% of those in the lowest wealth quintile, but 79.2% in the highest wealth quintile reported ever testing and receiving results (Table 7C).
- Among older adolescents (defined as those aged 15-19 years), 26.0% (33.9% of older adolescent girls and 18.4% of older adolescent boys) reported they had ever tested for HIV and received their results. Among young adults (those aged 20-24 years), 59.7% (73.7% of young women and 46.7% of young men) reported they had ever tested for HIV and received their results (Tables 7.A, 7.B, and 7.C).
- Based on self-reported data, among HIV-positive adults, 53.1% were unaware of their HIV-positive status (58.8% of men and 50.6% of women). Among all adults living with HIV, 42.8% reported being on ART (37.9% of men and 45.0% of women) (Tables 8.A, 8.B, and 8.C). However, ARV-detection data demonstrated that self-report was not always reliable, as 15.6% of those who reported that they were unaware of their HIV-positive status had detectable ARVs in their blood (16.1% among men and 15.3% among women), while approximately 3.7% of adults who reported that they were HIV-positive but not on ART also had detectable ARVs in their blood (though the denominator was small, so this should be interpreted with caution) (Tables 8.D, 8.E, and 8.F).
- Among HIV-positive adults aged 15-49 years, the proportion of adults with VLS was 40.9%, while the proportion of adults aged 15-64 years with VLS was 44.7% (42.5% among men and 45.6% among women) (Table 9.A).[1] Among older HIV-positive adults, the proportion of VLS

[1] Note, the prevalence of VLS was slightly higher than reported above in the 90-90-90 results because the estimate was based upon VLS measurements among all the adults who tested positive in CAMPHIA, regardless of whether they were known to be on treatment (by self-report or ARV detection). Thus, the estimates may have included individuals with a low VL measurement in the absence of treatment who are, nonetheless, at risk of progression until they are diagnosed and placed on ART.

was 61.1% among those aged 50-54 years (Table 9.B), and 61.3% among those aged 55-64 years (Table 9.C).

- There was some variation in VLS across regions, ranging from 27.6% in North Region to 62.9% in West Region (Table 9.A).
- The proportion of HIV-positive adults with VLS ranged from 21.7% in older adolescents aged 15-19 years to 61.6% in older adults aged 60-64 years (Table 9.B).
- Among adults who tested HIV positive in CAMPHIA but who reported an HIV-negative status with no detectable ARVs, 35.2% (33.1% of women and 39.4% of men) had CD4 counts less than 350 cells/microliter (µL) and 15.1% (15.5% of women and 14.2% of men) had severe immunosuppression with CD4 counts less than 200 cells/µL (Table 11.B).
- Among HIV-positive adults who reported initiating ART less than 12 months prior to the survey, 94.0% (92.0% women and 100% men) reported still receiving ART (Table 11.C).
- Among HIV-positive adults who reported initiating ART more than 12 months prior to the survey, 97.3% (96.6% women and 99.3% men) reported still receiving ART. Among those who reported initiating ART 12 months or more prior to the survey with ARVs detectable in their blood, 100% reported they were still on ART. Among those who reported ART initiation more than 12 months before the survey without detectable ARVs in their blood, 75.2% reported they were still on ART (Table 11.D).
- Among women aged 15-49 years who gave birth within the past 12 months, 0.9% tested HIV positive during antenatal care (ANC) and received results, and 78.9% tested HIV negative during ANC and received results. Among women aged 15-49 years who gave birth within the 12 months before the survey, 1.3% already knew they were HIV positive. There was some variation across the regions with regard to women aged 15-49 years who gave birth within the past 12 months knowing their HIV status, ranging from 50.1% in Far North to 98.0% in Douala (Table 12.C).
- Among women aged 15-49 years who gave birth during the 12 months preceding the survey, 81.1% knew their HIV status (Table 12.C).
- Among HIV-positive women aged 15-49 years who gave birth within the 12 months before the survey, 91.3% reported to have received ARVs during pregnancy to reduce the risk of mother-to-child transmission (MTCT). (Note, this estimate was based upon a small denominator (26 women) and should be interpreted with caution.) (Table 12.D).
- Among women aged 15-49 years who gave birth in the three years preceding the survey, 81.0% were breastfeeding their infants at ages 0-1 month, as compared to 69.8% who were breastfeeding their infants aged 6-8 months, and 43.1% breastfeeding their children aged 12-17 months at the time of the survey (Table 12.B).
- Among HIV-positive women aged 15-49 years who gave birth in the three years preceding the survey, 15.9% never breastfed, 58.5% breastfed at some point but were not breastfeeding at the time of the survey, and 25.6% were breastfeeding at the time of the survey. Among HIV-negative women aged 15-49 years who gave birth in the three years preceding the survey, 1.6% never breastfed, 55.8% breastfed at some point but were not breastfeeding at the time of the survey, and 42.6% were breastfeeding at the time of the survey (Table 12.B).
- Among women aged 15-49 years who delivered in the three years preceding the survey, 88.9% attended at least one ANC visit for their most recent birth. There was some variation across regions concerning the ANC visit. In North, Far North, and Adamawa regions, only 68.0%, 75.5%, and 78.0%, respectively, 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. The percentage of women aged 15-49 years who delivered in the three years preceding the survey and attended at least one ANC visit for their most recent birth was lower in North and Far North than other regions (Table 12.A).

- The prevalence of HIV was 7.4% among women aged 15-64 years who reported having had two or more sexual partners in the 12 months preceding the survey, compared to 2.8% among their male counterparts. The prevalence of HIV in those who had one partner was estimated to be 4.8% among women and 2.9% among men. HIV prevalence among men who reported not having a sexual partner during the 12 months preceding the survey was lower (2.3%) than that of women reporting the same sexual behavior (9.0%) (Tables 15.A).
- Overall, 55.6% of men reported having been medically circumcised and 27.4% reported non-medical circumcision. Only 6.2% of men reported they were not circumcised. By age group, reported medical circumcision was higher at younger ages. Medical circumcision ranged from 63.0% among men aged 25-29 years to 30.6% among men aged 60-64 years. Coverage of medical circumcision varied by education with 20.4% of those with no education reporting medical circumcision compared to 71.5% of those with secondary school, second cycle, or higher. By wealth quintile, coverage of medical circumcision also varied with 25.0% of those in the lowest wealth quintile compared to 72.6% of those in the highest wealth quintile. Coverage of medical circumcision was also higher in urban areas (63.7%) than in rural areas (46.4%). By region, coverage of medical circumcision ranged from 26.7% in Far North to 70.0% in Douala (Table 15.E).
- Among self-reported HIV-positive adults, 27.3% had ever visited a tuberculosis (TB) clinic (34.7% of men compared to 24.4% of women). Among those who had ever visited a TB clinic, 45.8% were diagnosed with TB; and of those, 94.6% were treated for TB. Almost half (46.5%) of men who visited a TB clinic were diagnosed with TB (although this estimate is based upon a small denominator [n=45] and should be interpreted with caution). Among self-reported HIV-positive women who visited a TB clinic, 45.4% were diagnosed with TB, and of those 92.9% were treated for TB (Table 17.A).
- The prevalence of hepatitis B was 8.3% among adults (5.5% among women and 11.2% among men). The prevalence was 7.0% in urban and 9.8% rural areas. However, there were marked differences among geographical regions, with the highest prevalence in North (12.8%) and the lowest in North West (4.6%). The prevalence of hepatitis B among the HIV-negative and HIV-positive population was similar (8.3% and 8.4%, respectively) (Table 17.C).

OTHER KEY FINDINGS AMONG YOUNG PEOPLE (AGES 15-24 YEARS)

- HIV prevalence in older adolescents was 0.7% (0.2% in boys, 1.2% in girls) and 1.7% in young adults (0.6% in young men, 2.9% in young women) (Table 6.C). This corresponds to approximately 57,000 HIV-positive young people in Cameroon.

90-90-90 targets among **all HIV-positive** young people, based upon self-report and ARV detection data (Table 10.C):

- **Diagnosed:** 20.7% were aware of their HIV-positive status.
- **On treatment:** 18.6% of all the young people living with HIV in Cameroon were receiving ART.

- **Viral load suppression on treatment:** 13.7% of all the HIV-positive young people in the country had received treatment and achieved VLS.

- Among ever-married or partnered older adolescent girls and young women (ages 15-24 years), 3.2% experienced physical violence by an intimate partner, 1.4% experienced sexual violence by an intimate partner, and 4.5% experienced either physical or sexual violence by an intimate partner in the 12 months preceding the survey. However, intimate partner violence (IPV) was likely under-reported in the face-to-face interviews in this survey; the prevalence estimates observed are low compared to previous data on IPV in Cameroon (Table 16.A).
- Among young people living in Cameroon, 18.1% reported having sex before the age of 15 years (20.8% among older adolescent boys and young men and 15.8% among older adolescent girls and young women). Among older adolescent girls, 20.6% reported sex before the age of 15 years, compared to 12.9% of young women (Table 13.A).
- Among sexually active young people, 73.4% of older adolescents (93.8% of older adolescent boys and 60.6% of older adolescent girls), compared to 62.3% of young adults (82.3% of young men and 46.1% of young women) reported having sex with a non-marital, non-cohabitating partner (Tables 15.B, 15.C, and 15.D).
- Among sexually active older adolescents, 56.1% (63.3% of older adolescent boys and 49.6% of older adolescent girls) reported using a condom the last time they had sex with a non-marital, non-cohabitating partner as compared to 43.5% (53.0% of men and 27.9% of women) of adults aged 25-29 years (Tables 15.B, 15.C, and 15.D).

OTHER KEY FINDINGS AMONG CHILDREN

- The estimated prevalence of HIV among children in Cameroon was 0.2% (Table 6.C). This corresponds to approximately 22,500 HIV-positive children in Cameroon.

GAPS AND UNMET NEEDS

- There has been considerable progress toward achievement of the second and third 90s of the UNAIDS 90-90-90 targets in adults (based on self-reported and/or detectable ARV data), with 93.1% of those diagnosed receiving ART, and 80.1% of those on ART with VLS. However, diagnosis is a persistent challenge, with only 55.6% of adults living with HIV having awareness of their HIV-positive status. Consequently, the overall prevalence of achieving VLS after receiving an HIV-positive diagnosis and receiving ART (based on self-report and ARV biomarker testing), among all the adults in Cameroon was low (41.4%). Therefore, identifying those living with HIV, but unaware of their status, and linking them to care is critical. The achievement of these targets is essential, not only to prevent HIV-related illness and AIDS-related deaths, but also to prevent transmission and the occurrence of new HIV infections.
- The considerable variation in prevalence of HIV infection and VLS across regions, age and sex, and other demographic groups highlights the need to focus interventions, and to rigorously evaluate and map their availability, accessibility, quality, and effectiveness in specific geographical areas and demographic groups.
- There are disparities by sex in prevalence of HIV infection, as well as coverage of care. The prevalence of HIV infection in the adult population was approximately two times higher among women (5.0%) than among men (2.3%).

- The low proportion of awareness (20.7%) and VLS on treatment among young adults living with HIV (13.7%) creates challenges to reducing the incidence of new infections in the future.

PROGRAMMATIC RESPONSES OR RECOMMENDATIONS

These findings highlight programmatic gaps and identify areas for intensified HIV response efforts in Cameroon. National policy changes and strategic prioritizations are needed to increase access and uptake of HIV services to achieve the UNAIDS 90-90-90 targets.

- HIV user fees are a barrier to prevention, care, and treatment and create a financial burden for people living with HIV. With support from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), the Government of Cameroon made a policy decision in April 2019 to eliminate all fees for HIV services by January 2020.
- PEPFAR will expand its geographic coverage from four high-burden regions to all ten regions in Cameroon starting in October 2019. This rapid scale-up of the clinical program is aimed at increasing ART coverage for people living with HIV and achieving 90-90-90 targets in Cameroon by the end of 2021.
- HIV case identification is a key step in the clinical cascade; however, case finding is suboptimal among men, children, adolescent girls, and young women. To address these gaps, effective strategies including index testing and targeted testing should be scaled up and tailored to each subpopulation in order to identify people living with HIV and initiate them on ART.
- Gaps in ART coverage especially among older adolescents and young adults underscore the need for improved linkage to treatment and retention on ART. Same-day ART initiation, scale-up of differentiated service delivery models, and patient-centered care focused on improving quality of service delivery will address some of the challenges with linkage and retention.
- To address the low VLS, especially among young people, there is a need for increased diagnosis, linkage to treatment, and treatment adherence through a patient-centered care approach, intensified retention efforts, and enhanced patient education.

Implementation and scale-up of effective strategies to identify people living with HIV who are not aware of their status, initiate them on ART, and ensure a sustained high level of VLS will interrupt the transmission cycle and facilitate epidemic control.

CONCLUSION

CAMPHIA 2017-2018 provided critical data on the primary outcomes of HIV incidence among adults and HIV prevalence among children. The results from CAMPHIA indicate that HIV continues to cause a significant burden of disease in Cameroon. Although there has been remarkable achievement in enrolling and treating those diagnosed, the major challenge remains diagnosis. A critical priority is to identify and link to care those living with HIV but unaware of their HIV status. The CAMPHIA team encourages public health staff, programmers, epidemiologists, and policy makers to examine the CAMPHIA data for their respective program areas and utilize the data to inform program planning.

1. INTRODUCTION

1.1 BACKGROUND

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

The Cameroon Population-based HIV Impact Assessment (CAMPHIA) was led by the Government of Cameroon under the Ministry of Health (MOH), Division of Health Operations Research (DROS) and National AIDS Control Commission, and through the National Institute of Statistics (INS). The survey was conducted with funding from PEPFAR and technical assistance through the US Centers for Disease Control and Prevention (CDC). The survey was implemented by INS and ICAP at Columbia University in collaboration with local partners, including the Centre Pasteur Cameroon, Global Health Systems Solutions, the National Early Infant Diagnosis Reference Laboratory/Mutengene, the National Public Health Lab, the Centre International de Référence Chantal Biya, and the Centre de Recherches sur les Maladies Emergentes, Re-Emergentes et la Medicine Nucleaire (CREMER).

1.2 OVERVIEW OF CAMPHIA 2017-2018

CAMPHIA, a household-based national survey, was conducted between July 2017 and February 2018 to measure the status of Cameroon's national HIV response. CAMPHIA offered home-based testing and counseling (HBTC) with return of results, and collected information about households and individuals' background, as well as the uptake of HIV care and treatment services. This survey is the first in Cameroon to estimate national HIV incidence and viral load (VL) suppression (VLS). The results provide information on national and regional progress toward control of the HIV epidemic.

Although HIV facility-based sentinel surveillance and previously conducted population-based studies provided useful knowledge regarding Cameroon's HIV epidemic and HIV control efforts, information critical to understand the current status of the epidemic and guide future interventions was still lacking. While population-level outcomes and impact can be inferred and modeled from facility-level data, this requires a series of untested assumptions about trends in the unobserved segments of the population. In addition, the population-based data that were available for HIV focused largely on knowledge, attitudes, and self-reported risk behaviors.

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

1.3 SPECIFIC OBJECTIVES

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

Primary Objectives

- To estimate national-level annual HIV incidence among adults.
- To estimate the regional prevalence of VLS (defined as HIV RNA less than 1,000 copies/milliliter [mL] of plasma) among HIV-positive adults.

Secondary Objectives

- To estimate the national prevalence of HIV infection among children.
- To estimate the national and regional prevalence of HIV infection among adults.
- To estimate the uptake of HIV-related services (especially prevention of mother-to-child transmission [PMTCT]-related services) and exposure to HIV interventions.
- To estimate the prevalence of transmitted drug-resistance among HIV-positive children and adults.
- To estimate the distribution of CD4 counts among HIV-positive participants.
- To estimate prevalence of HIV-related risk behaviors, knowledge, and attitudes.
- To estimate behavioral and demographic determinants of HIV incidence and prevalence.
- To estimate national prevalence of hepatitis B.
- To estimate prevalence of HIV/HBV co-infection among HIV-positive individuals.

2. SURVEY DESIGN, METHODS, AND RESPONSE RATES

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

2.1 SAMPLE FRAME AND DESIGN

CAMPHIA used a two-stage, stratified cluster sample design. The sampling frame was comprised of all households in the country, based upon 2015 Population Projections calculated from population to household ratio using the 2005 National Population and Housing Census data frame in collaboration with the INS. The sampling frame consisted of 18,020 EAs, containing 4,455,722 households and 22,179,707 persons, with an average number of households and persons per EA of 199 and 1,074 respectively. The first stage selected 489 enumeration areas (EAs) (clusters) using a probability proportional to size method. The 489 EAs were stratified by 12 geographical regions within Cameroon, including separate stratifiers for Douala and Yaounde. During the second stage, a sample of households was randomly selected within each EA, or cluster, using an equal probability method, where the actual number of households selected per cluster ranged from 25 to 30 (Table 2.1.A).

The sample size was calculated to provide a representative national estimate of HIV incidence among adults with a relative standard error (RSE) less than or equal to 0.37, as well as representative zonal estimates of VLS prevalence among HIV-positive adults with a maximum 95% CI of +/- 10.0% in high prevalence regions and maximum 95% confidence interval (CI) of +/- 21.0% in low prevalence regions. One-third of the households were randomly selected for inclusion of children, which was designed to provide a representative national estimate of pediatric HIV prevalence with a RSE less than or equal to 0.22%. The target sample size was 26,519 for adults and 7,057 for children.

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

Distribution of sampled enumeration areas and households, by region, CAMPHIA 2017-18

	Enumeration Areas			Households		
Region	Urban	Rural	Total	Urban	Rural	Total
Adamawa	15	23	38	390	751	1,141
Centre	13	24	37	416	919	1,335
Douala	55	0	55	1,421	0	1,421
East	11	19	30	301	755	1,056
Far North	18	57	75	493	1,590	2,083
Littoral	8	4	12	208	207	415
North	13	34	47	288	1,096	1,384
North West	14	24	38	345	703	1,048
South	11	20	31	327	547	874
South West	14	20	34	310	549	859
West	16	21	37	445	610	1,055
Yaounde	53	0	53	1,469	0	1,469
Total	241	246	487	6,413	7,727	14,140

Note: these are unweighted figures.

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

2.2 ELIGIBILITY CRITERIA, RECRUITMENT, AND CONSENT PROCEDURES

In CAMPHIA, the eligible survey population included individuals aged 0-64 years. The consent criteria are determined in each country—and it should be noted that the age categories for consent are different than the adult, adolescent, and child age definitions used for sampling and reporting purposes in this report. Sometimes, the age of majority crosses age brackets; therefore, the legal age of consent or age at which a minor is able to give consent may vary. In Cameroon, the consent criteria were as follows:

- Adults aged 21-64 years, living in the selected households and adult visitors of the same age who slept in the household the night before the survey, who were willing and able to provide verbal or written consent.
- Minors aged 10-20 years living in the selected households and visitors in the same age bracket who slept in the household the night before the survey, who were willing and able to provide verbal assent, and whose parents or guardians were willing and able to provide verbal permission for their participation.
- Children aged 0-9 years living in the selected households and visitors the same age who slept in the household the night before the survey, whose parents or guardians were willing and able to provide verbal consent for their participation.

An electronic informed consent form was administered using a tablet (Appendix G). 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. A designated head of household provided verbal consent for household members to participate in the survey, after which individual members were rostered during a household interview. Adults aged 21-64 years and emancipated minors (an emancipated minor is anyone below 21 years of age who is married or is free from any legally-competent representative as defined by law in Cameroon) then provided consent for an interview and for participation in the biomarker component of the survey, including HBTC, with return of HIV-testing results and CD4 counts during the household visit. Receipt of tests results was a requirement for participation in the biomarker component. If an individual did not want to receive his or her HIV test result, this was considered a refusal and the survey was concluded. Adults were also asked for consent to store their blood samples in a repository to perform additional tests in the future.

Minors aged 10-20 years were asked for assent to the interview and biomarker components after permission was granted by their parents or guardians. Parents provided consent for biomarker testing for children 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.

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

2.3 SURVEY IMPLEMENTATION

Training of Field and Laboratory Staff

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

- Scientific objectives of the survey
- Survey design and methods

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

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

Survey Staff

Fieldwork started at the beginning of July 2017 and was completed in February 2018. More than 200 field staff (one national coordinator, three work zone coordinators, 10 regional statisticians, three work zone lab coordinators, 30 team leaders, 120 nurse counselor/interviewers, 16 community-mobilization coordinators, and 60 drivers) participated in data collection. Fieldwork was conducted by 30 locally-hired field teams composed of a team leader, four nurse counselor/interviewers and two drivers. Field teams included both male and female staff and members spoke the languages used in the areas to which they were deployed. The field teams were supervised by 30 team leaders, three work zone coordinators, and one national coordinator, and managed by central staff, who guided and oversaw data collection activities, performed quality checks, and provided technical support (Appendix D).

In addition, the laboratory staff was organized at different levels (central laboratory staff, regional field supervisors, onsite lab supervisors, satellite lab technicians, and satellite lab logisticians). Over 25 laboratory technicians processed samples and performed additional procedures for HIV-1 VL, infant virological HIV testing, and quality control (QC) and QA. National and international monitors periodically conducted direct observation of data collection activities in the field and in the laboratories to provide technical support and ensure quality.

Community Sensitization and Mobilization

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

Supervision

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

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

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 (see Appendix E). The adult interview was administered to participants aged 15 years and older and included modules on demographic characteristics, sexual and reproductive health, marriage, male circumcision, sexual activity, HIV/acquired immune deficiency syndrome (AIDS) knowledge and attitudes, the HIV testing and treatment history, tuberculosis (TB) and other diseases, alcohol use, and gender norms (see Appendix F). Participants who self-reported their HIV-positive status were asked questions about their HIV care experience. Parents also answered questions about their children's (ages 0-14 years) health and participation in HBTC services as a part of the adult interview. In each household, one woman among those aged 15-64 years was also randomly selected to answer questions about her experiences with violence. Participants of any age who reported being victims of violence and minors who reported being victims of sexual exploitation were provided with referrals to social services. Female participants were interviewed by female staff, and male participants by male staff, whenever possible. The questionnaire was administered in French, English, and Fulfulde; versions of the questionnaires were reviewed and tested thoroughly for acceptability, feasibility, and flow of questions.

2.4 FIELD-BASED BIOMARKER TESTING

Blood Collection

Blood was collected by trained and qualified survey staff from consenting participants: 14 mL of venous blood from adults aged 15-64 years, 5 mL from persons aged 2-14 years, and 1 mL of capillary blood from adults who either refused to give venous blood or had failed venous collection and children younger than 2 years of age, using finger-stick for children aged 6-23 months and heel-stick for children younger than 6 months of age.

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

HIV Home-Based Testing and Counseling

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

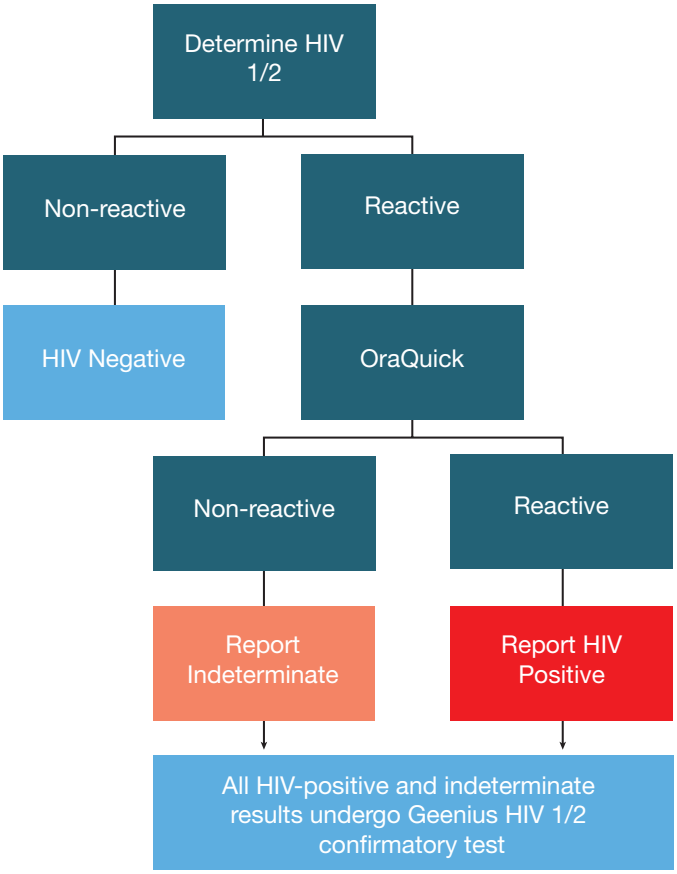


Figure 2.4.A
Household-based HIV testing algorithm, CAMPHIA 2017-2018

Determine™ HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States) as a screening test, OraQuick™ (Orasure Technologies, Bethlehem, Pennsylvania, United States) as a confirmatory test. Individuals with a nonreactive result on the screening test were reported as HIV negative. Individuals with a reactive screening test underwent confirmatory testing. Those with reactive results on both the screening and confirmatory tests were classified as HIV positive. Individuals with a reactive screening test result, followed by a nonreactive confirmatory test result were classified as indeterminate and referred to go for follow-up testing at a facility within 4 weeks. All HIV-positive and indeterminate samples underwent confirmation testing using Geenius-HIV 1/ 2 Supplemental Assay (Bio-Rad Laboratories, Hercules, California, United States) at the satellite laboratory to determine a positive or negative result for the final survey data.

HIV-positive participants were referred to HIV care and treatment services at a health facility of their choice. For children and minors under the age of 21, results were returned to a parent or guardian (with the presence of the child where deemed appropriate by the parent). Participants with indeterminate results were advised to attend a facility within 4 weeks for repeated testing, as per national guidelines.

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

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

Hepatitis B testing

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

Anthropometric Assessment

Height and weight measurements were obtained for all children under the age of 5 years who tested HIV positive during HBTC. Criteria for referral services for malnutrition were based on growth standards published by World Health Organization (WHO) and national guidelines.

CD4 Count Measurement

All participants who tested HIV positive during HBTC, and a random sample of 2% of those who tested HIV negative, received a CD4 count measurement in the field by qualified survey staff. The measurement was performed using the Pima™ CD4 Analyzer (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere).

2.5 LABORATORY-BASED BIOMARKER TESTING

Satellite and Central Laboratories

Twelve fixed satellite laboratories for the survey were established in existing health facility laboratories, and two mobile labs were utilized. One central reference laboratory was chosen for more specialized tests. At each satellite laboratory, trained

technicians performed HIV confirmatory testing, retesting for QA, and processing of whole blood specimens into plasma aliquots and DBS cards for temporary storage at -20°C., and HIV confirmatory testing. For QA of the HIV rapid testing conducted in the field, the first 50 samples tested by each field tester and a random sample of 5.0% of specimens that tested HIV negative during HBTC were retested in the laboratory using the national HIV rapid-testing algorithm. All specimens that tested HIV positive during HBTC, and those that had confirmed positive rapid test results during QA, underwent confirmatory testing using the Geenius HIV 1/2 Supplemental Assay (Bio-Rad, Hercules, California, United States). A positive Geenius result defined HIV-positive status for the survey.

All infants younger than 18 months of age who had a reactive Determine test during HBTC had their samples tested for EID using the Abbott m2000 Real-Time HIV-1 qualitative assay (Abbott Laboratories, Abbott Park, Illinois, United States). Central laboratory procedures included HIV VL testing, HIV TNA PCR for infant virological testing and for confirmation of status of those who self-reported an HIV-positive status but tested negative in HBTC, HIV recency testing, HIV drug resistance (HIVDR) testing, and long-term storage of samples at -80°C.

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

Viral Load Testing

The HIV-1 VL (HIV RNA copies per mL) of confirmed HIV-positive participants was measured using the Abbott Real-time HIV-1 assay on the Abbott m2000 Real-time platform (Abbott Laboratories, Abbott Park, Illinois, United States). The open mode protocol for the Abbott Real-time HIV-1 Assay was used to measure VL from DBS specimens from children and adults with insufficient plasma volume.

Viral load results were returned by the result returning coordinator (RRC) within 8 to 10 weeks to the health facility chosen by each HIV-positive participant. Participants were provided with a referral form (escorted to the health facility if consented) during HBTC for subsequent retrieval of their results. Survey staff (RRC) also contacted each participant via mobile phones, informing them that their VL results were available at the chosen facility and further advising them to seek care and treatment.

Infant HIV Virological Testing

HIV TNA PCR was conducted at the central lab using the Abbott RealTime HIV-1 qualitative assay on the Abbott m2000 Real-time platform (Abbott Laboratories, Abbott Park, Illinois, United States). Results were returned to a health facility selected by the child's parent or guardian within twelve weeks.

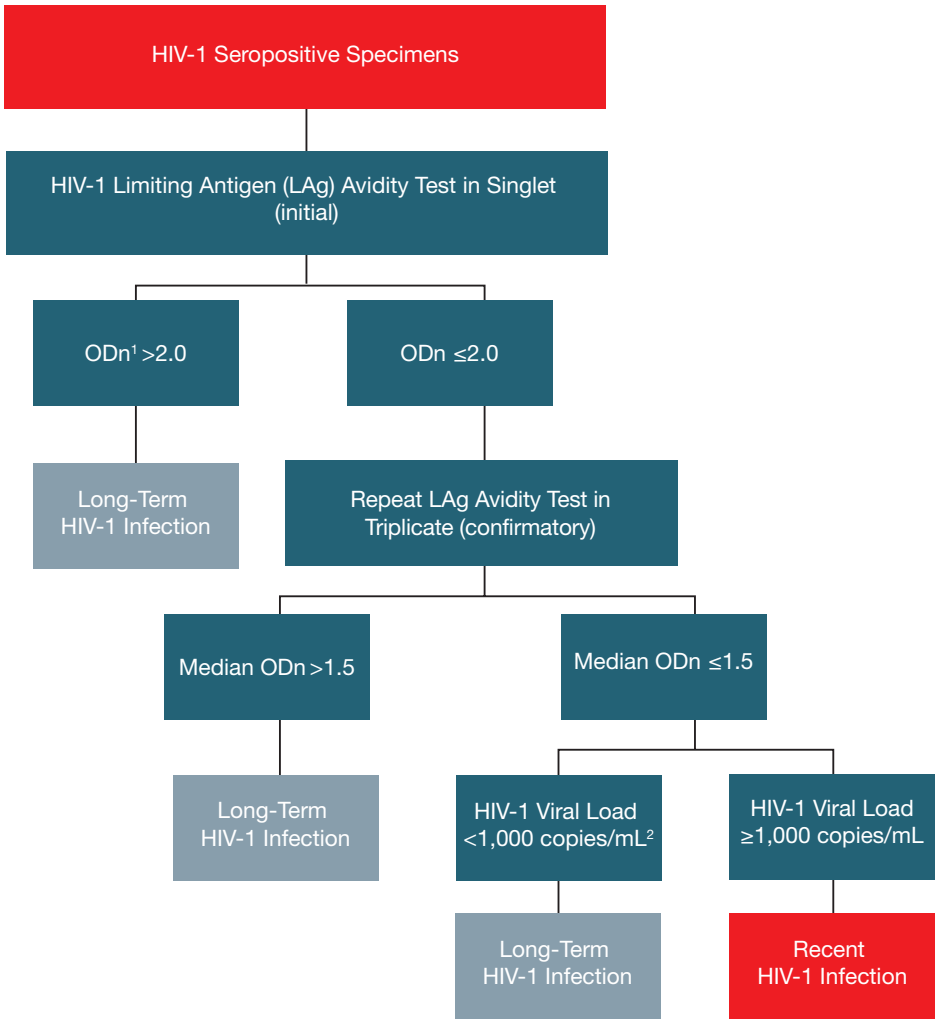
HIV Recent Infection Testing Algorithm

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

Specimens with median normalized optical density (ODn) ≤ 1.5 using LAg avidity testing were classified as potential recent infections, and their VL results were assessed. Specimens with VL < 1,000 copies/mL were classified as long-term infections, while those with VL ≥ 1,000 copies/mL were classified as recent infections (Figure 2.5.A). In the ARV-adjusted algorithm,

specimens with VL ≥ 1,000 copies/mL and with detectable ARVs were classified as long-term infections. Specimens with VL ≥ 1,000 copies/mL and without detectable ARVs were classified as recent infections (Figure 2.5.B).

Figure 2.5.A
HIV-1 recent infection testing algorithm, CAMPHIA 2017-2018



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

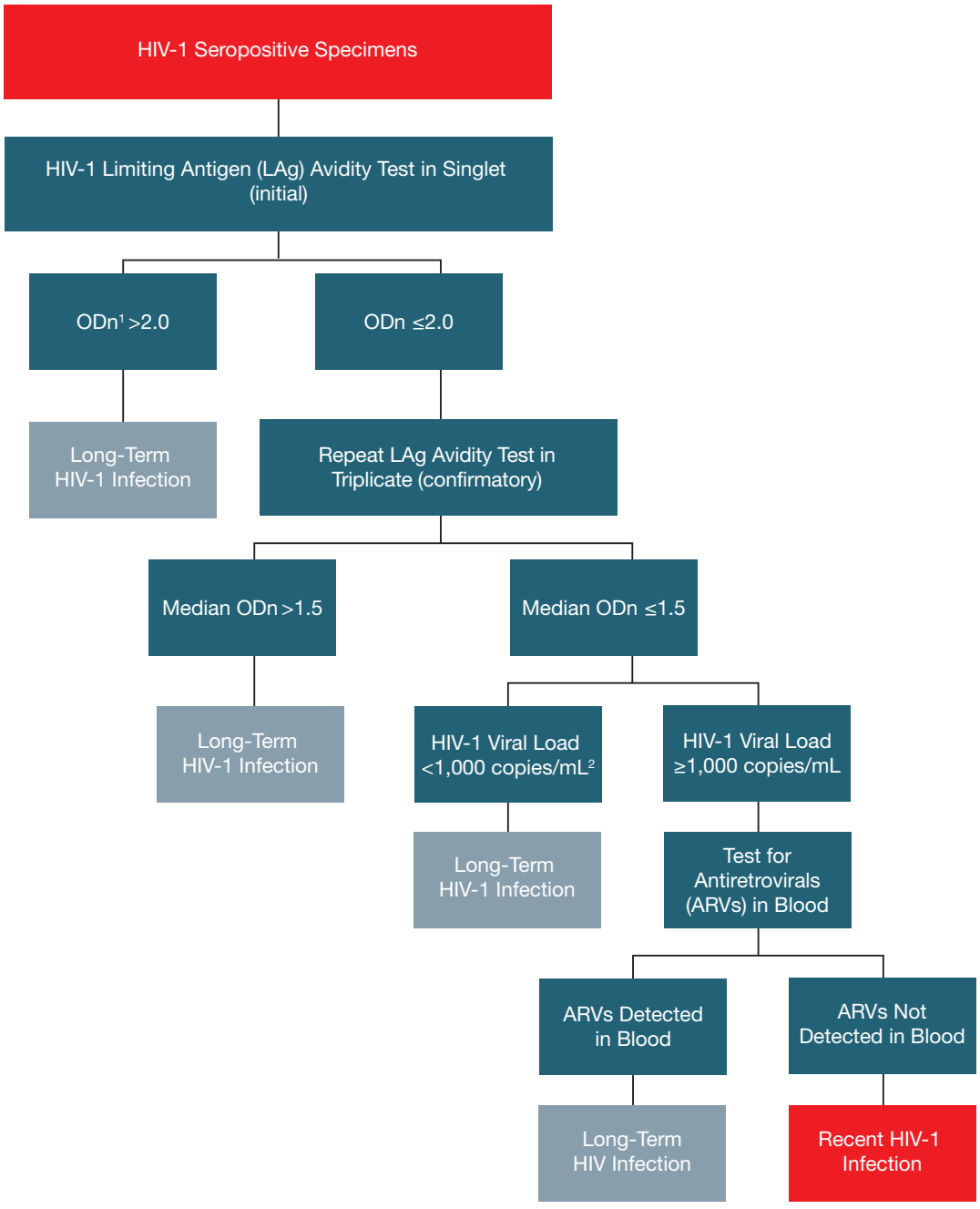


Figure 2.5.B
HIV-1 recent infection testing algorithm adjusted for detectable antiretrovirals, CAMPHIA 2017-2018

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

Detection of Antiretroviral Drug Resistance

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

Specimens were tested at the Centre de Recherches sur les Maladies Emergentes, Re-Emergentes et la Medicine Nucleaire (CREMER) for drug resistance.

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 is highly specific, as it separates the parent compound from the fragments and is highly sensitive, with a limit of detection of 0.02 µg/mL for each drug, and a signal-to-noise ratio of at least 5:1 for all drugs. As detection of all ARVs in use at the time of the survey was cost-prohibitive, three ARVs—efavirenz, nevirapine, and lopinavir—were selected as markers for the most commonly prescribed first- and second-line regimens. These ARVs were also selected based on their relatively long half-lives, allowing for a longer period of detection following intake.

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

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

2.6 DATA PROCESSING AND ANALYSIS

All field data were collected on tablets, transmitted to a central server using a secure virtual private network, and stored in a secure PostgreSQL database. Data cleaning was conducted using SAS 9.4 (SAS Institute Inc., Cary, North Carolina, United States). Laboratory data were cleaned and merged with the final questionnaire database using unique specimen barcodes and study identification numbers.

All results presented in the report are based on weighted estimates unless otherwise noted. Analysis weights account for sample selection probabilities and adjusted for nonresponse and noncoverage. Nonresponse adjusted weights were calculated for households, individual interviews, and individual blood draws in a hierarchical form. Adjustment for nonresponse for initial individual and blood-level weights was based on the development of weighting adjustment cells defined by a combination of variables that are potential predictors of response and HIV status. The nonresponse adjustment cells were constructed using chi-square automatic interaction detection, or Chi-square Automatic Interaction Detector (CHAID), algorithm. The cells were defined based on data from the household interview for the adjustment of individual-level weights, and from both the household and individual interviews for the adjustment of blood sample-level weights. Post-stratification adjustments were implemented to compensate for noncoverage in the sampling process. This final adjustment calibrated the

nonresponse-adjusted individual and blood weights to make the sum of each set of weights conform to national population totals by sex and five-year age groups.

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

Incidence estimates were based on the number of HIV infections identified as recent with the HIV-1 LAg Avidity plus VL algorithm, 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 proportion false recent (PFR) = 0.00.

2.7 RESPONSE RATES

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

Individual interview RRs were calculated as the number of individuals who were interviewed divided by the number of individuals eligible to participate in the survey. Blood draw RRs for adults were calculated as the number of individuals who provided blood divided by the number of individuals who were interviewed. Blood draw RRs for children were calculated as the number of individuals who provided blood divided by the number of individuals eligible to participate in the survey.

Of the 14,140 selected households, 12,417 and 11,623 were occupied and interviewed, respectively. The overall household RR (unweighted) was 92.3%. After adjusting for differential sampling probabilities and nonresponse, the overall weighted household RR was 91.9% (Table 2.7.A).

A total of 28,635 adults (13,216 men and 15,419 women) were eligible to participate in the survey. Interview RRs were 93.3% for men and 95.7% for women. Among those adults who were interviewed, 94.7% of men and 94.6% of women also had their blood drawn (Table 2.7.B).

Children in one-third of the selected households were eligible for blood draw. Of the 5,718 eligible children aged 0-9 years, 87.8% of boys and 88.2% girls had their blood drawn. Of the 2,300 eligible children aged 10-14 years, 97.2% of boys and 96.5% of girls had their blood drawn (Table 2.7.B).

Table 2.7.A Household response rates

Number of households selected, occupied, and interviewed and household response rates (unweighted and weighted), by residence, CAMPHIA 2017-2018

	Residence		
Result	Urban	Rural	Total
Household interviews			
Households selected	6,413	7,727	14,140
Households occupied	5,739	6,678	12,417
Households interviewed	5,199	6,424	11,623
Household response rate[1] (unweighted)	90.2	94.1	92.3
Household response rate[1] (weighted)	90.2	93.9	91.9

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

Table 2.7.B Interview and blood draw response rates

Number of eligible individuals and response rates for individual interviews[1] and blood draws[2] (unweighted and weighted), by residence and sex, CAMPHIA 2017-2018

	Residence					
	Urban		Rural		Total	
Result	Male	Female	Male	Female	Male	Female
Eligible individuals, ages 0-9 years						
Number of eligible individuals	973	943	1,903	1,899	2,876	2,842
Blood draw response rate (unweighted)	84.4	82.5	91.5	93.0	89.1	89.5
Blood draw response rate (weighted)	84.8	83.4	90.1	91.8	87.8	88.2
Eligible individuals, ages 10-14 years						
Number of eligible individuals	443	445	723	689	1,166	1,134
Interview response rate (unweighted)	93.2	93.0	95.2	97.1	94.4	95.5
Interview response rate (weighted)	93.1	93.2	95.1	96.8	94.2	95.0
Blood draw response rate (unweighted)	95.9	94.2	98.0	97.9	97.2	96.5
Blood draw response rate (weighted)	96.0	94.1	97.4	97.5	96.7	95.8
Eligible individuals, ages 15-24 years						
Number of eligible individuals	2,031	2,356	2,472	3,007	4,503	5,363
Interview response rate (unweighted)	91.5	95.4	94.7	97.0	93.2	96.3
Interview response rate (weighted)	91.7	95.2	94.2	97.2	92.9	96.2
Blood draw response rate (unweighted)	95.0	94.5	97.6	97.1	96.5	96.0
Blood draw response rate (weighted)	95.0	93.7	97.4	96.6	96.1	95.1

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

Number of eligible individuals and response rates for individual interviews[1] and blood draws[2] (unweighted and weighted), by residence and sex, CAMPHIA 2017-2018

	Residence					
	Urban		Rural		Total	
Result	Male	Female	Male	Female	Male	Female
Eligible individuals, ages 15-49 years						
Number of eligible individuals	5,228	5,873	6,090	7,563	11,318	13,436
Interview response rate (unweighted)	91.5	94.8	95.9	97.0	93.8	96.1
Interview response rate (weighted)	91.2	94.7	95.0	96.9	93.0	95.7
Blood draw response rate (unweighted)	92.9	93.3	97.3	97.1	95.3	95.5
Blood draw response rate (weighted)	92.6	92.8	96.8	96.6	94.5	94.7
Eligible individuals, ages 15-64 years						
Number of eligible individuals	5,955	6,652	7,261	8,767	13,216	15,419
Interview response rate (unweighted)	91.5	94.8	96.3	97.1	94.2	96.1
Interview response rate (weighted)	91.3	94.6	95.5	96.9	93.3	95.7
Blood draw response rate (unweighted)	93.1	93.1	97.4	97.2	95.5	95.5
Blood draw response rate (weighted)	92.8	92.6	96.8	96.7	94.7	94.6
Overall response rate (unweighted)	76.8	79.6	88.3	88.8	83.0	84.7

[1]Interview response rate = number of individuals interviewed/number of eligible individuals.
[2]Blood draw response rate = number of individuals who provided blood/number of individuals interviewed.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

2.8 REFERENCES

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

2. American Association for Public Opinion Research (AAPOR). *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys.* 9th edition. AAPOR; 2016. http://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf. Accessed on June 4, 2019.

3. SURVEY HOUSEHOLD CHARACTERISTICS

3.1 BACKGROUND

This chapter presents data on the characteristics of households surveyed in CAMPHIA. Household composition is described in terms of sex of the head of household, as well as the size of the household. The age structure of the de facto household population (ie, persons who slept in the household the night before) is described by sex as well as urban/rural residence. This chapter also describes the prevalence and composition of households impacted by HIV, which are households with one or more HIV-positive members.

3.2 RESULTS

The following tables and figures describe the household characteristics in CAMPHIA.

Table 3.A Household composition

Percent distribution of households by sex of head of household; median (quartile [Q1, Q3]) size of household and median (Q1, Q3) number of children under 18 years of age, by residence, CAMPHIA 2017-2018

	Residence					
	Urban		Rural		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Head of household						
Male	65.5	3,430	72.1	4,729	68.6	8,159
Female	34.5	1,769	27.9	1,695	31.4	3,464
Total	100.0	5,199	100.0	6,424	100.0	11,623

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

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

Figure 3.A
Distribution of the de facto population by sex and age, CAMPHIA 2017-2018

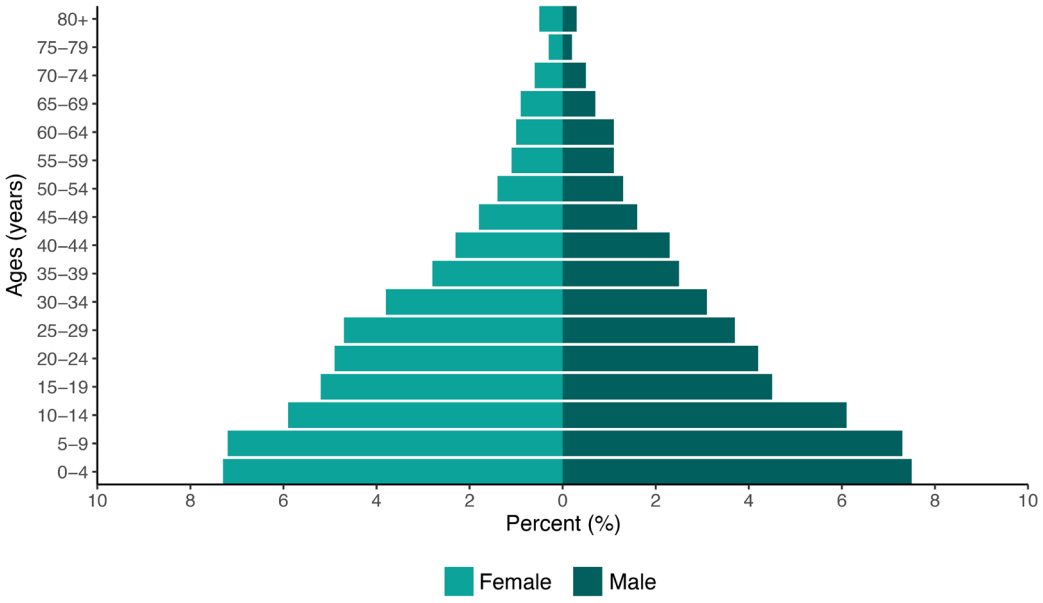


Table 3.B Distribution of de facto population

Percent distribution of the de facto household population, by 5-year age groups and sex, CAMPHIA 2017-2018

	Male		Female		Total	
Age	Percent	Number	Percent	Number	Percent	Number
0-4	7.5	4,273	7.3	4,117	14.8	8,390
5-9	7.3	4,259	7.2	4,116	14.6	8,375
10-14	6.1	3,389	5.9	3,313	12.0	6,702
15-19	4.5	2,417	5.2	2,823	9.7	5,240
20-24	4.2	2,111	4.9	2,547	9.1	4,658
25-29	3.7	1,874	4.7	2,474	8.4	4,348
30-34	3.1	1,599	3.8	1,948	7.0	3,547
35-39	2.5	1,321	2.8	1,498	5.3	2,819
40-44	2.3	1,182	2.3	1,214	4.6	2,396
45-49	1.6	849	1.8	956	3.4	1,805
50-54	1.3	677	1.4	780	2.7	1,457
55-59	1.1	629	1.1	633	2.2	1,262
60-64	1.1	592	1.0	574	2.1	1,166
65-69	0.7	392	0.9	512	1.6	904
70-74	0.5	301	0.6	381	1.1	682
75-79	0.2	153	0.3	188	0.6	341
≥80	0.3	184	0.5	277	0.8	461
Total	48.1	26,202	51.9	28,351	100.0	54,553

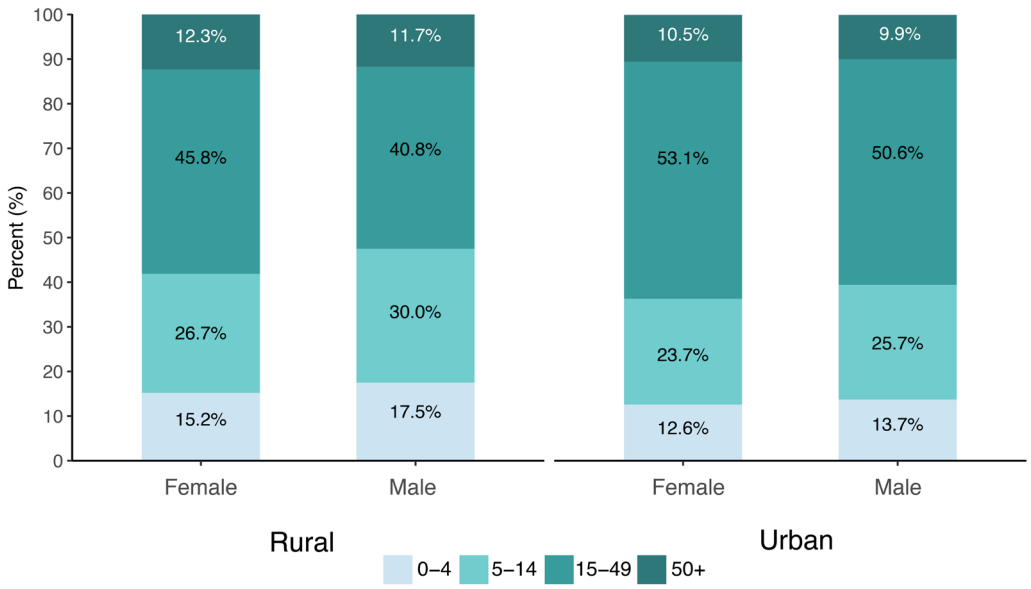


Figure 3.B
Household population by age, sex, and residence, CAMPHIA 2017-2018

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

Percent distribution of the household population, by sex, age, and residence, CAMPHIA 2017-2018

	Urban					
	Male		Female		Total	
Age (years)	Percent	Number	Percent	Number	Percent	Number
0-4	13.7	1,457	12.6	1,421	13.2	2,878
5-14	25.7	2,749	23.7	2,684	24.7	5,433
15-49	50.6	5,244	53.1	5,883	51.9	11,127
≥50	9.9	1,042	10.5	1,189	10.2	2,231
Total	100.0	10,492	100.0	11,177	100.0	21,669
	Rural					
	Male		Female		Total	
Age (years)	Percent	Number	Percent	Number	Percent	Number
0-4	17.5	2,816	15.2	2,696	16.3	5,512
5-14	30.0	4,899	26.7	4,745	28.3	9,644
15-49	40.8	6,109	45.8	7,577	43.4	13,686
≥50	11.7	1,886	12.3	2,156	12.0	4,042
Total	100.0	15,710	100.0	17,174	100.0	32,884

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

Table 3.D Prevalence of HIV-affected households

Percentage of households with at least one HIV-positive household member, by residence, CAMPHIA 2017-2018

Residence	Percent	Number
Urban	8.1	4,741
Rural	8.0	5,902
Total	8.1	10,643

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

Figure 3.C
Prevalence of HIV-affected households by residence, CAMPHIA 2017-2018

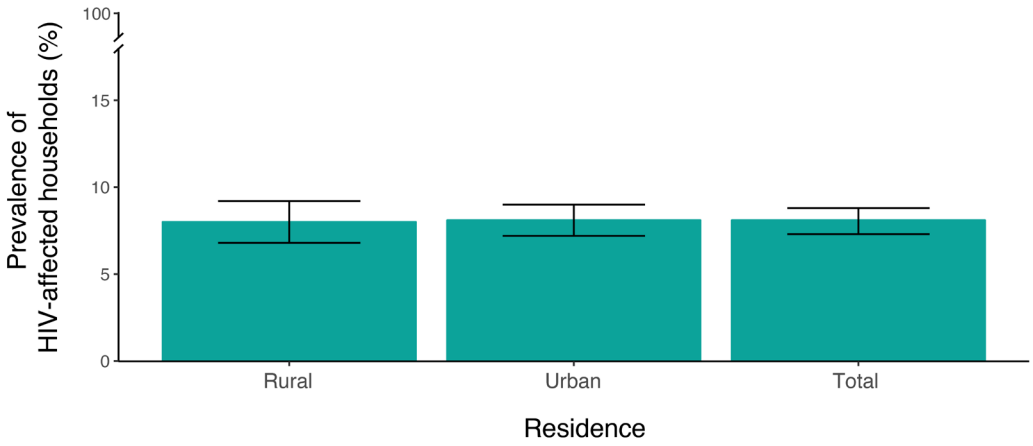


Table 3.E HIV-affected households by number of HIV-positive members

Among households with at least one HIV-positive household member, percent distribution of households by number of HIV-positive household members, by residence, CAMPHIA 2017-2018

	Residence					
	Urban		Rural		Total	
Number of HIV-positive household members	Percent	Number	Percent	Number	Percent	Number
1	88.5	354	86.3	403	87.5	757
2	10.8	46	12.8	57	11.7	103
3	0.7	4	0.8	5	0.8	9
4	0.0	0	0.1	1	0.0	1
Total	100.0	404	100.0	466	100.0	870

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

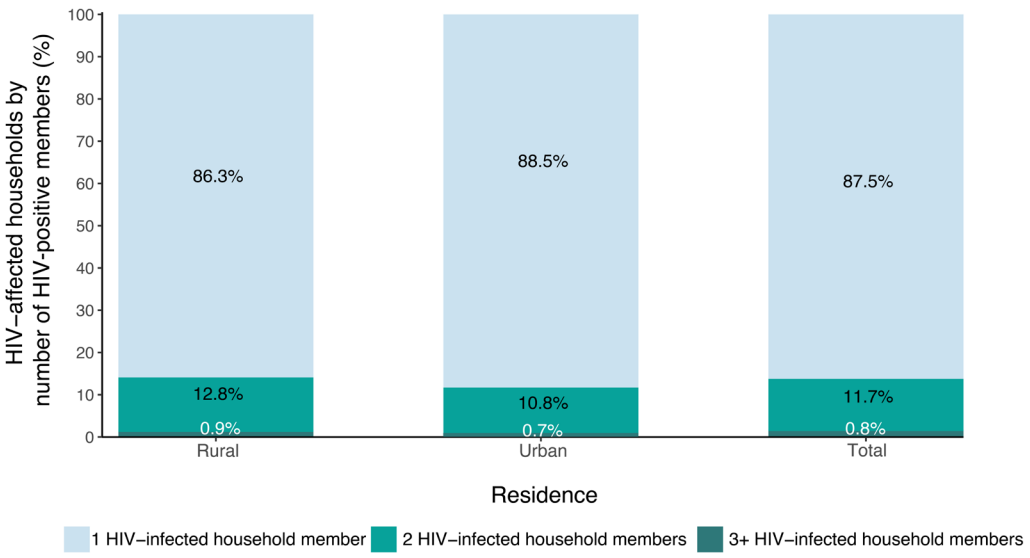


Figure 3.D HIV-affected households by number of HIV-positive members and residence, CAMPHIA 2017-2018

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

Percentage of households with an HIV-positive head of household, by sex of head of household, CAMPHIA 2017-2018

Sex of head of household	Percent	Number
Male	3.6	6,400
Female	8.5	2,623
Total	5.1	9,023

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

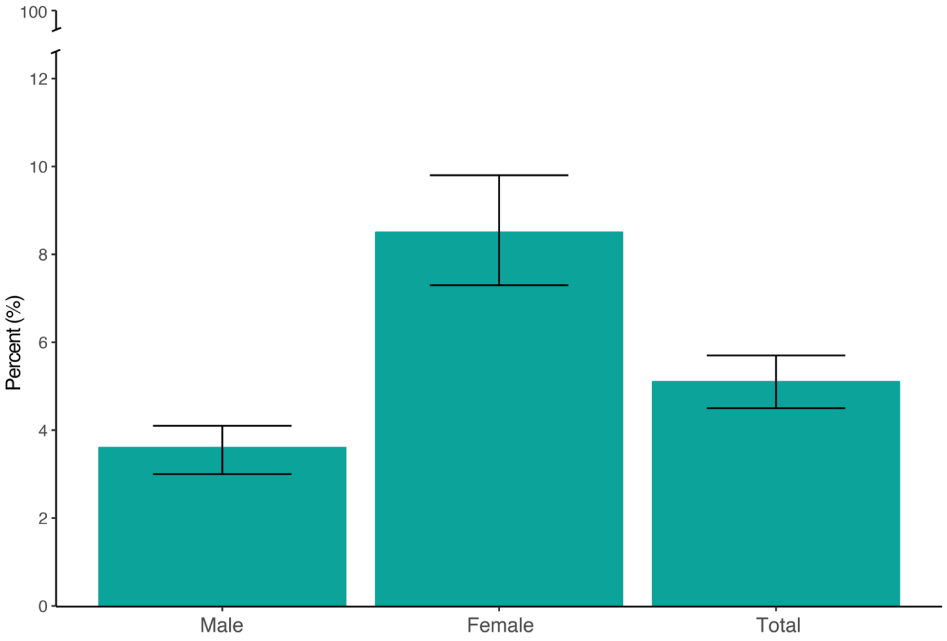


Figure 3.E
Prevalence of households with an HIV-positive head of household by sex, CAMPHIA 2017-2018

4. SURVEY RESPONDENT CHARACTERISTICS

4.1 BACKGROUND

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

4.2 RESULTS

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

Table 4.A Demographic characteristics of the adult population

Percent distribution of the adult population aged 15-64 years, by sex and selected demographic characteristics, CAMPHIA 2017-2018

	Male		Female		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Residence						
Total urban	53.6	5,451	51.3	6,308	52.4	11,759
Douala and Yaounde	24.8	2,331	22.9	2,629	23.9	4,960
Other urban	28.7	3,120	28.4	3,679	28.5	6,799
Rural	46.4	6,995	48.7	8,510	47.6	15,505
Region						
Adamawa	4.1	965	3.9	1,143	4.0	2,108
Centre	10.1	1,286	9.4	1,383	9.8	2,669
Douala	13.4	1,146	12.4	1,286	12.9	2,432
East	5.6	944	5.7	1,100	5.6	2,044
Far North	12.3	1,697	13.1	2,189	12.7	3,886
Littoral	7.3	431	7.0	473	7.1	904
North	7.9	1,526	8.2	1,836	8.1	3,362
North West	6.4	797	7.7	1,140	7.1	1,937
South	3.7	811	3.5	842	3.6	1,653
South West	8.4	692	7.8	774	8.1	1,466
West	9.5	966	10.9	1,309	10.2	2,275
Yaounde	11.5	1,185	10.5	1,343	11.0	2,528
Marital status						
Never married	45.7	5,103	29.8	4,084	37.6	9,187
Ever had sex	27.5	3,037	18.1	2,433	22.7	5,470
Never had sex	17.9	2,022	11.5	1,634	14.6	3,656
Missing whether had sex	(0.3)	44	*	17	0.2	61
Married or living together	46.0	6,232	53.5	8,212	49.8	14,444
Divorced or separated	7.5	963	9.6	1,389	8.6	2,352
Widowed	0.8	122	7.2	1,093	4.0	1,215

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

Percent distribution of the adult population aged 15-64 years, by sex and selected demographic characteristics, CAMPHIA 2017-2018

	Male		Female		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Type of union						
In polygamous union	7.2	1,082	12.7	2,094	9.9	3,176
Not in polygamous union	38.7	5,107	37.9	5,356	38.3	10,463
Not currently in union	54.2	6,188	49.4	6,566	51.8	12,754
Education						
None	8.5	1,482	18.3	3,597	13.5	5,079
Primary	24.2	3,396	29.0	4,461	26.6	7,857
Secondary first cycle	34.6	4,146	31.1	4,175	32.8	8,321
Secondary second cycle or higher	32.7	3,393	21.6	2,557	27.0	5,950
Wealth quintile						
Lowest	18.9	3,497	20.8	4,403	19.9	7,900
Second	19.3	2,696	21.0	3,411	20.2	6,107
Middle	21.9	2,407	20.4	2,676	21.2	5,083
Fourth	19.9	2,028	18.0	2,177	18.9	4,205
Highest	19.9	1,811	19.8	2,143	19.9	3,954
Religion						
Catholic	39.1	4,473	40.3	5,382	39.7	9,855
Protestant	23.0	2,906	24.2	3,623	23.6	6,529
Muslim	19.3	2,846	18.6	3,325	18.9	6,171
Animist	1.4	200	1.5	267	1.5	467
Other Christian	6.3	744	6.6	913	6.5	1,657
Other	3.9	442	5.2	732	4.6	1,174
None	7.0	804	3.6	565	5.2	1,369
Ethnicity						
Arabe-Choa/Peul/Haoussa	8.5	1,284	8.2	1,478	8.3	2,762
Biu-Mandara	3.5	548	3.6	732	3.5	1,280
Adamaoua-Oubangui	2.0	363	1.2	306	1.6	669
Bantoide Sud-Ouest	2.4	237	2.2	228	2.3	465
Grassfields Nord-Ouest	10.5	1,106	10.5	1,366	10.5	2,472
Bamilike/Bamoun	25.6	2,328	27.8	2,988	26.8	5,316
Cotier/Ngoe/Oroko	3.4	287	2.7	280	3.0	567
Beti/Bassa/Mbam	18.2	2,319	17.4	2,559	17.8	4,878
Kako/Maka	1.9	339	2.3	484	2.1	823
Foreigner/Etranger	0.7	75	0.5	76	0.6	151
No Tribe/Aucune	*	1	*	14	*	15
Other	23.3	3,545	23.5	4,281	23.4	7,826

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

Percent distribution of the adult population aged 15-64 years, by sex and selected demographic characteristics, CAMPHIA 2017-2018

	Male		Female		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Age						
15-19	19.7	2,210	18.5	2,708	19.1	4,918
20-24	17.0	1,988	15.7	2,458	16.3	4,446
25-29	14.5	1,759	13.9	2,375	14.2	4,134
30-34	12.4	1,509	13.6	1,863	13.0	3,372
35-39	9.6	1,243	10.8	1,434	10.2	2,677
40-44	8.3	1,107	8.8	1,161	8.6	2,268
45-49	6.1	805	6.2	908	6.1	1,713
50-54	5.1	644	5.4	746	5.3	1,390
55-59	3.9	610	3.9	614	3.9	1,224
60-64	3.2	571	3.3	551	3.2	1,122
Total 15-24	36.8	4,198	34.1	5,166	35.4	9,364
Total 15-49	87.8	10,621	87.4	12,907	87.6	23,528
Total 15-64	100.0	12,446	100.0	14,818	100.0	27,264

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 4.B Demographic characteristics of the pediatric population

Percent distribution of the population aged 0-14 years, by sex and selected demographic characteristics, CAMPHIA 2017-2018

	Male		Female		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Age						
0-17 months	11.0	401	10.6	366	10.8	767
18-59 months	27.0	991	27.3	997	27.2	1,988
5-9 years	32.9	1,421	33.1	1,410	33.0	2,831
10-14 years	29.1	1,101	29.0	1,083	29.0	2,184
Residence						
Total urban	43.7	1,363	43.9	1,325	43.8	2,688
Douala and Yaounde	15.8	448	17.1	454	16.4	902
Other urban	27.9	915	26.8	871	27.4	1,786
Rural	56.3	2,551	56.1	2,531	56.2	5,082
Region						
Adamawa	4.5	350	4.9	369	4.7	719
Centre	11.2	396	9.6	330	10.4	726
Douala	8.0	208	9.1	224	8.6	432
East	6.1	300	6.4	300	6.3	600
Far North	17.5	709	18.2	713	17.8	1,422
Littoral	6.7	111	6.0	102	6.3	213
North	10.8	630	11.4	657	11.1	1,287
North West	7.6	294	6.3	246	6.9	540
South	3.1	200	4.1	230	3.6	430
South West	5.3	150	5.5	148	5.4	298
West	11.5	326	10.4	307	11.0	633
Yaounde	7.7	240	8.0	230	7.9	470
Wealth quintile						
Lowest	27.7	1,452	29.4	1,497	28.5	2,949
Second	24.3	1,004	22.9	940	23.6	1,944
Middle	19.2	646	18.8	612	19.0	1,258
Fourth	16.0	467	14.6	429	15.3	896
Highest	12.8	341	14.3	367	13.6	708
Total 0-4	38.0	1,392	38.0	1,363	38.0	2,755
Total 0-14	100.0	3,914	100.0	3,856	100.0	7,770

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
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 4.C Demographic characteristics of the adolescent population

Percent distribution of the population aged 10-14 years, by sex and selected demographic characteristics, CAMPHIA 2017-2018

	Male		Female		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Residence						
Total urban	47.2	413	48.8	414	48.0	827
Douala and Yaounde	16.4	129	18.5	135	17.5	264
Other urban	30.7	284	30.2	279	30.5	563
Rural	52.8	688	51.2	669	52.0	1,357
Region						
Adamawa	4.3	94	5.3	105	4.8	199
Centre	9.7	103	8.9	92	9.3	195
Douala	9.0	64	9.7	64	9.4	128
East	6.9	95	7.6	100	7.2	195
Far North	17.3	202	18.1	195	17.7	397
Littoral	(6.2)	32	*	19	5.0	51
North	9.2	155	10.4	172	9.8	327
North West	7.6	84	6.8	70	7.2	154
South	2.7	54	4.3	62	3.5	116
South West	(5.4)	41	(5.3)	42	5.3	83
West	14.2	112	11.0	91	12.6	203
Yaounde	7.4	65	8.8	71	8.1	136
Education						
Currently attending primary school	58.3	684	50.1	590	54.2	1,274
Currently attending secondary school	31.9	304	33.2	285	32.6	589
Not currently attending school	9.8	112	16.7	208	13.2	320
Total, ages 10-14 years	100.0	1,101	100.0	1,083	100.0	2,184

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

5. HIV INCIDENCE

5.1 BACKGROUND

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

Two laboratory-based incidence testing algorithms (HIV-1 LAg avidity plus VL and HIV-1 LAg avidity plus VL and ARV detection) were used to distinguish recent from long-term infection, and incidence estimates were obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays, and with assay performance characteristics of a MDRI = 130 days (95% CI: 118, 142), with T = 1.0 year and residual PFR = 0.00. Survey weights are utilized for all estimates. All HIV-positive participants 18 months and older were tested for recent infection using HIV-1 LAg avidity assay.

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

5.2 RESULTS

These tables report HIV incidence in Cameroon at the time of the CAMPHIA survey.

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

Annual incidence of HIV among persons aged 15-49 and 15-64 years, by sex and age, using the limiting antigen (LAg) + viral load (VL) recent infection algorithm, CAMPHIA 2017-2018

	Male		Female		Total	
Age	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI
15-24	0.07	(0.00 – 0.21)	0.64	(0.12 – 1.15)	0.35	(0.08 – 0.61)
25-34	0.13	(0.00 – 0.40)	0.28	(0.00 – 0.55)	0.21	(0.02 – 0.39)
35-49	0.04	(0.00 – 0.17)	0.34	(0.00 – 0.72)	0.19	(0.00 – 0.40)
15-49	0.08	(0.00 – 0.18)	0.44	(0.18 – 0.69)	0.26	(0.12 – 0.40)
15-64	0.09	(0.00 – 0.19)	0.45	(0.20 – 0.69)	0.27	(0.14 – 0.41)

[1]Relates to Global AIDS Monitoring Indicator 3.1: HIV incidence.
[2]95% CI (confidence interval) indicates the interval that is expected to include the true population parameter 95% of the time.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Annual incidence of HIV among persons aged 15-49 and 15-64 years, by sex and age, using the limiting antigen (LAg) + viral load (VL) + antiretroviral detection (ARVs) algorithm, CAMPHIA 2017-2018

	Male		Female		Total	
Age	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI
15-24	0.07	(0.00 – 0.21)	0.64	(0.12 – 1.15)	0.35	(0.08 – 0.61)
25-34	0.13	(0.00 – 0.40)	0.28	(0.00 – 0.55)	0.21	(0.02 – 0.39)
35-49	0.04	(0.00 – 0.17)	0.22	(0.00 – 0.52)	0.13	(0.00 – 0.29)
15-49	0.08	(0.00 – 0.18)	0.40	(0.15 – 0.66)	0.24	(0.11 – 0.38)
15-64	0.09	(0.00 – 0.19)	0.39	(0.16 – 0.61)	0.24	(0.11 – 0.37)

[1]Relates to Global AIDS Monitoring Indicator 3.1: HIV incidence.
[2]95% CI (confidence interval) indicates the interval that is expected to include the true population parameter 95% of the time.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

5.3 REFERENCES

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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 BACKGROUND

This chapter presents representative estimates of HIV prevalence among adults (defined as those aged 15-64 years) at the national and zonal level by selected demographic and behavioral characteristics. It also estimates of the number of people living with HIV in Cameroon. HIV prevalence testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Cameroon's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay.

Appendix A describes the sample design and Appendix C provides estimates of sampling errors. Appendix B describes the PHIA HIV testing methodology.

6.2 RESULTS

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

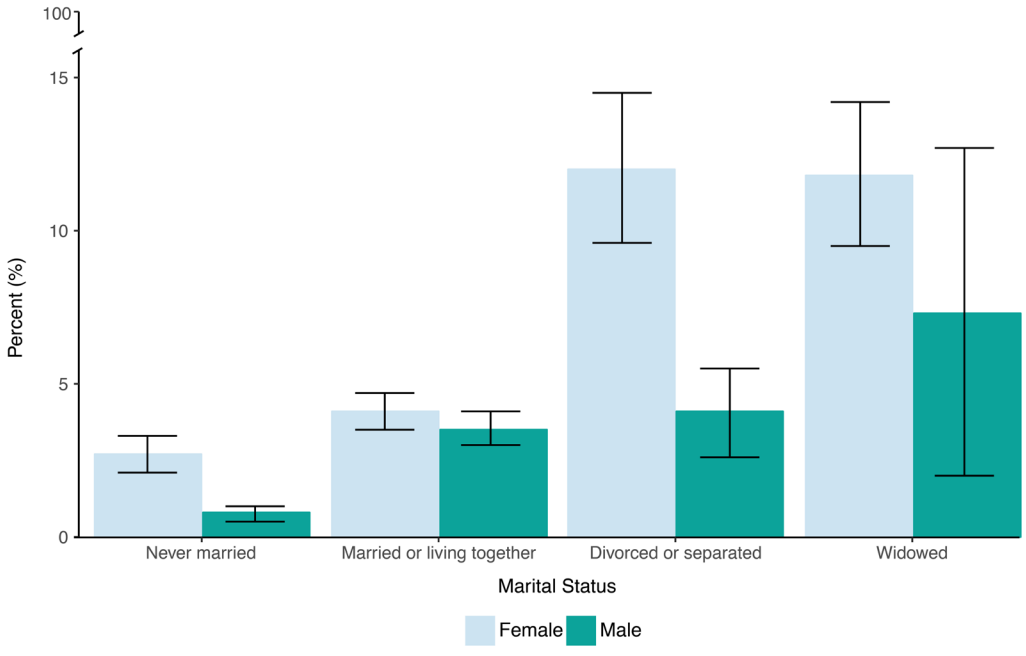


Figure 6.A
HIV prevalence by marital status: Ages 15-64 years, CAMPHIA 2017-2018

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

Prevalence of HIV among persons aged 15-64 years, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Total urban	2.2	5,075	5.5	5,871	3.8	10,946
Douala and Yaounde	2.1	2,082	5.5	2,353	3.8	4,435
Other urban	2.3	2,993	5.4	3,518	3.9	6,511
Rural	2.5	6,812	4.5	8,273	3.5	15,085
Region						
Adamawa	3.0	916	6.8	1,081	4.9	1,997
Centre	3.5	1,247	8.1	1,342	5.8	2,589
Douala	1.6	1,039	5.0	1,166	3.3	2,205
East	3.9	929	7.9	1,080	5.9	2,009
Far North	1.3	1,598	1.7	2,058	1.5	3,656
Littoral	1.5	428	4.6	465	3.1	893
North	1.3	1,496	1.9	1,806	1.6	3,302
North West	2.9	775	6.8	1,094	5.1	1,869
South	3.0	808	9.8	840	6.3	1,648
South West	2.6	649	4.7	724	3.6	1,373
West	2.4	959	2.9	1,301	2.7	2,260
Yaounde	2.7	1,043	6.2	1,187	4.4	2,230
Marital status						
Never married	0.8	4,873	2.7	3,903	1.5	8,776
Ever had sex	1.1	2,899	4.1	2,316	2.3	5,215
Never had sex	0.3	1,939	0.5	1,571	0.4	3,510
Missing whether had sex	3.0	(35)	*	16	2.2	51
Married or living together	3.5	5,940	4.1	7,840	3.8	13,780
Divorced or separated	4.1	931	12.0	1,319	8.6	2,250
Widowed	7.3	120	11.8	1,049	11.4	1,169
Type of union						
In polygamous union	2.9	1,048	3.3	2,015	3.1	3,063
Not in polygamous union	3.6	4,850	4.0	5,100	3.8	9,950
Not currently in union	1.3	5,924	6.0	6,271	3.5	12,195
Education						
None	1.3	1,423	3.2	3,443	2.6	4,866
Primary	3.2	3,295	6.3	4,318	5.0	7,613
Secondary first cycle	2.1	3,991	5.6	4,005	3.8	7,996
Secondary second cycle or higher	2.2	3,151	3.8	2,354	2.8	5,505

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

Prevalence of HIV among persons aged 15-64 years, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Wealth quintile						
Lowest	1.6	3,420	2.8	4,294	2.2	7,714
Second	2.8	2,624	6.0	3,303	4.5	5,927
Middle	2.1	2,312	5.2	2,559	3.6	4,871
Fourth	2.8	1,878	5.6	2,024	4.2	3,902
Highest	2.5	1,646	5.6	1,956	4.0	3,602
Religion						
Catholic	2.5	4,281	5.3	5,136	3.9	9,417
Protestant	2.3	2,796	5.7	3,478	4.1	6,274
Muslim	1.8	2,680	3.3	3,123	2.5	5,803
Animist	3.9	196	2.9	262	3.4	458
Other Christian	2.0	705	6.2	879	4.2	1,584
Other	2.3	424	5.8	699	4.3	1,123
None	3.0	782	3.7	557	3.2	1,339
Ethnicity						
Arabe-Choa/Peul/Haoussa	1.7	1,180	3.2	1,353	2.5	2,533
Biu-Mandara	1.1	532	2.1	714	1.7	1,246
Adamaoua-Oubangui	1.7	357	6.1	294	3.4	651
Bantoide Sud-Ouest	3.4	221	5.6	224	4.5	445
Grassfields Nord-Ouest	3.1	1,067	7.1	1,302	5.1	2,369
Bamilike/Bamoun	2.0	2,223	3.7	2,843	2.9	5,066
Cotier/Ngoe/Oroko	2.4	263	5.4	263	3.8	526
Beti/Bassa/Mbam	2.9	2,211	8.2	2,427	5.5	4,638
Kako/Maka	4.4	337	11.6	481	8.4	818
Foreigner/Etranger	1.6	69	4.7	69	3.0	138
No Tribe/Aucune	*	1	*	13	*	14
Other	2.1	3,416	3.5	4,137	2.8	7,553
Pregnancy status						
Currently pregnant	NA	NA	3.4	1,134	NA	NA
Not currently pregnant	NA	NA	5.1	12,790	NA	NA
Total 15-64	2.3	11,887	5.0	14,144	3.7	26,031

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

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

Prevalence of HIV among persons aged 15-49 years, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Total urban	1.9	4,444	5.2	5,197	3.6	9,641
Douala and Yaounde	1.7	1,855	5.2	2,101	3.4	3,956
Other urban	2.1	2,589	5.3	3,096	3.7	5,685
Rural	2.1	5,679	4.3	7,124	3.3	12,803
Region						
Adamawa	2.8	804	7.0	965	4.9	1,769
Centre	2.7	1,036	7.4	1,121	5.0	2,157
Douala	1.5	910	4.8	1,038	3.1	1,948
East	3.5	793	7.5	948	5.6	1,741
Far North	1.1	1,329	1.6	1,793	1.4	3,122
Littoral	1.6	360	4.9	405	3.3	765
North	1.4	1,287	2.0	1,642	1.7	2,929
North West	2.6	658	6.6	947	4.8	1,605
South	2.3	671	8.5	687	5.4	1,358
South West	2.4	565	4.7	629	3.5	1,194
West	2.0	765	3.1	1,083	2.6	1,848
Yaounde	2.0	945	5.6	1,063	3.7	2,008
Marital status						
Never married	0.8	4,816	2.6	3,791	1.5	8,607
Ever had sex	1.1	2,850	4.0	2,204	2.2	5,054
Never had sex	0.3	1,931	0.5	1,571	0.4	3,502
Missing whether had sex	(3.0)	35	*	16	2.2	51
Married or living together	3.3	4,500	4.1	6,941	3.8	11,441
Divorced or separated	3.3	742	12.4	1,126	8.5	1,868
Widowed	(10.3)	45	15.0	430	14.6	475
Type of union						
In polygamous union	2.5	692	3.2	1,745	3.0	2,437
Not in polygamous union	3.4	3,776	4.1	4,539	3.8	8,315
Not currently in union	1.1	5,603	5.5	5,347	3.1	10,950
Education						
None	0.9	1,010	3.0	2,783	2.4	3,793
Primary	3.0	2,624	6.3	3,512	4.8	6,136
Secondary first cycle	1.9	3,608	5.3	3,733	3.6	7,341
Secondary second cycle or higher	1.7	2,861	3.6	2,274	2.5	5,135

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

Prevalence of HIV among persons aged 15-49 years, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Wealth quintile						
Lowest	1.3	2,824	3.0	3,743	2.2	6,567
Second	2.6	2,150	5.6	2,765	4.2	4,915
Middle	1.7	2,020	4.9	2,213	3.2	4,233
Fourth	2.5	1,668	4.9	1,838	3.7	3,506
Highest	2.0	1,455	5.6	1,754	3.8	3,209
Religion						
Catholic	2.0	3,639	4.9	4,412	3.5	8,051
Protestant	2.1	2,371	5.5	2,992	3.9	5,363
Muslim	1.7	2,298	3.3	2,807	2.5	5,105
Animist	4.8	154	2.7	225	3.7	379
Other Christian	1.6	610	5.7	786	3.8	1,396
Other	1.9	375	5.6	629	4.0	1,004
None	2.7	658	4.4	460	3.3	1,118
Ethnicity						
Arabe-Choa/Peul/Haoussa	1.6	1,016	3.2	1,222	2.4	2,238
Biu-Mandara	1.0	459	2.3	616	1.7	1,075
Adamaoua-Oubangui	1.5	318	6.5	262	3.3	580
Bantoide Sud-Ouest	3.9	192	5.3	205	4.6	397
Grassfields Nord-Ouest	2.7	928	6.8	1,147	4.8	2,075
Bamilike/Bamoun	1.9	1,885	3.6	2,458	2.8	4,343
Cotier/Ngoe/Oroko	0.9	223	5.5	216	2.9	439
Beti/Bassa/Mbam	2.2	1,832	7.6	2,022	4.8	3,854
Kako/Maka	4.2	291	11.4	412	8.2	703
Foreigner/Etranger	0.0	58	3.7	64	1.8	122
No Tribe/Aucune	*	1	*	11	*	12
Other	2.0	2,911	3.4	3,664	2.7	6,575
Pregnancy status						
Currently pregnant	NA	NA	3.5	1,128	NA	NA
Not currently pregnant	NA	NA	4.9	10,975	NA	NA
Total 15-49	2.0	10,123	4.8	12,321	3.4	22,444

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

Table 6.C HIV prevalence by age and sex

Prevalence of HIV among persons aged 0-64 years, by sex and age, CAMPHIA 2017-2018

	Male		Female		Total	
Age	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
0-17 months	0.0	341	0.0	316	0.0	657
18-59 months	0.2	896	0.2	915	0.2	1,811
5-9	0.6	1,325	0.2	1,313	0.4	2,638
10-14	0.3	1,070	0.0	1,045	0.1	2,115
Total 0-4	0.1	1,237	0.2	1,231	0.1	2,468
Total 0-14	0.3	3,632	0.1	3,589	0.2	7,221
15-19	0.2	2,145	1.2	2,620	0.7	4,765
20-24	0.6	1,904	2.9	2,339	1.7	4,243
25-29	1.2	1,664	3.7	2,259	2.5	3,923
30-34	3.7	1,415	5.9	1,768	4.9	3,183
35-39	3.0	1,174	8.0	1,363	5.7	2,537
40-44	5.3	1,056	9.3	1,095	7.4	2,151
45-49	4.2	765	8.1	877	6.2	1,642
50-54	6.0	618	7.6	706	6.8	1,324
55-59	3.4	591	6.0	584	4.8	1,175
60-64	3.8	555	5.0	533	4.4	1,088
Total 15-24	0.4	4,049	2.0	4,959	1.2	9,008
Total 15-49	2.0	10,123	4.8	12,321	3.4	22,444
Total 15-64	2.3	11,887	5.0	14,144	3.7	26,031

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

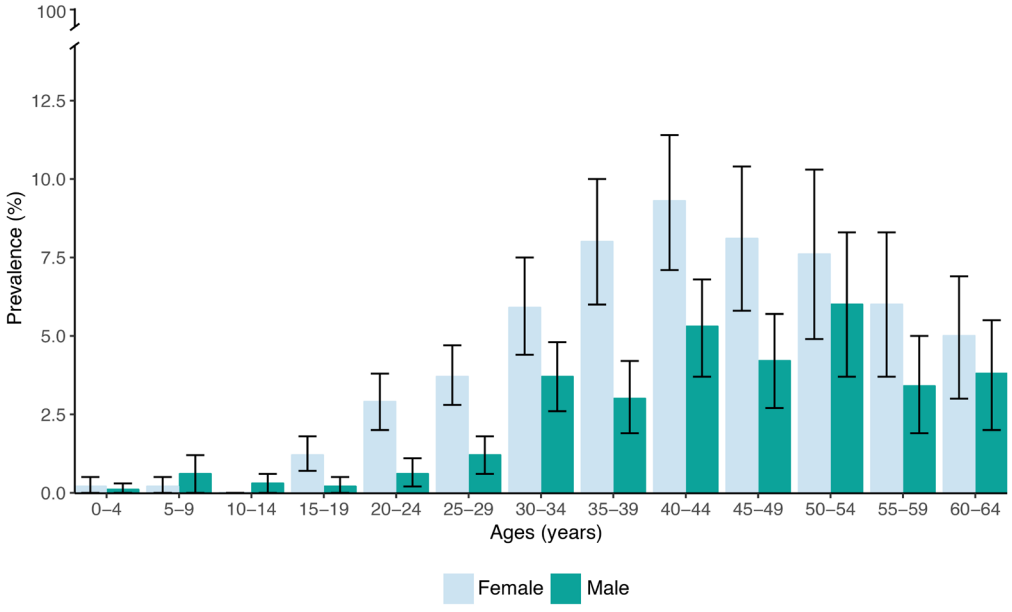


Figure 6.B
HIV prevalence by age and sex, CAMPHIA 2017-2018

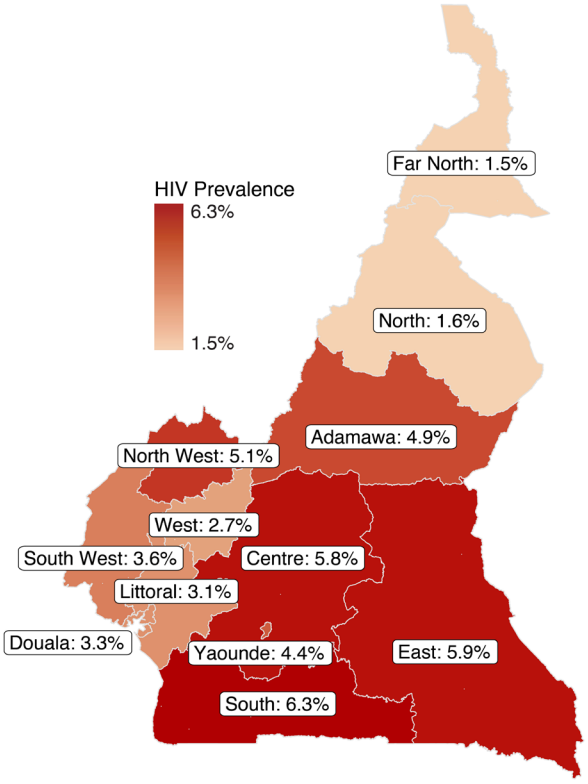


Figure 6.C
HIV prevalence among adults, by region, CAMPHIA 2017-2018

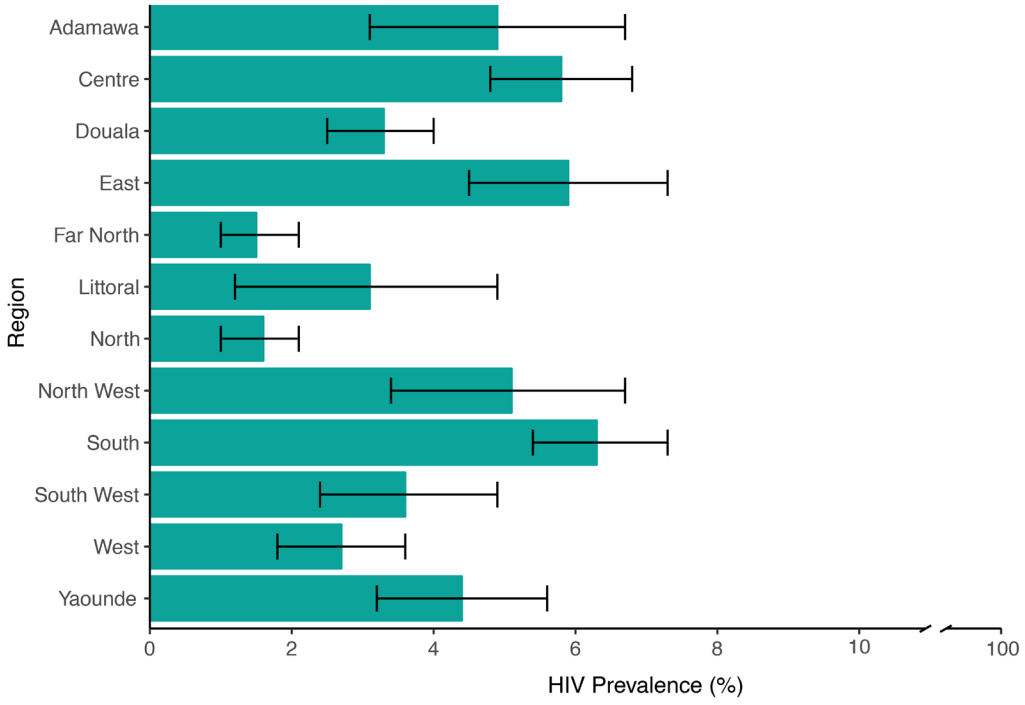


Figure 6.D
HIV prevalence among adults, by region, CAMPHIA 2017-2018

7. HIV TESTING

7.1 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 co-morbidities.

This section reports data on adult (defined as those aged 15-64 years) men and women, who reported ever receiving an HIV test and receiving the test results. Results on HIV testing in the last 12 months and receiving the test results are also presented to understand frequent or recent testing.

7.2 RESULTS

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

Table 7.A Self-reported HIV testing: Men

Percentage of men aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

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	76.7	29.3	283
HIV negative	51.2	25.5	11434
Not tested	64.9	44.4	550
Residence			
Total urban	61.8	33.3	5369
Douala and Yaounde	67.4	38.5	2296
Other urban	56.9	28.7	3073
Rural	41.9	18.9	6898
Region			
Adamawa	44.2	23.0	947
Centre	54.7	25.5	1270
Douala	70.8	42.5	1126
East	52.3	27.4	926
Far North	21.7	9.6	1682
Littoral	59.0	27.2	422
North	22.4	9.1	1507
North West	62.4	30.1	788
South	63.0	29.9	804
South West	61.3	28.1	679
West	56.8	28.7	946
Yaounde	63.4	33.9	1170

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

Percentage of men aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the past 12 months and received results[1]	Number
Marital status			
Never married	40.0	22.5	5032
Ever had sex	54.4	31.3	3001
Never had sex	17.4	8.9	1991
Missing whether had sex	56.6	29.4	(40)
Married or living together	62.8	29.4	6148
Divorced or separated	63.9	33.4	947
Widowed	60.7	22.7	117
Type of union			
In polygamous union	57.2	25.5	1063
Not in polygamous union	63.9	30.1	5042
Not currently in union	43.6	24.0	6096
Education			
None	17.7	8.0	1447
Primary	44.2	19.2	3337
Secondary first cycle	47.2	23.3	4095
Secondary second cycle or higher	73.0	40.0	3360
Wealth quintile			
Lowest	19.8	7.0	3446
Second	47.4	20.4	2655
Middle	54.5	27.0	2369
Fourth	64.2	34.4	2006
Highest	74.7	42.8	1784
Religion			
Catholic	57.5	29.5	4420
Protestant	55.3	28.2	2865
Muslim	40.2	21.6	2801
Animist	38.7	18.2	197
Other Christian	57.8	25.4	731
Other	56.4	25.0	438
None	44.4	21.5	788

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

Percentage of men aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the past 12 months and received results[1]	Number
Ethnicity			
Arabe-Choa/Peul/Haoussa	34.9	18.5	1259
Biu-Mandara	20.8	10.9	541
Adamaoua-Oubangui	48.5	23.8	353
Bantoide Sud-Ouest	66.3	31.2	235
Grassfields Nord-Ouest	64.6	30.3	1090
Bamilike/Bamoun	64.1	33.7	2293
Cotier/Ngoe/Oroko	60.6	31.5	282
Beti/Bassa/Mbam	59.8	30.8	2292
Kako/Maka	53.9	29.8	331
Foreigner/Etranger	46.8	20.4	74
No Tribe/Aucune	*	*	1
Other	37.6	17.9	3503
Age			
15-19	18.4	10.2	2180
20-24	46.7	26.8	1964
25-29	65.9	37.3	1734
30-34	68.4	34.7	1496
35-39	67.0	34.8	1227
40-44	66.5	29.5	1091
45-49	62.5	28.7	794
50-54	62.7	24.6	631
55-59	58.2	22.9	595
60-64	49.2	17.1	555
Total 15-24	31.5	17.9	4144
Total 15-49	51.8	27.2	10486
Total 15-64	52.5	26.6	12267

[1]Relates to PEPFAR HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 7.B Self-reported HIV testing: Women

Percentage of women aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

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	82.9	32.0	666
HIV negative	64.5	30.2	12873
Not tested	75.3	49.6	650
Residence			
Total urban	76.4	37.6	6158
Douala and Yaounde	81.8	42.3	2592
Other urban	72.0	33.7	3566
Rural	54.6	24.6	8031
Region			
Adamawa	51.1	20.7	1055
Centre	75.5	34.2	1344
Douala	82.5	43.4	1267
East	62.3	30.9	1010
Far North	26.2	9.9	2057
Littoral	78.7	38.8	459
North	31.0	11.1	1748
North West	79.1	36.6	1112
South	80.7	38.8	814
South West	77.3	37.3	749
West	72.2	34.1	1249
Yaounde	81.1	41.1	1325
Marital status			
Never married	52.6	28.6	4001
Ever had sex	71.4	40.4	2376
Never had sex	23.6	10.4	1609
Missing whether had sex	*	*	16
Married or living together	72.0	33.4	7775
Divorced or separated	77.9	34.2	1345
Widowed	60.2	22.9	1032
Type of union			
In polygamous union	54.6	21.7	1937
Not in polygamous union	74.8	35.7	5117
Not currently in union	58.9	28.9	6378

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

Percentage of women aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

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
Education			
None	29.6	10.7	3314
Primary	67.0	26.0	4237
Secondary first cycle	72.4	35.8	4077
Secondary second cycle or higher	83.8	48.1	2542
Wealth quintile			
Lowest	29.0	10.2	4108
Second	64.9	26.8	3241
Middle	73.3	36.1	2574
Fourth	80.0	39.0	2146
Highest	83.6	45.4	2114
Religion			
Catholic	72.6	36.0	5215
Protestant	69.4	32.5	3482
Muslim	48.2	20.7	3105
Animist	43.7	20.9	259
Other Christian	72.5	33.4	884
Other	73.4	35.3	709
None	43.5	19.8	528
Ethnicity			
Arabe-Choa/Peul/Haoussa	42.7	18.1	1357
Biu-Mandara	21.7	9.6	691
Adamaoua-Oubangui	51.0	21.1	284
Bantoide Sud-Ouest	74.2	37.8	222
Grassfields Nord-Ouest	82.4	40.0	1340
Bamilike/Bamoun	77.4	37.7	2897
Cotier/Ngoe/Oroko	81.4	42.9	276
Beti/Bassa/Mbam	79.5	38.6	2499
Kako/Maka	68.3	34.9	448
Foreigner/Etranger	74.2	35.9	73
No Tribe/Aucune	*	*	14
Other	47.0	20.2	4067

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

Percentage of women aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the past 12 months and received results[1]	Number
Age			
15-19	33.9	18.5	2623
20-24	73.7	40.9	2346
25-29	79.1	43.5	2284
30-34	81.3	38.7	1775
35-39	78.3	34.5	1379
40-44	72.5	26.0	1116
45-49	64.7	25.2	869
50-54	64.3	23.4	708
55-59	57.3	20.2	573
60-64	46.6	17.0	516
Total 15-24	52.1	28.7	4969
Total 15-49	67.1	32.8	12392
Total 15-64	65.9	31.3	14189

[1]Relates to PEPFAR HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

Table 7.C Self-reported HIV testing: Total

Percentage of persons aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

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	80.9	31.1	949
HIV negative	57.8	27.8	24307
Not tested	70.2	47.1	1200
Residence			
Total urban	69.0	35.4	11527
Douala and Yaounde	74.4	40.4	4888
Other urban	64.5	31.2	6639
Rural	48.4	21.8	14929

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

Percentage of persons aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the past 12 months and received results[1]	Number
Region			
Adamawa	47.5	21.9	2002
Centre	64.9	29.7	2614
Douala	76.5	42.9	2393
East	57.3	29.1	1936
Far North	24.0	9.8	3739
Littoral	68.8	33.0	881
North	26.8	10.1	3255
North West	71.7	33.7	1900
South	71.7	34.2	1618
South West	69.1	32.6	1428
West	65.1	31.6	2195
Yaounde	72.0	37.4	2495
Marital status			
Never married	45.1	25.0	9033
Ever had sex	61.3	34.9	5377
Never had sex	19.9	9.5	3600
Missing whether had sex	46.8	24.0	56
Married or living together	67.8	31.6	13923
Divorced or separated	71.8	33.9	2292
Widowed	60.2	22.9	1149
Type of union			
In polygamous union	55.6	23.1	3000
Not in polygamous union	69.2	32.8	10159
Not currently in union	50.8	26.3	12474
Education			
None	25.7	9.8	4761
Primary	56.7	22.9	7574
Secondary first cycle	59.3	29.3	8172
Secondary second cycle or higher	77.4	43.3	5902
Wealth quintile			
Lowest	24.6	8.6	7554
Second	56.6	23.8	5896
Middle	63.6	31.4	4943
Fourth	71.8	36.6	4152
Highest	79.2	44.1	3898

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

Percentage of persons aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

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
Religion			
Catholic	65.2	32.8	9635
Protestant	62.6	30.4	6347
Muslim	44.1	21.1	5906
Animist	41.3	19.6	456
Other Christian	65.3	29.5	1615
Other	66.2	30.9	1147
None	44.1	20.9	1316
Ethnicity			
Arabe-Choa/Peul/Haoussa	38.7	18.3	2616
Biu-Mandara	21.2	10.3	1232
Adamaoua-Oubangui	49.5	22.8	637
Bantoide Sud-Ouest	70.0	34.3	457
Grassfields Nord-Ouest	73.7	35.2	2430
Bamilike/Bamoun	71.1	35.8	5190
Cotier/Ngoe/Oroko	69.9	36.6	558
Beti/Bassa/Mbam	69.5	34.7	4791
Kako/Maka	61.8	32.6	779
Foreigner/Etranger	58.9	27.3	147
No Tribe/Aucune	*	*	15
Other	42.3	19.1	7570
Age			
15-19	26.0	14.2	4803
20-24	59.7	33.6	4310
25-29	72.4	40.4	4018
30-34	75.1	36.8	3271
35-39	73.0	34.6	2606
40-44	69.6	27.7	2207
45-49	63.6	26.9	1663
50-54	63.5	23.9	1339
55-59	57.8	21.5	1168
60-64	47.8	17.1	1071

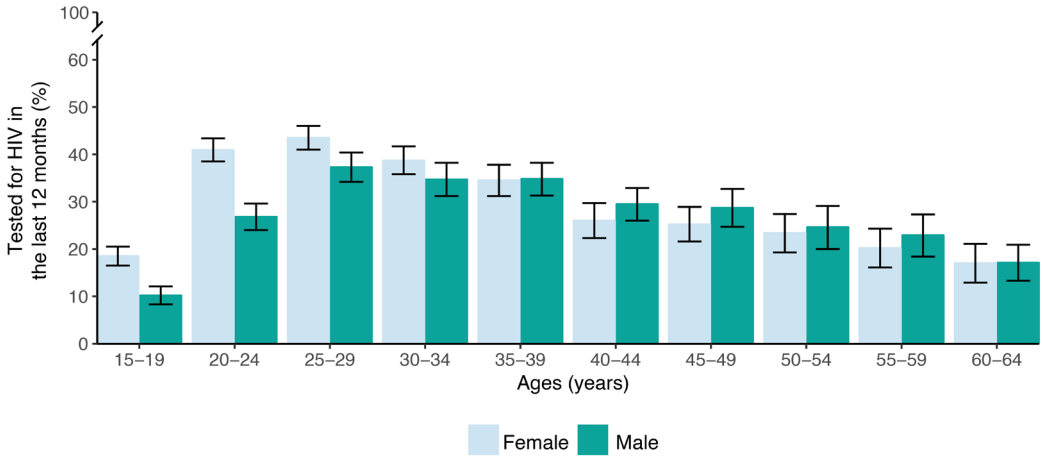
Table 7.C Self-reported HIV testing: Total (continued)

Percentage of persons aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

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
Total 15-24	41.5	23.2	9113
Total 15-49	59.5	30.0	22878
Total 15-64	59.3	29.0	26456

[1]Relates to PEPFAR HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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



8. HIV DIAGNOSIS AND TREATMENT

8.1 BACKGROUND

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

CAMPHIA determined the presence of three ARVs (efavirenz, nevirapine, and lopinavir) in blood as markers of first- and second-line regimens prescribed in the country at the time of the survey.

8.2 RESULTS

The following tables and figures describe the uptake of ART in Cameroon at the time of the CAMPHIA survey.

Table 8.A HIV treatment status: Men

Percent distribution of HIV-positive men aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Residence					
Total urban	58.4	3.7	37.9	100.0	119
Douala and Yaounde	(55.8)	(3.3)	(40.9)	(100.0)	42
Other urban	60.4	4.0	35.7	100.0	77
Rural	59.2	3.0	37.9	100.0	167
Region					
Adamawa	(59.4)	(8.1)	(32.5)	(100.0)	31
Centre	(68.9)	(7.3)	(23.8)	(100.0)	40
Douala	*	*	*	*	16
East	(53.)9	(3.0)	(43.0)	(100.0)	38
Far North	*	*	*	*	20
Littoral	*	*	*	*	6
North	*	*	*	*	18
North West	*	*	*	*	23
South	(54.6)	(3.9)	(41.5)	(100.0)	27
South West	*	*	*	*	17
West	*	*	*	*	24
Yaounde	(56.9)	(5.7)	(37.4)	(100.0)	26

Table 8.A HIV treatment status: Men (continued)

Percent distribution of HIV-positive men aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Marital status					
Never married	(73.1)	(2.0)	(24.9)	100.0	36
Ever had sex	(75.7)	(2.3)	(22.0)	100.0	32
Never had sex	*	*	*	*	4
Missing whether had sex	*	*	*	*	0
Married or living together	57.6	3.7	38.8	100.0	201
Divorced or separated	(54.6)	(3.6)	(41.8)	(100.0)	38
Widowed	*	*	*	*	11
Type of union					
In polygamous union	(73.4)	(2.0)	(24.5)	(100.0)	28
Not in polygamous union	55.2	3.5	41.3	100.0	169
Not currently in union	61.6	2.5	35.9	100.0	85
Education					
None	*	*	*	*	21
Primary	58.1	2.2	39.7	100.0	106
Secondary first cycle	66.0	5.4	28.6	100.0	94
Secondary second cycle or higher	50.0	3.0	47.0	100.0	65
Wealth quintile					
Lowest	72.4	0.0	27.6	100.0	62
Second	54.8	5.3	40.0	100.0	75
Middle	66.5	3.3	30.2	100.0	56
Fourth	56.3	2.6	41.2	100.0	57
Highest	(50.7)	(4.0)	(45.3)	(100.0)	36
Religion					
Catholic	52.0	3.7	44.2	100.0	104
Protestant	62.3	2.6	35.1	100.0	76
Muslim	71.1	5.0	23.8	100.0	52
Animist	*	*	*	*	8
Other Christian	*	*	*	*	13
Other	*	*	*	*	10
None	*	*	*	*	23

Table 8.A HIV treatment status: Men (continued)

Percent distribution of HIV-positive men aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, CAMPHIA 2017-2018

		Aware of HIV status			
Characteristic	Unaware of HIV status	Not on ART	On ART[1]	Total	Number
Ethnicity					
Arabe-Choa/Peul/Haoussa	*	*	*	*	21
Biu-Mandara	*	*	*	*	6
Adamaoua-Oubangui	*	*	*	*	12
Bantoide Sud-Ouest	*	*	*	*	6
Grassfields Nord-Ouest	(52.2)	(2.2)	(45.6)	(100.0)	33
Bamilike/Bamoun	(52.1)	(0.8)	(47.1)	(100.0)	48
Cotier/Ngoe/Oroko	*	*	*	*	7
Beti/Bassa/Mbam	67.3	1.4	31.3	100.0	67
Kako/Maka	*	*	*	*	14
Foreigner/Etranger	*	*	*	*	1
No Tribe/Aucune	*	*	*	*	0
Other	54.9	10.3	34.8	100.0	71
Age					
15-19	*	*	*	*	4
20-24	*	*	*	*	13
25-29	*	*	*	*	23
30-34	65.5	10.6	24.0	100.0	51
35-39	(55.6)	(0.0)	(44.4)	(100.0)	34
40-44	46.7	2.4	50.8	100.0	52
45-49	(57.2)	(2.7)	(40.2)	(100.0)	34
50-54	(44.2)	(0.0)	(55.8)	(100.0)	34
55-59	*	*	*	*	18
60-64	*	*	*	*	23
Total 15-24	*	*	*	*	17
Total 15-49	61.5	3.7	34.8	100.0	211
Total 15-64	58.8	3.3	37.9	100.0	286

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

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

Table 8.B HIV treatment status: Women

Percent distribution of HIV-positive women aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Residence					
Total urban	48.1	4.1	47.8	100.0	327
Douala and Yaounde	51.3	4.4	44.3	100.0	126
Other urban	45.5	3.9	50.6	100.0	201
Rural	53.8	4.8	41.5	100.0	351
Region					
Adamawa	66.3	0.0	33.7	100.0	67
Centre	51.8	5.0	43.2	100.0	101
Douala	54.7	3.6	41.7	100.0	57
East	46.4	2.7	50.9	100.0	85
Far North	(57.9)	(7.0)	(35.1)	100.0	33
Littoral	*	*	*	*	17
North	(71.3)	(4.9)	(23.8)	100.0	33
North West	26.3	3.2	70.5	100.0	70
South	52.7	4.9	42.4	100.0	82
South West	(52.2)	(12.6)	(35.1)	100.0	31
West	(45.8)	(3.3)	(50.9)	100.0	33
Yaounde	48.1	5.1	46.8	100.0	69
Marital status					
Never married	63.6	6.4	30.0	100.0	104
Ever had sex	64.7	6.0	29.2	100.0	94
Never had sex	*	*	*	*	10
Missing whether had sex	*	*	*	*	0
Married or living together	53.4	3.0	43.6	100.0	304
Divorced or separated	48.7	3.2	48.1	100.0	153
Widowed	33.4	7.8	58.8	100.0	115
Type of union					
In polygamous union	51.1	8.3	40.6	100.0	55
Not in polygamous union	55.7	1.9	42.4	100.0	203
Not currently in union	48.4	5.5	46.1	100.0	372
Education					
None	65.3	2.8	31.9	100.0	97
Primary	49.0	4.7	46.3	100.0	265
Secondary first cycle	48.9	3.9	47.2	100.0	226
Secondary second cycle or higher	47.6	5.9	46.5	100.0	89

Table 8.B HIV treatment status: Women (continued)

Percent distribution of HIV-positive women aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Wealth quintile					
Lowest	63.9	3.9	32.1	100.0	120
Second	48.7	6.4	44.9	100.0	202
Middle	43.7	3.0	53.3	100.0	138
Fourth	49.9	3.5	46.5	100.0	116
Highest	52.8	4.4	42.8	100.0	102
Religion					
Catholic	51.9	2.9	45.1	100.0	249
Protestant	49.4	4.0	46.7	100.0	208
Muslim	64.4	3.7	31.9	100.0	105
Animist	*	*	*	*	6
Other Christian	37.1	10.2	52.7	100.0	55
Other	(46.1)	(7.8)	(46.1)	100.0	40
None	*	*	*	*	14
Ethnicity					
Arabe-Choa/Peul/Haoussa	(68.3)	(8.8)	(22.9)	100.0	43
Biu-Mandara	*	*	*	*	14
Adamaoua-Oubangui	*	*	*	*	17
Bantoide Sud-Ouest	*	*	*	*	11
Grassfields Nord-Ouest	37.1	2.2	60.7	100.0	88
Bamilike/Bamoun	43.5	4.1	52.4	100.0	93
Cotier/Ngoe/Oroko	*	*	*	*	15
Beti/Bassa/Mbam	51.9	5.9	42.2	100.0	194
Kako/Maka	52.7	3.7	43.6	100.0	53
Foreigner/Etranger	*	*	*	*	5
No Tribe/Aucune	*	*	*	*	1
Other	56.3	5.2	38.5	100.0	144

Table 8.B HIV treatment status: Women (continued)

Percent distribution of HIV-positive women aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Age					
15-19	(92.2)	(2.6)	(5.2)	100.0	34
20-24	81.5	2.6	15.9	100.0	72
25-29	69.2	3.6	27.2	100.0	94
30-34	50.2	6.9	42.9	100.0	107
35-39	34.2	6.4	59.4	100.0	96
40-44	45.9	2.7	51.4	100.0	93
45-49	38.6	6.9	54.5	100.0	70
50-54	36.9	0.1	63.0	100.0	51
55-59	(38.6)	(4.6)	(56.7)	100.0	32
60-64	(47.3)	(2.6)	(50.1)	100.0	29
Total 15-24	85.2	2.6	12.2	100.0	106
Total 15-49	52.8	4.9	42.4	100.0	566
Total 15-64	50.6	4.4	45.0	100.0	678

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

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

Table 8.C HIV treatment status: Total

Percent distribution of HIV-positive persons aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Residence					
Total urban	51.1	4.0	44.9	100.0	446
Douala and Yaounde	52.6	4.1	43.3	100.0	168
Other urban	49.9	3.9	46.2	100.0	278
Rural	55.6	4.2	40.3	100.0	518
Region					
Adamawa	64.1	2.5	33.4	100.0	98
Centre	57.0	5.7	37.4	100.0	141
Douala	54.6	2.7	42.7	100.0	73
East	48.8	2.8	48.4	100.0	123
Far North	70.5	4.2	25.3	100.0	53
Littoral	*	*	*	*	23
North	70.0	5.8	24.2	100.0	51
North West	29.9	3.3	66.8	100.0	93
South	53.2	4.6	42.2	100.0	109
South West	(51.8)	(8.0)	(40.1)	100.0	48
West	51.7	1.9	46.4	100.0	57
Yaounde	50.8	5.3	43.9	100.0	95
Marital status					
Never married	66.4	5.1	28.5	100.0	140
Ever had sex	67.8	5.0	27.2	100.0	126
Never had sex	*	*	*	*	14
Missing whether had sex	*	*	*	*	0
Married or living together	55.1	3.3	41.6	100.0	505
Divorced or separated	49.9	3.3	46.9	100.0	191
Widowed	33.1	7.3	59.6	100.0	126
Type of union					
In polygamous union	58.6	6.2	35.2	100.0	83
Not in polygamous union	55.5	2.6	41.9	100.0	372
Not currently in union	51.0	4.9	44.1	100.0	457
Education					
No education	66.3	2.4	31.3	100.0	118
Primary	51.7	4.0	44.4	100.0	371
Secondary	53.8	4.3	41.9	100.0	320
More than secondary	48.7	4.6	46.7	100.0	154

Table 8.C HIV treatment status: Total (continued)

Percent distribution of HIV-positive persons aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Wealth quintile					
Lowest	66.7	2.7	30.7	100.0	182
Second	50.5	6.0	43.5	100.0	277
Middle	50.5	3.1	46.4	100.0	194
Fourth	52.1	3.2	44.7	100.0	173
Highest	52.1	4.3	43.6	100.0	138
Religion					
Catholic	52.0	3.2	44.8	100.0	353
Protestant	52.9	3.6	43.5	100.0	284
Muslim	66.7	4.2	29.1	100.0	157
Animist	*	*	*	*	14
Other Christian	44.7	7.8	47.5	100.0	68
Other	48.6	8.6	42.8	100.0	50
None	(50.4)	(3.1)	(46.5)	100.0	37
Ethnicity					
Arabe-Choa/Peul/Haoussa	74.0	5.9	20.1	100.0	64
Biu-Mandara	*	*	*	*	20
Adamaoua-Oubangui	(68.1)	(0.0)	(31.9)	100.0	29
Bantoide Sud-Ouest	*	*	*	*	17
Grassfields Nord-Ouest	41.5	2.2	56.3	100.0	121
Bamilike/Bamoun	46.4	3.0	50.6	100.0	141
Cotier/Ngoe/Oroko	*	*	*	*	22
Beti/Bassa/Mbam	55.8	4.8	39.4	100.0	261
Kako/Maka	56.7	4.6	38.7	100.0	67
Foreigner/Etranger	*	*	*	*	6
No Tribe/Aucune	*	*	*	*	1
Other	55.7	7.1	37.1	100.0	215

Table 8.C HIV treatment status: Total (continued)

Percent distribution of HIV-positive persons aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, CAMPHIA 2017-2018

		Aware of HIV status			
Characteristic	Unaware of HIV status	Not on ART	On ART[1]	Total	Number
Age					
15-19	(86.4)	(2.2)	(11.3)	100.0	38
20-24	85.1	2.1	12.8	100.0	85
25-29	71.9	2.7	25.4	100.0	117
30-34	55.6	8.2	36.3	100.0	158
35-39	39.5	4.8	55.7	100.0	130
40-44	46.2	2.6	51.2	100.0	145
45-49	44.8	5.5	49.7	100.0	104
50-54	40.0	0.0	60.0	100.0	85
55-59	53.9	4.8	41.3	100.0	50
60-64	40.8	3.1	56.1	100.0	52
Total 15-24	85.5	2.1	12.3	100.0	123
Total 15-49	55.3	4.5	40.2	100.0	777
Total 15-64	53.1	4.1	42.8	100.0	964

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

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

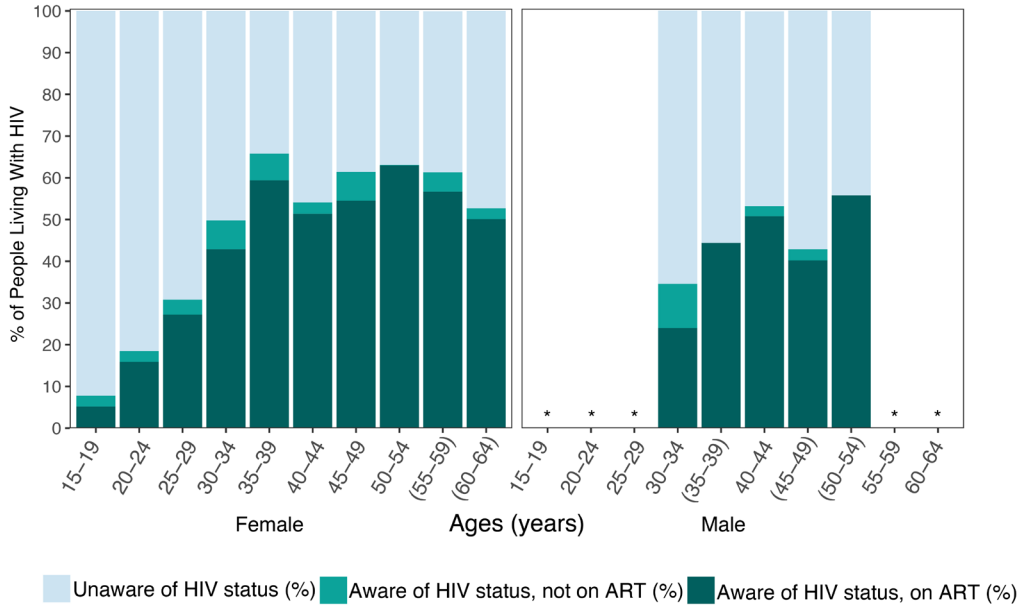


Figure 8.A
Proportion of HIV-positive adults reporting awareness of HIV status and antiretroviral therapy status, by age and sex, CAMPHIA 2017-2018

*Estimates with an asterisk are based on small number (a denominator of less than 25) and have been suppressed.
( ) Estimates for the age brackets in parentheses are based on a denominator between 25-49 and should be interpreted with caution.

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

Percent distribution of HIV-positive men aged 15-64 years by presence of detectable ARVs versus self-reported HIV treatment status, CAMPHIA 2017-2018

	ARV status			
Characteristic	Not detectable	Detectable	Total	Number
Self-reported treatment status				
Not previously diagnosed	83.9	16.1	100.0	169
Previously diagnosed, not on ART	*	*	*	10
Previously diagnosed, on ART	11.7	88.3	100.0	106
Total 15-24	*	*	*	17
Total 15-49	60.5	39.5	100.0	214
Total 15-64	56.1	43.9	100.0	288

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

Percent distribution of HIV-positive women aged 15-64 years by presence of detectable ARVs versus self-reported HIV treatment status, CAMPHIA 2017-2018

	ARV status			
Characteristic	Not detectable	Detectable	Total	Number
Self-reported treatment status				
Not previously diagnosed	84.7	15.3	100.0	361
Previously diagnosed, not on ART	(98.0)	(2.0)	100.0	28
Previously diagnosed, on ART	7.8	92.2	100.0	286
Total 15-24	80.9	19.1	100.0	106
Total 15-49	54.7	45.3	100.0	569
Total 15-64	50.2	49.8	100.0	682

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

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

Percent distribution of HIV-positive adults aged 15-64 years by presence of detectable ARVs versus self-reported HIV treatment status, CAMPHIA 2017-2018

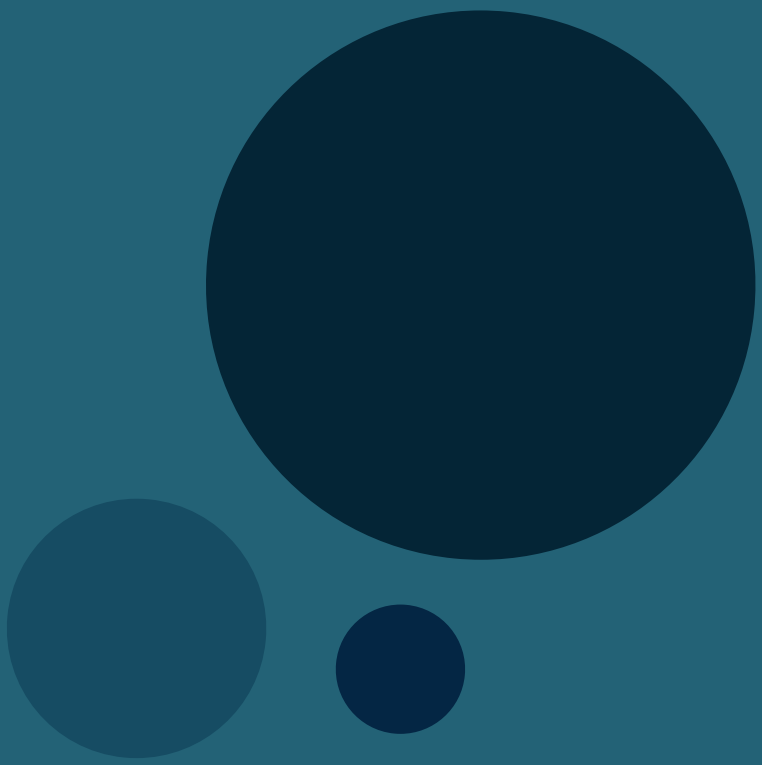
	ARV status			
Characteristic	Not detectable	Detectable	Total	Number
Self-reported treatment status				
Not previously diagnosed	84.4	15.6	100.0	530
Previously diagnosed, not on ART	(96.3)	(3.7)	100.0	38
Previously diagnosed, on ART	8.9	91.1	100.0	392
Total 15-24	81.9	18.1	100.0	123
Total 15-49	56.4	43.6	100.0	783
Total 15-64	52.0	48.0	100.0	970

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

8.3 REFERENCES

1. World Health Organization. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Geneva: World Health Organization; 2016. https://www.who.int/hiv/pub/arv/arv-2016/en/. Accessed June 4, 2019.

2. World Health Organization. Treat all: policy adoption and implementation status in countries. Geneva: World Health Organization; 2017. http://apps.who.int/iris/bitstream/handle/10665/259532/WHO-HIV-2017.58-eng.pdf;jsessionid=B3857967C208CC9E4093EEA9CEDC3A0C?sequence=1 Accessed June 4, 2019.



9. VIRAL LOAD SUPPRESSION

9.1 BACKGROUND

Viral load suppression is a key indicator of treatment success in HIV-positive individuals. For the purposes of CAMPHIA, VLS is defined as VL less than 1,000 HIV RNA copies per mL of plasma. This chapter describes VLS among the population of HIV-positive adults by age, sex, region, and other demographic characteristics.

9.2 RESULTS

The following tables and figures present VLS data of people on ART in Cameroon at the time of the CAMPHIA survey.

Table 9.A Viral load suppression by demographic characteristics

Among HIV-positive persons aged 15-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex, self-reported diagnosis and treatment status, and selected demographic characteristics, CAMPHIA 2017-2018

	Male		Female		Total	
Characteristic	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
Self-reported diagnosis and treatment status						
Not previously diagnosed	18.3	169	18.4	363	18.4	532
Previously diagnosed, not on ART	*	10	(11.5)	28	(10.8)	38
Previously diagnosed, on ART	82.1	107	79.2	287	80.0	394
Missing	*	4	*	12	*	16
Residence						
Total urban	38.4	121	46.3	332	44.0	453
Douala and Yaounde	(41.6)	43	43.5	129	43.0	172
Other urban	35.9	78	48.6	203	44.9	281
Rural	46.8	169	44.8	358	45.5	527
Region						
Adamawa	(29.6)	31	36.1	67	34.1	98
Centre	(40.0)	42	45.1	101	43.5	143
Douala	*	16	42.9	58	45.1	74
East	(39.1)	38	48.4	85	45.4	123
Far North	*	21	(46.3)	33	37.8	54
Littoral	*	6	*	17	*	23
North	*	18	(25.3)	34	27.6	52
North West	*	23	62.1	74	60.9	97
South	(32.6)	27	35.0	84	34.4	111
South West	*	17	(33.6)	32	(33.8)	49
West	*	24	(65.9)	34	62.9	58
Yaounde	(34.4)	27	44.1	71	41.1	98

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

Among HIV-positive persons aged 15-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex, self-reported diagnosis and treatment status, and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
Marital status						
Never married	(36.9)	37	32.5	107	33.8	144
Ever had sex	(40.4)	32	29.8	97	32.7	129
Never had sex	*	4	*	10	*	14
Missing whether had sex	*	1	*	0	*	1
Married or living together	41.5	202	47.0	308	44.7	510
Divorced or separated	(50.3)	40	39.6	154	41.8	194
Widowed	*	11	62.6	119	62.7	130
Type of union						
In polygamous union	(32.0)	28	41.8	55	38.5	83
Not in polygamous union	43.4	170	48.1	206	45.8	376
Not currently in union	44.9	88	44.6	380	44.6	468
Education						
None	*	22	45.5	100	42.1	122
Primary	42.3	107	44.2	270	43.6	377
Secondary first cycle	33.1	95	47.1	229	43.1	324
Secondary second cycle or higher	55.5	66	45.6	90	50.2	156
Wealth quintile						
Lowest	34.4	63	29.9	123	31.4	186
Second	45.0	75	49.8	203	48.4	278
Middle	32.4	57	53.8	143	47.5	200
Fourth	44.0	59	45.5	118	45.0	177
Highest	(52.7)	36	41.5	103	44.9	139
Religion						
Catholic	52.0	107	44.9	255	47.1	362
Protestant	30.0	76	46.9	211	42.3	287
Muslim	29.5	53	36.4	105	34.0	158
Animist	*	8	*	6	*	14
Other Christian	*	13	58.1	57	55.9	70
Other	*	10	(46.9)	40	45.1	50
None	*	23	*	15	(41.5)	38

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

Among HIV-positive persons aged 15-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex, self-reported diagnosis and treatment status, and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
Ethnicity						
Arabe-Choa/Peul/Haoussa	*	22	(35.3)	43	26.4	65
Biu-Mandara	*	6	*	14	*	20
Adamaoua-Oubangui	*	12	*	17	(31.0)	29
Bantoide Sud-Ouest	*	6	*	11	*	17
Grassfields Nord-Ouest	(48.9)	34	55.8	91	53.8	125
Bamilike/Bamoun	(61.8)	48	59.3	96	60.2	144
Cotier/Ngoe/Oroko	*	7	*	15	*	22
Beti/Bassa/Mbam	39.4	69	41.7	196	41.1	265
Kako/Maka	*	14	47.4	54	41.8	68
Foreigner/Etranger	*	1	*	5	*	6
No Tribe/Aucune	*	0	*	1	*	1
Other	35.9	71	33.2	147	34.2	218
Total 15-24	*	17	22.5	108	23.9	125
Total 15-49	38.0	215	42.1	577	40.9	792
Total 15-64	42.5	290	45.6	690	44.7	980

[1]Relates to PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

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

Among HIV-positive persons aged 0-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex and age, CAMPHIA 2017-2018

	Male		Female		Total	
Age	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
0-4	*	2	*	1	*	3
5-9	*	5	*	4	*	9
10-14	*	2	*	0	*	2
15-19	*	4	(23.2)	34	(21.7)	38
20-24	*	13	22.1	74	24.9	87
25-29	*	24	31.2	95	32.3	119
30-34	25.2	52	37.5	108	33.1	160
35-39	(44.8)	34	52.3	97	50.4	131
40-44	51.5	54	55.0	97	53.8	151
45-49	(36.5)	34	48.9	72	44.8	106
50-54	(55.4)	34	65.2	52	61.1	86
55-59	*	18	(67.2)	32	61.0	50
60-64	*	23	(56.9)	29	61.6	52
Total 15-24	*	17	22.5	108	23.9	125
Total 15-49	38.0	215	42.1	577	40.9	792
Total 15-64	42.5	290	45.6	690	44.7	980

[1]Relates to PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

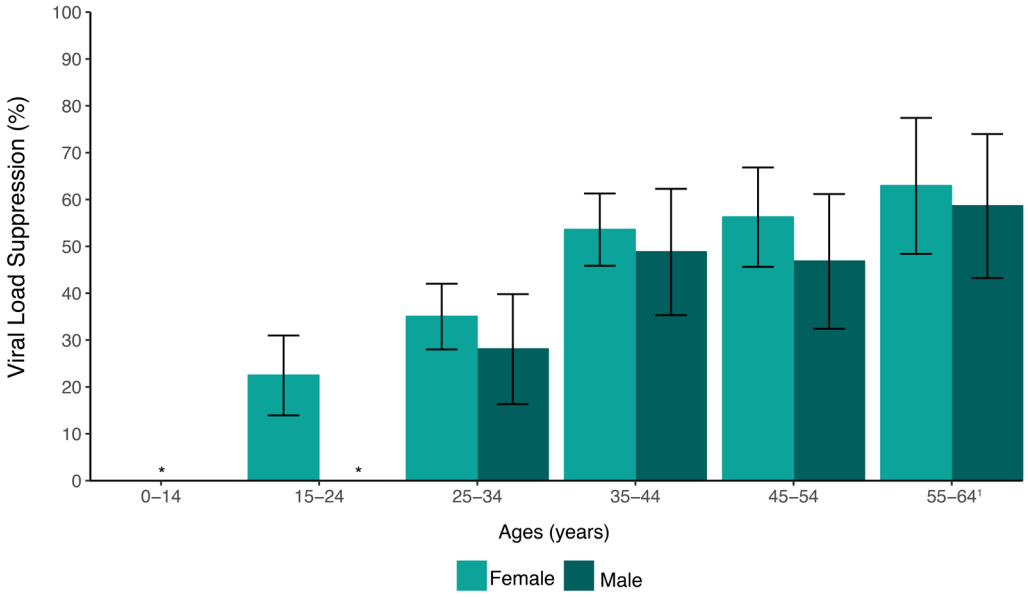
Table 9.C Viral load suppression by age (10-to-15-year age groups)

Among HIV-positive persons aged 0-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex and age, CAMPHIA 2017-2018

	Male		Female		Total	
Age	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
0-14	*	9	*	5	*	14
15-24	*	17	22.5	108	23.9	125
25-34	28.1	76	35.0	203	32.8	279
35-44	48.8	88	53.6	194	52.2	282
45-54	46.8	68	56.2	124	52.7	192
55-64	(58.6)	41	62.9	61	61.3	102

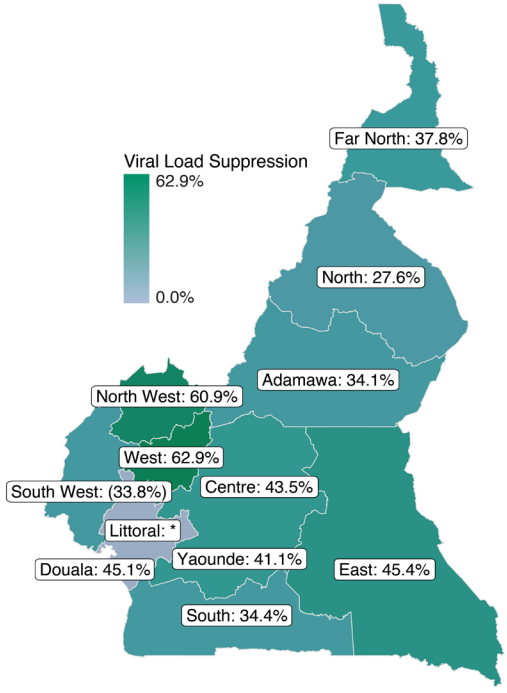
[1]Relates to PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Figure 9.A
Proportion of viral load suppression (<1,000 copies/mL) among people living with HIV, by age and sex, CAMPHIA 2017-2018



*Estimates with an asterisk are based on small number (a denominator of less than 25) and have been suppressed.
[1]The estimate among men aged 55-64 years is based on a denominator between 25-49 and should be interpreted with caution.

Figure 9.B
Viral load suppression (<1,000 copies/mL) among HIV-positive adults by region, CAMPHIA 2017-2018



*Estimates with an asterisk are based on small number (a denominator of less than 25) and have been suppressed.

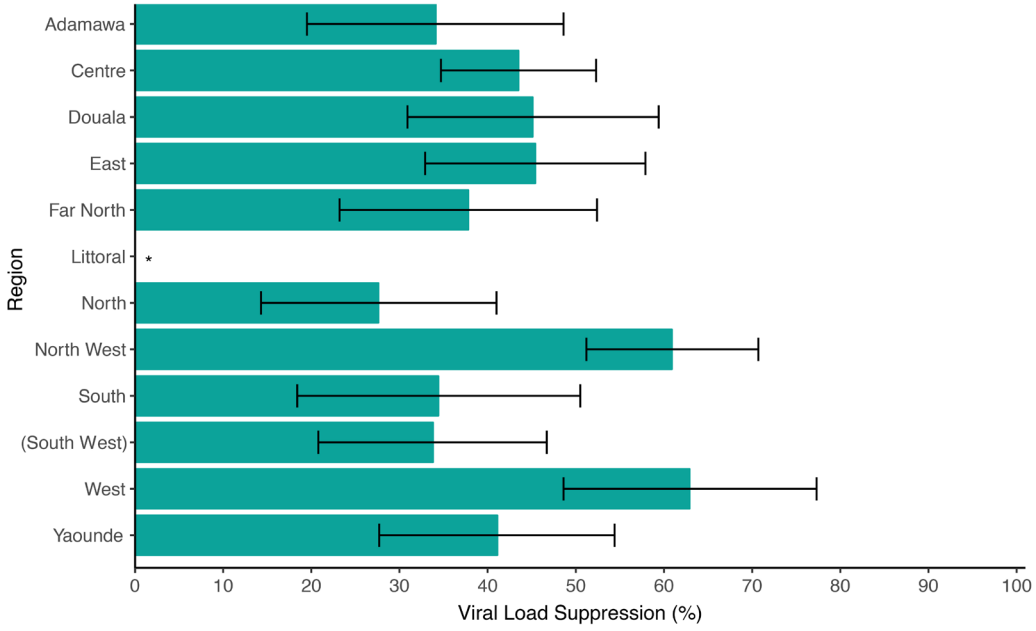
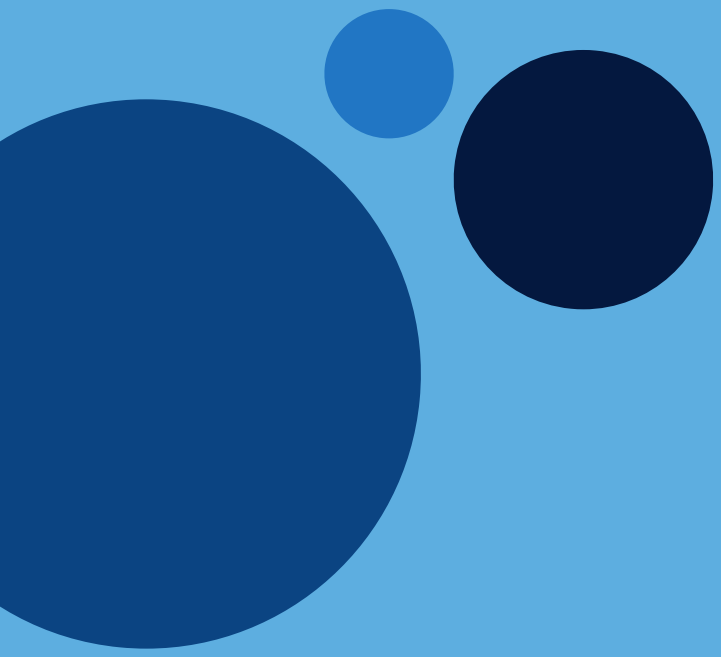


Figure 9.C
Viral load suppression (<1,000 copies/mL) among HIV-positive adults by region, CAMPHIA 2017-2018

* Estimates with an asterisk are based on small number (a denominator of less than 25) and have been suppressed.



10. UNAIDS 90-90-90 TARGETS

10.1 BACKGROUND

In order to achieve HIV epidemic control, UNAIDS has set ambitious targets referred to as 90-90-90: By 2020, 90% of all people living with HIV will know their HIV status; 90% of all persons diagnosed with HIV will receive sustained ART; and 90% of all persons receiving ART will have VLS.[1]

The previous chapters on HIV testing and treatment provide results on coverage of HIV testing and treatment services. The chapter on VLS presents VLS among all HIV-positive individuals, irrespective of knowledge of status or ART use. This chapter presents the status of the 90-90-90 indicators, which indicate program performance, among adults (ages 15-64 years). Awareness of HIV-positive status, and receipt of treatment among those who are aware of their HIV-positive status, are indicators of access to services. VLS among those who know their HIV-positive status and are on treatment not only provides an indication of access to and retention in care, but also, when compared to VLS among all HIV-positive individuals in the country, provides a measure of program success. VLS among all HIV-positive individuals of 73% (90 x 90 x 90) or greater is a critical milestone for national testing and treatment services on the path to epidemic control.

The 90-90-90 results in this chapter are presented in three ways. First, Table 10.A uses only self-reported awareness and ART status. Adults are defined as 'aware' of their HIV-positive status if they reported an HIV-positive status before testing as part of the CAMPHIA survey. Adults were defined as 'on treatment' if they reported current ART use. The VLS prevalence estimates presented are among only those who reported receiving current ART.

Second, Table 10.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 so that adults in whom ARVs were detected are classified as 'aware' and 'on treatment' even if they did not report it. Individuals are classified as 'on treatment' if they reported that they were taking ART or had detectable ARVs in their blood. The prevalence of VLS is reported for all of those classified as on treatment.

Finally, Table 10.C also shows the percentage of adults who were aware of their HIV-positive status (based upon self-report and detectable ARVs in blood); however, it also provides estimates of the prevalence of receiving treatment (again based on self-report and ARV biomarker data) among *all* the adults living with HIV in the country. Finally, it reports the prevalence among all adults living with HIV in Cameroon of achieving VLS after benefitting from HIV diagnosis and the receipt of ART.

It is important to note that in each of the 90-90-90 tables, individuals with VLS but who were not aware of their HIV-positive status or were not on ART, are excluded from the numerator for the third 90 (VLS among those on ART). It is for this reason that the prevalence of VLS in the overall 90-90-90 is sometimes slightly lower than the reported VLS prevalence in the preceding chapter (which may also have included VLS data from elite controllers—a small subset of people living with HIV whose immune systems are able to maintain VLS for a period of time without treatment). Thus, the overall 90-90-90 VLS estimates most accurately reflects what percentage of the adult population living with HIV have been reached and are benefiting from the national HIV program.

10.2 RESULTS

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

Table 10.A Adult 90-90-90 (self-reported antiretroviral therapy (ART) status; conditional percentages)

90-90-90 targets among people living with HIV aged 15-64 years, by sex and age, CAMPHIA 2017-2018

	Male		Female		Total	
	Diagnosed					
Age	Percentage self-reported HIV positive	Number	Percentage self-reported HIV positive	Number	Percentage self-reported HIV positive	Number
15-24	*	17	14.8	106	14.5	123
25-34	30.5	74	42.3	201	38.6	275
35-49	47.8	120	60.5	259	56.6	379
15-49	38.5	211	47.2	566	44.7	777
15-64	41.2	286	49.4	678	46.9	964
	On Treatment					
Age	Among those self-reported as HIV-positive, percentage who reported current ART usage	Number	Among those self-reported as HIV-positive, percentage who reported current ART usage	Number	Among those self-reported as HIV-positive, percentage who reported current ART usage	Number
15-24	*	1	*	18	*	19
25-34	*	22	86.8	83	83.9	105
35-49	96.3	56	91.5	152	92.7	208
15-49	90.4	79	89.7	253	89.9	332
15-64	92.0	117	91.1	315	91.3	432
	Viral Load Suppression (VLS)					
Age	Among those who reported current ART usage percentage with VLS	Number	Among those who reported current ART usage percentage with VLS	Number	Among those who reported current ART usage percentage with VLS	Number
15-24	*	1	*	14	*	15
25-34	*	16	62.6	73	64.4	89
35-49	81.7	54	82.8	141	82.5	195
15-49	76.5	71	77.3	228	77.1	299
15-64	82.1	107	79.2	287	80.0	394

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

90-90-90 targets among adults living with HIV aged 15-64 years, by sex and age, CAMPHIA 2017-2018

	Male		Female		Total	
	Diagnosed					
Age	Percentage self-reported as HIV positive or with detectable ARVs[1]	Number	Percentage self-reported as HIV positive or with detectable ARVs[1]	Number	Percentage self-reported as HIV positive or with detectable ARVs[1]	Number
15-24	*	17	22.3	107	20.7	124
25-34	37.1	75	51.1	203	46.7	278
35-49	61.2	122	65.8	262	64.4	384
15-49	48.5	214	54.0	572	52.4	786
15-64	51.4	289	57.5	685	55.6	974
	On Treatment Among Those Diagnosed					
Age	Percentage with detectable ARVs or who -reported current ARV usage[2]	Number	Percentage with detectable ARVs or who -reported current ARV usage[2]	Number	Percentage with detectable ARVs or who -reported current ARV usage[2]	Number
15-24	*	2	(88.5)	26	(89.8)	28
25-34	(82.5)	26	89.2	105	87.5	131
35-49	97.2	74	92.6	170	93.9	244
15-49	93.3	102	91.3	301	91.8	403
15-64	94.2	148	92.6	381	93.1	529
	Viral Load Suppression (VLS) Among Those on Treatment					
Age	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number
15-24	*	2	*	22	*	24
25-34	*	21	66.2	95	69.2	116
35-49	76.3	72	82.8	160	80.9	232
15-49	75.1	95	78.0	277	77.2	372
15-64	81.1	139	79.6	354	80.1	493

[1]Relates to Global AIDS Monitoring 2020 Indicator (GAM 2020) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed);
[2]Relates to GAM 2020 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy;
[3]Relates to GAM 2020 1.3: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 10.C Adult 90-90-90 (self-reported antiretroviral therapy (ART) status and laboratory antiretroviral data; unconditional/overall percentages)

90-90-90 targets among all adults living with HIV in Cameroon aged 15-64 years, by sex and age, CAMPHIA 2017-2018

	Male		Female		Total	
	Diagnosed					
Age	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported as HIV positive or with detectable ARVs[1]	Number	Percentage self-reported as HIV positive or with detectable ARVs[1]	Number
15-24	*	17	22.3	107	20.7	124
25-34	37.1	75	51.1	203	46.7	278
35-49	61.2	122	65.8	262	64.4	384
15-49	48.5	214	54.0	572	52.4	786
15-64	51.4	289	57.5	685	55.6	974
	On Treatment Among All Adults Living with HIV					
Age	Percentage with detectable ARVs or who reported current ARV usage[2]	Number	Percentage with detectable ARVs or who reported current ARV usage[2]	Number	Percentage with detectable ARVs or who reported current ARV usage[2]	Number
15-24	*	17	19.8	107	18.6	124
25-34	30.6	75	45.6	203	40.9	278
35-49	59.4	122	60.9	262	60.4	384
15-49	45.2	214	49.3	572	48.1	786
15-64	48.4	289	53.3	685	51.7	974
	Viral Load Suppression on Treatment Among All Adults Living with HIV					
Age	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number
15-24	*	17	16.6	107	13.7	124
25-34	24.1	75	30.2	203	28.3	278
35-49	45.4	122	50.4	262	48.9	384
15-49	33.9	214	38.5	572	37.1	786
15-64	39.3	289	42.4	685	41.4	974

[1]Relates to Global AIDS Monitoring 2020 Indicator (GAM 2020) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed);

[2]Relates to GAM 2020 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy;;

[3]Relates to GAM 2020 1.3: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

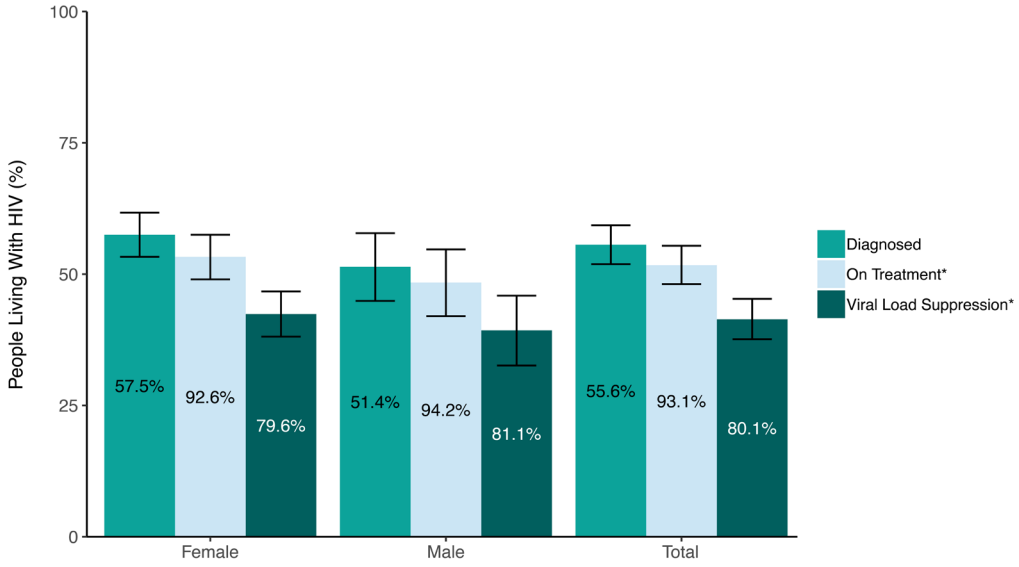


Figure 10.A Adult 90-90-90 (adjusted for laboratory antiretroviral data among adults aged 15-64 years), CAMPHIA 2017-2018

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

10.3 REFERENCES

1. Joint United Nations Programme on HIV/AIDS (UNAIDS). *90-90-90: An ambitious treatment target to help end the AIDS epidemic*. Geneva: UNAIDS; 2014. http://www.unaids.org/sites/default/files/media_asset/90-90-90_en_0.pdf. Accessed September 02, 2019.

11. CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV

11.1 BACKGROUND

As countries implement treatment for all people living with HIV, ensuring a sustainable health system that is people-centered and innovative requires diligent monitoring and responsiveness.[1] 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 transmitted drug resistance allows optimization of national ART guidelines including second- and third-line therapies.

CAMPHIA provided a unique opportunity to gauge progress in the expansion of HIV clinical services in Cameroon, as well as identify gaps and future challenges.

CAMPHIA estimated the prevalence of transmitted resistance to ARVs using samples from HIV-positive participants who were identified as recent HIV infections using the ARV-adjusted recent infection testing algorithm.

11.2 RESULTS

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

Table 11.A Median CD4 count and prevalence of immunosuppression

Among HIV-positive adults aged 15-64 years, median (Q1, Q3) CD4 count and percentage with immunosuppression (< 500 cells/μL), by sex, self-reported diagnosis and ART status, and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male			Female			Total		
	Median (Q1, Q3)	Percentage < 500 cells/ μL	Number	Median (Q1, Q3)	Percentage < 500 cells/ μL	Number	Median (Q1, Q3)	Percentage < 500 cells/ μL	Number
Self-reported diagnosis and treatment status									
Not previously diagnosed	392 (286, 540)	69.8	168	474 (311, 660)	53.8	359	436 (307, 626)	59.3	527
Previously diagnosed, not on ART	*	*	10	407 (165, 581)	(71.9)	28	404 (166, 480)	(75.3)	38
Previously diagnosed, on ART	505 (329, 682)	46.3	107	509 (327, 713)	48.9	287	508 (328, 696)	48.2	394
Missing	*	*	4	*	*	12	*	*	16
Residence									
Total urban	408 (280, 641)	63.1	121	479 (327, 654)	53.7	331	455 (312, 653)	56.5	452
Douala and Yaounde	379 (281, 648)	(58.5)	43	479 (297, 612)	54.5	128	453 (303, 640)	55.6	171
Other urban	419 (277, 564)	66.7	78	479 (348, 676)	53.1	203	457 (326, 658)	57.1	281
Rural	440 (308, 617)	59.6	168	493 (298, 717)	50.7	355	470 (302, 683)	53.7	523

Table 11.A Median CD4 count and prevalence of immunosuppression (continued)

Among HIV-positive adults aged 15-64 years, median (Q1, Q3) CD4 count and percentage with immunosuppression (< 500 cells/μL), by sex, self-reported diagnosis and ART status, and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male			Female			Total		
	Median (Q1, Q3)	Percentage < 500 cells/ μL	Number	Median (Q1, Q3)	Percentage < 500 cells/ μL	Number	Median (Q1, Q3)	Percentage < 500 cells/ μL	Number
Region									
Adamawa	287 (194, 557)	(67.0)	31	494 (344, 723)	48.8	65	461 (275, 693)	54.6	96
Centre	418 (306, 639)	(57.0)	42	461 (333, 665)	56.2	101	450 (315, 656)	56.4	143
Douala	*	*	16	481 (329, 600)	54.6	58	465 (318, 620)	55.1	74
East	405 (307, 487)	(77.0)	38	601 (313, 888)	41.2	85	478 (313, 787)	52.6	123
Far North	*	*	21	386 (272, 720)	(54.5)	32	380 (259, 634)	65.8	53
Littoral	*	*	6	*	*	17	*	*	23
North	*	*	17	504 (351, 725)	(46.1)	34	473 (355, 750)	50.8	51
North West	*	*	23	386 (280, 603)	63.7	74	400 (288, 538)	65.9	97
South	519 (420, 662)	(38.1)	27	507 (384, 769)	47.7	84	517 (385, 735)	45.4	111
South West	*	*	17	479 (352, 601)	(52.0)	32	452 (343, 585)	(58.5)	49
West	*	*	24	564 (257, 684)	(41.3)	34	507 (259, 677)	46.8	58
Yaounde	403 (345, 623)	(60.1)	27	472 (270, 644)	54.3	70	436 (276, 638)	56.1	97
Marital status									
Never married	463 (295, 719)	(52.9)	36	498 (348, 671)	47.4	104	495 (337, 673)	49.0	140
Ever had sex	515 (374, 767)	(46.6)	32	499 (350, 671)	46.8	94	501 (354, 677)	46.7	126
Never had sex	*	*	3	*	*	10	*	*	13
Missing whether had sex	*	*	1	*	*	0	*	*	1
Married or living together	411 (298, 623)	63.7	202	523 (328, 729)	46.8	307	476 (311, 669)	53.8	509
Divorced or separated	371 (261, 570)	(64.3)	40	439 (258, 623)	61.6	154	416 (260, 605)	62.2	194
Widowed	*	*	11	407 (306, 648)	59.0	119	411 (312, 654)	57.3	130
Type of union									
In polygamous union	357 (337, 478)	(76.5)	28	421 (288, 686)	54.4	54	411 (318, 643)	61.9	82
Not in polygamous union	421 (279, 645)	61.4	170	515 (333, 702)	47.1	206	477 (306, 658)	54.1	376
Not currently in union	441 (299, 626)	56.1	87	448 (300, 652)	56.8	377	448 (300, 652)	56.6	464
Education									
None	*	*	22	479 (321, 743)	51.7	99	478 (300, 707)	54.0	121
Primary	404 (264, 626)	62.5	106	465 (312, 684)	51.7	269	444 (300, 668)	54.8	375
Secondary first cycle	424 (307, 607)	66.1	95	499 (312, 694)	49.1	228	482 (308, 657)	54.0	323
Secondary second cycle or higher	453 (337, 656)	54.4	66	409 (279, 587)	61.5	89	443 (316, 640)	58.2	155

Table 11.A Median CD4 count and prevalence of immunosuppression (continued)

Among HIV-positive adults aged 15-64 years, median (Q1, Q3) CD4 count and percentage with immunosuppression (< 500 cells/µL), by sex, self-reported diagnosis and ART status, and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male			Female			Total		
	Median (Q1, Q3)	Percentage < 500 cells/ µL	Number	Median (Q1, Q3)	Percentage < 500 cells/ µL	Number	Median (Q1, Q3)	Percentage < 500 cells/ µL	Number
Wealth quintile									
Lowest	402 (256, 525)	71.4	62	402 (245, 652)	57.3	121	402 (249, 625)	61.8	183
Second	424 (335, 607)	64.4	75	499 (311, 727)	49.7	202	479 (324, 715)	54.0	277
Middle	361 (240, 521)	71.4	57	537 (336, 673)	43.9	142	473 (295, 619)	52.1	199
Fourth	486 (311, 664)	50.1	59	481 (326, 652)	54.9	118	482 (322, 654)	53.2	177
Highest	453 (325, 655)	(55.6)	36	446 (318, 613)	58.8	103	453 (320, 653)	57.8	139
Religion									
Catholic	447 (295, 641)	57.2	107	484 (299, 677)	51.9	254	479 (298, 667)	53.6	361
Protestant	392 (317, 585)	66.9	76	476 (324, 655)	53.3	211	444 (327, 654)	57.1	287
Muslim	332 (199, 509)	70.4	53	437 (298, 729)	57.6	104	414 (261, 644)	62.0	157
Animist	*	*	7	*	*	6	*	*	13
Other Christian	*	*	13	521 (388, 714)	40.2	57	521 (390, 665)	42.3	70
Other	*	*	10	396 (301, 582)	(57.3)	39	400 (298, 634)	(58.2)	49
None	*	*	23	*	*	14	451 (285, 671)	(59.5)	37
Ethnicity									
Arabe-Choa/Peul/ Haoussa	*	*	22	495 (385, 784)	(48.8)	42	474 (252, 762)	57.3	64
Biu-Mandara	*	*	6	*	*	14	*	*	20
Adamaoua-Oubangui	*	*	12	*	*	17	434 (251, 601)	(58.8)	29
Bantoide Sud-Ouest	*	*	6	*	*	11	*	*	17
Grassfields Nord-Ouest	421 (270, 546)	(65.6)	34	404 (280, 603)	58.6	90	409 (282, 588)	60.7	124
Bamilike/Bamoun	492 (291, 669)	(49.4)	48	505 (311, 700)	49.1	95	506 (300, 685)	49.2	143
Cotier/Ngoe/Oroko	*	*	7	*	*	15	*	*	22
Beti/Bassa/Mbam	443 (345, 673)	54.8	69	481 (312, 683)	53.7	196	477 (344, 683)	54.0	265
Kako/Maka	*	*	14	497 (311, 892)	47.4	54	443 (304, 657)	57.7	68
Foreigner/Etranger	*	*	1	*	*	5	*	*	6
No Tribe/Aucune	*	*	0	*	*	1	*	*	1
Other	398 (310, 513)	67.6	70	496 (308, 713)	49.6	146	434 (310, 669)	56.2	216

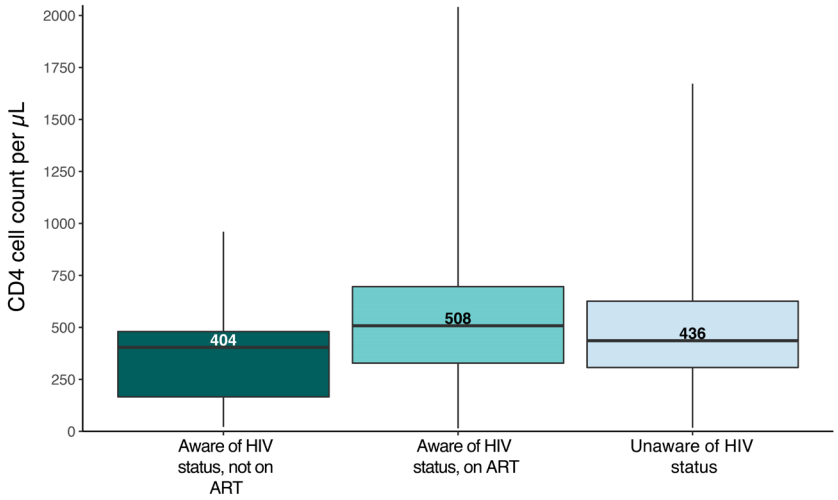
Table 11.A Median CD4 count and prevalence of immunosuppression (continued)

Among HIV-positive adults aged 15-64 years, median (Q1, Q3) CD4 count and percentage with immunosuppression (< 500 cells/µL), by sex, self-reported diagnosis and ART status, and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male			Female			Total		
	Median (Q1, Q3)	Percentage < 500 cells/ µL	Number	Median (Q1, Q3)	Percentage < 500 cells/ µL	Number	Median (Q1, Q3)	Percentage < 500 cells/ µL	Number
Age									
15-19	*	*	3	608 (479, 794)	(22.3)	33	507 (435, 763)	(33.4)	36
20-24	*	*	13	515 (354, 656)	46.8	74	535 (376, 728)	43.6	87
25-29	*	*	24	479 (275, 656)	55.2	92	486 (301, 654)	51.6	116
30-34	352 (274, 469)	77.3	52	471 (224, 641)	55.1	108	402 (266, 600)	63.0	160
35-39	408 (264, 555)	(61.6)	34	422 (270, 656)	62.0	97	421 (270, 655)	61.9	131
40-44	504 (349, 666)	48.6	54	451 (335, 614)	57.4	97	457 (342, 652)	54.4	151
45-49	380 (174, 518)	(69.2)	34	457 (268, 608)	55.3	72	410 (253, 605)	59.9	106
50-54	348 (180, 625)	(61.7)	34	551 (383, 896)	42.3	52	463 (305, 661)	50.4	86
55-59	*	*	18	567 (381, 713)	(40.1)	32	494 (345, 701)	49.4	50
60-64	*	*	23	531 (302, 719)	(44.7)	29	447 (294, 682)	55.8	52
Total 15-24	*	*	16	536 (379, 732)	38.8	107	535 (387, 749)	40.4	123
Total 15-49	438 (311, 635)	60.3	214	478 (305, 656)	54.4	573	455 (308, 654)	56.1	787
Total 15-64	424 (299, 625)	61.4	289	482 (311, 674)	52.4	686	464 (309, 656)	55.2	975

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Figure 11.A
CD4 count distribution among people living with HIV by HIV diagnosis and ART status, CAMPHIA 2017-2018



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

Table 11.B Late HIV diagnosis

Among adults aged 15-64 years who tested HIV positive in the PHIA survey but self-reported HIV negative with no detectable ARVs, percentage who had a CD4 cell count < 200 cells/μL and < 350 cells/μL, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male			Female			Total		
	Percentage < 200 cells/ μL	Percentage < 350 cells/ μL	Number	Percentage < 200 cells/ μL	Percentage < 350 cells/ μL	Number	Percentage < 200 cells/ μL	Percentage < 350 cells/ μL	Number
Residence									
Total urban	16.7	45.3	58	14.4	33.2	136	15.1	37.3	194
Douala and Yaounde	*	*	21	14.9	35.2	56	13.5	37.9	77
Other urban	(21.0)	(46.4)	37	13.9	31.5	80	16.5	36.9	117
Rural	11.3	32.5	82	16.8	32.8	165	15.0	32.7	247
Region									
Adamawa	*	*	20	(11.2)	(38.3)	41	16.1	44.0	61
Centre	*	*	22	(18.5)	(34.1)	45	13.7	39.8	67
Douala	*	*	7	*	*	24	(11.9)	(43.4)	31
East	*	*	16	5.3	24.0	38	11.9	30.4	54
Far North	*	*	15	*	*	18	(19.0)	(37.3)	33
Littoral	*	*	3	*	*	9	*	*	12
North	*	*	9	*	*	19	(8.7)	(16.9)	28
North West	*	*	6	*	*	18	*	*	24
South	*	*	13	(3.8)	(17.4)	36	(3.9)	(15.0)	49
South West	*	*	7	*	*	13	*	*	20
West	*	*	8	*	*	8	*	*	16
Yaounde	*	*	14	(18.0)	(35.1)	32	(15.0)	(33.2)	46
Marital status									
Never married	*	*	23	13.7	25.0	53	10.9	24.7	76
Ever had sex	*	*	21	14.1	24.9	50	11.4	22.9	71
Never had sex	*	*	2	*	*	3	*	*	5
Missing whether had sex	*	*	0	*	*	0	*	*	0
Married or living together	18.9	45.7	94	11.3	30.3	147	14.7	37.1	241
Divorced or separated	*	*	18	19.9	35.6	69	16.5	34.6	87
Widowed	*	*	5	(27.8)	(58.3)	31	(26.7)	(54.8)	36
Type of union									
In polygamous union	*	*	15	(9.3)	(39.3)	29	(5.5)	(45.0)	44
Not in polygamous union	22.9	45.1	77	14.3	25.3	98	18.6	35.1	175
Not currently in union	(4.2)	(26.1)	46	19.0	35.5	153	15.6	33.3	199

Table 11.B Late HIV diagnosis (continued)

Among adults aged 15-64 years who tested HIV positive in the PHIA survey but self-reported HIV negative with no detectable ARVs, percentage who had a CD4 cell count < 200 cells/µL and < 350 cells/µL, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male			Female			Total		
	Percentage < 200 cells/ µL	Percentage < 350 cells/ µL	Number	Percentage < 200 cells/ µL	Percentage < 350 cells/ µL	Number	Percentage < 200 cells/ µL	Percentage < 350 cells/ µL	Number
Education									
None	*	*	13	13.3	32.8	53	16.2	39.2	66
Primary	15.2	37.8	51	14.2	33.2	116	14.5	34.6	167
Secondary first cycle	10.5	35.1	50	16.1	29.5	96	14.1	31.5	146
Secondary second cycle or higher	(14.6)	(40.3)	26	(19.5)	(41.1)	36	17.1	40.7	62
Wealth quintile									
Lowest	(17.6)	(28.5)	39	13.3	38.2	71	14.7	34.9	110
Second	(12.6)	(40.3)	33	11.6	30.3	80	11.9	33.2	113
Middle	(19.1)	(44.3)	28	17.6	32.5	58	18.2	37.1	86
Fourth	(3.6)	(36.1)	26	13.9	30.4	53	9.9	32.7	79
Highest	*	*	14	(20.7)	(34.9)	39	20.7	38.2	53
Religion									
Catholic	(14.6)	(40.4)	47	20.4	34.8	109	18.7	36.5	156
Protestant	(4.4)	(38.5)	34	11.7	28.2	85	9.3	31.5	119
Muslim	(29.1)	(53.3)	32	14.7	37.1	62	19.9	42.9	94
Animist	*	*	3	*	*	1	*	*	4
Other Christian	*	*	7	*	*	21	(1.1)	(19.6)	28
Other	*	*	5	*	*	17	*	*	22
None	*	*	12	*	*	6	*	*	18
Ethnicity									
Arabe-Choa/Peul/ Haoussa	*	*	18	*	*	24	(20.6)	(35.9)	42
Biu-Mandara	*	*	3	*	*	8	*	*	11
Adamaoua-Oubangui	*	*	6	*	*	12	*	*	18
Bantoide Sud-Ouest	*	*	1	*	*	5	*	*	6
Grassfields Nord-Ouest	*	*	12	(22.3)	(43.3)	28	(20.9)	(36.8)	40
Bamilike/Bamoun	*	*	17	(32.5)	(50.0)	28	(20.1)	(46.1)	45
Cotier/Ngoe/Oroko	*	*	5	*	*	4	*	*	9
Beti/Bassa/Mbam	(3.5)	(36.0)	36	14.3	24.2	86	11.0	27.8	122
Kako/Maka	*	*	8	(0.0)	(35.5)	25	(10.4)	(38.3)	33
Foreigner/Etranger	*	*	1	*	*	4	*	*	5
No Tribe/Aucune	*	*	0	*	*	1	*	*	1
Other	(11.1)	(35.6)	33	9.4	34.1	76	9.9	34.6	109

Table 11.B Late HIV diagnosis (continued)

Among adults aged 15-64 years who tested HIV positive in the PHIA survey but self-reported HIV negative with no detectable ARVs, percentage who had a CD4 cell count < 200 cells/μL and < 350 cells/μL, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male			Female			Total		
	Percentage < 200 cells/ μL	Percentage < 350 cells/ μL	Number	Percentage < 200 cells/ μL	Percentage < 350 cells/ μL	Number	Percentage < 200 cells/ μL	Percentage < 350 cells/ μL	Number
Age									
15-19	*	*	2	(2.2)	(13.5)	27	(3.3)	(21.3)	29
20-24	*	*	12	6.6	19.5	53	6.1	15.9	65
25-29	*	*	18	15.8	41.1	50	12.4	31.4	68
30-34	(12.1)	(52.5)	31	(28.8)	(37.1)	46	21.6	43.7	77
35-39	*	*	15	(33.3)	(56.0)	31	(25.7)	(50.6)	46
40-44	*	*	19	(7.6)	(27.9)	37	6.0	29.8	56
45-49	*	*	14	*	*	24	(18.7)	(31.7)	38
50-54	*	*	16	*	*	15	(30.3)	(43.1(	31
55-59	*	*	9	*	*	8	*	*	17
60-64	*	*	4	*	*	10	*	*	14
Total 15-24	*	*	14	5.1	17.4	80	5.3	17.6	94
Total 15-49	10.6	34.9	111	16.0	32.6	268	14.3	33.3	379
Total 15-64	14.2	39.4	140	15.5	33.1	301	15.1	35.2	441

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

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

Among HIV-positive adults aged 15-64 years who reported initiating ART less than 12 months before the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Presence of detectable ARVs						
Detectable	*	22	100.0	62	100.0	84
Not detectable	*	3	*	6	*	9
Residence						
Total urban	*	8	(89.5)	39	(91.4)	47
Douala and Yaounde	*	3	*	17	*	20
Other urban	*	5	*	22	(90.3)	27
Rural	*	17	(96.7)	29	(97.9)	46

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

Among HIV-positive adults aged 15-64 years who reported initiating ART less than 12 months before the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Region						
Adamawa	*	1	*	6	*	7
Centre	*	2	*	10	*	12
Douala	*	1	*	7	*	8
East	*	3	*	6	*	9
Far North	*	0	*	2	*	2
Littoral	*	0	*	2	*	2
North	*	1	*	2	*	3
North West	*	5	*	8	*	13
South	*	4	*	9	*	13
South West	*	2	*	4	*	6
West	*	4	*	2	*	6
Yaounde	*	2	*	10	*	12
Marital status						
Never married	*	4	*	9	*	13
Ever had sex	*	4	*	7	*	11
Never had sex	*	0	*	2	*	2
Missing whether had sex	*	0	*	0	*	0
Married or living together	*	18	(90.0)	26	(93.4)	44
Divorced or separated	*	2	*	18	*	20
Widowed	*	1	*	15	*	16
Type of union						
In polygamous union	*	2	*	4	*	6
Not in polygamous union	*	15	*	15	(100.0)	30
Not currently in union	*	7	(93.4)	42	(94.5)	49
Education						
None	*	1	*	9	*	10
Primary	*	11	(97.0)	27	(97.8)	38
Secondary first cycle	*	7	*	22	(82.9)	29
Secondary second cycle or higher	*	6	*	9	*	15

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

Among HIV-positive adults aged 15-64 years who reported initiating ART less than 12 months before the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Wealth quintile						
Lowest	*	3	*	12	*	15
Second	*	8	*	22	(88.3)	30
Middle	*	5	*	9	*	14
Fourth	*	7	*	12	*	19
Highest	*	2	*	13	*	15
Religion						
Catholic	*	4	*	23	(93.8)	27
Protestant	*	11	(96.0)	25	(97.1)	36
Muslim	*	6	*	8	*	14
Animist	*	1	*	2	*	3
Other Christian	*	0	*	4	*	4
Other	*	0	*	6	*	6
None	*	3	*	0	*	3
Ethnicity						
Arabe-Choa/Peul/Haoussa	*	0	*	2	*	2
Biu-Mandara	*	0	*	2	*	2
Adamaoua-Oubangui	*	2	*	1	*	3
Bantoide Sud-Ouest	*	1	*	1	*	2
Grassfields Nord-Ouest	*	6	*	11	*	17
Bamilike/Bamoun	*	6	*	10	*	16
Cotier/Ngoe/Oroko	*	0	*	1	*	1
Beti/Bassa/Mbam	*	5	*	24	(90.5)	29
Kako/Maka	*	0	*	5	*	5
Foreigner/Etranger	*	0	*	0	*	0
No Tribe/Aucune	*	0	*	0	*	0
Other	*	5	*	11	*	16

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

Among HIV-positive adults aged 15-64 years who reported initiating ART less than 12 months before the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Age						
15-19	*	0	*	1	*	1
20-24	*	0	*	4	*	4
25-29	*	2	*	9	*	11
30-34	*	5	*	11	*	16
35-39	*	5	*	17	*	22
40-44	*	4	*	7	*	11
45-49	*	3	*	6	*	9
50-54	*	1	*	2	*	3
55-59	*	1	*	9	*	10
60-64	*	4	*	2	*	6
Total 15-24	*	0	*	5	*	5
Total 15-49	*	19	90.1	55	92.7	74
Total 15-64	(100.0)	25	92.0	68	94.0	93

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

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

Among HIV-positive adults aged 15-64 years who reported initiating ART more than 12 months before the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Presence of detectable ARVs						
Detectable	100.0	70	100.0	191	100.0	261
Not detectable	*	8	(71.9)	28	(75.2)	36
Residence						
Total urban	(98.7)	39	97.1	115	97.5	154
Douala and Yaounde	*	14	(97.5)	38	98.2	52
Other urban	(97.7)	25	96.9	77	97.1	102
Rural	(100.0)	40	95.8	105	97.0	145

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

Among HIV-positive adults aged 15-64 years who reported initiating ART more than 12 months before the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Region						
Adamawa	*	9	*	11	*	20
Centre	*	9	(97.5)	32	(96.7)	41
Douala	*	7	*	17	*	24
East	*	11	(100.0)	34	(100.0)	45
Far North	*	3	*	9	*	12
Littoral	*	3	*	4	*	7
North	*	3	*	5	*	8
North West	*	9	(98.8)	40	(99.0)	49
South	*	8	*	23	(96.9)	31
South West	*	5	*	10	*	15
West	*	5	*	14	*	19
Yaounde	*	7	*	21	(100.0)	28
Marital status						
Never married	*	4	*	24	(90.9)	28
Ever had sex	*	3	*	22	(92.5)	25
Never had sex	*	1	*	2	*	3
Missing whether had sex	*	0	*	0	*	0
Married or living together	99.1	57	97.3	86	98.0	143
Divorced or separated	*	13	97.5	57	98.0	70
Widowed	*	5	97.7	52	97.9	57
Type of union						
In polygamous union	*	5	*	13	*	18
Not in polygamous union	99.0	52	98.0	61	98.5	113
Not currently in union	*	22	96.0	133	96.6	155
Education						
None	*	6	*	20	(96.7)	26
Primary	(100.0)	25	97.5	88	98.1	113
Secondary first cycle	*	24	95.7	78	96.0	102
Secondary second cycle or higher	*	24	(96.8)	34	98.3	58

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

Among HIV-positive adults aged 15-64 years who reported initiating ART more than 12 months before the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Wealth quintile						
Lowest	*	13	*	24	(95.0)	37
Second	*	17	95.7	69	96.6	86
Middle	*	16	97.7	52	97.3	68
Fourth	*	19	(100.0)	39	100.0	58
Highest	*	14	(94.5)	36	96.4	50
Religion						
Catholic	(98.8)	37	100.0	81	99.6	118
Protestant	*	19	94.4	70	95.3	89
Muslim	*	7	*	22	(100.0)	29
Animist	*	2	*	3	*	5
Other Christian	*	5	(89.8)	26	(91.6)	31
Other	*	3	*	11	*	14
None	*	6	*	6	*	12
Ethnicity						
Arabe-Choa/Peul/Haoussa	*	3	*	8	*	11
Biu-Mandara	*	3	*	2	*	5
Adamaoua-Oubangui	*	3	*	2	*	5
Bantoide Sud-Ouest	*	3	*	4	*	7
Grassfields Nord-Ouest	*	12	(99.0)	44	99.2	56
Bamilike/Bamoun	*	15	(97.7)	38	98.4	53
Cotier/Ngoe/Oroko	*	1	*	8	*	9
Beti/Bassa/Mbam	*	18	100.0	58	100.0	76
Kako/Maka	*	4	*	18	*	22
Foreigner/Etranger	*	0	*	1	*	1
No Tribe/Aucune	*	0	*	0	*	0
Other	*	17	(86.2)	37	89.5	54

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

Among HIV-positive adults aged 15-64 years who reported initiating ART more than 12 months before the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Age						
15-19	*	1	*	2	*	3
20-24	*	0	*	10	*	10
25-29	*	2	*	18	*	20
30-34	*	6	(92.0)	36	(92.9)	42
35-39	*	9	(100.0)	38	(100.0)	47
40-44	*	17	(96.9)	39	98.0	56
45-49	*	14	(98.3)	34	(98.7)	48
50-54	*	16	(100.0)	25	(100.0)	41
55-59	*	2	*	7	*	9
60-64	*	12	*	11	*	23
Total 15-24	*	1	*	12	*	13
Total 15-49	(100.0)	49	95.7	177	96.7	226
Total 15-64	99.3	79	96.6	220	97.3	299

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 11.E Resistance to antiretrovirals (ARVs)

Among adults aged 15-64 years who were recently infected with HIV, percentage with resistance to ARVs, by class of ARV resistance, CAMPHIA 2017-2018

	Percent	Number	DR Mutations Detected[1]
Successfully amplified[2]	86.4	19	
Any	15.8	3	K101KE, K103KN, K103N, M184V, M46MI
Nucleoside reverse transcriptase inhibitor (NRTI)	5.3	1	M184V
Non-nucleoside reverse transcriptase inhibitor (NNRTI)	10.5	2	K101KE, K103KN, K103N
Protease inhibitor (PI)I	5.3	1	M46MI
NRTI & NNRTI	5.3	1	K103N, M184V
NRTI, NNRTI & PI	0.0	0	

[1]Based on *Stanford Database for HIV Drug Resistance Mutation* https://hivdb.stanford.edu/assets/media/resistance-mutation-handout-feb2019.b0204a57.pdf
[2]Unweighted figures, from a total of 22 cases.

Table 11.F HIV subtype

Percent distribution of HIV-positive adults aged 15-64 years who underwent genotyping, by HIV subtype, CAMPHIA 2017-2018

	Total	
	Percent	Number
Subtype A	7.6	6
Subtype B	0.0	0
Subtype C	0.0	0
Subtype D	0.0	0
Subtype F	2.5	2
Subtype G	6.3	5
Subtype H	1.3	1
Subtype J	2.5	2
HIV-1 O group	1.3	1
Recombinant	78.5	62
Total	100.0	79

Unweighted figures.

11.3 REFERENCES

1. World Health Organization. *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection.* Geneva: World Health Organization; 2016. http://www.who.int/hiv/pub/arv/arv-2016/en/. Accessed September 2, 2019.

12. PREVENTION OF MOTHER-TO-CHILD TRANSMISSION

12.1 BACKGROUND

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

To prevent MTCT, WHO recommends a comprehensive four-pronged approach including: (1) primary prevention of HIV infection among women of childbearing age (henceforth referred to in this chapter as women); (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]

12.2 RESULTS

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

Table 12.A Antenatal care

Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one antenatal care (ANC) visit for her most recent birth, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who attended at least one ANC visit	Number
Residence		
Total urban	96.4	1,596
Douala and Yaounde	97.8	621
Other urban	95.4	975
Rural	82.7	2,777
Region		
Adamawa	78.0	370
Centre	94.2	414
Douala	98.1	287
East	86.2	362
Far North	75.5	731
Littoral	97.0	142
North	68.0	667
North West	96.7	304
South	95.1	269
South West	97.2	186
West	96.5	307
Yaounde	97.6	334

Table 12.A Antenatal care (continued)

Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one antenatal care (ANC) visit for her most recent birth, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who attended at least one ANC visit	Number
Marital status		
Never married	96.0	522
Married or living together	88.0	3,426
Divorced or separated	87.1	341
Widowed	83.5	68
Type of union		
In polygamous union	77.1	790
Not in polygamous union	90.2	2,351
Not currently in union	92.0	931
Education		
None	69.3	1,116
Primary	87.7	1,393
Secondary first cycle	96.1	1,204
Secondary second cycle or higher	99.2	650
Wealth quintile		
Lowest	70.4	1,554
Second	89.8	1,021
Middle	96.8	713
Fourth	97.4	585
Highest	99.0	493
Religion		
Catholic	92.7	1,492
Protestant	90.3	1,048
Muslim	83.0	1,103
Animist	67.6	91
Other Christian	92.5	263
Other	94.5	217
None	71.6	157
Ethnicity		
Arabe-Choa/Peul/Haoussa	81.4	521
Biu-Mandara	66.4	253
Adamaoua-Oubangui	75.9	93
Bantoide Sud-Ouest	(97.0)	47
Grassfields Nord-Ouest	98.0	358
Bamilike/Bamoun	98.0	751
Cotier/Ngoe/Oroko	97.7	66
Beti/Bassa/Mbam	94.8	706

Table 12.A Antenatal care (continued)

Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one antenatal care (ANC) visit for her most recent birth, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who attended at least one ANC visit	Number
Ethnicity		
Kako/Maka	82.4	153
Foreigner/Etranger	*	23
No Tribe/Aucune	*	3
Other	79.7	1,394
Age		
15-19	87.6	447
20-24	89.8	1,135
25-29	87.9	1,238
30-34	89.2	860
35-39	90.7	492
40-44	88.0	165
45-49	(81.4)	36
Total 15-24	89.2	1,582
Total 15-49	88.9	4,373

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 12.B 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, CAMPHIA 2017-2018

Characteristic	Never breastfed	Ever breastfed, but not currently breastfeeding	Currently breastfeeding	Total	Number
Child's age (months)					
0-1	2.2	16.8	81.0	100.0	297
2-3	0.7	21.5	77.8	100.0	283
4-5	2.4	19.4	78.2	100.0	256
6-8	2.0	28.3	69.8	100.0	391
9-11	2.9	30.3	66.7	100.0	388
12-17	1.6	55.3	43.1	100.0	792
18-23	2.2	82.9	14.9	100.0	605
24-36	2.7	90.7	6.6	100.0	1,042

Table 12.B Breastfeeding status by child's age and mother's HIV status (continued)

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, CAMPHIA 2017-2018

Characteristic	Never breastfed	Ever breastfed, but not currently breastfeeding	Currently breastfeeding	Total	Number
Result of mother's PHIA survey HIV test					
HIV positive	15.9	58.5	25.6	100.0	136
HIV negative	1.6	55.8	42.6	100.0	4,006
Not tested	1.6	51.1	47.3	100.0	194
Total	2.1	55.6	42.3	100.0	4,336

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

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

Among women aged 15-49 years who gave birth within the past 12 months, percentage who were tested for HIV during antenatal care (ANC) and received their results or who already knew they were HIV positive, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of women who gave birth within the past 12 months
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Residence					
Total urban	0.8	88.9	1.2	91.0	569
Douala and Yaounde	0.6	95.7	0.4	96.8	227
Other urban	1.0	83.9	1.9	86.7	342
Rural	0.9	69.2	1.3	71.4	794
Region					
Adamawa	2.7	65.0	1.2	68.9	88
Centre	0.5	86.6	3.3	90.4	139
Douala	1.3	96.0	0.7	98.0	107
East	1.0	72.1	2.0	75.2	121
Far North	0.0	48.6	1.9	50.5	207
Littoral	(0.0)	(85.1)	(1.5)	(86.6)	46
North	0.0	52.2	0.9	53.2	154
North West	1.5	86.6	1.7	89.8	132
South	0.0	82.6	1.0	83.6	82
South West	0.0	85.2	0.3	85.5	63
West	4.1	89.3	0.0	93.4	104
Yaounde	0.0	95.5	0.0	95.5	120

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

Among women aged 15-49 years who gave birth within the past 12 months, percentage who were tested for HIV during antenatal care (ANC) and received their results or who already knew they were HIV positive, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of women who gave birth within the past 12 months
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Type of union					
In polygamous union	0.0	61.3	1.9	63.3	188
Not in polygamous union	1.1	80.8	0.7	82.5	777
Not currently in union	1.1	81.1	2.6	84.9	303
Marital status					
Never married	0.5	84.8	1.4	86.8	200
Married or living together	0.8	78.2	0.9	79.9	1,055
Divorced or separated	2.6	73.4	5.6	81.6	87
Widowed	*	*	*	*	16
Education					
None	1.1	44.0	0.5	45.6	245
Primary	1.1	70.6	2.3	74.0	400
Secondary first cycle	1.1	87.0	1.2	89.2	447
Secondary second cycle or higher	0.2	96.9	0.7	97.8	270
Wealth quintile					
Lowest	1.2	48.2	1.3	50.7	382
Second	0.0	74.5	2.4	76.9	327
Middle	0.0	88.5	0.4	88.9	238
Fourth	2.5	90.3	0.6	93.4	220
Highest	0.8	93.5	1.5	95.8	195
Religion					
Catholic	0.5	84.6	1.8	86.8	505
Protestant	2.1	80.7	1.2	84.0	341
Muslim	0.8	62.6	0.5	63.9	307
Animist	*	*	*	*	21
Other Christian	0.0	83.6	1.7	85.3	87
Other	0.0	86.7	0.7	87.5	71
None	(0.0)	(72.1)	(0.0)	(72.1)	31
Ethnicity					
Arabe-Choa/Peul/Haoussa	1.7	63.9	0.0	65.6	136
Biu-Mandara	0.0	49.9	0.0	49.9	50
Adamaoua-Oubangui	(2.6)	(59.3)	(0.0)	(62.0)	27
Bantoide Sud-Ouest	*	*	*	*	17

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

Among women aged 15-49 years who gave birth within the past 12 months, percentage who were tested for HIV during antenatal care (ANC) and received their results or who already knew they were HIV positive, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of women who gave birth within the past 12 months
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Grassfields Nord-Ouest	1.3	84.7	2.6	88.6	143
Bamilike/Bamoun	1.4	92.6	0.6	94.5	273
Cotier/Ngoe/Oroko	(0.0)	(92.1)	(0.0)	(92.1)	25
Beti/Bassa/Mbam	0.3	88.5	2.3	91.1	228
Kako/Maka	(3.5)	(82.1)	(0.0)	(85.6)	42
Foreigner/Etranger	*	*	*	*	10
No Tribe/Aucune	*	*	*	*	0
Other	0.2	61.2	1.9	63.3	412
Age					
15-19	1.5	69.2	0.0	70.6	180
20-24	0.7	76.8	0.3	77.8	389
25-29	0.2	84.1	1.0	85.3	378
30-34	1.9	82.3	2.7	86.9	238
35-39	0.6	80.0	1.5	82.1	134
40-44	(0.0)	(69.0)	(7.4)	(76.5)	37
45-49	*	*	*	*	7
Total 15-24	0.9	74.4	0.2	75.5	569
Total 15-49	0.9	79.0	1.3	81.1	1,363

[1]Relates to PEPFAR PMTCT_STAT_NAT / SUBNAT: Percentage of pregnant women with known HIV status. Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

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

Among HIV-positive women aged 15-49 years who gave birth within the 12 months before the survey, percentage who received antiretrovirals (ARVs) during pregnancy to reduce the risk of mother-to-child transmission, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who were already on ARVs prior to pregnancy	Percentage who were newly initiated on ARVs during pregnancy or labor and delivery	Total percentage who received ARVs[1]	Number of HIV-positive women who gave birth within the prior 12 months
Residence				
Total urban	*	*	*	12
Douala and Yaounde	*	*	*	2
Other urban	*	*	*	10
Rural	*	*	*	14
Region				
Adamawa	*	*	*	3
Centre	*	*	*	4
Douala	*	*	*	2
East	*	*	*	3
Far North	*	*	*	3
Littoral	*	*	*	1
North	*	*	*	2
North West	*	*	*	4
South	*	*	*	1
South West	*	*	*	1
West	*	*	*	2
Yaounde	*	*	*	0
Marital status				
Never married	*	*	*	5
Married or living together	*	*	*	15
Divorced or separated	*	*	*	6
Widowed	*	*	*	0
Type of union				
In polygamous union	*	*	*	2
Not in polygamous union	*	*	*	12
Not currently in union	*	*	*	11
Education				
None	*	*	*	3
Primary	*	*	*	12
Secondary first cycle	*	*	*	9
Secondary second cycle or higher	*	*	*	2

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

Among HIV-positive women aged 15-49 years who gave birth within the 12 months before the survey, percentage who received antiretrovirals (ARVs) during pregnancy to reduce the risk of mother-to-child transmission, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who were already on ARVs prior to pregnancy	Percentage who were newly initiated on ARVs during pregnancy or labor and delivery	Total percentage who received ARVs[1]	Number of HIV-positive women who gave birth within the prior 12 months
Wealth quintile				
Lowest	*	*	*	9
Second	*	*	*	6
Middle	*	*	*	1
Fourth	*	*	*	6
Highest	*	*	*	4
Religion				
Catholic	*	*	*	10
Protestant	*	*	*	11
Muslim	*	*	*	3
Animist	*	*	*	0
Other Christian	*	*	*	1
Other	*	*	*	1
None	*	*	*	0
Ethnicity				
Arabe-Choa/Peul/Haoussa	*	*	*	1
Biu-Mandara	*	*	*	0
Adamaoua-Oubangui	*	*	*	1
Bantoide Sud-Ouest	*	*	*	0
Grassfields Nord-Ouest	*	*	*	5
Bamilike/Bamoun	*	*	*	4
Cotier/Ngoe/Oroko	*	*	*	0
Beti/Bassa/Mbam	*	*	*	5
Kako/Maka	*	*	*	1
Foreigner/Etranger	*	*	*	0
No Tribe/Aucune	*	*	*	0
Other	*	*	*	9

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

Among HIV-positive women aged 15-49 years who gave birth within the 12 months before the survey, percentage who received antiretrovirals (ARVs) during pregnancy to reduce the risk of mother-to-child transmission, by selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who were already on ARVs prior to pregnancy	Percentage who were newly initiated on ARVs during pregnancy or labor and delivery	Total percentage who received ARVs[1]	Number of HIV-positive women who gave birth within the prior 12 months
Age				
15-19	*	*	*	2
20-24	*	*	*	5
25-29	*	*	*	6
30-34	*	*	*	8
35-39	*	*	*	3
40-44	*	*	*	2
45-49	*	*	*	0
Total 15-24	*	*	*	**7**
Total 15-49	(50.5)	(40.9)	(91.3)	26

[1]Relates to Global AIDS Monitoring Indicator 2020 2.3: Preventing mother-to-child transmission of HIV.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

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

Among infants born in the last 17 months to HIV-positive women aged 15-49 years, percentage exposed to HIV and percentage confirmed positive for HIV infection, by mother's self-reported antiretroviral (ARV) and breastfeeding status, CAMPHIA 2017-2018

Characteristic	Percentage of infants confirmed HIV positive[1]	Number of infants born to HIV-positive women[2]
Mother's self-reported ARV status		
Mother unaware of HIV status during pregnancy	*	6
Already on ARVs at first antenatal visit	*	3
Newly initiated on ARVs during pregnancy or labor and delivery	*	4
Did not receive ARVs during pregnancy	*	1
Missing self-reported ARV status during pregnancy	*	9
Mother's self-reported breastfeeding status		
Ever breastfed the infant	*	18
Never breastfed the infant	*	3
Missing breastfeeding status	*	2
Total 0-11 months	*	17
Total 0-17 months	*	23

[1]Relates to GAM 2.2 Mother-to-child transmission of HIV; [2]Includes only infants who were tested for HIV during the PHIA survey.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

2. World Health Organization. *Towards the elimination of mother-to-child transmission of HIV: report of a WHO technical consultation.* Geneva: World Health Organization; 2011. http://apps.who.int/iris/bitstream/handle/10665/44638/9789241501910_eng.pdf;jsessionid=CD35DAE3C3D00349A9B149BCFF9262C4?sequence=1. Accessed September 2, 2019.

13. YOUNG PEOPLE

13.1 BACKGROUND

One-third of the population of sub-Saharan Africa is between the ages of 10-24 years.[1] Young people (the population including both older adolescents aged 15-19 years and young adults aged 20-24) are more likely to engage in risky sexual behaviors than older adults and have less frequent contact with the healthcare system. Control of HIV in this demographic is critical for long-term epidemic control but is also particularly challenging.

13.2 RESULTS

Table 13.A shows the prevalence of early sexual debut before 15 years of age among young men and women, by marital status, region, and socio-demographic characteristics.

Figure 13.A reports on the 90-90-90 targets for young people.

Table 13.A Sex before the age of 15 years

Percentage of young people (male and female) aged 15–24 years who reported they had sexual intercourse before the age of 15 years; by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number
Residence						
Total urban	20.2	1,037	10.5	1,420	15.2	2,457
Douala and Yaounde	20.1	460	6.6	580	13.4	1,040
Other urban	20.3	577	13.4	840	16.7	1,417
Rural	21.5	1,207	21.0	2,007	21.2	3,214
Region						
Adamawa	16.5	169	20.6	281	18.6	450
Centre	25.1	288	16.6	340	21.0	628
Douala	19.2	197	5.2	274	12.0	471
East	29.0	217	36.9	337	33.3	554
Far North	15.4	176	18.3	415	17.3	591
Littoral	21.3	73	9.6	97	15.1	170
North	18.0	176	23.9	386	21.7	562
North West	17.3	171	17.1	288	17.2	459
South	28.7	181	22.3	215	25.4	396
South West	21.4	137	10.8	198	15.6	335
West	16.8	196	12.5	290	14.5	486
Yaounde	20.9	263	8.2	306	14.8	569

Table 13.A Sex before the age of 15 years (continued)

Percentage of young people (male and female) aged 15–24 years who reported they had sexual intercourse before the age of 15 years; by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number
Marital status						
Never married	21.1	1,728	10.8	1,373	16.9	3,101
Married or living together	17.5	358	20.3	1,757	19.8	2,115
Divorced or separated	24.0	152	18.5	273	20.9	425
Widowed	*	1	*	14	*	15
Type of union						
In polygamous union	(22.0)	36	28.0	348	27.2	384
Not in polygamous union	17.2	319	18.9	1,240	18.5	1,559
Not currently in union	21.3	1,881	12.0	1,660	17.3	3,541
Education						
None	11.3	76	28.2	556	25.4	632
Primary	22.6	355	30.3	800	27.5	1,155
Secondary first cycle	27.2	979	14.6	1,223	20.6	2,202
Secondary second cycle or higher	14.7	833	2.8	844	9.3	1,677
Wealth quintile						
Lowest	23.6	479	27.2	912	25.8	1,391
Second	21.5	459	21.9	833	21.7	1,292
Middle	20.6	523	16.3	664	18.4	1,187
Fourth	21.6	446	8.3	542	15.0	988
Highest	17.3	337	4.6	472	10.6	809
Religion						
Catholic	19.9	926	11.0	1,261	15.3	2,187
Protestant	20.2	547	16.3	849	18.0	1,396
Muslim	19.2	400	23.7	800	21.9	1,200
Animist	*	24	(24.6)	40	27.5	64
Other Christian	25.5	132	16.8	219	20.6	351
Other	25.6	99	17.2	177	20.7	276
None	24.6	114	16.5	77	22.2	191

Table 13.A Sex before the age of 15 years (continued)

Percentage of young people (male and female) aged 15–24 years who reported they had sexual intercourse before the age of 15 years; by sex and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number
Ethnicity						
Arabe-Choa/Peul/Haoussa	20.2	159	23.1	365	22.0	524
Biu-Mandara	9.3	65	16.3	130	13.5	195
Adamaoua-Oubangui	21.9	65	27.3	83	24.5	148
Bantoide Sud-Ouest	(14.4)	45	11.1	55	12.8	100
Grassfields Nord-Ouest	17.6	213	14.1	331	15.7	544
Bamilike/Bamoun	16.2	441	7.1	629	11.3	1,070
Cotier/Ngoe/Oroko	26.9	55	6.1	73	16.2	128
Beti/Bassa/Mbam	25.9	558	16.1	616	21.3	1,174
Kako/Maka	37.0	77	39.4	155	38.5	232
Foreigner/Etranger	*	11	*	19	(17.2)	30
No Tribe/Aucune	*	0	*	2	*	2
Other	21.4	553	19.7	961	20.4	1,514
Age						
15-19	30.3	752	20.6	1,260	24.8	2,012
20-24	16.1	1,492	12.9	2,167	14.4	3,659
Total 15-24	20.8	2,244	15.8	3,427	18.1	5,671

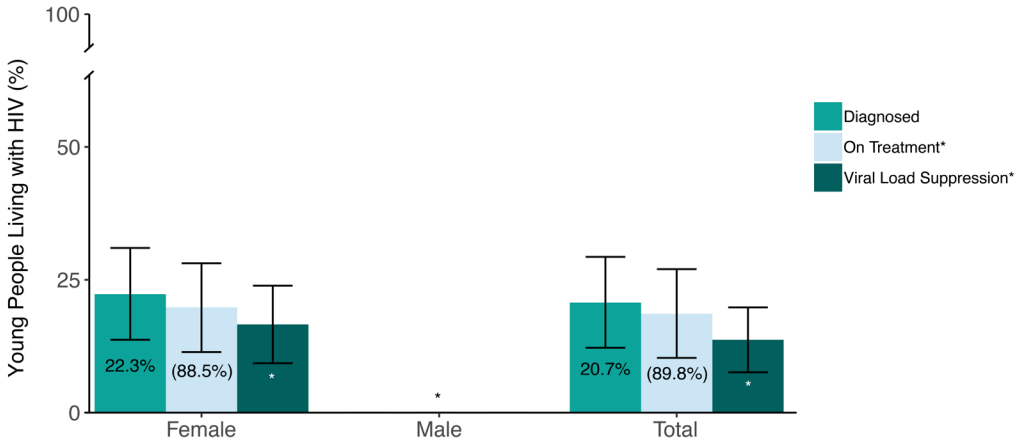
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

Figure 13.A
Young people 90-90-90 (based on self-report and laboratory ARV-adjusted data among young people aged 15-24 years), CAMPHIA 2017-2018



Note: In the antiretroviral (ARV)-adjusted 90-90-90, participants are classified as "aware" or "diagnosed" if they reported knowing their HIV-positive status before testing positive in CAMPHIA or had detectable ARVs in their blood. Participants are classified as "on treatment" if they reported that they were on treatment or if they had detectable ARVs in their blood.
*Estimates with an asterisk are based on small number (a denominator of less than 25) and have been suppressed.
( ) Estimates in parentheses are based on a denominator between 25-49 and should be interpreted with caution.

13.3 REFERENCES

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14. CHILDREN

14.1 BACKGROUND

It is essential that children have accurate information about HIV prevention in order to protect themselves as they become sexually active. CAMPHIA administered a questionnaire to young adolescents aged 10-14 years in order to assess their knowledge of HIV prevention. The survey asked young adolescents whether they had heard of HIV, and then whether they agreed or disagreed with both accurate and inaccurate statements about HIV prevention.

Note: In other PHIAs, this chapter would present estimates of HIV prevalence in children (those aged 0-14 years), estimates of children living with HIV, and VLS among children, which are critical for meeting the needs of pediatric HIV treatment; planning for HIV prevention, care and treatment services for children; evaluating PMTCT programs; and addressing specific needs of children. Such estimates are most commonly derived indirectly from clinic-based data or epidemiologic models. In Cameroon, CAMPHIA attempted to provide direct measurements of these estimates among children. However, aside from HIV prevalence (0.2%; 0.3% in boys and 0.1% in girls, Table 6.C), the number of children living with HIV identified in CAMPHIA (14) was too small to make reliable estimates.

14.2 RESULTS

Table 14.A reports the percentage of adolescent boys and girls in Cameroon who had heard of HIV. Tables 14.B, 14.C, and 14.D presents HIV prevention knowledge among adolescent girls and boys, disaggregated by whether they lived in rural or urban settings, by region, and socio-economic status (wealth quintile).

Table 14.A Young adolescents: HIV knowledge

Percentage of young adolescents aged 10-14 years who have heard of HIV, by gender, CAMPHIA 2017-2018

Characteristic	Percentage who have heard of HIV	Number
Gender		
Boys	55.8	1,101
Girls	55.7	1,083
Total 10-14	55.8	2,184

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

Table 14.B Young adolescents: Knowledge about HIV prevention: Boys

Among young adolescent boys aged 10-14 years who had heard of HIV, percentage who correctly identified ways of preventing the sexual transmission of HIV and rejected major misconceptions about HIV transmission, by selected demographic characteristics, CAMPHIA 2017-2018

	Percentage who correctly answered the questions:									
Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass HIV to her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	If people with HIV take ARVs, are they less likely to spread the virus to other people?	Can ARVs rid HIV from an HIV-positive person's body?	Percent who answered ALL correctly	Number
Residence										
Total urban	69.2	65.2	63.0	75.7	71.8	17.8	40.6	54.6	3.5	280
Douala and Yaounde	71.3	65.6	68.2	81.1	77.4	16.7	40.9	54.1	4.3	105
Other urban	67.8	64.9	59.4	72.0	67.8	18.5	40.4	54.9	2.9	175
Rural	59.8	50.5	43.8	51.3	55.2	22.8	35.6	42.3	1.8	266
Region										
Adamawa	(69.5)	(64.3)	(40.5)	(61.5)	(49.1)	(12.7)	(26.1)	(50.1)	(0.0)	27
Centre	73.8	66.6	61.0	75.0	73.1	22.9	38.4	62.4	7.6	71
Douala	67.4	65.4	63.3	78.8	75.5	15.6	37.6	50.7	3.0	50
East	(55.4)	(58.2)	(58.2)	(59.8)	(62.5)	(11.2)	(47.0)	(35.1)	(0.0)	40
Far North	50.2	52.5	42.8	39.8	31.1	9.8	31.5	30.9	0.0	64
Littoral	*	*	*	*	*	*	*	*	*	22
North	(59.8)	(44.8)	(53.6)	(49.1)	(46.9)	(35.1)	(42.9)	(43.5)	(5.8)	36
North West	(74.3)	(65.4)	(43.7)	(68.7)	(75.3)	(22.3)	(38.5)	(47.1)	(4.0)	46
South	(59.7)	(61.5)	(52.9)	(79.8)	(79.2)	(19.1)	(37.0)	(26.8)	0.0	34
South West	*	*	*	*	*	*	*	*	*	21
West	60.3	53.9	44.2	50.4	59.5	23.0	41.9	53.4	1.7	80
Yaounde	75.6	65.9	73.7	83.7	79.5	18.0	44.4	57.9	5.8	55
Wealth quintile										
Lowest	55.8	42.2	33.3	41.7	49.6	11.5	32.7	32.5	0.0	102
Second	59.9	55.3	42.6	55.2	49.3	26.3	34.9	41.2	2.9	137
Middle	63.8	60.5	56.7	65.4	72.5	22.9	36.9	51.2	3.0	124
Fourth	63.6	59.8	62.9	76.4	73.0	17.9	44.3	53.0	2.6	95
Highest	80.6	71.6	72.9	81.3	75.3	17.5	42.6	64.4	4.4	87
Total 10-14	65.2	58.9	54.8	65.3	64.7	19.9	38.5	49.3	2.8	546

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

Table 14.C Young adolescents: Knowledge about HIV prevention: Girls

Among young adolescent girls aged 10-14 years who had heard of HIV, percentage who correctly identified ways of preventing the sexual transmission of HIV and rejected major misconceptions about HIV transmission, by selected demographic characteristics, CAMPHIA 2017-2018

	Percentage who correctly answered the questions:									
Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass HIV to her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumci-sion help prevent HIV infection?	If people with HIV take ARVs, are they less likely to spread the virus to other people?	Can ARVs rid HIV from an HIV-positive person's body?	Percent who answered ALL correctly	Number
Residence										
Total urban	61.1	56.5	59.5	69.8	67.9	16.4	38.9	51.9	3.4	287
Douala and Yaounde	67.0	61.9	65.5	75.4	73.9	18.7	42.2	58.4	4.9	121
Other urban	55.7	51.5	54.0	64.6	62.4	14.4	35.8	46.0	1.9	166
Rural	56.5	44.4	41.2	54.0	59.8	17.0	37.0	40.4	1.0	233
Region										
Adamawa	(64.1)	(47.9)	(39.0)	(57.1)	(55.0)	(7.4)	(25.6)	(21.0)	(0.0)	36
Centre	63.8	62.2	53.5	70.6	67.1	21.8	41.6	56.3	0.0	56
Douala	69.0	69.0	70.2	77.2	80.8	20.0	44.4	52.7	4.6	60
East	(57.1)	(47.0)	(52.3)	(61.6)	(68.0)	(16.0)	(35.1)	(34.7)	5.5	45
Far North	(46.7)	(39.9)	(41.1)	(51.0)	(50.7)	(11.8)	(38.0)	(20.6)	0.0	42
Littoral	*	*	*	*	*	*	*	*	*	12
North	(48.0)	(46.7)	(32.8)	(63.8)	(47.2)	(17.3)	(29.2)	(35.0)	(0.0)	33
North West	67.1	34.9	52.4	64.2	79.5	18.1	48.8	50.7	2.8	52
South	(40.5)	(42.5)	(29.9)	(73.8)	(69.0)	(7.8)	(40.5)	(49.6)	(0.0)	34
South West	(59.2)	(43.1)	(56.5)	(56.7)	(79.1)	(20.3)	(35.6)	(40.6)	(0.0)	30
West	57.0	49.9	42.8	49.1	47.9	14.0	30.4	51.9	3.1	59
Yaounde	64.7	53.8	60.0	73.3	65.9	17.1	39.5	64.9	5.3	61
Wealth quintile										
Lowest	48.5	37.8	30.2	45.2	42.5	12.6	30.4	32.6	0.0	80
Second	52.1	46.9	44.9	55.9	68.6	15.7	39.7	38.9	2.2	137
Middle	57.3	45.1	44.3	65.9	64.6	15.0	41.1	47.4	0.0	111
Fourth	67.2	62.5	64.6	66.3	62.9	19.5	34.0	51.2	4.9	95
Highest	66.1	60.4	67.8	76.4	73.7	18.3	41.5	60.0	4.0	97
Total 10-14	59.4	52.1	52.8	64.0	65.0	16.6	38.2	47.7	2.5	520

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files. The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

Table 14.D Young adolescents: Knowledge about HIV prevention: Total

Among young adolescents aged 10-14 years who had heard of HIV, percentage who correctly identified ways of preventing the sexual transmission of HIV and rejected major misconceptions about HIV transmission, by selected demographic characteristics, CAMPHIA 2017-2018

	Percentage who correctly answered the questions:									
Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass HIV to her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	If people with HIV take ARVs, are they less likely to spread the virus to other people?	Can ARVs rid HIV from an HIV-positive person's body?	Percent who answered ALL correctly	Number
Residence										
Total urban	65.0	60.7	61.2	72.6	69.8	17.1	39.7	53.2	3.4	567
Douala and Yaounde	68.9	63.6	66.7	77.9	75.4	17.8	41.6	56.5	4.7	226
Other urban	61.8	58.3	56.8	68.4	65.2	16.5	38.2	50.5	2.4	341
Rural	58.3	47.7	42.7	52.5	57.3	20.2	36.3	41.5	1.4	499
Region										
Adamawa	66.5	55.2	39.6	59.1	52.4	9.8	25.8	34.0	0.0	63
Centre	69.4	64.6	57.6	73.1	70.4	22.4	39.8	59.7	4.2	127
Douala	68.3	67.4	67.2	77.9	78.5	18.1	41.5	51.8	3.9	110
East	56.3	52.3	55.1	60.8	65.4	13.7	40.7	34.8	2.9	85
Far North	48.7	47.2	42.1	44.5	39.4	10.6	34.2	26.6	0.0	106
Littoral	(53.3)	(54.7)	(47.3)	(60.5)	(51.5)	(26.4)	(28.3)	(46.3)	(0.0)	34
North	54.1	45.7	43.6	56.1	47.0	26.5	36.3	39.4	3.0	69
North West	70.4	48.7	48.5	66.2	77.6	20.0	44.2	49.1	3.4	98
South	49.0	50.9	40.0	76.5	73.5	12.8	38.9	39.5	0.0	68
South West	63.9	47.0	66.7	63.8	77.0	18.3	37.4	46.9	0.0	51
West	58.9	52.2	43.6	49.9	54.6	19.2	37.1	52.8	2.3	139
Yaounde	69.6	59.2	66.2	78.0	72.0	17.5	41.7	61.7	5.5	116
Wealth quintile										
Lowest	52.7	40.3	32.0	43.2	46.6	11.9	31.7	32.6	0.0	182
Second	56.0	51.1	43.7	55.6	58.9	21.0	37.3	40.1	2.6	274
Middle	60.7	53.1	50.8	65.6	68.7	19.1	38.9	49.3	1.6	235
Fourth	65.4	61.1	63.7	71.2	67.8	18.7	39.0	52.1	3.8	190
Highest	72.9	65.6	70.2	78.7	74.4	17.9	42.0	62.1	4.2	184
Total 10-14	62.3	55.5	53.8	64.6	64.8	18.3	38.3	48.5	2.6	1,066

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

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

15. HIV RISK FACTORS

15.1 BACKGROUND

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

Since 2007, WHO and UNAIDS have recommended voluntary medical male circumcision as a cost-effective strategy to reduce male acquisition of HIV. To inform voluntary medical male circumcision programs, men aged 15-64 years were asked if they had been medically or traditionally circumcised.

15.2 RESULTS

The following tables present CAMPHIA's data on HIV risk factors in Cameroon.

Table 15.A HIV prevalence by sexual behavior

Prevalence of HIV among adults aged 15-64 years, by sex and sexual behavior characteristics, CAMPHIA 2017-2018

	Male		Female		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Age at first sexual intercourse						
<15	2.5	1,095	6.6	2,011	4.8	3,106
15-19	2.7	5,175	5.6	8,302	4.4	13,477
20-24	3.4	2,297	4.4	1,328	3.8	3,625
≥25	2.3	811	1.8	156	2.2	967
Number of sexual partners in the past 12 months						
0	2.3	1,179	9.0	2,034	6.4	3,213
1	2.9	5,766	4.8	9,669	4.0	15,435
≥2	2.8	2,720	7.4	598	3.6	3,318
Condom use at last sexual intercourse in the past 12 months						
Used condom	2.9	1,594	6.6	1,292	4.4	2,886
Did not use condom	2.9	6,049	4.6	8,685	3.8	14,734
No sexual intercourse in the past 12 months	2.3	1,179	9.0	2,034	6.4	3,213
Total 15-24	0.4	4,049	2.0	4,959	1.2	9,008
Total 15-49	2.0	10,123	4.8	12,321	3.4	22,444
Total 15-64	2.3	11,887	5.0	14,144	3.7	26,031

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Table 15.B Condom use at last sex with a non-marital, non-cohabitating partner: Men

Among men aged 15-64 years who reported having sex in the 12 months before the survey, percentage who reported having a non-marital, non-cohabitating partner during that period; among those who reported having sex with a non-marital, non-cohabitating partner in the prior 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, CAMPHIA 2017-2018

	Among men who reported having sex in the prior 12 months		Among men who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
Characteristic	Percentage who reported having sex with a non-marital, non-cohabitating partner during that period	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Residence				
Total urban	53.8	3,897	55.7	1,697
Douala and Yaounde	59.2	1,756	57.0	871
Other urban	48.7	2,141	54.2	826
Rural	38.4	4,982	45.1	1,452
Region				
Adamawa	37.4	668	64.3	178
Centre	58.6	963	51.0	439
Douala	54.7	882	55.3	399
East	46.7	695	47.3	244
Far North	19.0	1,073	41.5	159
Littoral	48.7	327	55.8	140
North	18.0	1,031	38.5	152
North West	48.1	546	52.2	212
South	58.0	617	42.9	286
South West	52.1	523	32.8	218
West	42.6	680	61.2	250
Yaounde	64.8	874	58.8	472
Marital status				
Never married	92.3	2,264	59.8	1,774
Married or living together	19.2	5,879	42.7	859
Divorced or separated	87.5	674	35.2	470
Widowed	(79.0)	44	(14.4)	32
Type of union				
In polygamous union	29.4	1,040	32.2	199
Not in polygamous union	17.0	4,813	46.4	650
Not currently in union	91.2	2,982	54.7	2,276
Education				
None	11.3	1,125	26.2	90
Primary	31.6	2,495	34.5	634
Secondary first cycle	52.0	2,679	51.5	1,128
Secondary second cycle or higher	61.9	2,559	59.8	1,292

Table 15.B Condom use at last sex with a non-marital, non-cohabitating partner: Men (continued)

Among men aged 15-64 years who reported having sex in the 12 months before the survey, percentage who reported having a non-marital, non-cohabitating partner during that period; among those who reported having sex with a non-marital, non-cohabitating partner in the prior 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, CAMPHIA 2017-2018

Characteristic	Among men who reported having sex in the prior 12 months		Among men who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner during that period	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Wealth quintile				
Lowest	20.2	2,419	30.0	421
Second	41.0	1,933	44.1	652
Middle	53.7	1,665	53.5	724
Fourth	56.4	1,492	54.7	696
Highest	57.2	1,365	58.8	655
Religion				
Catholic	54.0	3,235	54.0	1,382
Protestant	47.0	2,122	49.0	773
Muslim	30.6	1,940	50.9	443
Animist	27.4	152	(36.2)	34
Other Christian	47.3	529	50.2	193
Other	49.4	311	47.9	120
None	47.3	570	50.1	196
Ethnicity				
Arabe-Choa/Peul/Haoussa	24.3	838	43.7	152
Biu-Mandara	26.3	323	44.9	69
Adamaoua-Oubangui	40.8	269	47.2	77
Bantoide Sud-Ouest	52.6	188	34.2	84
Grassfields Nord-Ouest	50.1	779	46.9	312
Bamilike/Bamoun	49.3	1,726	61.1	740
Cotier/Ngoe/Oroko	55.6	211	44.7	95
Beti/Bassa/Mbam	65.5	1,783	49.2	906
Kako/Maka	44.2	244	40.1	84
Foreigner/Etranger	42.7	51	*	20
No Tribe/Aucune	*	1	*	1
Other	33.9	2,459	51.2	607

Table 15.B Condom use at last sex with a non-marital, non-cohabitating partner: Men (continued)

Among men aged 15-64 years who reported having sex in the 12 months before the survey, percentage who reported having a non-marital, non-cohabitating partner during that period; among those who reported having sex with a non-marital, non-cohabitating partner in the prior 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, CAMPHIA 2017-2018

Characteristic	Among men who reported having sex in the prior 12 months		Among men who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner during that period	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Age				
15-19	93.8	563	63.3	462
20-24	82.3	1,263	62.4	822
25-29	60.0	1,424	53.0	650
30-34	41.2	1,315	45.0	402
35-39	32.2	1,117	39.3	279
40-44	25.5	983	41.4	192
45-49	19.2	703	34.2	120
50-54	23.8	557	22.7	113
55-59	16.0	504	24.6	62
60-64	11.9	450	(22.3)	47
Total 15-24	85.8	1,826	62.7	1,284
Total 15-49	51.4	7,368	53.5	2,927
Total 15-64	46.7	8,879	51.6	3,149

[1]Relates to Global AIDS Monitoring Indicator 2020 3.18: Condom use at last high-risk sex.

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

Table 15.C Condom use at last sex with a non-marital, non-cohabitating partner: Women

Among women aged 15-64 years who reported having sex in the 12 months before the survey, percentage who reported having a non-marital, non-cohabitating partner during that period; among those who reported having sex with a non-marital, non-cohabitating partner in the prior 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, CAMPHIA 2017-2018.

	Among women who reported having sex in the prior 12 months		Among women who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
Characteristic	Percentage who reported having sex with a non-marital, non-cohabitating partner in the prior 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				
Total urban	37.7	4,452	37.2	1,511
Douala and Yaounde	45.3	1,935	40.7	806
Other urban	31.3	2,517	33.2	705
Rural	21.6	6,300	30.2	1,148
Region				
Adamawa	14.4	841	30.8	99
Centre	36.4	980	34.7	335
Douala	44.5	975	41.2	402
East	25.1	840	27.6	197
Far North	6.6	1,495	30.6	95
Littoral	32.1	365	40.8	132
North	8.2	1,418	17.2	98
North West	33.9	746	34.5	229
South	40.4	653	21.5	231
South West	41.6	556	21.4	205
West	26.0	923	40.3	232
Yaounde	46.3	960	40.0	404
Marital status				
Never married	82.7	1,919	43.9	1,425
Married or living together	6.4	7,717	22.6	403
Divorced or separated	84.4	837	24.2	644
Widowed	74.1	251	16.8	172
Type of union				
In polygamous union	4.9	1,956	19.5	67
Not in polygamous union	5.9	5,052	23.2	249
Not currently in union	82.5	3,007	36.7	2,241
Education				
None	6.2	2,722	14.4	144
Primary	20.3	3,280	17.8	584
Secondary first cycle	38.4	2,853	38.2	1,029
Secondary second cycle or higher	50.6	1,884	42.6	898

Table 15.C Condom use at last sex with a non-marital, non-cohabitating partner: Women (continued)

Among women aged 15-64 years who reported having sex in the 12 months before the survey, percentage who reported having a non-marital, non-cohabitating partner during that period; among those who reported having sex with a non-marital, non-cohabitating partner in the prior 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, CAMPHIA 2017-2018.

Characteristic	Among women who reported having sex in the prior 12 months		Among women who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Wealth quintile				
Lowest	10.6	3,227	19.1	319
Second	28.0	2,485	25.3	614
Middle	34.0	1,886	36.9	586
Fourth	38.1	1,593	39.4	543
Highest	39.9	1,554	40.4	597
Religion				
Catholic	38.6	3,905	38.2	1,315
Protestant	31.7	2,603	32.9	733
Muslim	9.9	2,473	26.5	207
Animist	12.1	201	*	17
Other Christian	32.5	631	30.3	173
Other	33.0	519	23.0	152
None	17.6	413	38.5	57
Ethnicity				
Arabe-Choa/Peul/Haoussa	6.1	1,116	26.1	58
Biu-Mandara	9.6	510	(33.8)	48
Adamaoua-Oubangui	15.9	240	(39.1)	35
Bantoide Sud-Ouest	44.9	161	29.3	66
Grassfields Nord-Ouest	35.4	921	30.3	302
Bamilike/Bamoun	33.1	2,181	40.7	691
Cotier/Ngoe/Oroko	50.1	207	29.7	92
Beti/Bassa/Mbam	45.5	1,861	35.3	749
Kako/Maka	39.1	373	24.7	121
Foreigner/Etranger	21.2	59	*	7
No Tribe/Aucune	*	8	*	0
Other	19.4	3,099	30.6	487

Table 15.C Condom use at last sex with a non-marital, non-cohabitating partner: Women (continued)

Among women aged 15-64 years who reported having sex in the 12 months before the survey, percentage who reported having a non-marital, non-cohabitating partner during that period; among those who reported having sex with a non-marital, non-cohabitating partner in the prior 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, CAMPHIA 2017-2018.

	Among women who reported having sex in the prior 12 months		Among women who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
Characteristic	Percentage who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Age				
15-19	60.6	1,135	49.6	581
20-24	46.1	2,042	44.0	732
25-29	29.7	2,127	27.9	485
30-34	20.6	1,656	22.9	278
35-39	19.4	1,231	25.3	193
40-44	18.8	949	19.6	158
45-49	18.2	667	22.5	110
50-54	15.2	459	11.1	66
55-59	11.1	311	(13.3)	36
60-64	12.6	175	*	20
Total 15-24	51.4	3,177	46.5	1,313
Total 15-49	31.3	9,807	35.7	2,537
Total 15-64	29.8	10,752	34.7	2,659

[1]Relates to Global AIDS Monitoring Indicator 2020 3.18: Condom use at last high-risk sex.

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.

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

Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

Table 15.D Condom use at last sex with a non-marital, non-cohabitating partner: Total

Among adults aged 15-64 years who reported having sex in the 12 months before the survey, percentage who reported having a non-marital, non-cohabitating partner during that period; among those who reported having sex with a non-marital, non-cohabitating partner in the prior 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, CAMPHIA 2017-2018.

	Among adults who reported having sex in the prior 12 months		Among adults who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
Characteristic	Percentage who reported having sex with a non-marital, non-cohabitating partner in the prior 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				
Total urban	45.7	8,349	47.7	3,208
Douala and Yaounde	52.4	3,691	49.9	1,677
Other urban	39.8	4,658	45.1	1,531
Rural	29.4	11,282	39.0	2,600
Region				
Adamawa	25.8	1,509	54.4	277
Centre	48.0	1,943	44.6	774
Douala	49.7	1,857	48.9	801
East	35.4	1,535	39.3	441
Far North	12.1	2,568	38.0	254
Littoral	40.4	692	49.4	272
North	12.5	2,449	30.5	250
North West	40.3	1,292	43.6	441
South	49.0	1,270	33.2	517
South West	47.0	1,079	27.7	423
West	33.3	1,603	51.8	482
Yaounde	55.8	1,834	51.0	876
Marital status				
Never married	88.3	4,183	53.2	3,199
Married or living together	12.2	13,596	36.7	1,262
Divorced or separated	85.9	1,511	29.2	1,114
Widowed	74.8	295	16.5	204
Type of union				
In polygamous union	14.1	2,996	29.5	266
Not in polygamous union	11.6	9,865	40.3	899
Not currently in union	87.2	5,989	46.4	4,517
Education				
None	7.8	3,847	19.7	234
Primary	25.3	5,775	26.7	1,218
Secondary first cycle	45.1	5,532	45.5	2,157
Secondary second cycle or higher	57.3	4,443	53.3	2,190

Table 15.D Condom use at last sex with a non-marital, non-cohabitating partner: Total (continued)

Among adults aged 15-64 years who reported having sex in the 12 months before the survey, percentage who reported having a non-marital, non-cohabitating partner during that period; among those who reported having sex with a non-marital, non-cohabitating partner in the prior 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, CAMPHIA 2017-2018.

Characteristic	Among adults who reported having sex in the prior 12 months		Among adults who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Wealth quintile				
Lowest	14.8	5,646	25.4	740
Second	34.0	4,418	35.4	1,266
Middle	43.8	3,551	46.6	1,310
Fourth	47.6	3,085	48.5	1,239
Highest	48.6	2,919	50.8	1,252
Religion				
Catholic	46.0	7,140	46.8	2,697
Protestant	39.0	4,725	41.6	1,506
Muslim	19.7	4,413	44.2	650
Animist	19.3	353	32.5	51
Other Christian	39.8	1,160	41.4	366
Other	39.9	830	35.4	272
None	36.6	983	47.9	253
Ethnicity				
Arabe-Choa/Peul/Haoussa	14.4	1,954	39.4	210
Biu-Mandara	16.6	833	41.0	117
Adamaoua-Oubangui	30.9	509	45.3	112
Bantoide Sud-Ouest	49.1	349	32.2	150
Grassfields Nord-Ouest	42.8	1,700	39.6	614
Bamilike/Bamoun	40.7	3,907	52.0	1,431
Cotier/Ngoe/Oroko	53.1	418	37.9	187
Beti/Bassa/Mbam	55.8	3,644	43.2	1,655
Kako/Maka	41.3	617	31.3	205
Foreigner/Etranger	32.2	110	(47.9)	27
No Tribe/Aucune	*	9	*	1
Other	26.3	5,558	42.7	1,094

Table 15.D Condom use at last sex with a non-marital, non-cohabitating partner: Total (continued)

Among adults aged 15-64 years who reported having sex in the 12 months before the survey, percentage who reported having a non-marital, non-cohabitating partner during that period; among those who reported having sex with a non-marital, non-cohabitating partner in the prior 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, CAMPHIA 2017-2018.

Characteristic	Among adults who reported having sex in the prior 12 months		Among adults who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Age				
15-19	73.4	1,698	56.1	1,043
20-24	62.3	3,305	54.5	1,554
25-29	44.2	3,551	43.5	1,135
30-34	30.1	2,971	36.3	680
35-39	25.5	2,348	33.4	472
40-44	22.2	1,932	31.7	350
45-49	18.7	1,370	28.8	230
50-54	20.1	1,016	18.9	179
55-59	14.1	815	20.9	98
60-64	12.1	625	16.4	67
Total 15-24	66.1	5,003	55.2	2,597
Total 15-49	40.7	17,175	45.8	5,464
Total 15-64	37.9	19,631	44.4	5,808

[1]Relates to Global AIDS Monitoring Indicator 2020 3.18: Condom use at last high-risk sex.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 15.E Male circumcision

Percent distribution of men aged 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Circumcised[1]		Uncircumcised	Unknown	Total	Number
	Medical circumcision	Non-medical circumcision				
Result of PHIA survey HIV test						
HIV positive	54.2	33.3	3.0	9.5	100.0	290
HIV negative	55.5	27.4	6.3	10.7	100.0	11,597
Not tested	59.2	24.8	4.4	11.5	100.0	559

Table 15.E Male circumcision (continued)

Percent distribution of men aged 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Circumcised[1]		Uncircumcised	Unknown	Total	Number
	Medical circumcision	Non-medical circumcision				
Residence						
Total urban	63.7	19.9	2.4	14.0	100.0	5,451
Douala and Yaounde	68.7	14.5	2.6	14.3	100.0	2,331
Other urban	59.4	24.6	2.1	13.8	100.0	3,120
Rural	46.4	36.1	10.5	7.0	100.0	6,995
Region						
Adamawa	35.1	59.4	3.3	2.2	100.0	965
Centre	64.2	25.8	1.0	9.0	100.0	1,286
Douala	70.0	13.7	2.4	14.0	100.0	1,146
East	40.0	52.7	1.2	6.1	100.0	944
Far North	26.7	44.3	28.2	0.8	100.0	1,697
Littoral	67.3	17.0	1.0	14.8	100.0	431
North	30.1	50.9	18.3	0.7	100.0	1,526
North West	64.0	16.9	1.0	18.1	100.0	797
South	58.9	31.2	1.0	8.9	100.0	811
South West	65.3	15.1	1.0	18.6	100.0	692
West	65.2	17.4	0.3	17.2	100.0	966
Yaounde	67.1	15.3	2.9	14.6	100.0	1,185
Marital status						
Never married	62.8	18.0	7.1	12.0	100.0	5,103
Ever had sex	68.4	16.8	2.9	11.9	100.0	3,037
Never had sex	54.1	19.8	13.7	12.4	100.0	2,022
Missing whether had sex	(69.7)	(24.8)	(1.1)	(4.3)	100.0	44
Married or living together	48.3	36.5	5.8	9.5	100.0	6,232
Divorced or separated	58.1	28.2	3.2	10.6	100.0	963
Widowed	43.7	44.5	2.6	9.2	100.0	122
Type of union						
In polygamous union	37.2	49.1	7.4	6.3	100.0	1,082
Not in polygamous union	50.3	34.1	5.5	10.1	100.0	5,107
Not currently in union	61.9	19.8	6.5	11.8	100.0	6,188
Education						
None	20.4	62.7	13.6	3.3	100.0	1,482
Primary	41.4	39.9	8.2	10.6	100.0	3,396
Secondary first cycle	59.3	22.4	6.8	11.5	100.0	4,146
Secondary second cycle or higher	71.5	14.4	2.2	11.9	100.0	3,393

Table 15.E Male circumcision (continued)

Percent distribution of men aged 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Circumcised[1]		Uncircumcised	Unknown	Total	Number
	Medical circumcision	Non-medical circumcision				
Wealth quintile						
Lowest	25.0	48.5	23.8	2.8	100.0	3,497
Second	51.6	36.4	2.9	9.1	100.0	2,696
Middle	60.8	23.1	2.3	13.8	100.0	2,407
Fourth	66.1	17.2	1.9	14.7	100.0	2,028
Highest	72.6	13.7	1.0	12.7	100.0	1,811
Religion						
Catholic	63.0	19.5	5.0	12.5	100.0	4,473
Protestant	58.7	23.4	7.2	10.8	100.0	2,906
Muslim	39.1	54.5	2.1	4.3	100.0	2,846
Animist	37.1	27.4	28.3	7.3	100.0	200
Other Christian	60.0	19.6	7.6	12.8	100.0	744
Other	58.5	24.8	5.1	11.7	100.0	442
None	48.1	19.7	15.3	16.9	100.0	804
Ethnicity						
Arabe-Choa/Peul/Haoussa	34.1	59.0	3.3	3.6	100.0	1,284
Biu-Mandara	26.4	39.3	33.0	1.3	100.0	548
Adamaoua-Oubangui	33.1	52.3	6.5	8.1	100.0	363
Bantoide Sud-Ouest	77.4	15.4	1.1	6.1	100.0	237
Grassfields Nord-Ouest	67.9	13.9	0.9	17.3	100.0	1,106
Bamilike/Bamoun	67.7	13.1	0.2	18.9	100.0	2,328
Cotier/Ngoe/Oroko	67.5	16.3	0.0	16.2	100.0	287
Beti/Bassa/Mbam	68.6	22.5	0.5	8.4	100.0	2,319
Kako/Maka	41.2	51.7	1.0	6.1	100.0	339
Foreigner/Etranger	58.2	23.0	2.6	16.2	100.0	75
No Tribe/Aucune	*	*	*	*	*	1
Other	38.1	38.8	18.4	4.7	100.0	3,545

Table 15.E Male circumcision (continued)

Percent distribution of men aged 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Circumcised[1]		Uncircumcised	Unknown	Total	Number
	Medical circumcision	Non-medical circumcision				
Age						
15-19	57.9	19.3	9.8	13.0	100.0	2,210
20-24	61.7	19.9	6.6	11.7	100.0	1,988
25-29	63.0	21.2	5.0	10.9	100.0	1,759
30-34	59.3	25.8	4.4	10.6	100.0	1,509
35-39	56.0	29.8	4.9	9.2	100.0	1,243
40-44	52.7	33.0	5.0	9.3	100.0	1,107
45-49	45.8	39.8	4.3	10.1	100.0	805
50-54	41.4	43.9	4.1	10.6	100.0	644
55-59	38.5	48.5	6.6	6.4	100.0	610
60-64	30.6	55.3	6.3	7.8	100.0	571
Total 15-24	59.7	19.6	8.4	12.4	100.0	4,198
Total 15-49	58.1	24.5	6.3	11.1	100.0	10,621
Total 15-64	55.6	27.4	6.2	10.8	100.0	12,446

[1]Relates to Global AIDS Monitoring Indicator 2020 3.16: Prevalence of male circumcision and PEPFAR VMMC_TOTALCIRC NAT / SUBNAT: Total number of men ever circumcised.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

16. INTIMATE PARTNER VIOLENCE

16.1 BACKGROUND

In the *World Report on Violence and Health*, WHO defined violence as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation."[1,2]

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 (ie, spouse, boyfriend/girlfriend, dating partner, or ongoing sexual partner).[3] 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 (eg, condom use).[4] Data from CAMPHIA 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. Sexual violence was defined in CAMPHIA as experiencing physical force or pressure to have sex. Physical violence was defined as experiencing punching, kicking, whipping, beating, slapping, pushing, shoving, choking, smothering, drowning, or burning. It also included having an object thrown at you or being hurt or threatened with a knife, gun, or other weapon. Prevalence numbers are broken down by age, education, region, and sociodemographic characteristics. Violence markers are measured against a woman's HIV status, as well as demographic characteristics.

Violence questionnaires were administered to one randomly-selected woman in each household who had ever been in an intimate relationship. Questions were adapted from the Demographic and Health Survey as well as Violence Against Children and Youth Survey, which measures physical, emotional, and sexual violence in childhood, adolescence, and young adulthood (up to the age of 24 years). Women and adolescents reporting violence were offered referral to social services.

16.2 RESULTS

The following table presents CAMPHIA survey data on intimate partner violence. Note, IPV was likely under-reported in the survey; the prevalence estimates observed were low compared to previous data on IPV in Cameroon.

Table 16.A Prevalence of recent intimate partner violence

Among ever-married or partnered women aged 15-64 years, percentage who experienced physical or sexual violence from an intimate partner in the 12 months before the survey, by woman's HIV status and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Physical violence[1]	Sexual violence[2]	Physical and sexual violence	Physical or sexual violence[3]	Number of ever-married or partnered women
Result of PHIA survey HIV test					
HIV positive	1.5	0.3	0.0	1.9	359
HIV negative	1.8	0.8	0.1	2.5	5,685
Not tested	1.9	0.2	0.0	1.9	331

Table 16.A Prevalence of recent intimate partner violence (continued)

Among ever-married or partnered women aged 15-64 years, percentage who experienced physical or sexual violence from an intimate partner in the 12 months before the survey, by woman's HIV status and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Physical violence[1]	Sexual violence[2]	Physical and sexual violence	Physical or sexual violence[3]	Number of ever-married or partnered women
Residence					
Total urban	1.7	1.1	0.0	2.7	2,494
Douala and Yaounde	1.6	1.4	0.0	3.0	984
Other urban	1.8	0.8	0.1	2.5	1,510
Rural	1.9	0.5	0.1	2.2	3,881
Region					
Adamawa	0.8	0.4	0.0	1.2	572
Centre	3.6	0.4	0.0	3.8	625
Douala	1.2	1.8	0.0	3.1	492
East	1.4	0.7	0.4	1.7	538
Far North	1.0	0.2	0.0	1.2	1,043
Littoral	1.5	0.0	0.0	1.5	213
North	0.4	0.1	0.0	0.5	814
North West	2.3	3.1	0.0	5.5	417
South	3.7	1.3	0.2	4.8	426
South West	4.5	0.2	0.0	4.7	291
West	0.6	0.3	0.1	0.8	452
Yaounde	2.0	1.0	0.0	2.9	492
Marital status					
Never married	*	*	*	*	0
Married or living together	2.0	0.6	0.1	2.5	5,047
Divorced or separated	1.9	1.9	0.0	3.8	741
Widowed	0.3	0.0	0.0	0.3	572
Type of union					
In polygamous union	1.3	0.3	0.1	1.4	943
Not in polygamous union	1.9	0.6	0.0	2.5	3,629
Not currently in union	1.2	1.1	0.0	2.3	1,313
Education					
None	0.5	0.2	0.0	0.7	1,805
Primary	1.6	0.5	0.0	2.1	2,225
Secondary first cycle	2.8	0.7	0.0	3.4	1,550
Secondary second cycle or higher	2.3	2.1	0.2	4.3	781

Table 16.A Prevalence of recent intimate partner violence (continued)

Among ever-married or partnered women aged 15-64 years, percentage who experienced physical or sexual violence from an intimate partner in the 12 months before the survey, by woman's HIV status and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Physical violence[1]	Sexual violence[2]	Physical and sexual violence	Physical or sexual violence[3]	Number of ever-married or partnered women
Wealth quintile					
Lowest	1.1	0.3	0.0	1.4	2,068
Second	1.9	0.4	0.0	2.2	1,530
Middle	2.2	0.7	0.0	2.9	1,078
Fourth	1.9	1.2	0.1	3.0	924
Highest	1.9	1.5	0.2	3.2	772
Religion					
Catholic	1.8	0.9	0.1	2.5	2,125
Protestant	1.9	0.4	0.0	2.3	1,596
Muslim	0.5	0.8	0.0	1.3	1,568
Animist	0.8	0.0	0.0	0.8	132
Other Christian	3.9	1.2	0.0	5.1	413
Other	5.3	1.5	0.0	6.7	311
None	0.2	0.0	0.0	0.2	226
Ethnicity					
Arabe-Choa/Peul/Haoussa	0.9	0.5	0.0	1.3	752
Biu-Mandara	0.0	0.3	0.0	0.3	336
Adamaoua-Oubangui	0.3	0.0	0.0	0.3	159
Bantoide Sud-Ouest	0.0	0.8	0.0	0.9	81
Grassfields Nord-Ouest	3.2	2.8	0.0	6.1	533
Bamilike/Bamoun	1.0	0.6	0.0	1.6	1,124
Cotier/Ngoe/Oroko	5.8	1.1	1.1	5.8	111
Beti/Bassa/Mbam	2.6	0.8	0.1	3.2	1,100
Kako/Maka	0.7	0.5	0.0	1.1	228
Foreigner/Etranger	(1.8)	(0.0)	(0.0)	(1.8)	41
No Tribe/Aucune	*	*	*	*	5
Other	2.1	0.2	0.0	2.3	1,896

Table 16.A Prevalence of recent intimate partner violence (continued)

Among ever-married or partnered women aged 15-64 years, percentage who experienced physical or sexual violence from an intimate partner in the 12 months before the survey, by woman's HIV status and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Physical violence[1]	Sexual violence[2]	Physical and sexual violence	Physical or sexual violence[3]	Number of ever-married or partnered women
Age					
15-19	2.8	0.9	0.1	3.6	353
20-24	3.4	1.6	0.1	4.9	960
25-29	2.2	0.5	0.0	2.7	1,258
30-34	2.1	1.0	0.0	3.1	1,049
35-39	2.8	0.5	0.2	3.1	770
40-44	0.2	0.2	0.0	0.5	579
45-49	0.4	1.6	0.0	2.0	456
50-54	0.6	0.2	0.0	0.9	372
55-59	0.5	0.0	0.0	0.5	310
60-64	0.0	0.0	0.0	0.0	268
Total 15-24	3.2	1.4	0.1	4.5	1,313
Total 15-49	2.0	0.9	0.1	2.8	5,425
Total 15-64	1.8	0.7	0.0	2.5	6,375

[1]Physical violence was defined as being punched, kicked, whipped, beaten, slapped, pushed, shoved, choked, smothered, drowned or burned. It also included having an object thrown at oneself or being hurt or threatened with a knife, gun or other weapon.
[2]Sexual violence was defined as being physically forced to have sex.
[3]Relates to Global AIDS Monitoring indicator 2020 4.3: Prevalence of recent intimate partner violence.
Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

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17. TUBERCULOSIS AND HEPATITIS B

17.1 BACKGROUND

People living with HIV are at risk for acquiring other diseases, including TB and hepatitis B. TB is the leading cause of death for people living with HIV in Africa. 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 6,000 TB-related deaths among HIV-positive persons in Cameroon in 2017.[1] This chapter describes the TB clinical care cascade for HIV-positive individuals: received care at a TB clinic, TB diagnoses among those receiving care, and treatment among those diagnosed with TB.

HIV and HBV have similar transmission routes and concurrent infection with both viruses often results in more rapid progression of hepatitis B to cirrhosis and higher liver-disease mortality. CAMPHIA 2017-2018 provides population-based hepatitis B 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 hepatitis B vaccination programs. This chapter describes the prevalence of hepatitis B in individuals aged 15 to 64 years, by province, sex, age, and socioeconomic and demographic characteristics.

17.2 RESULTS

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

Table 17.A Tuberculosis clinic attendance and services among HIV-positive adults

Among self-reported HIV-positive adults aged 15-64 years, percentage who ever visited a 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, CAMPHIA 2017-2018

	Among HIV-positive persons		Among HIV-positive persons who ever visited a TB clinic		Among HIV-positive persons who were diagnosed with TB	
Characteristic	Percentage who ever visited a TB clinic	Number	Percentage who were diagnosed with TB	Number	Percentage who were treated for TB	Number
Sex						
Male	34.7	126	(46.5)	45	*	24
Female	24.4	332	45.4	82	(92.9)	38
Total 15-64	27.3	458	45.8	127	94.6	62

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 17.B TB clinic attendance and services in the population

Among persons aged 0-64 years, percentage who ever visited a TB clinic; among those who had ever visited a TB clinic, percentage who were diagnosed for TB and percentage who were treated for TB, by result of PHIA survey HIV test, and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who ever visited a TB clinic	Number	Among persons who ever visited a TB clinic		Among persons diagnosed with TB	
			Percentage who were diagnosed with TB	Number	Percentage treated for TB	Number
Result of PHIA survey HIV test						
HIV positive	16.8	159	42.5	72	94.1	67
HIV negative	2.5	976	29.4	312	92.2	286
Not tested	4.8	115	*	18	*	17
Sex						
Male	3.2	631	34.1	243	94.5	229
Female	2.8	619	24.5	159	89.9	141
Residence						
Total urban	3.8	689	28.6	202	94.3	189
Douala and Yaounde	4.3	305	33.1	100	94.1	93
Other urban	3.5	384	24.4	102	94.7	96
Rural	2.2	561	31.0	200	90.1	181
Region						
Adamawa	3.7	99	(20.2)	25	*	24
Centre	2.7	128	42.7	50	(96.4)	49
Douala	4.6	161	35.5	60	93.4	55
East	3.1	100	(43.2)	47	(95.3)	44
Far North	1.9	119	(18.4)	26	*	22
Littoral	(2.7)	40	*	8	*	6
North	1.6	95	(28.5)	28	*	24
North West	3.5	102	*	19	*	16
South	3.6	96	(48.0)	47	(94.9)	44
South West	3.6	75	*	22	*	20
West	2.5	91	(27.5)	30	(94.1)	28
Yaounde	3.9	144	(29.9)	40	(95.2)	38
Marital status						
Never married	3.0	254	27.5	74	89.2	65
Ever had sex	3.7	189	30.1	61	87.1	52
Never had sex	1.8	63	*	13	*	13
Missing whether had sex	*	2	*	0	*	0
Married or living together	5.7	716	31.4	240	95.3	228
Divorced or separated	6.6	154	(28.5)	47	(91.7)	44

Table 17.B TB clinic attendance and services in the population (continued)

Among persons aged 0-64 years, percentage who ever visited a TB clinic; among those who had ever visited a TB clinic, percentage who were diagnosed for TB and percentage who were treated for TB, by result of PHIA survey HIV test, and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who ever visited a TB clinic	Number	Among persons who ever visited a TB clinic		Among persons diagnosed with TB	
			Percentage who were diagnosed with TB	Number	Percentage treated for TB	Number
Type of union						
In polygamous union	4.4	122	(36.8)	44	(94.4)	41
Not in polygamous union	6.0	556	30.7	185	95.2	176
Not currently in union	4.0	501	29.6	158	88.5	138
Education						
None	3.6	146	(26.4)	42	(93.0)	39
Primary	4.7	350	34.6	124	91.9	113
Secondary first cycle	4.8	389	33.9	143	93.3	132
Secondary second cycle or higher	5.7	331	25.4	88	91.9	81
Wealth quintile						
Lowest	1.2	194	33.9	72	82.2	61
Second	3.1	294	31.0	107	96.0	103
Middle	3.2	266	29.4	87	91.3	80
Fourth	3.4	236	28.8	66	94.6	61
Highest	4.6	260	27.1	70	94.0	65
Religion						
Catholic	4.7	451	30.5	144	92.9	134
Protestant	4.6	284	29.0	95	89.4	85
Muslim	4.7	257	28.5	77	91.4	71
Animist	*	19	*	5	*	5
Other Christian	6.3	94	(31.2)	29	(97.0)	28
Other	5.5	54	*	22	*	19
None	4.8	56	*	24	*	22
Ethnicity						
Arabe-Choa/Peul/Haoussa	5.4	126	(30.0)	39	(92.8)	36
Biu-Mandara	(2.5)	29	*	9	*	7
Adamaoua-Oubangui	*	19	*	6	*	5
Bantoide Sud-Ouest	*	23	*	4	*	4
Grassfields Nord-Ouest	5.4	130	(21.9)	29	(89.8)	26
Bamilike/Bamoun	4.7	248	33.1	83	94.2	77
Cotier/Ngoe/Oroko	(7.5)	41	*	14	*	11
Beti/Bassa/Mbam	5.7	273	38.1	110	94.0	105
Kako/Maka	(4.3)	31	*	15	*	15
Foreigner/Etranger	*	5	*	1	no match	1
No Tribe/Aucune	*	0	*	0	*	0
Other	4.0	293	26.2	88	92.0	79

Table 17.B TB clinic attendance and services in the population (continued)

Among persons aged 0-64 years, percentage who ever visited a TB clinic; among those who had ever visited a TB clinic, percentage who were diagnosed for TB and percentage who were treated for TB, by result of PHIA survey HIV test, and selected demographic characteristics, CAMPHIA 2017-2018

Characteristic	Percentage who ever visited a TB clinic	Number	Among persons who ever visited a TB clinic		Among persons diagnosed with TB	
			Percentage who were diagnosed with TB	Number	Percentage treated for TB	Number
Pregnancy status						
Currently pregnant[1]	(4.1)	47	*	11	*	9
Not currently pregnant	4.6	551	25.3	145	90.1	129
Age						
0-4	*	11	*	2	*	2
5-9	*	11	*	2	*	2
10-14	*	9	*	0	*	0
15-19	1.5	66	*	17	*	15
20-24	3.1	129	(22.7)	27	*	22
25-29	3.7	135	26.3	(36)	(91.1)	31
30-34	5.3	167	29.3	52	(92.6)	48
35-39	6.8	165	35.7	60	93.8	57
40-44	7.6	156	36.8	66	95.3	63
45-49	7.8	128	(29.6)	43	(94.2)	40
50-54	8.8	103	(34.8)	36	(95.8)	34
55-59	8.0	92	(30.6)	31	(89.0)	27
60-64	7.5	78	(34.9)	30	(95.9)	29
Total 15-24	2.2	195	(22.0)	44	(84.0)	37
Total 15-49	4.4	946	29.8	301	92.1	276
Total 15-64	4.8	1,219	30.6	398	92.5	366

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 17.C Hepatitis B prevalence

Prevalence of hepatitis B among adults ages 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, CAMPHIA 2017-2018

	Male		Female		Total	
Characteristic	Percentage	Number	Percentage	Number	Percentage	Number
Result of PHIA survey HIV test						
HIV positive	9.5	289	7.9	683	8.4	972
HIV negative	11.3	448	5.4	542	8.3	990
Not tested	*	0	*	0	*	0
Residence						
Total urban	10.6	312	3.4	532	7.0	844
Douala and Yaounde	10.5	111	3.7	212	6.9	323
Other urban	10.7	201	3.1	320	7.0	521
Rural	11.9	425	7.7	693	9.8	1,118
Region						
Adamawa	9.2	63	7.4	118	8.3	181
Centre	6.5	92	7.3	152	6.8	244
Douala	14.0	51	2.5	102	8.1	153
East	17.3	72	8.7	131	12.6	203
Far North	10.7	93	7.9	114	9.4	207
Littoral	*	19	(3.4)	43	8.2	62
North	18.9	83	4.2	98	12.8	181
North West	4.3	50	4.8	111	4.6	161
South	16.3	57	3.9	112	10.9	169
South West	(11.7)	38	0.5	53	6.0	91
West	6.9	59	10.1	81	8.7	140
Yaounde	5.9	60	5.1	110	5.5	170
Marital status						
Never married	12.8	245	3.2	261	9.1	506
Ever had sex	11.7	154	3.5	193	8.3	347
Never had sex	14.4	89	2.3	67	10.4	156
Missing whether had sex	*	2	*	1	*	3
Married or living together	10.6	407	6.5	619	8.3	1,026
Divorced or separated	6.2	66	7.7	196	7.1	262
Widowed	*	19	5.6	145	4.5	164
Type of union						
In polygamous union	10.0	64	5.6	126	7.2	190
Not in polygamous union	11.0	337	6.9	411	8.9	748
Not currently in union	11.7	330	4.4	602	8.4	932

Table 17.C Hepatitis B prevalence (continued)

Prevalence of hepatitis B among adults ages 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, CAMPHIA 2017-2018

	Male		Female		Total	
Characteristic	Percentage	Number	Percentage	Number	Percentage	Number
Education						
None	7.2	73	7.0	240	7.1	313
Primary	15.1	242	6.6	422	10.8	664
Secondary first cycle	11.7	237	4.1	371	8.0	608
Secondary second cycle or higher	8.2	185	5.0	191	6.7	376
Wealth quintile						
Lowest	13.2	205	8.4	294	10.7	499
Second	18.9	172	6.6	338	12.7	510
Middle	6.3	141	4.5	239	5.3	380
Fourth	4.5	141	5.4	183	4.8	324
Highest	14.4	77	2.7	171	7.6	248
Religion						
Catholic	14.1	264	6.8	450	10.1	714
Protestant	8.2	180	3.3	325	5.7	505
Muslim	6.4	171	4.4	238	5.5	409
Animist	*	13	*	18	(20.9)	31
Other Christian	(19.2)	41	4.4	82	13.2	123
Other	*	23	4.3	68	4.2	91
None	(14.1)	45	(9.4)	43	11.7	88
Ethnicity						
Arabe-Choa/Peul/Haoussa	12.3	71	3.6	104	8.0	175
Biu-Mandara	*	24	(3.5)	48	10.5	72
Adamaoua-Oubangui	(5.5)	27	(1.8)	36	3.8	63
Bantoide Sud-Ouest	*	12	*	16	(21.5)	28
Grassfields Nord-Ouest	2.8	71	2.2	138	2.5	209
Bamilike/Bamoun	10.9	134	5.1	200	7.9	334
Cotier/Ngoe/Oroko	*	12	(0.0)	29	(8.7)	41
Beti/Bassa/Mbam	10.4	146	8.6	286	9.4	432
Kako/Maka	(11.9)	25	7.1	74	8.9	99
Foreigner/Etranger	*	3	*	8	*	11
No Tribe/Aucune	*	0	*	1	*	1
Other	10.8	211	8.1	285	9.6	496

Table 17.C Hepatitis B prevalence (continued)

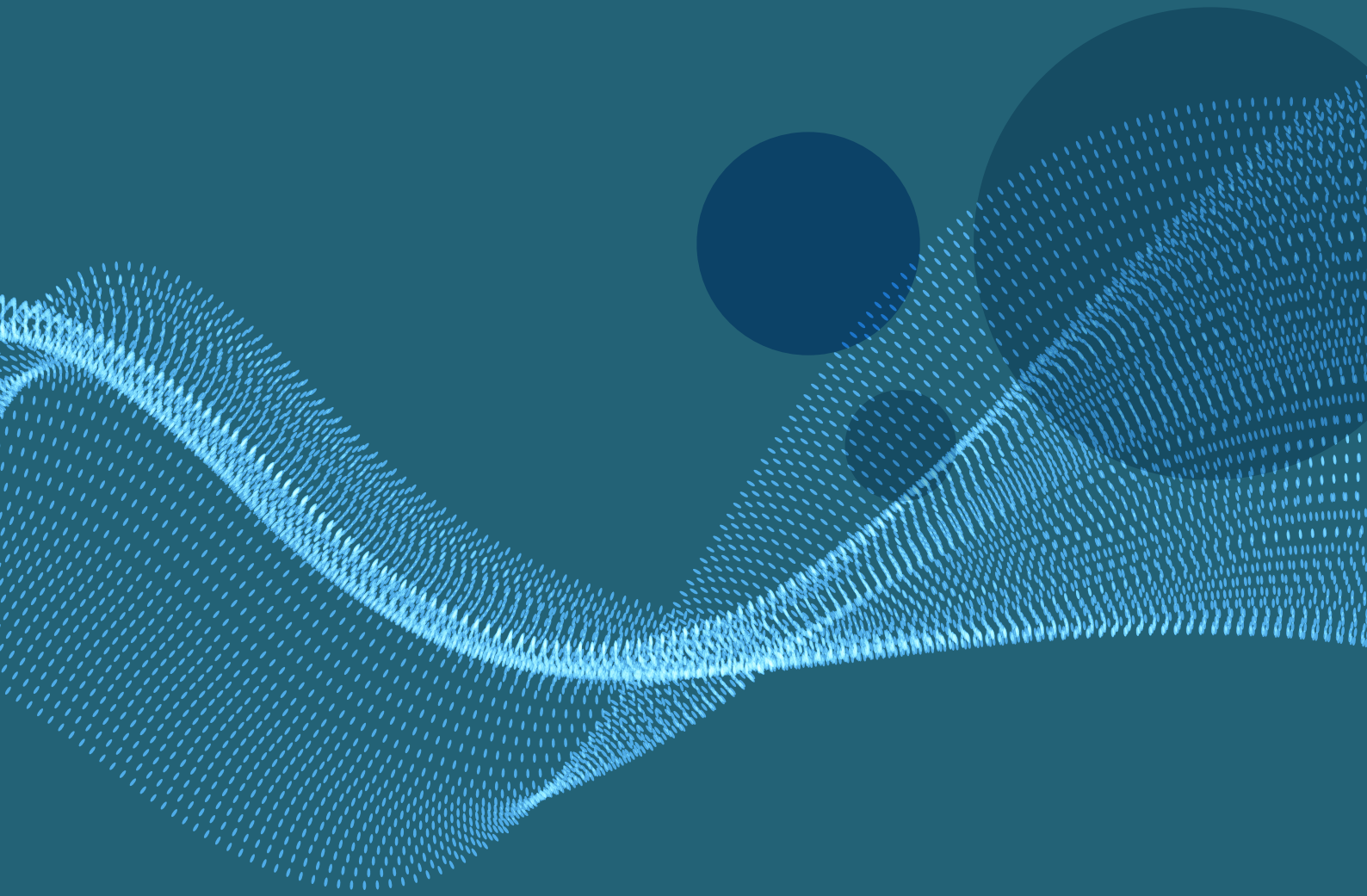
Prevalence of hepatitis B among adults ages 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, CAMPHIA 2017-2018

	Male		Female		Total	
Characteristic	Percentage	Number	Percentage	Number	Percentage	Number
Pregnancy status						
Currently pregnant[1]	NA	NA	10.9	82	NA	NA
Not currently pregnant	NA	NA	5.2	1,122	NA	NA
Age						
15-19	16.1	90	3.2	147	9.8	237
20-24	7.6	101	6.2	164	6.9	265
25-29	8.0	82	6.8	186	7.4	268
30-34	20.4	96	8.6	178	14.1	274
35-39	16.3	81	8.4	141	12.0	222
40-44	8.9	94	7.4	144	8.1	238
45-49	6.8	65	0.4	98	3.5	163
50-54	4.0	51	0.7	74	2.3	125
55-59	(3.0)	38	(6.3)	46	4.6	84
60-64	(0.8)	39	(0.3)	47	0.5	86
Total 15-24	12.2	191	4.6	311	8.4	502
Total 15-49	12.4	609	6.0	1,058	9.2	1,667
Total 15-64	11.2	737	5.5	1,225	8.3	1,962

Weighted estimates: For a detailed explanation of the sampling and weighting processes, see the *Sampling and Weighting Technical Report*, available on the PHIA website at https://phia-data.icap.columbia.edu/files.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

17.3 REFERENCES

1. Joint United Nations Programme on HIV/AIDS. *UNAIDS data tables,* 2017. http://aidsinfo.unaids.org/. Accessed March 29, 2019.



APPENDICES

APPENDIX A SAMPLE DESIGN AND WEIGHTING

Appendix A provides a high-level overview of sampling and weighting procedures for CAMPHIA 2017-2018. In-depth details are provided in the *CAMPHIA Technical Report*, which may be found online at https://phia-data.icap.columbia.edu/files.

A.1 SAMPLE DESIGN

Overview

The sample design for CAMPHIA 2017-2018 is a stratified multistage probability sample design, with strata defined by the 12 regions of the country, first-stage sampling units defined by EAs within strata, second-stage sampling units defined by households within EAs, and finally eligible persons within households. Within each region, the first-stage sampling units (also referred to as primary sampling units [PSUs]) were selected with probabilities proportionate to the number of households in the PSU based on the 2005 Cameroon Population and Housing Census The allocation of the sample PSUs to the 12 regions was made in a manner designed to achieve specified precision levels for (1) a national estimate of the HIV incidence rate and (2) regional estimates of VLS.

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

Within the sampled households, all eligible adults aged 15-64 years were included in the study sample for data collection. All eligible children aged 0-14 years in one-third of the sampled households were included in the study for data collection.

Population of Inference

The population of inference for CAMPHIA 2017-2018 is comprised of the de facto household population. The de facto population is comprised of individuals who were present in households (ie, slept in the household) on the night prior to the household interview. In contrast, the *de jure* population is comprised of individuals who are usual residents of the household, irrespective of whether or not they slept in the household on the night prior to the household interview.

Precision Specifications and Assumptions

The following specifications were used to develop the sample design for CAMPHIA 2017-2018.

- The RSE of the national estimate of annual HIV incidence among persons aged 15-49 years should be 40% or less.
- For the high-prevalence regions (ie, regions with HIV prevalence of 5% or higher), 95% confidence interval bounds should be ±0.10 or less for estimates of VLS among all HIV-positive adults aged 15-49 years.
- A total overall sample size (including adults aged 15-49 years, adults aged 50-64 years and children aged 0-14) should yield approximately 35,000 analyzable blood draws.

The following assumptions were used to develop the sample design for CAMPHIA 2017-2018:

- An overall HIV prevalence rate of 0.043 (4.3%) for adults aged 15-49 years that varies by region (Table A.1.A). Source: 2014 UNAIDS Estimate
- An annual national HIV incidence rate for adults aged 15-49 years of P_a = 0.0038 (0.38%). Source: 2014 UNAIDS Estimate
- A mean duration of recent infections (MDRI) of 130 days, yielding an annualization rate of 365/130 = 2.8077. Hence, the estimated incidence rate for MDRI = 130 days is P_m = 0.0037/2.8077 = 0.0013 (0.13%).
- Viral load suppression among HIV-positive adults aged 15-49 years in each region of P_{vh} = 0.50 (50%). This is a conservative assumption because it will overstate the actual variance of VLS.
- A sample size of 25 occupied households per sampled cluster (PSU) in urban areas, and an expected average of 30 occupied sampled households per sampled cluster (PSU) in rural areas
- An intra-cluster correlation (ICC) of 0.05 for HIV prevalence and VLS. The ICC provides an average measure of the homogeneity of responses within the first-stage sampling units.
- An occupancy rate of 95.45% for sampled dwellings. Note that this is not included in the calculation of the overall survey response rate, but it does determine the initial numbers of dwelling units to be sampled. Source: 2014 Cameroon Multiple Indicator Cluster Survey (MICS)
- An overall household response rate of 99.6% among occupied households. Source: 2014 Cameroon MICS

- The average number of persons aged 15-49 years per household is 1.99. Source: 2014 Cameroon MICS
- The percentage of children in households who are aged 0-14 years is 44.3%. Source: 2014 Cameroon MICS
- The percentage of persons in households who are aged 50 years or older is 8.0%. Source: 2014 Cameroon MICS
- Among eligible individuals aged 15-64 years in households completing the household roster, a biomarker response rate of 83.1%. Source: Conservative assumption derived from the 2014 Cameroon MICS and 2011 Demographic and Health Survey.
- Among the eligible children aged 0-14 years in households designated for child data collection, a biomarker response rate of 78.1%. This value is the corresponding biomarker response rate for adults minus 5%.

Selection of the Primary Sampling Units

The PSUs for CAMPHIA 2017-2018 are defined to be the EAs created for the 2005 Cameroon Population and Housing Census. The sampling frame consisted of approximately 18,000 EAs containing an estimated 4.5 million households and 22.2 million persons.

A stratified sample of 490 EAs was selected from the final EA sampling frame in accordance with the sample allocation given in Table A.1.A. Twenty-two strata were specified for sampling purposes consisting of the two cities of Yaounde and Douala (which are predominantly urban) plus the urban and rural areas of the 10 administrative regions of Cameroon (resulting in a total of 22 sampling strata). 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 2005 Population and Housing Census. Within each stratum, the EAs in the sampling frame were sorted by division (department), subdivision (arrondissement) within division, and finally by EA code within subdivision. This 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 segmentation may be found in the *CAMPHIA Technical Report* (https://phia-data.icap.columbia.edu/files).

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 CAMPHIA 2017-2018 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 *CAMPHIA Technical Report*: https://phia-data.icap.columbia.edu/files.

To maintain uniform workloads within the EAs that were fielded for data collection, a fixed sample size of 26 dwelling units per urban EA and 31 dwelling units per rural EA was specified for the CAMPHIA. Based on an assumed occupancy rate of 95.5%, the specified sample sizes were expected to yield about 25 and 30 households per urban and rural EAs, respectively. Such a design will produce self-weighting (ie, equal probability) samples of households within each sampling stratum only if the numbers of listed dwelling units for the EAs in the stratum are proportional to the corresponding MOS used to select the EAs. However, because the MOS used to select EAs was based on 2005 census data, there were appreciable differences between the MOS and actual listing counts for many of the sampled EAs. As a result, the fixed-sample-size-per-EA design originally proposed for CAMPHIA would have led to extremely large design effects due to unequal weighting within strata. To reduce the impact of the unequal weighting on sampling precision, the specified sample sizes of 26 (in urban EAs) or 31 (in rural EAs) were either doubled, tripled, or quadrupled, depending on the magnitude of the difference between the listing count and MOS. To offset the increased sampled sizes, the numbers of dwelling units/households to be sampled from the remaining EAs were reduced accordingly. The EA sample sizes were doubled in 36 EAs, tripled in six EAs, and quadrupled in four EAs, and the resulting design effects were less than 1.33 for all strata, and no greater than 1.10 for the majority of strata.

The *CAMPHIA Technical Report* https://phia-data.icap.columbia.edu/files 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.A. Allocation of sample clusters (EAs) and dwelling units and projected sample sizes (number of respondents) by stratum

Region code	Stratum (Region)[1, 2]	Estimated HIV prevalence[3]	Sample clusters (EAs)	Target dwelling units sampled	Expected households[4]	Projected number of respondents[5]		
						15-49 years	50-64 years	0-14 years[6]
1	Adamaoua	5.7	38	1,116	1,065	1,853	320	557
2	Centre	6.8	37	1,095	1,045	1,573	314	547
3	Douala	5.1	55	1,446	1,380	2,579	415	722
4	Est	7.0	30	885	845	1,593	254	442
5	Extrême-Nord	1.3	76	2,294	2,190	3,883	659	1,146
6	Littoral	4.3	12	335	320	536	96	167
7	Nord	2.7	47	1,409	1,345	2,445	404	704
8	Nord-Ouest	7.0	38	1,121	1,070	1,557	322	560
9	Ouest	3.1	37	1,079	1,030	1,172	310	539
10	Sud	8.0	31	917	875	1,384	263	458
11	Sud-Ouest	6.3	34	995	950	1,696	286	497
12	Yaounde	7.0	55	1,451	1,385	2,220	416	725
TOTAL		4.8	490	14,143	13,500	22,493	4,060	7,065

[1]The cities of Yaounde and Douala are defined to be separate regions for CAMPHIA.
[2]The region of Centre excludes Yaounde, and the region of Littoral excludes Douala.
[3]Source: 2011 Cameroon Demographic and Health Survey (CDHS).
[4]Assumes occupancy rate of 95.5%.
[5] Entries are projected counts based on the assumptions used to develop the sample design.
[6] Children 0-14 years of age in a random one-third subsample of households.

Selection of Individuals

The selection of individuals for CAMPHIA 2017-2018 involved the following steps: (1) compiling a list of all individuals known to reside in the household or who slept in the household during the night prior to data collection; (2) identifying those rostered individuals who 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 (ie, the de facto population) were retained for subsequent weighting and analysis.

The *CAMPHIA Technical Report* (https://phia-data.icap.columbia.edu/files) provides a brief description of the process for listing and selecting individuals for participation in CAMPHIA 2017-2018, and also presents detailed summaries of the distributions of eligible individuals and participants in individual interviews and HIV testing by strata and age.

A.2 WEIGHTING

Overview

In general, the purpose of weighting survey data from a complex sample design is to (1) compensate for variable probabilities of selection, (2) account for differential nonresponse rates within relevant subsets of the sample, and (3) adjust for possible under-coverage of certain population groups. Weighting is accomplished by assigning an appropriate sampling weight to each responding sampled unit (eg, a household or person), and using that weight to calculate weighted estimates from the sample. The critical component of the sampling weight is the base weight which is defined 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 CAMPHIA 2017-2018, 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 CAMPHIA 2017-2018 includes several steps. Methods and results for each of the steps below are detailed in the *CAMPHIA Technical Report* (https://phia-data.icap.columbia.edu/files).

Initial checks: Checks of the data files are carried out as part of the survey and data QC, 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 nonresponding 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 under-coverage in the sampling process by post-stratifying (ie, weighting up) to 2017 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 under-coverage.

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 accounts for 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: 14 milliliters (mL) of venous blood was collected from adults aged 15-64 years, 5 mL from children aged 2-14 years, and 1 mL of capillary from adults who either refused to give venous blood or had failed venous collection and children younger than 2 years of age, using finger-stick for children aged 6-23 months and heel-stick for infants under 6 months of age.

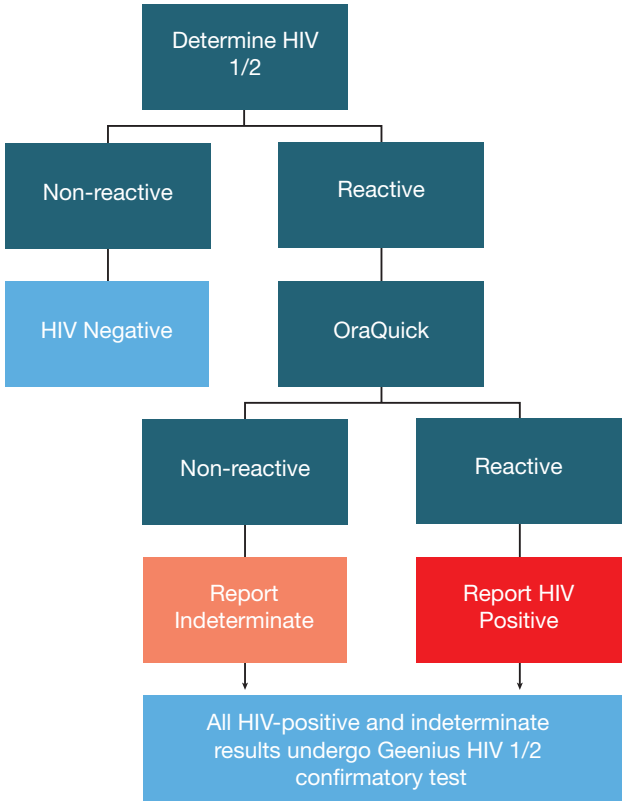
Blood samples were labeled with a unique barcoded participant identification number and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for registration in a laboratory information management system, processing into plasma and DBS, and storage at -20°C within 24 hours of blood collection. Approximately weekly, samples were transported to Centre Pasteur de Cameroun (CPC) for additional testing and to the National Public Health Laboratory of Cameroon for 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 Cameroon'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 CPC, as described in Section B.3. For children younger than 18 months of age, only the initial rapid test was performed. If the test was reactive, the sample underwent additional testing at CPC, as described in Section B.3.

Figure B.2.A
Household-based HIV testing algorithm, ages 18 months and older, CAMPHIA 2017-2018



CD4 Testing

All participants who tested HIV positive and a random sample of 5% of participants who tested HIV negative received a CD4 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 Cameroon's national guidelines. For participants aged 18 years or older, results were communicated directly to the participant. For participants aged 15-17 years, results were communicated to the participant and the parent/guardian together, while for participants less than the age of 15 years, results were communicated directly to the 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 healthcare personnel, in order to facilitate active linkage to HIV care and treatment in Cameroon's healthcare system.

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

Quality Assurance and Control

To assure the quality of the performance of field staff conducting HIV testing, proficiency testing, using a panel of blinded HIV-positive and HIV-negative dried tube specimens, was evaluated twice during the course of field work. Additionally, sample re-testing was conducted at a satellite lab for (1) the first 50 samples tested by each field staff member, (2) a random sample of 5% of HIV-negative specimens, and (3) all HIV-indeterminate specimens.

A limitation of the survey is the potential limitation of rapid tests to detect HIV antibodies among people in the serological window of infection, in HIV-infected patients on ART or in some HIV-infected infants. Participants in these two categories were not expected to be a significant source of bias. However, it is possible that this study did not identify all HIV-exposed infants who would need further PCR testing to verify HIV status. Although the survey used the methodology commonly practiced at the time, in a recent programmatic update, WHO concluded that the use of rapid tests to establish HIV-exposure status may be unreliable in HIV-infected infants.[1]

B.3 LABORATORY-BASED PROCEDURES

Twelve survey satellite laboratories were established in existing health facility laboratories across the country, and two mobile labs moved with the teams in particularly remote areas. One central laboratory was established at CPC in Yaounde.

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 CPC in accordance with the manufacturer's protocol.

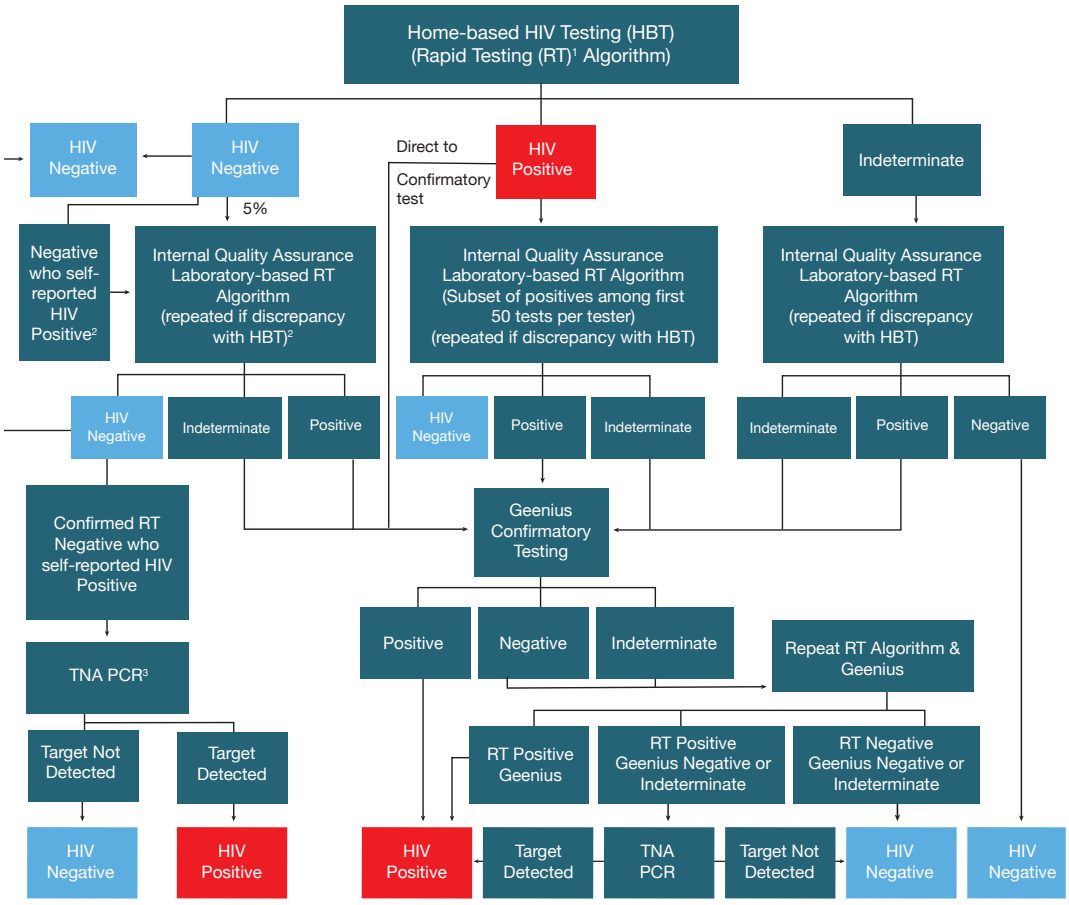
HIV TNA PCR

HIV TNA PCR was conducted for children younger than 18 months of age 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 at the central lab using the Abbott RealTime HIV-1 qualitative assay (Abbott Molecular, Wiesbaden, Germany) on the Abbott m2000 Real-time platform (Abbott Laboratories. Abbott Park, Illinois, United States) in accordance with the manufacturer's protocol.

Classification of Final HIV Status

For participants aged 18 months or older, the algorithm for classification of final HIV status included results from HIV rapid testing, Geenius testing, and HIV TNA PCR (Figure B.3.A). For participants younger than 18 months of age, the algorithm for classification of final HIV status included results from HIV rapid testing and HIV TNA PCR (Note: WHO currently recommends that virological testing be performed on all infants who are HIV exposed, as determined by maternal serology, and repeated at the age of 18 months or three months after last breastfeeding, in order to make a final determination of HIV status)[1] (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), CAMPHIA 2017-2018



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

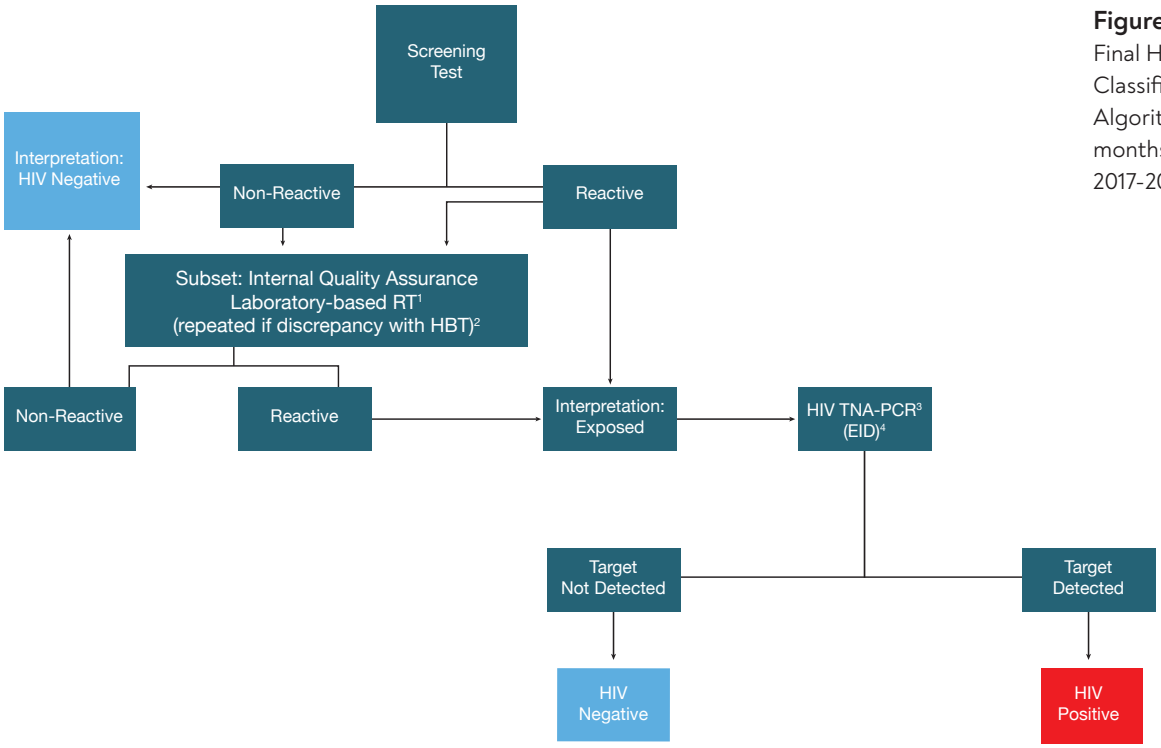


Figure B.3.B
Final HIV Status Classification Algorithm (<18 months), CAMPHIA 2017-2018

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

Viral Load Testing

The HIV-1 VL (HIV RNA copies per mL) of confirmed HIV-positive participants was measured using the AbbotReal-time HIV-1 assay on the Abbott m2000 System (Abbott Molecular Inc., Chicago, Illinois, United States). HIV-1 VL (RNA copies per mL) was then measured using the Abbott m2000rt. The open-mode protocol for the Abbott RealTime HIV-1 assay was used to measure VL from DBS samples from children and from adults with insufficient volume of plasma.

Viral load results were returned to the health facility chosen by each HIV-positive participant. Participants were provided with a referral form during home-based testing and counselling 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.

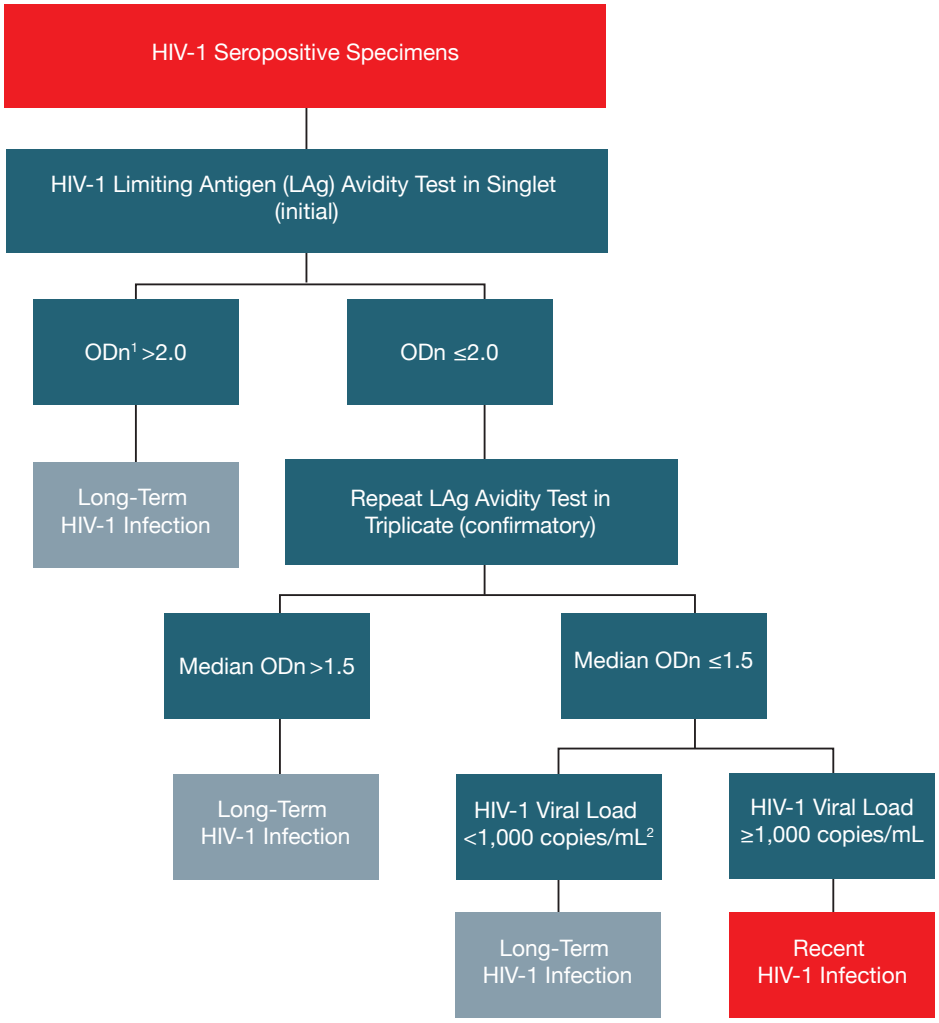
HIV Recency Testing

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 LAg avidity enzyme immunoassay (Sedia Biosciences Corporation, Portland, Oregon, United States) and VL results (Figure B.3.C). 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 aged 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 (ODn) > 2.0 during initial testing were classified as long-term infections, while those with ODn ≤ 2.0 underwent further testing of the specimen in triplicate. Specimens with median ODn > 1.5 in confirmatory testing were classified as long-term infections. Specimens with median ODn < 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 ODn ≤ 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 ≥ 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, lopinavir, and nevirapine 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 (LAg/VL algorithm), CAMPHIA 2017-2018



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

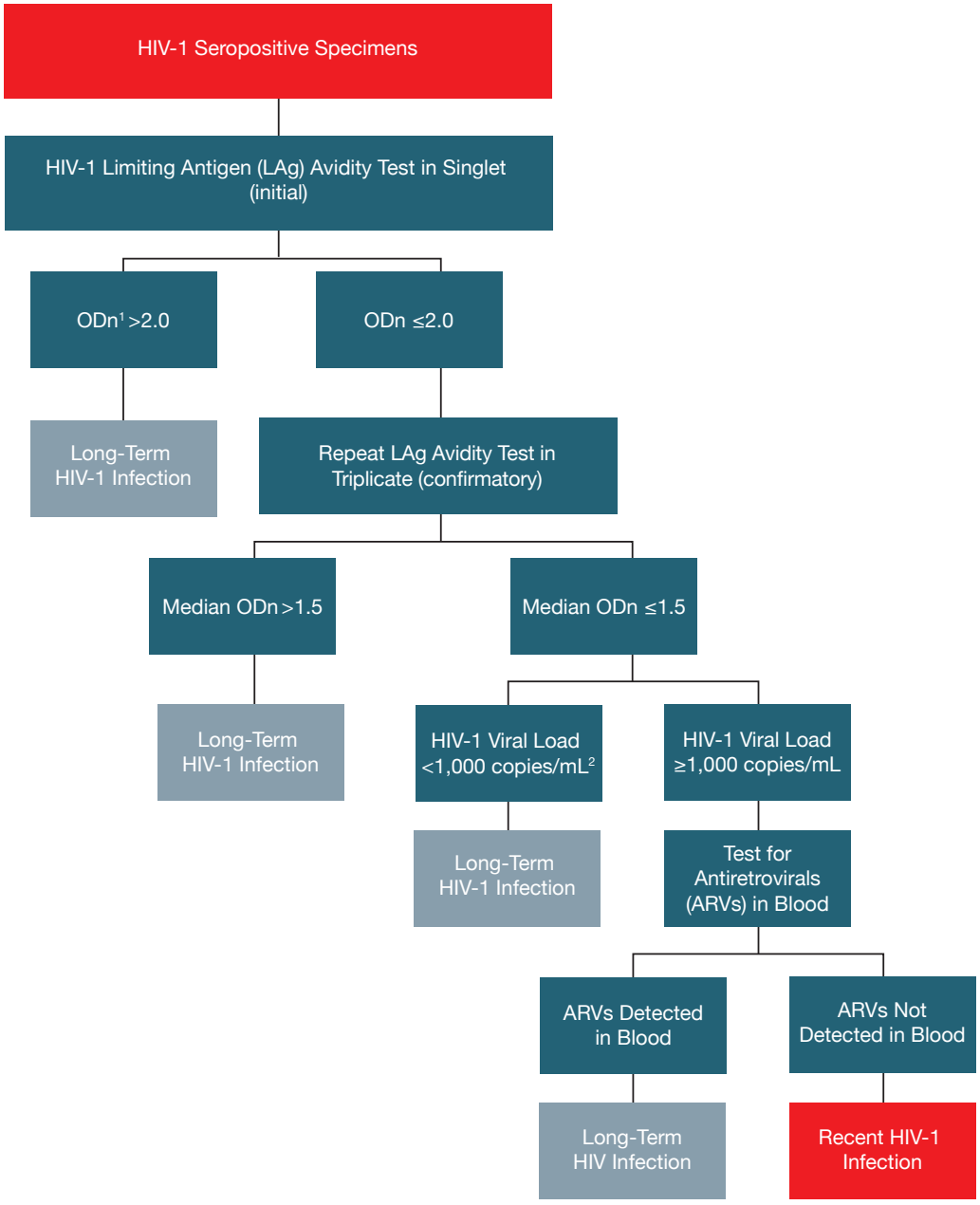


Figure B.3.D
HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), CAMPHIA 2017-2018

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

HIV Incidence Estimation

Incidence estimates were obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays. Weighted counts for HIV-negative persons (N); HIV-positive persons (P); numbers tested on the LAg assay (Q); and numbers HIV recent (R) are provided for use in incidence calculations or UNAIDS 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 *CAMPHIA Technical Report*, which may be found online at [https://phia-data.icap.columbia.edu/files].

Table B.3.A Annual HIV incidence auxiliary data: N, P, Q, R, (LAg/VL[1] algorithm)

Annual incidence of HIV among persons aged 15-49 and 15-64 years, by sex and age, CAMPHIA 2017-2018

	Male				Female				Total			
Age	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[1] (N)	Number HIV positive[2] (P)	Number tested on LAg assay[2] (Q)	Number HIV recent[2] (R)
15-24	4,031.96	17.04	17.04	1.03	4,860.15	98.85	98.85	11.06	8,900.58	107.42	107.42	11.03
25-34	3,006.33	72.67	72.67	1.43	3,832.84	194.16	194.16	3.76	6,848.28	257.72	257.72	5.02
35-49	2,872.15	122.85	122.85	0.43	3,053.28	281.72	281.72	3.67	5,925.65	404.35	404.35	4.09
15-49	9,917.90	205.10	205.10	2.92	11,731.36	589.64	589.64	18.35	21,674.50	769.50	769.50	20.16
15-64	11,609.00	278.00	277.30	3.85	13,437.71	706.29	706.29	21.49	25,070.20	960.80	960.06	24.28

[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[1] algorithm)

Annual incidence of HIV among persons aged 15-49 and 15-64 years, by sex and age, using LAg/VL/ARVs algorithm, by sex and age, CAMPHIA 2017-2018

	Male				Female				Total			
Age	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	4,031.96	17.04	17.04	1.03	4,860.15	98.85	98.85	11.06	8,900.58	107.42	107.42	11.03
25-34	3,006.33	72.67	72.67	1.43	3,832.84	194.16	194.16	3.76	6,848.28	257.72	257.72	5.02
35-49	2,872.15	122.85	122.85	0.43	3,053.28	281.72	281.72	2.39	5,925.65	404.35	404.35	2.81
15-49	9,917.90	205.10	205.10	2.92	11,731.36	589.64	589.64	16.95	21,674.50	769.50	769.50	18.88
15-64	11,609.00	278.00	277.30	3.85	13,437.71	706.29	706.29	18.51	25,070.20	960.80	960.06	21.49

[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.[2] Three ARVs, two non-nucleoside reverse transcriptase inhibitors, efavirenz and nevirapine, and one protease inhibitor, lopinavir, were used as markers for both first- and second-line regimens, based on the Cameroon's national treatment guidelines. 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 µm column (110 Å, 50 x 2 mm) (Phenomonex, Torrance, California, United States). Each ARV was detected using an API 4000 LC/MS/MS instrument (Applied Biosystems, Foster City, California, United States). Internal standards and in-house quality control cut-off samples, including negative controls, were utilized in each run. This qualitative method used a limit of detection of 0.02 µg/mL for each ARV, with a signal-to-noise ratio of at least 5:1 for all ARVs. Samples with concentrations above 0.02 µg/mL were considered positive for each ARV.

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

Genotyping for Detection of Antiretroviral Drug Resistance and HIV Subtyping

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

Viral RNA or TNA from plasma or DBS was extracted using the NucliSENS® easyMAG® (bioMérieux, Marcy-L'Etoile, France) platform. The HIV *pol* gene was amplified by one-step 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).[3,4,5]

The customized RECall software program was used to edit raw sequences and generate consensus sequences.[6] Mutations in the protease and reverse transcriptase genes were classified as potentially associated with drug resistance, according to the Stanford University HIV Drug Resistance Database.[7] 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 was established at 1,000 copies/mL for plasma and DBS.[8] 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.[9,10] This BioAfrica viral subtyping tool is designed to use phylogenetic methods in order to identify the HIV-1 subtype of a specific sequence. The sequence 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 (eg, misinterpretation of an HIV test result) and data management (eg, transcription errors in data entry). While CAMPHIA 2017-2018 implemented numerous quality assurance and control measures to minimize non-sampling errors, these errors are impossible to avoid and difficult to evaluate statistically.

In contrast, sampling errors can be evaluated statistically. The sample of respondents selected for CAMPHIA 2017-2018 is only one of many samples that could have been selected from the same population, using the same design and expected size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. Sampling errors are a measure of the variability between all possible samples. Although the degree of variability is not known exactly, it can be estimated from the survey results.

The standard error, which is the square root of the variance, is the usual measurement of sampling error for a particular statistic (eg, proportion, 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 plus or minus two times the standard error of that statistic in 95 percent of all possible samples of identical size and design.

CAMPHIA 2017-2018 utilized a multi-stage stratified sample design, which requires complex calculations to obtain sampling errors. Specifically, a variant of the jackknife repeated replication method was implemented in SAS (SAS Institute Inc. Cary, North Carolina, United States) to estimate variance for proportions (eg, HIV prevalence), rates (eg, annual HIV incidence), and counts (eg, 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 CAMPHIA 2017-2018, 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 240 variance-estimation strata were created by pairing (or occasionally tripling) the sample clusters in the systematic order in which they had been selected. Hence, 240 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, ..., K).

In addition to the standard error, the design effect for each estimate is also calculated. The design effect is defined as the ratio between the standard error using the given sample design and 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 CAMPHIA 2017-2018 are presented in Tables C.1 through C.8, and sampling errors for all survey estimates may be found online at https://phia.icap.columbia.edu/resources/. For each variable, sampling error tables include the weighted estimate, unweighted denominator, standard error, design effect, and lower and upper 95 percent confidence limits.

Table C.1 Sampling errors: Annual HIV incidence by age, CAMPHIA 2017-2018

Age (years)	Weighted estimate (%)	Design effect	Lower confidence limit (%)	Upper confidence limit (%)
		TOTAL		
15-24	0.35	1.79	0.08	0.61
25-34	0.21	1.12	0.02	0.39
35-49	0.13	1.05	0.00	0.29
15-49	0.24	1.48	0.11	0.38
15-64	0.24	1.57	0.11	0.37
		MALE		
15-24	0.07	1.02	0.00	0.21
25-34	0.13	1.47	0.00	0.40
35-49	0.04	0.42	0.00	0.17
15-49	0.08	1.16	0.00	0.18
15-64	0.09	1.11	0.00	0.19
		FEMALE		
15-24	0.64	2.10	0.12	1.15
25-34	0.28	1.00	0.00	0.55
35-49	0.22	1.17	0.00	0.52
15-49	0.40	1.68	0.15	0.66
15-64	0.39	1.67	0.16	0.61

Table C.2 Sampling errors: HIV prevalence by age, CAMPHIA 2017-2018

Age	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			TOTAL		
0-17 months	0.0	657	0.0	0.0	0.0
18-59 months	0.2	1,811	0.1	0.0	0.5
5-9	0.4	2,638	0.2	0.0	0.8
10-14	0.1	2,115	0.1	0.0	0.3
Total 0-4	0.1	2,468	0.1	0.0	0.3
Total 0-14	0.2	7,221	0.1	0.1	0.4
15-19	0.7	4,765	0.2	0.4	1.0
20-24	1.7	4,243	0.2	1.3	2.2
25-29	2.5	3,923	0.3	1.9	3.1
30-34	4.9	3,183	0.4	4.0	5.8
35-39	5.7	2,537	0.6	4.4	7.0
40-44	7.4	2,151	0.7	6.0	8.7
45-49	6.2	1,642	0.7	4.7	7.7
50-54	6.8	1,324	0.8	5.1	8.5
55-59	4.8	1,175	0.7	3.4	6.1
60-64	4.4	1,088	0.7	3.0	5.7
Total 15-24	1.2	9,008	0.1	0.9	1.5

Table C.2 Sampling errors: HIV prevalence by age, CAMPHIA 2017-2018 (continued)

Age	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
Total 15-49	3.4	22,444	0.2	3.1	3.8
Total 15-64	3.7	26,031	0.2	3.3	4.0
		MALE			
0-17 months	0.0	341	0.0	0.0	0.0
18-59 months	0.2	896	0.1	0.0	0.4
5-9	0.6	1,325	0.3	0.0	1.2
10-14	0.3	1,070	0.2	0.0	0.6
Total 0-4	0.1	1,237	0.1	0.0	0.3
Total 0-14	0.3	3,632	0.1	0.1	0.5
15-19	0.2	2,145	0.1	0.0	0.5
20-24	0.6	1,904	0.2	0.2	1.1
25-29	1.2	1,664	0.3	0.6	1.8
30-34	3.7	1,415	0.5	2.6	4.8
35-39	3.0	1,174	0.6	1.9	4.2
40-44	5.3	1,056	0.8	3.7	6.8
45-49	4.2	765	0.7	2.7	5.7
50-54	6.0	618	1.1	3.7	8.3
55-59	3.4	591	0.7	1.9	5.0
60-64	3.8	555	0.9	2.0	5.5
Total 15-24	0.4	4,049	0.1	0.2	0.7
Total 15-49	2.0	10,123	0.2	1.7	2.3
Total 15-64	2.3	11,887	0.2	2.0	2.7
		FEMALE			
0-17 months	0.0	316	0.0	0.0	0.0
18-59 months	0.2	915	0.2	0.0	0.7
5-9	0.2	1,313	0.1	0.0	0.5
10-14	0.0	1,045	0.0	0.0	0.0
Total 0-4	0.2	1,231	0.2	0.0	0.5
Total 0-14	0.1	3,589	0.1	0.0	0.3
15-19	1.2	2,620	0.3	0.7	1.8
20-24	2.9	2,339	0.4	2.0	3.8
25-29	3.7	2,259	0.5	2.8	4.7
30-34	5.9	1,768	0.7	4.4	7.5
35-39	8.0	1,363	1.0	6.0	10.0
40-44	9.3	1,095	1.0	7.1	11.4
45-49	8.1	877	1.1	5.8	10.4
50-54	7.6	706	1.3	4.9	10.3
55-59	6.0	584	1.1	3.7	8.3
60-64	5.0	533	0.9	3.0	6.9
Total 15-24	2.0	4,959	0.2	1.5	2.5
Total 15-49	4.8	12,321	0.3	4.2	5.3
Total 15-64	5.0	14,144	0.3	4.5	5.5

Table C.3 Sampling errors: HIV prevalence by residence and region, ages 15-64 years, CAMPHIA 2017-2018

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
		TOTAL			
Residence					
Total Urban	3.8	10,946	0.2	3.4	4.3
Douala or Yaounde	3.8	4,435	0.3	3.1	4.5
Other urban	3.9	6,511	0.3	3.3	4.4
Rural	3.5	15,085	0.3	3.0	4.1
Region					
Adamawa	4.9	1,997	0.9	3.1	6.7
Centre	5.8	2,589	0.5	4.8	6.8
Douala	3.3	2,205	0.4	2.5	4.0
East	5.9	2,009	0.7	4.5	7.3
Far North	1.5	3,656	0.3	1.0	2.1
Littoral	3.1	893	0.9	1.2	4.9
North	1.6	3,302	0.3	1.0	2.1
North West	5.1	1,869	0.8	3.4	6.7
South	6.3	1,648	0.5	5.4	7.3
South West	3.6	1,373	0.6	2.4	4.9
West	2.7	2,260	0.5	1.8	3.6
Yaounde	4.4	2,230	0.6	3.2	5.6
		MALE			
Residence					
Total Urban	2.2	5,075	0.2	1.9	2.6
Douala or Yaounde	2.1	2,082	0.3	1.5	2.7
Other urban	2.3	2,993	0.2	1.9	2.8
Rural	2.5	6,812	0.3	1.9	3.0
Region					
Adamawa	3.0	916	0.7	1.5	4.6
Centre	3.5	1,247	0.6	2.4	4.7
Douala	1.6	1,039	0.4	0.8	2.5
East	3.9	929	0.6	2.7	5.0
Far North	1.3	1,598	0.3	0.7	2.0
Littoral	1.5	428	0.5	0.5	2.6
North	1.3	1,496	0.3	0.6	1.9
North West	2.9	775	0.7	1.5	4.3
South	3.0	808	0.8	1.3	4.7
South West	2.6	649	0.6	1.3	3.9
West	2.4	959	0.7	1.0	3.8
Yaounde	2.7	1,043	0.4	1.8	3.5

Table C.3 Sampling errors: HIV prevalence by residence and region, ages 15-64 years, CAMPHIA 2017-2018 (continued)

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
		FEMALE			
Residence					
Total Urban	5.5	5,871	0.4	4.7	6.2
Douala or Yaounde	5.5	2,353	0.6	4.3	6.8
Other urban	5.4	3,518	0.4	4.5	6.3
Rural	4.5	8,273	0.3	3.8	5.2
Region					
Adamawa	6.8	1,081	1.0	4.8	8.9
Centre	8.1	1,342	0.6	6.8	9.4
Douala	5.0	1,166	0.6	3.8	6.2
East	7.9	1,080	1.0	5.8	10.0
Far North	1.7	2,058	0.3	1.0	2.4
Littoral	4.6	465	1.3	2.0	7.2
North	1.9	1,806	0.4	1.1	2.7
North West	6.8	1,094	1.2	4.2	9.3
South	9.8	840	0.9	7.8	11.7
South West	4.7	724	0.8	3.0	6.4
West	2.9	1,301	0.4	2.0	3.9
Yaounde	6.2	1,187	1.1	4.0	8.4

Table C.4 Sampling errors: Viral load suppression by age, CAMPHIA 2017-2018

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
		TOTAL			
0-14	*	14	10.7	0.0	42.8
15-24	23.9	125	4.3	14.9	32.8
25-34	32.8	279	3.1	26.4	39.3
35-44	52.2	282	3.2	45.6	58.8
45-54	52.7	192	3.9	44.7	60.8
55-64	61.3	102	5.4	50.3	72.3
Total 15-24	23.9	125	4.3	14.9	32.8
Total 15-49	40.9	792	2.1	36.5	45.3
Total 15-64	44.7	980	1.9	40.7	48.7

Table C.4 Sampling errors: Viral load suppression by age, CAMPHIA 2017-2018

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
MALE					
0-14	*	9	11.3	0.0	38.6
15-24	*	17	13.9	1.7	59.1
25-34	28.1	76	5.7	16.3	39.8
35-44	48.8	88	6.5	35.3	62.3
45-54	46.8	68	7.0	32.4	61.2
55-64	(58.6)	41	7.5	43.2	74.0
Total 15-24	*	17	13.9	1.7	59.1
Total 15-49	38.0	215	4.3	29.1	47.0
Total 15-64	42.5	290	3.8	34.8	50.3
FEMALE					
0-14	*	5	36.5	0.0	100.0
15-24	22.5	108	4.1	13.9	31.0
25-34	35.0	203	3.4	28.0	42.0
35-44	53.6	194	3.7	45.9	61.3
45-54	56.2	124	5.1	45.6	66.8
55-64	62.9	61	7.0	48.4	77.4
Total 15-24	22.5	108	4.1	13.9	31.0
Total 15-49	42.1	577	2.2	37.6	46.5
Total 15-64	45.6	690	2.1	41.3	50.0

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

Table C.5 Sampling errors: Viral load suppression by residence and region, ages 15-64 years, CAMPHIA 2017-2018

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Residence					
Total Urban	44.0	453	2.9	38.0	50.0
Douala or Yaounde	43.0	172	4.6	33.4	52.5
Other urban	44.9	281	3.7	37.2	52.6
Rural	45.5	527	2.5	40.4	50.5
Region					
Adamawa	34.1	98	7.1	19.5	48.6
Centre	43.5	143	4.3	34.7	52.3
Douala	45.1	74	6.9	30.9	59.4
East	45.4	123	6.1	32.9	57.9
Far North	37.8	54	7.1	23.2	52.4
Littoral	*	23	2.1	50.6	59.4
North	27.6	52	6.5	14.3	41.0

Table C.5 Sampling errors: Viral load suppression by residence and region, ages 15-64 years, CAMPHIA 2017-2018 (continued)

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
North West	60.9	97	4.7	51.2	70.7
South	34.4	111	7.8	18.4	50.5
South West	33.8	49	6.3	20.8	46.7
West	62.9	58	7.0	48.6	77.3
Yaounde	41.1	98	6.5	27.7	54.4
MALE					
Residence					
Total Urban	38.4	121	5.3	27.6	49.2
Douala or Yaounde	41.6	43	9.1	22.8	60.4
Other urban	35.9	78	6.0	23.6	48.2
Rural	46.8	169	4.9	36.7	56.9
Region					
Adamawa	29.6	31	12.6	3.5	55.6
Centre	40.0	42	5.7	28.2	51.7
Douala	51.8*	16	15.0	20.9	82.7
East	39.1	38	11.0	16.5	61.7
Far North	25.8*	21	10.4	4.4	47.2
Littoral	79.3*	6	14.5	49.5	100.0
North	31.1*	18	8.8	13.3	49.4
North West	57.4*	23	10.7	35.3	79.6
South	32.6	27	9.3	13.4	51.9
South West	32.6*	17	9.3	14.8	53.3
West	58.8*	24	9.5	39.1	78.1
Yaounde	34.4	27	11.1	11.6	57.2
FEMALE					
Residence					
Total Urban	46.3	332	3.2	39.7	52.9
Douala or Yaounde	43.5	129	4.6	34.0	53.0
Other urban	48.6	203	4.5	39.4	57.9
Rural	44.8	358	2.6	39.5	50.1
Region					
Adamawa	36.1	67	5.9	24.0	48.2
Centre	45.1	101	5.2	34.3	55.9
Douala	42.9	58	7.3	27.9	57.9
East	48.4	85	6.0	36.1	60.7
Far North	46.3	33	7.7	30.3	62.2
Littoral	*	17	4.0	38.5	55.1
North	25.3	34	6.5	12.0	38.7
North West	62.1	74	6.4	49.0	75.3
South	35.0	84	8.9	16.7	53.4

Table C.5 Sampling errors: Viral load suppression by residence and region, ages 15-64 years, CAMPHIA 2017-2018 (continued)

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
South West	33.6	32	8.6	15.9	51.2
West	65.9	34	10.1	45.1	86.7
Yaounde	44.1	71	5.9	32.0	56.1

Table C.6 Sampling errors: ARV-adjusted 90-90-90 by age (conditional percentages), CAMPHIA 2017-2018

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Diagnosed					
15-24	20.7	124	4.1	12.2	29.3
25-34	46.7	278	3.1	40.3	53.1
35-49	64.4	384	2.5	59.1	69.6
15-49	52.4	786	1.9	48.5	56.3
15-64	55.6	974	1.8	51.9	59.3
On Treatment					
15-24	(89.8)	28	4.4	80.7	98.9
25-34	87.5	131	3.5	80.4	94.6
35-49	93.9	244	1.7	90.4	97.4
15-49	91.8	403	1.7	88.3	95.3
15-64	93.1	529	1.4	90.3	95.8
Viral Load Suppression					
15-24	*	24	11.5	50.0	97.2
25-34	69.2	116	5.3	58.3	80.1
35-49	80.9	232	3.2	74.4	87.3
15-49	77.2	372	3.0	70.9	83.5
15-64	80.1	493	2.5	75.0	85.1
MALE					
Diagnosed					
15-24	*	17	12.0	0.0	38.3
25-34	37.1	75	6.0	24.7	49.5
35-49	61.2	122	5.1	50.6	71.7
15-49	48.5	214	3.7	40.9	56.0
15-64	51.4	289	3.1	44.9	57.8
On Treatment					
15-24	*	2	0.0	100.0	100.0
25-34	(82.5)	26	7.2	67.6	97.3
35-49	97.2	74	2.2	92.7	100.0

Table C.6 Sampling errors: ARV-adjusted 90-90-90 by age (conditional percentages), CAMPHIA 2017-2018 (continued)

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
15-49	93.3	102	2.6	88.0	98.5
15-64	94.2	148	2.0	90.1	98.3
		Viral Load Suppression			
15-24	*	2	6.1	0.0	18.1
25-34	*	21	9.2	59.8	97.7
35-49	76.3	72	6.0	64.0	88.7
15-49	75.1	95	5.5	63.8	86.3
15-64	81.1	139	4.0	72.8	89.4
		FEMALE			
		Diagnosed			
15-24	22.3	107	4.2	13.7	31.0
25-34	51.1	203	3.5	43.9	58.3
35-49	65.8	262	3.2	59.3	72.3
15-49	54.0	572	2.1	49.7	58.4
15-64	57.5	685	2.0	53.3	61.7
		On Treatment			
15-24	(88.5)	26	4.9	78.4	98.5
25-34	89.2	105	3.9	81.2	97.1
35-49	92.6	170	2.2	88.0	97.1
15-49	91.3	301	2.1	86.9	95.6
15-64	92.6	381	1.7	89.0	96.2
		Viral Load Suppression			
15-24	*	22	7.2	69.1	98.7
25-34	66.2	95	5.9	54.1	78.3
35-49	82.8	160	3.3	76.1	89.5
15-49	78.0	277	3.2	71.5	84.5
15-64	79.6	354	2.7	74.0	85.3

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

Table C.7 Sampling errors: ARV-adjusted 90-90-90 by age (unconditional percentages), CAMPHIA 2017-2018

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Diagnosed					
15-24	20.7	124	4.1	12.2	29.3
25-34	46.7	278	3.1	40.3	53.1
35-49	64.4	384	2.5	59.1	69.6
15-49	52.4	786	1.9	48.5	56.3
15-64	55.6	974	1.8	51.9	59.3
On Treatment					
15-24	18.6	124	4.1	10.3	27.0
25-34	40.9	278	3.2	34.3	47.4
35-49	60.4	384	2.5	55.2	65.7
15-49	48.1	786	1.8	44.4	51.8
15-64	51.7	974	1.8	48.1	55.4
Viral Load Suppression					
15-24	13.7	124	3.0	7.6	19.8
25-34	28.3	278	3.0	22.0	34.5
35-49	48.9	384	2.8	43.0	54.7
15-49	37.1	786	2.0	33.0	41.3
15-64	41.4	974	1.9	37.6	45.3
MALE					
Diagnosed					
15-24	*	17	12.0	0.0	38.3
25-34	37.1	75	6.0	24.7	49.5
35-49	61.2	122	5.1	50.6	71.7
15-49	48.5	214	3.7	40.9	56.0
15-64	51.4	289	3.1	44.9	57.8
On Treatment					
15-24	*	17	12.0	0.0	38.3
25-34	30.6	75	5.7	18.8	42.4
35-49	59.4	122	5.1	48.9	70.0
15-49	45.2	214	3.5	38.0	52.4
15-64	48.4	289	3.1	42.0	54.7
Viral Load Suppression					
15-24	*	17	0.8	0.0	2.4
25-34	24.1	75	5.6	12.7	35.5
35-49	45.4	122	5.6	33.7	57.0
15-49	33.9	214	3.6	26.4	41.4
15-64	39.3	289	3.2	32.6	45.9

Table C.7 Sampling errors: ARV-adjusted 90-90-90 by age (unconditional percentages), CAMPHIA 2017-2018 (continued)

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
FEMALE					
Diagnosed					
15-24	22.3	107	4.2	13.7	31.0
25-34	51.1	203	3.5	43.9	58.3
35-49	65.8	262	3.2	59.3	72.3
15-49	54.0	572	2.1	49.7	58.4
15-64	57.5	685	2.0	53.3	61.7
On Treatment					
15-24	19.8	107	4.1	11.4	28.1
25-34	45.6	203	3.6	38.2	52.9
35-49	60.9	262	3.1	54.6	67.2
15-49	49.3	572	2.1	45.1	53.6
15-64	53.3	685	2.1	49.0	57.5
Viral Load Suppression					
15-24	16.6	107	3.6	9.3	23.9
25-34	30.2	203	3.3	23.4	36.9
35-49	50.4	262	3.3	43.5	57.3
15-49	38.5	572	2.2	34.0	42.9
15-64	42.4	685	2.1	38.1	46.7

Table C.8 Sampling errors: Number of new infections annually among adults (ages 15-64 years) and number of adults living with HIV, CAMPHIA 2017-2018

	Weighted estimate	Standard error	Lower confidence limit	Upper confidence limit
Number of new infections annually	31,376	8,274	14,301	48,451
Number of adults living with HIV	499,863	22,822	452,860	546,866

APPENDIX D SURVEY PERSONNEL

Name	Organization
Anne-Cecile Zoung- Kanyi Bissek	Ministry of Health
Calixte Ida Penda	Ministry of Health
Cyprien Nde	Ministry of Health
Edith Michele Temgoua	Ministry of Health
Felicite Naah	Ministry of Health
Florence Zeh Kakanou	Ministry of Health
Gildas Nguemkam	Ministry of Health
Guy Ewos	Ministry of Health
Jerome Ateudjieu	Ministry of Health
Martial Fabou	Ministry of Health
Onambany Benjamin	Ministry of Health
Andrea Low	ICAP at Columbia University- New York
David Hoos	ICAP at Columbia University- New York
Elizabeth Gummerson	ICAP at Columbia University- New York
Elizabeth Radin	ICAP at Columbia University- New York
Hannah Chung	ICAP at Columbia University- New York
Jessica Justman	ICAP at Columbia University- New York
Katherine Johnson	ICAP at Columbia University- New York
Kiwon Lee	ICAP at Columbia University- New York
Mansoor Farahani	ICAP at Columbia University- New York
Melissa Metz	ICAP at Columbia University- New York
Natasha McLeod	ICAP at Columbia University- New York
Natazia Fistrovic	ICAP at Columbia University- New York
Neena Philip	ICAP at Columbia University- New York
Noelle Esquire	ICAP at Columbia University- New York
Oren Mayer	ICAP at Columbia University- New York
Rita Sondengam	ICAP at Columbia University- New York
Sally Findley	ICAP at Columbia University- New York
Stephen Delgado	ICAP at Columbia University- New York
Steven Wynn	ICAP at Columbia University- New York
Suzue Saito	ICAP at Columbia University- New York
Theo Smart	ICAP at Columbia University- New York
Yen Pottinger	ICAP at Columbia University- New York
Denis Ako-Arrey	ICAP at Columbia University- Cameroon
Denis Etaba Ongunene	ICAP at Columbia University- Cameroon
Djoumessi Fonkou Paul Barthelemy	ICAP at Columbia University- Cameroon
Ebogo Mesmey Bertrand	ICAP at Columbia University- Cameroon
Francois Ateba Ndongo	ICAP at Columbia University- Cameroon

Name	Organization
Jacob Kuh	ICAP at Columbia University- Cameroon
Jean Gustave Epoupa Epoupa	ICAP at Columbia University- Cameroon
Julius Atia Iseli	ICAP at Columbia University- Cameroon
Leba Edwige Flore	ICAP at Columbia University- Cameroon
Marie Paule Ngogang	ICAP at Columbia University- Cameroon
Marie Prudence Onabel	ICAP at Columbia University- Cameroon
Mirabel Tebi	ICAP at Columbia University- Cameroon
Peter Tebon Teboh	ICAP at Columbia University- Cameroon
Onguene Joseph	ICAP at Columbia University- Cameroon
Rafiatou Ntiantie	ICAP at Columbia University- Cameroon
Tangang Akamangwa	ICAP at Columbia University- Cameroon
Thomas Vukugah	ICAP at Columbia University- Cameroon
Wilfried Ihinaga	ICAP at Columbia University- Cameroon
Blanche Pitt	ICAP at Columbia University- South Africa
Bright Phiri	ICAP at Columbia University- South Africa
Charles Wentzl	ICAP at Columbia University- South Africa
Herbert Longwe	ICAP at Columbia University- South Africa
Oliver Murangandi	ICAP at Columbia University- South Africa
Pule Mphole	ICAP at Columbia University- South Africa
Takura Kupamupindi	ICAP at Columbia University- South Africa
Bharat Parekh	CDC Atlanta
Carin Molchan	CDC Atlanta
Daniel Yavo	CDC Atlanta
Drew Voetsch	CDC Atlanta
Edith Nyangoma	CDC Atlanta
Ernest Yufenyuy	CDC Atlanta
Hetal Patel	CDC Atlanta
Katie Lupoli	CDC Atlanta
Katina Pappas-Deluca	CDC Atlanta
Keisha Jackson	CDC Atlanta
Kristin Brown	CDC Atlanta
Laura Porter	CDC Atlanta
Megan Bronson	CDC Atlanta
Nikhil Kothegal	CDC Atlanta
Paul Stupp	CDC Atlanta
Stephane Bodika	CDC Atlanta
Steve Kinchen	CDC Atlanta
Steve McCracken	CDC Atlanta
William Levine	CDC Atlanta
Wolfgang Hladik	CDC Atlanta

Name	Organization
Alex Cox	CDC Cameroon
Christopher Murrill	CDC Cameroon
Edgar Monterroso	CDC Cameroon
Emmanuel Chia Ziawi	CDC Cameroon
Joseph Jembia Mosoko	CDC Cameroon
Judith Shang	CDC Cameroon
Laura Eno	CDC Cameroon
Nwando Diallo	CDC Cameroon
Omotayo Bolu	CDC Cameroon
Rachel McCullough Sanden	CDC Cameroon
Rachel Weber	CDC Cameroon
Sarah Guagliardo	CDC Cameroon
Terence Asong Ngulefac	CDC Cameroon
Dzossa Anaclet Désiré	National AIDS Control Committee (NACC), Cameroon
Jean Bosco Nfetam Elat	National AIDS Control Committee (NACC), Cameroon
Jean De Dieu Anoumbissi	National AIDS Control Committee (NACC), Cameroon
Raoul Anderson Fodjo Toukam	National AIDS Control Committee (NACC), Cameroon
Serge Clotaire Billong	National AIDS Control Committee (NACC), Cameroon
Wounang Sonfack Romain	National AIDS Control Committee (NACC), Cameroon
Dzossa Anaclet Désiré	National Institute of Statistics (NIS), Cameroon
Guy She Etoundi	National Institute of Statistics (NIS), Cameroon
Joseph Tedou	National Institute of Statistics (NIS), Cameroon
Paul Roger Libite	National Institute of Statistics (NIS), Cameroon
Wounang Sonfack Romain	National Institute of Statistics (NIS), Cameroon

APPENDIX E HOUSEHOLD QUESTIONNAIRE

HOUSEHOLD SCHEDULE												
LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX		RESIDENCE				AGE			
	Please give me the names of the persons who usually lives in your household or guests of the household who stayed here last night, starting with the head of the household.								IF LESS THAN 2 YEARS, RECORD IN MONTHS.			
	AFTER LISTING THE NAME AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON ASK QUESTIONS 2A-2C BELOW TO BE SURE THAT THE SCHEDULE IS COMPLETE.	What is the relationship of (**NAME**) to the head of the household? SEE CODES BELOW	Is (**NAME**) Male or Female?		Does (**NAME**) usually live here?		Did (**NAME**) sleep here last night?		How old is (**NAME**)?		Is age of (**NAME**) recorded in MONTHS/ YEARS?	
(1)	(2)	(3)	(4)		(5)		(6)		(7)		(8)	
1			M	F	Y	N	Y	N			MONTHS YEARS	
2			M	F	Y	N	Y	N			MONTHS YEARS	
3			M	F	Y	N	Y	N			MONTHS YEARS	
4			M	F	Y	N	Y	N			MONTHS YEARS	
5			M	F	Y	N	Y	N			MONTHS YEARS	
6			M	F	Y	N	Y	N			MONTHS YEARS	
7			M	F	Y	N	Y	N			MONTHS YEARS	
8			M	F	Y	N	Y	N			MONTHS YEARS	
9			M	F	Y	N	Y	N			MONTHS YEARS	
10			M	F	Y	N	Y	N			MONTHS YEARS	

HOUSEHOLD SCHEDULE

☐ **TICK HERE IF CONTINUATION SHEET USED**

2A) Just to make sure I have a complete listing, are there any other persons such as small children or infants that we have not listed? YES ☐ NO ☐

2B) Are there any other people such as domestic servants, lodgers, or friends who may not be members of your household who usually live here? YES ☐ NO ☐

2C) Are there any guests or temporary visitors staying here, or anyone else who stayed here last night who we have not seen? YES ☐ NO ☐

ADD TO SCHEDULE

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 / MBANYIA
10 = OTHER RELATIVE
11 = ADOPTED/FOSTER/ STEPCHILD
12 = NOT RELATED
98 = DON'T KNOW

HOUSEHOLD SCHEDULE (continued)

LINE NO.	IF (**NAME**) IS 0-20 YEARS: SPECIAL CASE MINOR STATUS	ORPHAN STATUS/PARENT OR GUARDIAN				IF (**NAME**) IS 0-14 YEARS	
	Is (**NAME**) a Special Case Minor? Meets at least ONE of the following: 1. Married 2. Has a child 3. Does not have a parent/ guardian 4. Lives apart from parent/ guardian	Is (**NAME**)'s natural mother alive?	Does (NAME)'s natural mother usually live in this household or was a guest last night? IF YES: RECORD MOTHER'S LINE NUMBER. IF NO: RECORD **FEMALE** GUARDIAN'S LINE NUMBER OR '00' IF FEMALE PARENT OR GUARDIAN NOT PRESENT IN HH.	Is (**NAME**)'s natural father alive?	Does (**NAME**)'s natural father usually live in this household or was a guest last night? IF YES: RECORD FATHER'S LINE NUMBER. IF NO: RECORD **MALE** GUARDIAN'S LINE NUMBER OR '00' IF MALE PARENT OR GUARDIAN NOT PRESENT IN HH.	RECORD LINE NUMBER OF PARENT/ GUARDIAN WHO WILL FILL OUT CHILDREN'S MODULE FOR (**NAME**)	DO NOT READ: Is (**NAME**) eligible for survey?
(1)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1	Y N DK	Y N DK → 12		Y N DK → 14			Y N
2	Y N DK	Y N DK → 12		Y N DK → 14			Y N
3	Y N DK	Y N DK → 12		Y N DK → 14			Y N
4	Y N DK	Y N DK → 12		Y N DK → 14			Y N
5	Y N DK	Y N DK → 12		Y N DK → 14			Y N
6	Y N DK	Y N DK → 12		Y N DK → 14			Y N
7	Y N DK	Y N DK → 12		Y N DK → 14			Y N
8	Y N DK	Y N DK → 12		Y N DK → 14			Y N
9	Y N DK	Y N DK → 12		Y N DK → 14			Y N
10	Y N DK	Y N DK → 12		Y N DK → 14			Y N

HOUSEHOLD SCHEDULE		
TOTAL ELIGIBLE MALES (15-64 YEARS)		
TOTAL ELIGIBLE FEMALES (15-64 YEARS)		
TOTAL ELIGIBLE EARLY ADOLESCENTS (10 TO 14 YEARS)		
TOTAL ELIGIBLE CHILDREN (0 MONTHS TO 9 YEARS)		

HOUSEHOLD SCHEDULE (continued)

LINE NO.	IF (**NAME**) is 21+	IF (**NAME**) is 0-20 years					
	SICK PERSON	SICKNESS AND DEATH OF BIOLOGICAL PARENTS				MOTHER DEAD OR SICK	FATHER DEAD OR SICK
	CHECK COLUMNS 7 AND 8, IF UNDER 21 → 17 IF 21 YEARS OR MORE: Has (**NAME**) been very sick for at least 3 months during the past 12 months, that is (**NAME**) was too sick to work or do normal activities?	CHECK COLUMN 10, IF COLUMN 10 'N' OR 'DK' → 19 IF COLUMN 10 'Y': Has (**NAME**)'s natural mother been very sick for at least 3 months during the past 12 months, that is she was too sick to work or do normal activities?	IF MOTHER SICK: Does (**NAME**)'s natural mother have HIV/AIDS?*	CHECK COLUMN 12, IF COLUMN 12 'N' OR 'DK' → 21 IF COLUMN 12 'Y': Has (**NAME**)'s natural father been very sick for at least 3 months during the past 12 months, that is he was too sick to work or do normal activities?	IF FATHER SICK: Does (**NAME**)'s natural father have HIV/AIDS?*	IF CHILD'S NATURAL MOTHER HAS DIED (COLUMN 10 'N') OR BEEN SICK (COLUMN 18 'Y'), SELECT Y.	IF CHILD'S NATURAL FATHER HAS DIED (COLUMN 12'N') OR BEEN SICK (COLUMN 20 'Y'), SELECT Y.
(1)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
2	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
3	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
4	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
5	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
6	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
7	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
8	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
9	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
10	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N

HOUSEHOLD SCHEDULE (continued)

LINE NO.	SPOUSES AND CO-HABITATING PARTNERS					
	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.
(1)	(23a)	(23b)	(23c)	(23d)	(23e)	(23f)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
	SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN/MINORS		
101	DO NOT READ: CHECK COLUMN 7 IN THE HOUSEHOLD SCHEDULE. **ANY CHILD AGE 0-20 YEARS?**	NUMBER OF CHILDREN 0-20 YRS: ☐☐	
102	DO NOT READ: CHECK COLUMN 16 IN THE HOUSEHOLD SCHEDULE. **ANY SICK ADULT AGE 21+ YEARS?**	YES_____1 NO _____2	YES →105 Q101 NONE→114
103	DO NOT READ: CHECK COLUMN 21 IN THE HOUSEHOLD SCHEDULE. **ANY CHILD WHOSE MOTHER HAS DIED OR IS VERY SICK?**	YES_____1 NO _____2	YES→105
104	DO NOT READ: CHECK COLUMN 22 IN THE HOUSEHOLD SCHEDULE. **ANY CHILD WHOSE FATHER HAS DIED OR IS VERY SICK?**	YES_____1 NO _____2	NO→114
105	**Record names, line numbers, and ages of all children 0-20 who are identified in columns 16, 21, and 22 as having a sick adult in their household or having a mother and/or father who has died or has been very sick.**		
		child (1) / child (2) / child (3)	
	NAME	_____ / _____ / _____	
	LINE NUMBER (FROM COLUMN 1)	☐☐ / ☐☐ / ☐☐	
	AGE (FROM COLUMN 7)	☐☐ / ☐☐ / ☐☐	
	INTERVIEWER SAY: "I would like to ask you about any formal, organized help or support for children that your household may have received for which you did not have to pay. By formal, organized support, I mean help provided by someone working for a program. This program could be government, private, religious, charity, or community-based."		
106	Now I would like to ask you about the support your household received for (**NAME**). In the last 12 months, has your household received any medical support for (**NAME**), such as medical care, supplies, or medicine, for which you did not have to pay?	YES_____1 NO _____2 DON'T KNOW_____8	YES_____1 NO _____2 DON'T KNOW_____8

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES		SKIP
	SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN/MINORS (continued)			
107	In the last 12 months, has your household received any emotional or psychological support for (**NAME**), such as companionship, counseling from a trained counselor, or spiritual support, which you received at home and for which you did not have to pay?	YES_____1 NO _____2 DON'T KNOW____8	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	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	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?	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 YES_____1 NO, DID NOT RECEIVE SUPPORT_____2 NO, CHILD DOES NOT ATTEND SCHOOL_____3 DON'T KNOW_____8

CONTINUE TO NEXT CHILD IF OTHER CHILDREN WHOSE MOTHER AND/OR FATHER HAS DIED OR IS VERY SICK.

MATRIX END

INTERVIEWER SAYS: "Thank you for the information regarding (**NAME**)."

IF THERE IS ANOTHER CHILD 0-20 YEARS IN THE HOUSEHOLD WHO HAS BEEN IDENTIFIED IN COLUMN 17 AS HAVING A MOTHER/FATHER WHO HAS DIED OR IS VERY SICK BESIDES (NAME) → CONTINUE TO 106 AND ASK ABOUT THE NEXT CHILD.

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

☐ **TICK IF CONTINUATION SHEET REQUIRED.**

IF NO OTHER CHILDREN, CONTINUE HOUSEHOLD INTERVIEW.

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES			SKIP
		HOUSEHOLD DEATHS			
114	Now I would like to ask you more questions about your household. Has any usual resident of your household died since January 1, 2014?	YES_____1 NO _____2 DON'T KNOW _____8			No → 201
115	How many usual household residents died since January 1, 2014?	NUMBER OF DEATHS ☐☐ DON'T KNOW_____88			
ASK 116-120 AS APPROPRIATE FOR EACH PERSON WHO DIED. IF THERE WERE MORE THAN 3 DEATHS USE ADDITIONAL QUESTIONNAIRES.					
116	What was the name of the person who died (most recently/before him/her)?	NAME 1ST DEATH _____	NAME 2ND DEATH _____	NAME 3RD DEATH _____	
117	When did (**NAME**) die? Please give your best guess.	DAY ☐☐ MONTH ☐☐ YEAR ☐☐ DON'T KNOW DAY = -8 DON't KNOW MONTH = -8 DOn'T KNOW YEAR = -8	DAY ☐☐ MONTH ☐☐ YEAR ☐☐ DON'T KNOW DAY = -8 DON't KNOW MONTH = -8 DOn'T KNOW YEAR = -8	DAY ☐☐ MONTH ☐☐ YEAR ☐☐ DON'T KNOW DAY = -8 DON't KNOW MONTH = -8 DOn'T KNOW YEAR = -8	
118	Was (**NAME**) male or female?	MALE _____1 FEMALE_____2 DON'T KNOW _____8 CURRENT DATE> DATE OF DEATH 1 > JANUARY 1, 2014	MALE _____1 FEMALE_____2 DON'T KNOW _____8 CURRENT DATE> DATE OF DEATH 1 > JANUARY 1, 2014	MALE _____1 FEMALE_____2 DON'T KNOW _____8 CURRENT DATE> DATE OF DEATH 1 > JANUARY 1, 2014	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
		HOUSEHOLD DEATHS (continued)	
119	How old was (**NAME**) when (he/she) died? RECORD DAYS IF LESS THAN 1 MONTH, MONTHS IF LESS THAN 1 YEAR, AND COMPLETED YEARS IF 1 YEAR OR MORE.	DAY ☐☐ DAY ☐☐ DAY ☐☐ MONTH ☐☐ MONTH ☐☐ MONTH ☐☐ YEAR ☐☐ YEAR ☐☐ YEAR ☐☐ DON'T KNOW___88 DON'T KNOW___88 DON'T KNOW___88	
120	IF FEMALE DEATH AGED 15-49 YEARS: "Was (**NAME**) pregnant when she died or had she been pregnant within 3 months before she died?"	YES_____1 NO _____2 DON'T KNOW_____8	
	CONTINUE TO NEXT DEATH ACCORDING UP TO THE NUMBER REPORTED FROM 115. ☐ **TICK IF CONTINUATION SHEET REQUIRED.**		
		HOUSEHOLD CHARACTERISTICS	
	INTERVIEWER SAY: "Now I would like to ask you more questions about your household."		
201	What is the <u>main</u> source of drinking water for members of your household?	**PIPED WATER** PIPED INTO DWELLING_____11 PIPED TO YARD/PLOT _____12 PUBLIC TAP/STANDPIPE_____ 13 TUBE WELL OR BOREHOLE _____21 **DUG WELL** PROTECTED WELL _____ 31 UNPROTECTED WELL _____32 **WATER FROM SPRING** PROTECTED SPRING_____ 41 UNPROTECTED SPRING _____42 RAINWATER _____ 51 TANKER TRUCK_____ 61 CART WITH SMALL TANK_____71 SURFACE WATER (RIVER/DAM/ LAKE/ POND/STREAM/CANAL _____ 81 BOTTLED WATER _____ 91 OTHER _____96 (SPECIFY) _____	
202	Do you do anything to the water to make it safer to drink?	YES _____1 NO_____ 2 DON'T KNOW_____ 8	NO, DK → 204

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
		HOUSEHOLD CHARACTERISTICS (continued)	
203	What do you do to make your water safe for drinking?	BOILING _____ 1 FILTRATION (CHARCOAL FILTER _____ 2 SEDIMENTATION _____ 3 DISINFECTION (WATERGUARD, CHLORINE _____ 4 USE BOTTLED WATER _____ 5 OTHER _____ 96 (SPECIFY) _____	
204	What kind of toilet facility do members of your household usually use?	FLUSH OR POUR FLUSH TOILET _____ 11 TRADITIONAL PIT LATRINE _____ 21 VENTILATED IMPROVED PIT LATRINE (VIP) _____ 22 NO FACILITY/BUSH/FIELD _____ 61 OTHER _____ 96 (SPECIFY) _____	NO FACILITY, OTHER → 207
205	Do you share this toilet facility with other households?	YES _____ 1 NO _____ 2	NO → 207
206	How many households use this toilet facility?	NO. OF HOUSEHOLD IF LESS THAN 10 _____ 10 OR MORE HOUSEHOLDS _____ 96 DON'T KNOW _____ 98	
PREFACE BEFORE QUESTIONS 207-211: Does your household have:			
207	Electricity?	YES _____ 1 NO _____ 2	
208	A radio	YES _____ 1 NO _____ 2	
209	A television?	YES _____ 1 NO _____ 2	
210	A telephone/mobile telephone	YES _____ 1 NO _____ 2	
211	A refrigerator	YES _____ 1 NO _____ 2	
212	What type of fuel does your household mainly use for cooking?	ELECTRICITY _____ 1 LPG / NATURAL GAS _____ 2 BIOGAS _____ 3 PARAFFIN / KEROSENE _____ 4 COAL, LIGNITE _____ 5 CHARCOAL FROM WOOD _____ 6 FIREWOOD / STRAW _____ 7 DUNG _____ 8 NO FOOD COOKED IN HOUSEHOLD _____ 95 OTHER _____ 96 (SPECIFY) _____	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
		HOUSEHOLD CHARACTERISTICS (continued)	
213	MAIN MATERIAL OF FLOOR RECORD OBSERVATION.	**NATURAL FLOOR** EARTH / SAND _____ 11 **RUDIMENTARY FLOOR** WOOD PLANKS _____ 21 **FINISHED FLOOR** PARQUET OR POLISHED WOOD _____ 31 CERAMIC TILES _____ 33 CEMENT/TERAZO _____ 34 CARPET _____ 35 OTHER _____ 96 (SPECIFY) _____	
214	MAIN MATERIAL OF THE ROOF RECORD OBSERVATION.	**NATURAL ROOFING** THATCH/PALM LEAF _____ 12 DUNG / MUD _____ 13 **RUDIMENTARY ROOFING** CORRUGATED IRON/ALUMINUM SHEET _____ 21 **FINISHED ROOFING** ASBESTOS SHEET _____ 31 CONCRETE _____ 32 TILES _____ 33 OTHER _____ 96 (SPECIFY) _____	
215	MAIN MATERIAL OF THE EXTERIOR WALLS RECORD OBSERVATION.	**NATURAL WALLS** CANE/PALM/TRUNKS _____ 12 DUNG / MUD _____ 13 **RUDIMENTARY WALLS** BAMBOO WITH MUD _____ 21 STONE WITH MUD _____ 22 PLYWOOD/CARDBOARD _____ 23 REUSED WOOD _____ 25 **FINISHED WALLS** CEMENT _____ 31 STONE WITH LIME/CEMENT _____ 32 BRICKS _____ 33 CEMENT BLOCKS _____ 34 WOOD PLANKS/SHINGLES _____ 35 OTHER _____ 96 (SPECIFY) _____	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
		HOUSEHOLD CHARACTERISTICS (continued)	
216	How many rooms are used for sleeping?	NUMBER OF ROOMS: ☐☐	
	PREFACE BEFORE QUESTIONS 217-220: Does any member of your household own:		
217	A bicycle?	YES _____ 1 NO _____ 2	
218	A motorcycle or motor scooter?	YES _____ 1 NO _____ 2	
219	A car or truck?	YES _____ 1 NO _____ 2	
220	A boat with a motor?	YES _____ 1 NO _____ 2	
	PREFACE BEFORE QUESTIONS 221-225: Does any member of your household own:		
221	Cows?	YES _____ 1 NO _____ 2	
222	Goats/Sheep?	YES _____ 1 NO _____ 2	
223	Poultry (e.g., ducks, chickens)?	YES _____ 1 NO _____ 2	
224	Dogs?	YES _____ 1 NO _____ 2	
225	Other animals (camels, horses, donkeys)?	YES _____ 1 NO _____ 2	
		MALARIA & FOOD SECURITY	
226	Does your household have any mosquito nets that can be used while sleeping?	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8 REFUSED _____ 9	NO, DK, REFUSED → 229
227	May I please see the mosquito nets you use? COUNT THE NUMBER OF NETS HANGING OVER BEDS OR SLEEPING AREAS	NUMBER OF HANGING NETS _____ REFUSED _____ -9	
228	Who slept under these nets last night? SELECT INDIVIDUALS FROM THE HOUSEHOLD ROSTER.	LIST HOUSEHOLD ROSTER NAMES FOR INTERVIEWER TO SELECT REFUSED _____ -9	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
		MALARIA & FOOD SECURITY (continued)	
229	In the past 4 weeks, did you or any household member go to sleep at night hungry because there was not enough food?	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	NO, DK → 301
230	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	
Now I will ask you questions on economic support you have received.			
301	Has your household received any of the following forms of external economic support in the last 12 months? SELECT ALL THAT APPLY.	NOTHING _____ A CASH TRANSFER (E.G. PENSIONS, DISABILITY GRANTS, CHILD GRANT _____ B ASSISTANCE FOR SCHOOL FEES _____ C MATERIAL SUPPORT FOR EDUCATION (E.G. UNIFORMS, SCHOOL BOOKS, EDUCATION, TUITION SUPPORT, BURSARIES _____ D INCOME GENERATION SUPPORT IN CASH OR KIND (E.G. AGRIGULTURAL INPUTS _____ E FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION ___ F MATERIAL OR FINANCIAL SUPPORT FOR SHELTER _____ G SOCIAL PENSION _____ H OTHER _____ X (SPECIFY) _____ DON'T KNOW _____ Z	NOTHING, DON'T KNOW → END OF SECTION

END OF HOUSEHOLD INTERVIEW

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

END TIME

END RECORD THE END TIME.

USE 24 HOUR TIME.

IF START TIME IS 3:12 PM,
RECORD 15 HOURS, 12 MINUTES,
NOT 03 HOURS, 12 MINUTES.

HOUR: ☐☐

MINUTES: ☐☐

INTERVIEWER OBSERVATIONS:

TO BE COMPLETED AFTER THE INTERVIEW:

COMMENTS ABOUT RESPONDENT:

COMMENTS ABOUT SPECIFIC QUESTIONS:

GENERAL QUESTIONS:

APPENDIX F ADULT QUESTIONNAIRE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
MODULE 1: RESPONDENT BACKGROUND			
L1	In which language(s) would you prefer to answer this survey? SELECT MAX 2	ENGLISH = A FRENCH = B FUFULDE = C EWONDO = D PIDGIN = D ARABIC =E OTHER = F SPECIFY: _____	
L2	LANGUAGE OF QUESTIONNAIRE	ENGLISH = 1 FRENCH = 2 FULFULDE = 3 PIDGIN WITH ENGLISH = 4	
L3	LANGUAGE OF INTERVIEW	ENGLISH = 1 FRENCH = 2 FUFULDE = 3 EWONDO = 4 PIDGIN = 5 ARABIC = 6 OTHER = 7 SPECIFY: _____	
L4	VERBAL TRANSLATION 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	
102	What is your ethnic group/tribe?	ARABES-CHOA/PEULH/HAOUSSA = 1 BIU-MANDARA = 2 ADAMAOUA-OUBANGUI = 3 BANTOÏDE SUD-OUEST = 4 GRASSFIELDS = 5 BAMILIKE/BAMOUN = 6 CÔTIER/NGOE/OROKO = 7 BETI/BASSA/MBAM = 8 KAKO/MEKA/PYGMÉ = 9 FOREIGNER = 10 NO TRIBE = 11 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
103	What is your religion?	CATHOLIC = 1 PROTESTANT = 2 MUSLIM = 3 ANIMIST = 4 OTHER CHRISTIAN = 5 OTHER RELIGION = 96 SPECIFY: _____ NO RELIGION = 6 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
104	Have you ever attended school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED →108
105	Are you enrolled in school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
106	What is the highest year of school you attended?	MOINS 1 AN/LESS THAN 1 YR = 0 PRESCOLAIRE/PRESCHOOL = 1 SIL/GDE SECT/CLASS 1 = 2 CP/CPS/CLASS 2 = 3 CE1/CLASS 3 = 4 CE2/CLASS 4 = 5 CM1/CLASS 5 = 6 CM2/CLASS 6/7 = 7 6È/1ÈRE A.T/FORM 1 = 8 5È/2È A.T/FORM 2 = 9 4È/3È A.T/FORM 3 = 10 3È/4È A.T/FORM 4 = 11 2NDE G OU T/FORM 5 = 12 1ERE G OU T/LOWER 6 = 13 TERMINALE G OU T/UPPER 6 = 14 SUPERIOR 1E ANNEE/HIGHER ED 1ST YEAR = 15 SUPERIOR 2E ANNEE/HIGHER ED 2ND YEAR = 16 SUPERIOR 3E ANNEE/HIGHER ED 3RD YEAR = 17 SUPERIOR 4E ANNEE OU PLUS/HIGHER ED 4TH YEAR OR MORE= 18 NE SAIS PAS/ DON'T KNOW = -8 REFUSE/ REFUSED = -9	DK, REFUSED →108
107	What is the highest year of school you completed?	MOINS 1 AN/LESS THAN 1 YR = 0 PRESCOLAIRE/PRESCHOOL = 1 SIL/GDE SECT/CLASS 1 = 2 CP/CPS/CLASS 2 = 3 CE1/CLASS 3 = 4 CE2/CLASS 4 = 5 CM1/CLASS 5 = 6 CM2/CLASS 6/7 = 7 6È/1ÈRE A.T/FORM 1 = 8 5È/2È A.T/FORM 2 = 9 4È/3È A.T/FORM 3 = 10 3È/4È A.T/FORM 4 = 11 2NDE G OU T/FORM 5 = 12 1ERE G OU T/LOWER 6 = 13 TERMINALE G OU T/UPPER 6 = 14 SUPERIOR 1E ANNEE/HIGHER ED 1ST YEAR = 15 SUPERIOR 2E ANNEE/HIGHER ED 2ND YEAR = 16 SUPERIOR 3E ANNEE/HIGHER ED 3RD YEAR = 17 SUPERIOR 4E ANNEE OU PLUS/HIGHER ED 4TH YEAR OR MORE= 18 NE SAIS PAS/ DON'T KNOW = -8 REFUSE/ REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
108	Have you done any work in the last 12 months for which you received cash or goods as payment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → END OF SECTION
109	Have you done any work in the last seven days for which you received cash or goods as payment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 2: MARRIAGE			
Interviewer says: "Now I would like to ask you about your current and previous relationships and/or marriages."			
201	Have you ever been married or lived together with a [man/woman] as if married?	YES = 1 NO = 2 DON'T KNOW =-8 REFUSED = -9	NO, DK, REFUSED → NEXT MODULE
202	What is your marital status now: are you married, living together with someone as if married, widowed, divorced, or separated?	MARRIED = 1 LIVING TOGETHER = 2 WIDOWED = 3 DIVORCED = 4 SEPARATED = 5 DON'T KNOW = -8 REFUSED = -9	WIDOWED, DIVORCED, SEPARATED, DK, REFUSED → NEXT MODULE
Interviewer says: "The next several questions are about your current husband, wife, or partner(s)."			
203	Altogether, how many wives or live-in partners do you have?	NUMBER OF WIVES OR LIVE-IN PARTNERS ____ DON'T KNOW = -8 REFUSED = -9	DK, REFUSED → NEXT MODULE SKIP IF FEMALE
204	The Household Schedule listed [count] household members as your wives/ partners. Please review the list below and tell me if it is correct.	YES = 1 NO = 2	YES→ 207 SKIP IF FEMALE
205	Is [**NAME**] your wife/partner?	YES = 1 NO = 2	SKIP IF FEMALE
206	Does [**NAME**] live in the household?	YES = 1 NO = 2	SKIP IF FEMALE
207	Do you have additional wives/ partner(s) that live with you here in this household?	YES = 1 NO = 2	SKIP IF FEMALE NO→ 210
208	How many additional wives/partners(s) live with you here?	NUMBER OF WIVES OR LIVE-IN PARTNERS _ _	SKIP IF FEMALE
209	Please enter the name of your wife/ partner that lives with you here.	NAME OF WIFE/PARTNER ___ DON'T KNOW = -8 REFUSED = -9	SKIP IF FEMALE
210	How many wives or live-in partners do you have who live elsewhere? This would include wives or partners that you stay with or support in other households.	NUMBER OF ADDITIONAL WIVE(S)/ PARTNERS ___ DON'T KNOW = -8 REFUSED = -9	SKIP IF FEMALE
211	Is your husband or partner living with you now or is he staying elsewhere?	LIVING TOGETHER = 1 STAYING ELSEWHERE = 2 DON'T KNOW = -8 REFUSE TO ANSWER = -9	STAYING ELSEWHERE, DK, REFUSED → 215 SKIP IF MALE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
212	The household schedule listed [NAME OF HUSBAND/PARTNER] as your husband/partner who is living here. Is that correct?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES, DK, REF→ 215 SKIP IF MALE
213	Please select the husband/partner that lives with you.	[LIST OF PERSONS ON HH ROSTER] NOT LISTED IN HOUSEHOLD = 96	LISTED → 215 SKIP IF MALE
214	Please enter the name of your husband/partner that lives with you.	NAME OF HUSBAND/PARTNER ___ DON'T KNOW = -8 REFUSED = -9	SKIP IF MALE
215	Does your husband or partner have other wives or does he live with other women as if married?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSE TO ANSWER = -9	NO, DK, REFUSED→ NEXT MODULE SKIP IF MALE
216	Including yourself, in total, how many wives or partners does your husband or partner stay with or support?	NUMBER OF WIVES OR PARTNERS _ _ DON'T KNOW = -8 REFUSE TO ANSWER = -9	SKIP IF MALE
MODULE 3: REPRODUCTION			
Interviewer says: "Now I would like to ask you questions about your pregnancies and your children."			**MALE → 341**
301	How many times have you been pregnant including a current pregnancy? CODE '00' IF NONE.	NUMBER OF TIME(S) ___ DON'T KNOW = -8 REFUSED = -9	NONE(00), DK, REFUSED → 341
302	Have you ever had a pregnancy that resulted in a live birth? A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 340
303	How many live births have you had since the 1st of January, 2014? CODE '00' IF NONE.	NUMBER OF CHILDREN ___ DON'T KNOW = -8 REFUSED = -9	NONE(0), DK, REFUSED → 341
Interviewer says: "Now I would like to ask you some questions about the last pregnancy that resulted in a live birth in the last 3 years (since January 1, 2014)."			
304	Did your last pregnancy result in live birth to twins or more?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 306
305	What is the name of the [INSERT ORDER OF BIRTH] born child from that pregnancy that resulted in a live birth? IF THE CHILD WAS NOT NAMED BEFORE DEATH, INPUT BIRTH 1	NAME _____	WILL BE REPEATED FOR EACH MULTIPLE BIRTH → 307
306	What is the name of the child from your last pregnancy that resulted in a live birth? IF THE CHILD (CHILDREN) WAS NOT NAMED BEFORE DEATH, INPUT BIRTH 1.	NAME _____	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
307	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	YES → 309 DK, REFUSED → 309
308	What is the main reason you did not visit a clinic for antenatal care when you were pregnant with [**NAME**]?	CLINIC WAS TOO FAR AWAY = 1 COULD NOT TAKE TIME OFF WORK/TOO BUSY = 2 COULD NOT AFFORD TO PAY FOR THE VISIT = 3 DID NOT TRUST THE CLINIC STAFF = 4 RECEIVED CARE AT HOME = 5 DID NOT WANT AN HIV TEST DONE = 6 HUSBAND/FAMILY WOULD NOT LET ME GO = 7 USED TRADITIONAL BIRTH ATTENDANT/ HEALER = 8 COST OF TRANSPORT = 9 RELIGIOUS REASONS = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
Interviewer says: "I will now be asking you questions on HIV testing. Please remember that your responses will be kept confidential and will not be shared with anyone else."			
309	Have you ever tested for HIV before your pregnancy with [**NAME**]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 312
310	Did you test positive for HIV before your pregnancy with [**NAME**]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 312
311	At the time of your first antenatal care visit when you were pregnant with [**NAME**], were you taking ARVs, that is, antiretroviral medications to treat HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 318 NO, DK, REFUSED→ 316 ELECTRONIC AID IF DON'T KNOW
312	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	
313	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	YES → 315 DK, REFUSED → 318

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
314	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 HUSBAND/WIFE/PARTNER//FAMILY = 2 AFRAID OTHERS WOULD KNOW ABOUT TEST RESULTS = 3 DID NOT NEED TEST/LOW RISK = 4 THE TEST WAS NOT AVAILABLE IN THE HEALTH FACILITY = 5 THE HEALTH PERSONNEL DID NOT PROPOSE I TAKE A TEST = 6 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL→ 318
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	POSITIVE → 316 ELSE → 318
316	Did you EVER take ARVs during your pregnancy with [**NAME**] to stop [**NAME**] from getting HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 318 DK, REFUSED → 318 ELECTRONIC AID IF DON'T KNOW
317	What was the main reason you did not take ARVs while you were pregnant with [**NAME**]?	WAS NOT PRESCRIBED = 1 I FELT HEALTHY/NOT SICK = 2 COST OF MEDICATIONS = 3 COST OF TRANSPORT = 4 RELIGIOUS REASONS = 5 WAS TAKING TRADITIONAL MEDICATIONS = 6 MEDICATIONS OUT OF STOCK = 7 DID NOT WANT PEOPLE TO KNOW HIV STATUS = 8 DID NOT RECEIVE PERMISSION FROM HUSBAND/WIFE/PARTNER//FAMILY = 9 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
318	When you were pregnant with [**NAME**], were you offered a test for Hepatitis B?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
319	When you were pregnant with [**NAME**], were you tested for Hepatitis B?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 322
320	Did you test positive for Hepatitis B during your pregnancy with [**NAME**]?	YES = 1 NO = 2 DID NOT GET RESULT = 3 DON'T KNOW = -8 REFUSED = -9	NO, NO RESULT, DK, REFUSED → 322

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
321	Did you get treatment for Hepatitis B during your pregnancy with [**NAME**]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
322	Where did you give birth to [**NAME**]?	AT HOME = 1 AT A HEALTH FACILITY = 2 IN TRANSIT = 3 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	HOME, TRANSIT, OTH, DK, REFUSED → 329
323	Were you offered an HIV test during labor?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
324	Did you test for HIV during labor?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 329 SKIP IF HIV POSITIVE
325	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	NEG, UNK/INDET, NO RESULTS, DK, REFUSED → 329 SKIP IF HIV POSITIVE
326	During labor, were you offered ARVs to protect [**NAME**] against HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF ALREADY ON ARVS.
327	During labor, did you take ARVs to protect [**NAME**] against HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 329 ELECTRONIC AID IF DON'T KNOW. SKIP IF ALREADY ON ARVS.
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 __ __ DON'T KNOW DAY= -8 REFUSED DAY= -9 MONTH __ __ DON'T KNOW MONTH= -8 REFUSED MONTH= -9 YEAR __ __ __ __ DON'T KNOW YEAR=-8 REFUSED YEAR= -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
330	Is [**NAME**] still alive?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES, DK, REFUSED → 333 IF MULTIPLE BIRTH ASK 330 -- 339 FOR EACH CHILD.
331	How old was [**NAME**] when he/she died? KEY '0' IF CHILD WAS LESS THAN ONE YEAR OLD.	YEARS ____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	>0, DK, REFUSED → 335
332	How old was [**NAME**] in months when he/she died? KEY '0' IF CHILD WAS LESS THAN ONE MONTH OLD.	MONTHS ____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9	ALL→335
333	Is [**NAME**] living with you?	YES = 1 NO = 2	NO →335
334	RECORD HOUSEHOLD LINE NUMBER OF CHILD RECORD '00' IF CHILD NOT LISTED IN HOUSEHOLD	HOUSEHOLD LINE NUMBER ___	
335	Did you ever breastfeed [**NAME**]?	YES = 1 NO, NEVER BREASTFED = 2 NO, CHILD NOT ALIVE = 3 DON'T KNOW = -8 REFUSED = -9	NO, NOT ALIVE, DK, REFUSED → 339
336	For how long did you breastfeed [**NAME**]? ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS OR IN MONTHS. CODE '00' IF LESS THAN 1 WEEK.	WEEKS ___ MONTHS ___ STILL BREASTFEEDING = 96 DON'T KNOW = -8 REFUSED = -9	
337	Some people exclusively breastfeed their baby and some people mix breastmilk feedings with other liquids. What kind of breastfeeding method did you use when your baby was 0-6 months?	EXCLUSIVE = 1 MIXED METHOD (BREASTMILK AND FORMULA OR OTHER LIQUID) = 2 DON'T KNOW = -8 REFUSED = -9	
338	Did you continue taking ARVs while you were breastfeeding [**NAME**]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF ONLY ONE TIME MED. SKIP IF HIV NEGATIVE. SKIP IF NOT TAKING ARVS
339	Thank you for the information regarding [**NAME**]. DID THE RESPONDENT HAVE MORE THAN ONE CHILD (I.E. TWINS, TRIPLETS)?	YES = 1 NO = 2	YES →RETURN TO 330 FOR MULTIPLES
Interviewer says: "I will now ask about current pregnancies."			

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
340	Are you pregnant now?	YES = 1 NO = 2 DON'T KNOW/UNSURE = -8 REFUSED = -9	YES → END OF MODULE
Interviewer says: "I will now ask you about family planning."			
341	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	NO, DK, REFUSED→ END OF MODULE
342	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 MALE CONDOM = G FEMALE CONDOM = H RHYTHM/NATURAL METHODS = I WITHDRAWAL = J NOT HAVING SEX = K OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
MODULE 4: CHILDREN			
HOUSEHOLD SCHEDULE NOTED THAT [NAME OF RESPONDENT] WILL FILL OUT THE CHILDREN'S MODULE FOR [NUMBER OF CHILDREN] CHILD/CHILDREN. **Interviewer says: "I am going to ask you a number of questions about your child/children regarding their health and where they get their health services. I will begin with your youngest child."** **[LIST OF CHILDREN <=14 YEARS ASSIGNED TO NAME]**			
401	Now I am going to ask you questions for [**NAME**].		
402	How old is [**NAME**] in years? IF [**NAME**] IS LESS THAN 1 YEAR OLD, KEY 0 HERE AND KEY AGE IN MONTHS ON NEXT SCREEN.	AGE IN YEARS_____	IF 402>=1 & 402<=5 → 404 IF 402 > 5 → 405
403	How old is [**NAME**] in months?	AGE IN MONTHS ___	→ 405
404	You said that [**NAME**] was [KIDAGEY]. How many months over [KIDAGEY] is [CHILD*]?	MONTHS SINCE LAST BIRTHDAY ___	
405	Is [**NAME**] a boy or girl?	BOY = 1 GIRL = 2 REFUSED = -9	
406	Is [**NAME**] 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	TOO YOUNG, REFUSED → 411

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
407	What is the highest level of school [NAME] has attended: nursery, primary or secondary?	NURSERY = 0 PRIMARY = 1 SECONDARY = 2 NEVER ATTENDED SCHOOL = 3 DON'T KNOW = -8 REFUSED = -9	IF 406 = NO, CURRENTLY NOT IN SCHOOL, DK → 409 NURSERY → 411
408	What school year is [**NAME**] in now?	MOINS 1 AN/LESS THAN 1 YR = 0 PRESCOLAIRE/PRESCHOOL = 1 SIL/GDE SECT/CLASS 1 = 2 CP/CPS/CLASS 2 = 3 CE1/CLASS 3 = 4 CE2/CLASS 4 = 5 CM1/CLASS 5 = 6 CM2/CLASS 6/7 = 7 6È/1ÈRE A.T/FORM 1 = 8 5È/2È A.T/FORM 2 = 9 4È/3È A.T/FORM 3 = 10 3È/4È A.T/FORM 4 = 11 2NDE G OU T/FORM 5 = 12 1ERE G OU T/LOWER 6 = 13 TERMINALE G OU T/UPPER 6 = 14 NE SAIS PAS/ DON'T KNOW = -8 REFUSE/ REFUSED = -9	
409	Was [**NAME**] enrolled in school during the previous school year?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO DK, REFUSED → 411
410	What year was [**NAME**] in during the previous school year?	MOINS 1 AN/LESS THAN 1 YR = 0 PRESCOLAIRE/PRESCHOOL = 1 SIL/GDE SECT/CLASS 1 = 2 CP/CPS/CLASS 2 = 3 CE1/CLASS 3 = 4 CE2/CLASS 4 = 5 CM1/CLASS 5 = 6 CM2/CLASS 6/7 = 7 6È/1ÈRE A.T/FORM 1 = 8 5È/2È A.T/FORM 2 = 9 4È/3È A.T/FORM 3 = 10 3È/4È A.T/FORM 4 = 11 2NDE G OU T/FORM 5 = 12 1ERE G OU T/LOWER 6 = 13 TERMINALE G OU T/UPPER 6 = 14 NE SAIS PAS/ DON'T KNOW = -8 REFUSE/ REFUSED = -9	
411	Now we are going to ask you some questions about [**NAME**'s] health. Some of them may sound sensitive, but the information is important for their health.		IF 405 IS GIRL→ 414
412	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	NO DK, REFUSED → 414 ELECTRONIC AID IF DON'T KNOW.

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
413	Who circumcised [**NAME**]?	DOCTOR, CLINICAL OFFICER, OR NURSE = 1 TRADITIONAL PRACTITIONER / CIRCUMCISER =2 MIDWIFE = 3 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSE TO ANSWER=-9	
414	Has [**NAME**] ever been tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 416 DK, REFUSED → 433
415	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 HUSBAND/WIFE/PARTNER /FAMILY = G AFRAID WIFE/HUSBAND/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 SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	ALL-> 433
416	What month and year was [**NAME**]'s last HIV test done?	MONTH __ __ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR __ __ __ __ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	DATE RESTRAINTS
417	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 NEG, UNK/INDET, DID NOT RECEIVE, DK, REFUSED→ 433
418	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 you have received. PROBE TO VERIFY DATE.	MONTH __ __ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR __ __ __ __ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
419	Has [**NAME**] ever received any HIV-related care from a doctor, clinical officer or nurse from a health facility?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 421 DK, REFUSED → 424

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
420	What is the main reason why [**NAME**] has never seen a doctor, clinical officer, or nurse for HIV-related 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 IF THE CHILD DOES NOT SEEM SICK, HE/SHE DOES NOT NEED CARE = 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 I DO NOT BELIEVE THE CHILD HAS A DISEASE = 9 DO NOT TRUST THE STAFF/QUALITY OF CARE = 10 I DO NOT FEEL WE ARE RESPECTED BY THE STAFF = 11 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL→ 424
421	What month and year did [**NAME**] first see a doctor, clinical officer or nurse for HIV medical care? PROBE TO VERIFY DATE.	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH= -9 YEAR _____ DON'T KNOW YEAR =-8 REFUSED YEAR = -9	
422	What month and year did [**NAME**] last see a doctor, clinical officer or nurse for HIV medical care?	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH= -9 YEAR _____ DON'T KNOW YEAR =-8 REFUSED YEAR = -9	IF <7 MONTHS, DK, REFUSED, MISSING DATE → 424
423	What is the main reason for [**NAME**] not seeing a doctor, clinical officer or nurse for HIV medical care for more than 6 months?	FACILITY IS TOO FAR AWAY = 1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE FOR CHILD = 2 COST OF CARE = 3 COST OF TRANSPORT = 4 IF THE CHILD DOES NOT SEEM SICK, HE/SHE DOES NOT NEED CARE = 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//MISSED MOST RECENT APPOINTMENT= 9 DO NOT TRUST THE STAFF/QUALITY OF CARE = 10 I DO NOT FEEL WE ARE RESPECTED BY THE STAFF = 11 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
424	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 STILL DON'T UNDERSTAND WHAT A CD4 TEST IS = 3 DON'T KNOW = -8 REFUSED = -9	NO, DON'T UNDERSTAND, DK, REFUSED → 426 NO, DON'T UNDERSTAND, DK, REFUSED & NEVER IN HIV CARE → 433
425	What month and year was [**NAME**] last tested for his/her CD4 count?	MONTH __ __ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR __ __ __ __ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	NEVER IN HIV CARE → 433
426	Has [**NAME**] ever taken ARVs? ARVs are antiretroviral medications that treat his/her HIV infection.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 428 DK, REFUSED → 432 ELECTRONIC AID IF DON'T KNOW
427	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 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL→ 432
428	What month and year did [**NAME**] first start taking ARVs? PROBE TO VERIFY DATE.	MONTH = ___ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR = ___ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
429	Is [**NAME**] currently taking ARVs? By currently, I mean that [**NAME**] may have missed some doses but [**NAME**] is still taking ARVs.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 3040 DK, REFUSED → 432

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
430	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 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL → 432
431	People sometimes forget to take all their ARVs every day. In the last 30 days, how many days has [**NAME**] missed taking any ARV pills? CODE '00' IF NONE.	DAYS ___ ___ DON'T KNOW = -8 REFUSED = -9	
432	Is [**NAME**] currently taking Bactrim or cotrimoxazole? Bactrim or cotrimoxazole is a medicine that treats different illnesses, but is also 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 Bactrim or cotrimoxazole.	YES = 1 NO = 2 I STILL DON'T UNDERSTAND WHAT BACTRIM/COTRI IS = 3 DON'T KNOW IF CHILD IS TAKING = -8 REFUSED = -9	ELECTRONIC AID IF DON'T KNOW
433	Has [**NAME**] ever visited a clinic for tuberculosis for TB diagnosis or treatment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 434
434	Was [**NAME**] tested for HIV at the TB clinic?	YES = 1 NO, WAS NOT TESTED FOR HIV = 2 NO, WAS ALREADY HIV POSITIVE = 3 DON'T KNOW = -8 REFUSED = -9	SKIP IF 414 = NO
435	Have you ever been told by a doctor, clinical officer or nurse that [**NAME**] had TB?	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 439
436	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 ___ ___ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _ _ _ _ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
437	Was [**NAME**] ever treated for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 439
438	Is [**NAME**] currently on treatment for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 439
439	The last time [**NAME**] was treated for TB, did [**NAME**] complete at least 6 months of treatment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
440	Has your child been vaccinated for Hepatitis B? ASK IF CHILD'S VACCINATION CARD IS AVAILABLE.	YES=1 NO=2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED →442
441	How many doses of Hepatitis B vaccination has your child received?	0 DOSES =0 1 DOSE = 1 2 DOSES = 2 3+ DOSES = 3 DON'T KNOW = -8 REFUSED = -9	
442	TICK WHETHER HEPATITIS B VACCINATION WAS CONFIRMED VIA VACCCINATION CARD OR PARENT RECALL	CONFIRMED WITH VACCINATION CARD = 1 CONFIRMED VIA PARENT RECALL = 2 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
443	Thank you for the information about [**NAME**]. DOES THE RESPONDENT HAVE ANOTHER CHILD AGED 0-14 YEARS?		YES→RETURN TO 401
MODULE 5: MALE CIRCUMCISION			
Interviewer says: "I will be asking a few questions about circumcision. Circumcision is the complete removal of the foreskin from the penis. I have a picture to show you what a completely circumcised penis looks like."			ELECTRONIC AID IF DON'T KNOW. SKIP IF FEMALE
501	Some men are uncomfortable talking about circumcision but it is important for us to have this information. Some men are circumcised. Are you circumcised?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED=9	YES → 503 DK, REFUSED → NEXT MODULE
502	Are you planning to get circumcised?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED= -9	ALL → NEXT MODULE
503	How old were you when you were circumcised? Please give your best guess. IF LESS THAN ONE YEAR, CODE '00'.	AGE IN YEARS ___ DON'T KNOW = -8 REFUSED= -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
504	Who did the circumcision?	DOCTOR, CLINICAL OFFICER, OR NURSE = 1 TRADITIONAL PRACTITIONER / CIRCUMCISER =2 MIDWIFE = 3 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED= -9	
MODULE 6: SEXUAL ACTIVITY			
Interviewer says: "In this part of the interview, I will be asking questions about your sexual relationships and practices. These questions will help us have a better understanding of how they may affect your life and risk for HIV. **Let me assure you again that your answers are completely confidential and will not be shared with anyone. If there are questions that you do not want to answer, we can go to the next question."**			
601	Have you ever had sex? Sex can be when a penis enters a vagina, when a penis enters an anus, or when a person puts his/her mouth on the penis or vagina of another person.	YES = 1 NO = 2 DK = -8 REFUSED = -9	REFUSED, NO→ NEXT MODULE
602	What types of sex have you had? SELECT ALL THAT APPLY. Vaginal sex is when a penis enters a vagina. Anal sex is when a penis enters an anus. Oral sex is when a person puts his/her mouth on the penis or vagina of another person.	NEVER HAD SEX = A VAGINAL = B ANAL = C ORAL = D DON'T KNOW = Y REFUSED = Z	NEVER, DK, REFUSED → NEXT MODULE
603	How old were you when you had vaginal sex for the very first time?	AGE IN YEARS _ _ DON'T KNOW = -8 REFUSED = -9	SKIP IF NEVER HAD VAGINAL SEX
604	How old were you when you had anal sex for the very first time?	AGE IN YEARS _ _ DON'T KNOW = -8 REFUSED = -9	SKIP IF NEVER HAD ANAL SEX
605	People often have sex with different people over their lifetime. In total, with how many different people have you had sex in your lifetime? Please give your best guess. IF NUMBER OF PARTNERS IS GREATER THAN 100, WRITE ' 100'.	NUMBER OF SEXUAL PARTNERS IN LIFETIME _ _ __ DON'T KNOW = -8 REFUSED = -9	
606	People often have sex with different people over their lifetime. In total, with how many different people have you had sex in the last 12 months? IF NONE CODE '00'. IF NUMBER OF PARTNERS IS GREATER THAN 100, WRITE ' 100'.	NUMBER OF SEXUAL PARTNERS IN LAST 12 MONTHS __ __ __ DON'T KNOW = -8 REFUSED = -9	IF 00 PARTNERS IN LAST 12 MONTHS → 701

NO.	QUESTIONS	CODING CATEGORIES		SKIPS/FILTERS
Interviewer says: "Now I would like to ask you some questions about the people you have had sex with in the last 12 months. Let me assure you again that your answers are completely confidential and will not be told to your sexual partner or anyone else. I will first ask you about the most recent person you had sex with."				
ASK ONLY ABOUT THE LAST 3 PERSONS THE PARTICIPANT HAS HAD SEX WITH.				
607	Does the person you had sex with live in this household?	YES = 1 NO = 2 NO→ 609	YES = 1 NO = 2 NO→ 609	YES = 1 NO = 2 NO→ 609
608	Please select the **name** below from the household membership list. Please identify the person you had sex with.	[LIST] ALL→ 610	[LIST] ALL→ 610	[LIST] ALL→ 610
609	I would like to ask you for the initials of this person so I can keep track. They do not have to be the actual initials of this person.	INITIALS ___ ___	INITIALS ___ ___	INITIALS ___ ___
610	What is your relationship with (INITIALS)?	HUSBAND/WIFE = 1 LIVE-IN PARTNER = 2 PARTNER, NOT LIVING WITH RESPONDENT = 3 EX-WIFE/HUSBAND/ EX-PARTNER = 4 FRIEND/ ACQUAINTANCE = 5 SEX WORKER = 6 SEX WORKER CLIENT =7 STRANGER = 8 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	HUSBAND/WIFE = 1 LIVE-IN PARTNER = 2 PARTNER, NOT LIVING WITH RESPONDENT = 3 EX-WIFE/HUSBAND/ EX-PARTNER = 4 FRIEND/ ACQUAINTANCE = 5 SEX WORKER = 6 SEX WORKER CLIENT =7 STRANGER = 8 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	HUSBAND/WIFE = 1 LIVE-IN PARTNER = 2 PARTNER, NOT LIVING WITH RESPONDENT = 3 EX-WIFE/HUSBAND/EX-PARTNER = 4 FRIEND/ACQUAINTANCE = 5 SEX WORKER = 6 SEX WORKER CLIENT =7 STRANGER = 8 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9
611	Is (INITIALS) male or female?	MALE = 1 FEMALE = 2 DON'T KNOW = -8 REFUSED = -9	MALE = 1 FEMALE = 2 DON'T KNOW = -8 REFUSED = -9	MALE = 1 FEMALE = 2 DON'T KNOW = -8 REFUSED = -9
612	How old is (INITIALS)? Please give your best guess.	AGE IN YEARS ___ DON'T KNOW = -8 REFUSED = -9	AGE IN YEARS ___ DON'T KNOW = -8 REFUSED = -9	AGE IN YEARS ___ DON'T KNOW = -8 REFUSED = -9
613	The last time you had sex with (INITIALS) was a condom used?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9
614	Did you enter into a sexual relationship with (INITIALS) because (INITIALS) provided you with or you expected that (INITIALS) would provide you gifts, help you to pay for things, or help you in other ways?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 SKIP IF SEX WORKER OR CLIENT	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 SKIP IF SEX WORKER OR CLIENT	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 SKIP IF SEX WORKER OR CLIENT

NO.	QUESTIONS	CODING CATEGORIES		SKIPS/FILTERS
615	In the last 12 months, have you had sex with (INITIALS) because (INITIALS) provided you with, or you expected that (INITIALS) would provide you with gifts, help you to pay for things or help you in other ways?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 NO, DK, REFUSED → 617 SKIP IF SEX WORKER OR CLIENT	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 NO, DK, REFUSED → 617 SKIP IF SEX WORKER OR CLIENT	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 NO, DK, REFUSED → 617 SKIP IF SEX WORKER OR CLIENT
616	In the last 12 months, what have you received from (INITIALS)? SELECT ALL THAT APPLY.	DID NOT RECEIVE ANYTHING = A MONEY = B FOOD = C SCHOOL FEES = D EMPLOYMENT = E GIFTS/FAVORS = F TRANSPORT = G SHELTER/RENT = H PROTECTION = I OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z SKIP IF SPOUSE, LIVE-IN PARTNER, SEX WORKER OR CLIENT	DID NOT RECEIVE ANYTHING = A MONEY = B FOOD = C SCHOOL FEES = D EMPLOYMENT = E GIFTS/FAVORS = F TRANSPORT = G SHELTER/RENT = H PROTECTION = I OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z SKIP IF SPOUSE, LIVE-IN PARTNER, SEX WORKER OR CLIENT	DID NOT RECEIVE ANYTHING = A MONEY = B FOOD = C SCHOOL FEES = D EMPLOYMENT = E GIFTS/FAVORS = F TRANSPORT = G SHELTER/RENT = H PROTECTION = I OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z SKIP IF SPOUSE, LIVE-IN PARTNER, SEX WORKER OR CLIENT
617	Do you expect to have sex with (**INITIALS**) again?	YES =1 NO =2 DON'T KNOW = -8 REFUSED = -9	YES =1 NO =2 DON'T KNOW = -8 REFUSED = -9	YES =1 NO =2 DON'T KNOW = -8 REFUSED = -9
618	Does (INITIALS) know your HIV status? HIV status could mean you are HIV negative or HIV positive.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9
619	What is the HIV status of (INITIALS)? READ RESPONSES ALOUD	I THINK HE/SHE IS POSITIVE = 1 HE/SHE TOLD ME HE/SHE IS POSITIVE = 2 HE/SHE IS POSITIVE, TESTED TOGETHER = 3 I THINK HE/SHE IS NEGATIVE = 4 HE/SHE TOLD ME HE/SHE IS NEGATIVE = 5 HE/SHE IS NEGATIVE, TESTED TOGETHER=6 DON'T KNOW STATUS = 7 REFUSED = -9	I THINK HE/SHE IS POSITIVE = 1 HE/SHE TOLD ME HE/SHE IS POSITIVE = 2 HE/SHE IS POSITIVE, TESTED TOGETHER = 3 I THINK HE/SHE IS NEGATIVE = 4 HE/SHE TOLD ME HE/SHE IS NEGATIVE = 5 HE/SHE IS NEGATIVE, TESTED TOGETHER=6 DON'T KNOW STATUS = 7 REFUSED = -9	I THINK HE/SHE IS POSITIVE = 1 HE/SHE TOLD ME HE/SHE IS POSITIVE = 2 HE/SHE IS POSITIVE, TESTED TOGETHER = 3 I THINK HE/SHE IS NEGATIVE = 4 HE/SHE TOLD ME HE/SHE IS NEGATIVE = 5 HE/SHE IS NEGATIVE, TESTED TOGETHER=6 DON'T KNOW STATUS = 7 REFUSED = -9

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
620	I will now ask you about the person you have had sex with previous to (INITIALS).	REPEATS STARTING AT 607 FOR UP TO 2 ADDITIONAL PARTNERS	
MODULE 7: HIV TESTING			
Interviewer says: "I would now like to ask you some questions about HIV testing."			
701	Have you ever tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 703 DK, REFUSED→ NEXT MODULE CONSTRAINT IF REPORTED TESTING
702	Why have you never been tested for HIV? SELECT ALL THAT APPLY.	DON'T KNOW WHERE TO TEST = A TEST COSTS TOO MUCH = B TRANSPORT COSTS TOO MUCH = C TOO FAR AWAY = D AFRAID OTHERS WILL KNOW ABOUT TEST RESULTS = E DON'T NEED TEST/LOW RISK = F DID NOT RECEIVE PERMISSION FROM HUSBAND/WIFE/PARTNER/FAMILY = G AFRAID HUSBAND/WIFE/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 DON'T CARE IF I HAVE HIV = M I'M AFRAID OF MY HIV TEST RESULT = N OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	ALL -> NEXT MODULE
703	What month and year was your last HIV test?	MONTH ____ ____ DON'T KNOW MONTH= -8 REFUSED MONTH= -9 YEAR ___ DON'T KNOW YEAR = -8 REFUSED YEAR= -9	
704	Where was the last test done?	VOLUNTARY COUNSELING &TESTING (VCT) FACILITY = 1 MOBILE VCT = 2 AT HOME = 3 HEALTH CLINIC / FACILITY = 4 HOSPITAL OUTPATIENT CLINIC = 5 TB CLINIC = 6 STI CLINIC = 7 HOSPITAL INPATIENT WARDS = 8 BLOOD DONATING CENTER = 9 ANC CLINIC = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
705	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	NEGATIVE, UNCERTAIN, DID NOT RECEIVE, DK, REFUSED → NEXT MODULE ADD CONSTRAINT FOR WOMEN WHO ANSWERED POSITIVE IN REPRO MODULE
706	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 __ __ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR __ __ __ __ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
707	Of the following people, who have you told that you are HIV positive? CHECK ALL THAT APPLY.	NO ONE = A HUSBAND/WIFE/SEX PARTNER = B DOCTOR = C FRIEND = D FAMILY MEMBER = E OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
Interviewer says: "Now I would like to ask you questions about your experiences with health care providers."			
708	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	
709	In the last 12 months, have you been denied health services including dental care, because of your HIV status?	YES = 1 NO = 2 NO ONE KNOWS MY STATUS = 3 DON'T KNOW = -8 REFUSED = -9	
MODULE 8: HIV STATUS, CARE AND TREATMENT			
Interviewer says: "Now I'm going to ask you more about your experience with HIV support, care and treatment."			NOT HIV POSITIVE → NEXT MODULE
801	After learning you had HIV, have you ever received HIV medical care from a doctor, clinical officer or nurse?	YES = 1 NO = 2 DON' T KNOW = -8 REFUSED = -9	YES → 803 DK, REFUSED → NEXT MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
802	What is the main 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 DO NOT TRUST THE STAFF/QUALITY OF CARE = 9 I DO NOT FEEL RESPECTED BY THE STAFF = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL → NEXT MODULE
803	What month and year did you first see a doctor, clinical officer or nurse for HIV medical care? PROBE TO VERIFY DATE.	MONTH __ __ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR __ __ __ __ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
804	What month and year did you last see a doctor, clinical officer or nurse for HIV medical care? PROBE TO VERIFY DATE.	MONTH __ __ DON'T KNOW MONTH = -8 REFUSED MONTH= -9 YEAR __ __ __ __ DON'T KNOW YEAR = -8 REFUSED = -9	IF <7 MONTHS, DK, REFUSED → 806
805	What is the main reason for not seeing a doctor, clinical officer or nurse for HIV medical care for more than 6 months?	FACILITY IS TOO FAR AWAY = 1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE = 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 DO NOT TRUST THE STAFF/QUALITY OF CARE = 10 I DO NOT FEEL RESPECTED BY THE STAFF = 11 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
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 STILL DON'T UNDERSTAND WHAT A CD4 TEST IS = 3 DON'T KNOW/REMEMBER = -8 REFUSED = -9	NO, DON'T UNDERSTAND, DK, REFUSED → 808 NO, DK, REFUSED & NEVER IN HIV CARE → END OF MODULE
807	What month and year were you last tested for your CD4 count?	MONTH __ __ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR __ __ __ __ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	NEVER IN HIV CARE → END OF MODULE
808	Have you ever taken ARVs, that is, antiretroviral medications to treat HIV infection?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES→ 810 DK, REFUSED → NEXT MODULE
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 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL→ NEXT MODULE
810	What month and year did you first start taking ARVs? PROBE TO VERIFY DATE.	MONTH ____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR ____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
811	Are you currently taking ARVs, that is, antiretroviral medications? By currently, I mean that you may have missed some doses but you are still taking ARVs.	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	YES→ 813 DK, REFUSED → NEXT MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
812	Can you tell me the main reason why you are not currently taking ARVs?	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 PEOPLE WOULD SEE MY ARVS AND KNOW MY STATUS = 10 OTHER=96 SPECIFY: _____ DON' T KNOW = -8 REFUSED = -9	ALL → NEXT MODULE
813	People sometimes forget to take all of their ARVs every day. In the last 30 days, how many days have you missed taking any of your ARV pills? CODE '00' IF NONE.	NUMBER OF DAYS _____ DON'T KNOW = -8 REFUSED = -9	
814	When you have ARV pills at home, what are the main reasons that you forget or do not take your ARV pills every day?	I HAVE TROUBLE TAKING A TABLET EVERYDAY = 1 I HAD SIDE EFFECTS/RASH = 2 DO NOT NEED IT WHEN I DO NOT FEEL SICK = 3 MY SCHEDULE CONFLICTS WITH THE TIMES I'M SUPPOSED TO TAKE PILLS = 4 I DON'T HAVE ENOUGH PRIVACY TO TAKE EVERY DAY = 5 I JUST FORGET = 6 OTHER=96 SPECIFY: _____ DK = -8 REFUSED = -9	
MODULE 9: TUBERCULOSIS AND OTHER HEALTH ISSUES			
Interviewer says: "Now we will ask you about tuberculosis or TB."			
901	Have you ever visited a clinic for TB diagnosis or treatment?	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	
902	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	NO, DK, REFUSED → END OF MODULE
903	Were you ever treated for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → END OF MODULE
904	Are you currently on treatment for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → END OF MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
905	The last time you were treated for TB, did you complete at least 6 months of treatment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 10: GENDER NORMS			
Interviewer says: "Now I would like to ask you question on attitudes and decision-making in your home."			
1001	Who usually makes decisions about health care for yourself: you, your (husband/wife/partner), you and your (husband/wife/partner) together, or someone else?	I DO = 1 HUSBAND/WIFE/PARTNER = 2 WE BOTH DO = 3 SOMEONE ELSE = 4 DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT MARRIED/ LIVING TOGETHER
1002	Who generally decides about how the money you receive is spent: you, your (husband/wife/partner), you and your (husband/wife/partner) together, or someone else?	I DO = 1 HUSBAND/WIFE/PARTNER = 2 WE BOTH DO = 3 SOMEONE ELSE = 4 DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT MARRIED/ LIVING TOGETHER
MODULE 11: VIOLENCE			
Interviewer says: "You have been randomly 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 Cameroon. 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. **When I ask about sex, I mean vaginal, anal, oral sex or the insertion of an object into your vagina or anus. Vaginal sex is when a penis enters a vagina. Anal sex is when a penis enters an anus (butt). Oral sex is when a partner puts his/her mouth on his/her partner's penis or vagina.** **You may answer these questions about people in your past or people who are still near you, including someone you know, a family member, or your husband or partner."**			ADULT OR ADOLESCENT VIOLENCE MODULE ASKED OF 1 FEMALE PER HOUSEHOLD, 13+ YEARS (CHILD FLAGGED HOUSEHOLDS) OR 15+ YEARS (NON CHILD-FLAGGED HOUSEHOLDS)
1101	How many times has anyone ever touched you in a sexual way without your permission, but did not try and force you to have sex? Touching in a sexual way without permission includes fondling, pinching, grabbing, or touching you on or around your sexual body parts. CODE '00' IF NONE.	NUMBER OF TIMES ___ DON'T KNOW = -8 REFUSED = -9	NONE(0), DK, REFUSED→ 1103
1102	How old were you the first time someone touched you without your permission?	AGE IN YEARS ___ DON'T KNOW = -8 REFUSED = -9	
1103	How many times in your life has anyone tried to make you have sex against your will but did not succeed? This includes someone using harassment, threats, tricks, or physical force. CODE '00' IF NONE.	NUMBER OF TIMES ___ DON'T KNOW = -8 REFUSED = -9	NONE(0), DK, REFUSED→ 1105

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
1104	How old were you the first time someone tried to make you have sex against your will but did not succeed?	AGE IN YEARS ___ DON'T KNOW = -8 REFUSED = -9	
1105	How many times in your life have you been physically forced to have sex? CODE '00' IF NONE.	NUMBER OF TIMES ___ DON'T KNOW = -8 REFUSED = -9	NONE(0), DK, REFUSED→ 1109
1106	How old were you the first time someone physically forced you to have sex?	AGE IN YEARS ____ DON'T KNOW = -8 REFUSED = -9	
1107	In the last 12 months, did someone physically force you to have sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 1109
1108	In the last 12 months, did a partner physically force you to have sex? By partner, I mean a live-in partner or husband.	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	
1109	How many times in your life has someone pressured 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___ DON'T KNOW = -8 REFUSED = -9	NONE(0), DK, REFUSED→ 1113
1110	How old were you the first time someone pressured you to have sex and did succeed?	AGE IN YEARS ___ DON'T KNOW = -8 REFUSED = -9	
1111	In the last 12 months, did someone pressure you to have sex and did succeed?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 1113
1112	In the last 12 months, did a partner pressure you to have sex and did succeed? By partner, I mean a live-in partner or husband.	YES =1 NO, DID NOT PRESSURE AND SUCCEED = 2 NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS = 3 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
1113	After any of these unwanted sexual experiences, did you try to seek help or services from any of the following? SELECT ALL THAT APPLY. READ RESPONSES ALOUD.	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 FAMILY = F FRIEND = G COMMUNITY LEADER = H OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	DID NOT TRY TO SEEK HELP → 1114 ELSE→ 1115 SKIP IF NEVER EXPERIENCED.
1114	What was the main reason that you did not try to seek help or services?	DID NOT KNOW SERVICES WERE AVAILABLE = 1 SERVICES NOT AVAILABLE = 2 AFRAID OF GETTING IN TROUBLE = 3 ASHAMED FOR SELF/FAMILY = 4 COULD NOT AFFORD SERVICES = 5 DID NOT THINK IT WAS A PROBLEM = 6 FELT IT WAS MY FAULT = 7 AFRAID OF BEING ABANDONED = 8 DID NOT NEED/WANT SERVICES = 9 AFRAID OF MAKING SITUATION WORSE = 10 FEAR OF THE NEGATIVE REACTION OF SERVICE PROVIDERS=11 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
1115	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	NO, DK, REFUSED → 1121
1116	How old were you the first time one of these things happened to you?	AGE IN YEARS ____ DON'T KNOW = -8 REFUSED = -9	
1117	In the last 12 months, how many times did someone: Punch, kick, whip, or beat you with an object Slap you, throw something at you that could hurt you, push you or shove you Choke smother, try to drown you, or burn you intentionally Use or threaten you with a knife, gun or other weapon?	ZERO = 1 ONCE = 2 2-4 TIMES = 3 5+ TIMES = 4 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
1118	In the last 12 months, did a partner do any of these things to you? By partner, I mean a live-in partner or husband.	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	
SERVICES FOR PHYSICAL VIOLENCE			
1119	Thinking about all these experiences that we just discussed, whether someone has done the following: 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 Did you try to seek help or services for any of these incidents 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 FAMILY = F FRIEND = G COMMUNITY LEADER = H OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	DID NOT TRY TO SEEK HELP → 1120 ELSE → 1121
1120	What was the main reason that you did not try to seek help or services?	DID NOT KNOW SERVICES WERE AVAILABLE = 1 SERVICES NOT AVAILABLE = 2 AFRAID OF GETTING IN TROUBLE = 3 ASHAMED FOR SELF/FAMILY = 4 COULD NOT AFFORD SERVICES = 5 DID NOT THINK IT WAS A PROBLEM = 6 FELT IT WAS MY FAULT = 7 AFRAID OF BEING ABANDONED = 8 DID NOT NEED/WANT SERVICES = 9 AFRAID OF MAKING SITUATION WORSE = 10 FEAR OF THE NEGATIVE REACTION OF SERVICE PROVIDERS=11 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
1121			SKIP IF NEVER EXPERIENCED PHYSICAL OR SEXUAL VIOLENCE.
1122			SKIP IF >=21 YEARS OLD SKIP IF NEVER SOLD SEX

APPENDIX G ADOLESCENT QUESTIONNAIRE

THIS QUESTIONNAIRE IS ADMINISTERED TO ELIGIBLE YOUNG ADOLESCENTS AGED BETWEEN 10-14 YEARS AFTER INFORMED PARENTAL/GUARDIAN CONSENT AND MINOR ASSENT.

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS			
101	IS THE RESPONDENT MALE OR FEMALE?	MALE = 1 FEMALE = 2	
102	How old were you at your last birthday?	AGE IN COMPLETED YEARS __ __ DON'T KNOW AGE = -8 REFUSED = -9	
103	Are you enrolled in school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 109
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	NO, DK, REFUSED → 106
105	Why did you miss school?	I HAVE BEEN SICK = 1 I DON'T FEEL SAFE TRAVELING TO SCHOOL = 2 I DON'T FEEL SAFE WHILE IN SCHOOL = 3 I DON'T LIKE SCHOOL = 4 I HAVE TO LOOK AFTER MY FAMILY= 5 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL = 6 SCHOOL IS TOO FAR AWAY = 7 I HAVE TO WORK = 8 I HAVE A CHILD OR I AM PREGNANT (GIRLS ONLY) = 9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) (GIRLS ONLY) = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
106	What is the highest level of school you have attended: primary or secondary?	PRIMARY = 1 SECONDARY = 2 DON'T KNOW = -8 REFUSED = -9	
107	What school year are you in now?	PRESCOLAIRE/PRESCHOOL = 1 SIL/GDE SECT/CLASS 1 = 2 CP/CPS/CLASS 2 = 3 CE1/CLASS 3 = 4 CE2/CLASS 4 = 5 CM1/CLASS 5 = 6 CM2/CLASS 6/7 = 7 6È/1ÈRE A.T/FORM 1 = 8 5È/2È A.T/FORM 2 = 9 4È/3È A.T/FORM 3 = 10 3È/4È A.T/FORM 4 = 11 2NDE G OU T/FORM 5 = 12 1ERE G OU T/LOWER 6 = 13 TERMINALE G OU T/UPPER 6 = 14 NE SAIS PAS/ DON'T KNOW = -8 REFUSE/ REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
108	What class/form were you in last year?	PRESCOLAIRE/PRESCHOOL = 1 SIL/GDE SECT/CLASS 1 = 2 CP/CPS/CLASS 2 = 3 CE1/CLASS 3 = 4 CE2/CLASS 4 = 5 CM1/CLASS 5 = 6 CM2/CLASS 6/7 = 7 6È/1ÈRE A.T/FORM 1 = 8 5È/2È A.T/FORM 2 = 9 4È/3È A.T/FORM 3 = 10 3È/4È A.T/FORM 4 = 11 2NDE G OU T/FORM 5 = 12 1ERE G OU T/LOWER 6 = 13 TERMINALE G OU T/UPPER 6 = 14 NE SAIS PAS/ DON'T KNOW = -8 REFUSE/ REFUSED = -9	ALL → END OF MODULE
109	Why do you NOT go to school?	I HAVE BEEN SICK = 1 I DON'T FEEL SAFE TRAVELING TO SCHOOL = 2 I DON'T FEEL SAFE WHILE IN SCHOOL = 3 I DON'T LIKE SCHOOL = 4 I HAVE TO LOOK AFTER MY FAMILY= 5 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL = 6 SCHOOL IS TOO FAR AWAY = 7 I HAVE TO WORK = 8 I HAVE A CHILD OR I AM PREGNANT(GIRLS ONLY) = 9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) (GIRLS ONLY) = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
110	Have you ever attended school?	YES = 1 NO = 2 DON'T KNOW =-8 REFUSED = -9	NO, DK, REFUSED → END OF MODULE
111	When was the last time you regularly attended school? Would you say it was less than a year ago or more than a year ago?	LESS THAN 1 YEAR = 1 1 YEAR OR LONGER = 2 DON'T KNOW =-8 REFUSED = -9	
112	What is the highest class/form that you have completed?	MOINS 1 AN/LESS THAN 1 YR = 0 PRESCOLAIRE/PRESCHOOL = 1 SIL/GDE SECT/CLASS 1 = 2 CP/CPS/CLASS 2 = 3 CE1/CLASS 3 = 4 CE2/CLASS 4 = 5 CM1/CLASS 5 = 6 CM2/CLASS 6/7 = 7 6È/1ÈRE A.T/FORM 1 = 8 5È/2È A.T/FORM 2 = 9 4È/3È A.T/FORM 3 = 10 3È/4È A.T/FORM 4 = 11 2NDE G OU T/FORM 5 = 12 1ERE G OU T/LOWER 6 = 13 TERMINALE G OU T/UPPER 6 = 14 NE SAIS PAS/ DON'T KNOW = -8 REFUSE/REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 2: HIV PREVENTION INTERVENTIONS			
Interviewer says: "Now I would like to ask you some questions about what you know about health."			
201	Have you ever heard of HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 205
202	From where have you heard about HIV? PROBE: Anywhere else? RECORD ALL MENTIONED	SCHOOLS/TEACHERS = A PARENTS/GUARDIAN/FAMILY = B FRIENDS = C RELIGIOUS LEADERS = D INTERNET = E MOBILE PHONE = F HEALTH PROVIDERS/DOCTORS/NURSES/ CLINICAL OFFICERS = G TELEVISION/FILM = H RADIO = I COMMUNITY HEALTH WORKERS = J OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
203	Have you ever discussed HIV with your parents or guardian?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
204	Have you taken part in any of the following HIV prevention programs? READ RESPONSES ALOUD. SELECT ALL THAT APPLY	NONE = A HEALTH EDUCATION IN SCHOOL = B PEER EDUCATION PROGRAMS = C ADOLESCENT RADIO PROGRAM - HIV PREVENTION BY CHANTAL BIYA FOUNDATION = D OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	"DON'T KNOW', "REFUSED" CANNOT BE SELECTED WITH ANY OTHER CATEGORY.
205	Do you know what a condom is?	YES = 1 NO = 2 REFUSED = -9	NO, REFUSED →END OF MODULE
206	Do you know where to get a condom?	YES = 1 NO = 2 REFUSED = -9	NO, REFUSED → 210
207	Where can a person go to get a condom? SELECT ALL THAT APPLY	CLINIC/HOSPITAL = A KIOSK/SHOP = B PHARMACY = C LOCAL FREE DISPENSER = D FRIENDS/PEERS = E BOYFRIEND/GIRLFRIEND = F FAMILY MEMBER/HOUSEHOLD = G OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
208	If you wanted to, could you yourself get a condom?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES, DK, REFUSED → 210
209	Why is it not easy for you to get a condom? SELECT ALL THAT APPLY.	TOO FAR = A COSTS TOO MUCH = B DO NOT WANT OTHERS TO KNOW = C OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
210	Have you ever seen a male condom demonstration? By a condom demonstration, I mean someone like a nurse, peer educator, or another trained adult showed you how a male condom is correctly used.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 3: SEXUAL BEHAVIOR			
Interviewer says: "The next questions ask about sexual behavior. There is no right or wrong answer. Your responses will not be publicly linked to you in any way or shared with anyone, including your parents." **PLEASE LOOK OUT FOR SIGNS OF DISTRESS IN CHILD WHEN ASKING THE FOLLOWING SEXUAL BEHAVIOR QUESTIONS. IF THE CHILD SEEMS DISTRESSED, ASK CHILD IF HE/SHE WANTS TO STOP THE INTERVIEW.**		
301	Do you know what having sex is?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	AGE <13 & RESPONSE = NO, DK, REFUSED → 501 (module 5)
302	Have you ever had vaginal, anal or oral sex? Vaginal sex is when a penis enters a vagina. Anal sex is when a penis enters an anus. Oral sex is when a person puts his/her mouth on the penis or vagina of another person. SELECT ALL THAT APPLY.	NEVER HAD SEX = A VAGINAL = B ANAL = C ORAL = D DON'T KNOW = Y REFUSED = Z	NEVER, DK, REFUSED → 318 "NEVER", "DON'T KNOW', "REFUSED" CANNOT BE SELECTED WITH ANY OTHER CATEGORY.
303	How old were you when you had sex for the first time? (Instructions for Interviewer: If needed, probe with Year and Month that adolescent remembers. Then help participant remember his/her age at that time.)	AGE IN YEARS __ __ DON'T KNOW = -8 REFUSED = -9	
304	The first time you had sex, was it because you wanted to or because you were forced?	WANTED TO = 1 FORCED = 2 DON'T KNOW = -8 REFUSED = -9	WANTED, DK, REFUSED → 306

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
305	The first time you had sex, were you physically forced or were you pressured into having sex through harassment, threats or tricks?	PHYSICALLY FORCED= 1 PRESSURED = 2 DON'T KNOW = -8 REFUSED = -9	ALL → 307
306	What was the main reason that you had sex for the first time?	IT JUST HAPPENED = 1 MY FRIENDS PRESSURED ME TO HAVE SEX = 2 TO SHOW MY LOVE/TO FEEL LOVED = 3 I WANTED TO HAVE SEX = 4 MY BOYFRIEND/GIRLFRIEND WANTED TO HAVE SEX = 5 FOR MONEY / GIFTS = 6 I WANTED TO HAVE A BABY = 7 OTHER= 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
307	How old was the person you first had sex with? Please give your best guess.	AGE IN YEARS ____ DON'T KNOW = -8 REFUSED = -9	
308	The first time you had sex, was a condom used?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF DON'T KNOW WHAT CONDOM IS
309	In total, how many different people have you had sex with? Please give your best guess.	NUMBER OF PARTNERS __ __ DON'T KNOW = -8 REFUSED = -9	CONSTRAINT CANNOT BE '0'.
310	The last time you had sex, was a condom used?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF DON'T KNOW WHAT CONDOM IS
311	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 IF DON'T KNOW WHAT CONDOM IS
312	Can you ask your most recent partner to use a condom?	ALWAYS = 1 SOMETIMES = 2 NEVER = 3 DON'T REMEMBER = 4 DON'T KNOW = -8 REFUSED = -9	NEVER, DON'T REMEMBER, DK, REFUSED → 314
313	When you ask your partner to use a condom, do they use one?	ALWAYS = 1 SOMETIMES = 2 NEVER = 3 DON'T REMEMBER = 4 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
314	If you use a condom, is your partner okay with it?	ALWAYS = 1 SOMETIMES = 2 NEVER = 3 DON'T REMEMBER = 4 DON'T KNOW = -8 REFUSED = -9	
315	Have you ever had sex with someone because he/she provided you with, or you expected that he/she would provide you with gifts, help you to pay for thing or help you in other ways such as giving you food or paying for school fees?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 317
316	What age was the oldest partner who promised these things for you? You can give your best guess.	AGE IN YEARS ____ DON'T KNOW = -8 REFUSED = -9	
317	Have you ever been pregnant?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	GIRLS ONLY.
318	Have you ever talked with a parent or guardian about sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 4: SOCIAL NORMS, INTENTION TO ABSTAIN, SELF-EFFICACY AND ASSERTIVENESS			
Interviewer says: "Now I would like to ask you some questions about the social norms."			
401	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 = -8 REFUSED = -9	SKIP IF 301 =NO, DK, REFUSED
402	Do you feel pressured by your boyfriend/girlfriend to have sex?	YES = 1 NO = 2 DON'T HAVE BOYFRIEND/GIRLFRIEND=3 DON'T KNOW = -8 REFUSED = -9	SKIP IF 301 =NO, DK, REFUSED
403	Do you feel pressured by your friends to have sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF 301 =NO, DK, REFUSED
404	If you did not want to have sex with someone, could you tell them that you do not want to have sex with them?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF 301 =NO, DK, REFUSED

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 5: HIV RISK PERCEPTION			SKIP TO NEXT MODULE IF NEVER HEARD OF HIV (201 = NO, DK, REF)
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	NOT LIKELY → 503 I HAVE HIV, DK, REFUSED → END OF MODULE
502	What is the main reason you think you are likely to get HIV?	I HAVE HAD SEX WITHOUT A CONDOM = 1 I HAVE OR HAD MANY BOY/GIRL FRIENDS = 2 I HAVE HAD BLOOD TRANSFUSIONS = 3 MY MOTHER/FATHER/CLOSE RELATIVE HAS HIV = 4 I DON'T TRUST MY BOY/GIRLFRIEND = 5 I AM SICK = 6 MY BOY/GIRL FRIEND IS SICK OR HAS DIED= 7 I DESERVE IT/I AM A BAD PERSON = 8 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL → NEXT MODULE
503	What is the main 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 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
MODULE 6: HIV KNOWLEDGE			
Interviewer says: "Now I would like to ask you some questions about what you know about some things related to health."			SKIP TO NEXT MODULE IF 201 = NO, DK, REF
601	What are the different ways to spread/ transmit HIV? DO NOT READ RESPONSES. SELECT ALL THAT APPLY	SEX = A UNPROTECTED SEX WITHOUT A CONDOM OR PROTECTION = B RAPE = C DELIVERY OR BREASTFEEDING FROM HIV+ MOTHER = D USING WORN OUT (UNSTERILIZED) BLADES OR NEEDLES = E UNSAFE BLOOD TRANSFUSION = F OPEN WOUND EXPOSURE = G GOING TO THE BARBERSHOP = H DRESSING PROVOCATIVELY = I OTHER = X PLEASE SPECIFY_____ DON'T KNOW = Y REFUSED = Z	DK or REFUSED → 604
602	Can a person reduce their chance of getting HIV by not having sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
603	Can a person reduce their chance of getting HIV by using condoms when having sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
604	Can a healthy-looking person have HIV or AIDS?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
605	Can a mother with HIV or AIDS pass HIV to her unborn baby?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
606	Are there medicines that people with HIV or AIDS can take to help them live longer?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
606	Can male circumcision help prevent HIV infection? Circumcision is the removal of the foreskin from a penis. SHOW A REALISTIC, COLOR DRAWING TO CLARIFY.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
607	If people with HIV take ARVs, are they less likely to spread the virus to other people?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
608	Can ARVs rid HIV from an HIV-positive person's body?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 7: HIV TESTING			
Interviewer says: "I would now like to ask you some questions about HIV testing. Again, I would like to reassure you that all your answers are confidential and we will not be sharing your answers with anyone else. If you don't understand a question, please feel free to ask me any questions and I will help clarify."			SKIP TO NEXT MODULE IF 201 = NO, DK, REF
701	To what extent do you agree with the following statement: Everyone should get tested for HIV. Do you strongly agree, agree, disagree, or strongly disagree?	STRONGLY AGREE = 1 AGREE = 2 DISAGREE = 3 STRONGLY DISAGREE = 4 DON'T KNOW = -8 REFUSED = -9	
702	To what extent do you agree with the following statement: Only persons who think they might have HIV should get an HIV test. Do you strongly agree, agree, disagree, or strongly disagree?	STRONGLY AGREE = 1 AGREE = 2 DISAGREE = 3 STRONGLY DISAGREE = 4 DON'T KNOW = -8 REFUSED = -9	
703	Have you ever been tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → END OF MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
704	When you took your HIV test, did someone give you pre- or post-counseling and talk with you about the importance of the HIV test?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
705	Did you receive the results of any of your HIV tests?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → END OF MODULE
706	What was the result of that HIV test?	HIV POSITIVE = 1 HIV NEGATIVE = 2 UNCERTAIN/INDETERMINATE = 3 DON'T KNOW = -8 REFUSED = -9	DK, REFUSED → END OF MODULE
707	Who knows about your HIV test result?	NOBODY = A PARENT / GUARDIAN = B OTHER FAMILY MEMBER = C FRIEND = D OTHER = E SPECIFY_____ DON'T KNOW = -8 REFUSED = -9	
708	Are you currently on treatment for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF 706 = HIV NEGATIVE, uncertain/ indeterminate
MODULE 8: HIV STIGMA			
Interviewer says: "Now I would like to ask you some more questions about HIV."			SKIP TO NEXT MODULE IF 201=NO, DK, REFUSED OR 501 = ALREADY HAVE HIV OR 706 = HIV POSITIVE
801	Would you be willing to share food with someone who has HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
802	Would you be friends with someone who has HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
803	Would you be comfortable to have a teacher who has HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 9: ALCOHOL AND DRUGS			
Interviewer says: "I would like to ask you some questions about alcohol and drugs or substances that you may have taken that were not given to you by a doctor. Your answers will not be told to anyone, even your parents."			

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
901	Have you ever drunk alcohol, for example beer, palm wine, or whiskey in a sachet? SHOW GRAPHIC OF COMMON ALCOHOLIC BEVERAGES.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 903
902	During the past 1 month, on how many days did you have at least one drink containing alcohol?	NUMBER OF DAYS ___ DON'T KNOW = -8 REFUSED = -9	MAX = 31
903	Have you ever tried drugs?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → END OF MODULE
904	What drugs have you ever tried? DO NOT READ RESPONSES. PROBE FOR MULTIPLE RESPONSES.	MARIJUANA/CANNABIS = A SOLVENTS = B AMPHETAMINE TABLETS = C METHAMPHETAMINE = D BARBITUATES = E COCAINE = F OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
MODULE 10: PARENTAL SUPPORT			
1001	How often are you comfortable to share your problems or worries with your parents?	ALWAYS = 1 MOST OF THE TIME = 2 SOMETIMES = 3 RARELY = 4 NEVER = 5 DON'T KNOW = -8 REFUSED = -9	
1002	How often are your parents concerned or interested in your problems or worries?	ALWAYS = 1 MOST OF THE TIME = 2 SOMETIMES = 3 RARELY = 4 NEVER = 5 DON'T KNOW = -8 REFUSED = -9	
1003	Do your parents/guardians really know what you were doing with your free time when you were not at school or work?	ALWAYS = 1 MOST OF THE TIME = 2 SOMETIMES = 3 RARELY = 4 NEVER = 5 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
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 Cameroon. Let me assure you that your answers are completely confidential and will not be told to anyone."		ADULT OR ADOLESCENT VIOLENCE MODULE ASKED OF 1 FEMALE PER HOUSEHOLD, 13+ YEARS (CHILD FLAGGED HOUSEHOLDS) OR 15+ YEARS (NON CHILD-FLAGGED HOUSEHOLDS)
1101	Has anyone ever done any of these things to you: Punched, kicked, whipped, or beat you with an object Choked smothered, tried to drown you, or burned you intentionally Used or threatened you with a knife, gun or other weapon?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1102	Has anyone ever touched you in a sexual way without your permission, but did not try and force you to have sex? Touching in a sexual way without permission includes fondling, pinching, grabbing, or touching you on or around your sexual body parts.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 1104
1103	The first time this happened, what was your relationship to the person who did this? If it was more than one person, what was your relationship with the person you knew the best?	BOYFRIEND/GIRLFRIEND/SPOUSE = 1 RELATIVE/FAMILY MEMBER = 2 CLASSMATE/SCHOOLMATE = 3 TEACHER = 4 POLICE/SECURITY OFFICER/MILITARY= 5 EMPLOYER = 6 NEIGHBOR = 7 COMMUNITY/RELIGIOUS LEADER = 8 FRIEND = 9 STRANGER = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
1104	Has anyone ever tried to make you have sex against your will but did not succeed?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
	Interviewer says: "You said before that you had been pressured or forced to have sex. I'm going to ask you again about these topics."		DISPLAY INSTRUCTION IF 304 = FORCED
1105	Has anyone ever pressured you to have sex, through harassment, threats or tricks and did succeed?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1106	Has anyone ever physically forced you to have sex and did succeed?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	1105 = NO, DK, REFUSED AND 1106 = NO, DK, REFUSED → 1108
1107	The first time you were pressured or forced to have sex, what was your relationship to the person who did this?	BOYFRIEND/GIRLFRIEND/SPOUSE = 1 RELATIVE/FAMILY MEMBER = 2 CLASSMATE/SCHOOLMATE = 3 TEACHER = 4 POLICE/SECURITY OFFICER/MILITARY= 5 EMPLOYER = 6 NEIGHBOR = 7 COMMUNITY/RELIGIOUS LEADER = 8 FRIEND = 9 STRANGER = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
1108	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 NGO = D RELIGIOUS LEADER = E OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	ALL EXCEPT I DID NOT TRY TO SEEK HELP → 1110 SKIP IF NO UNWANTED SEXUAL EXPERIENCES (1102 = NO, DK, REFUSED & 1104 = NO, DK, REFUSED & 1105 = NO, DK, REFUSED, & 1106 = NO, DK, REFUSED)
1109	What was the main reason that you did not try to seek professional help or services?	DID NOT KNOW SERVICES WERE AVAILABLE = 1 SERVICES NOT AVAILABLE = 2 AFRAID OF GETTING IN TROUBLE = 3 ASHAMED FOR SELF/FAMILY = 4 COULD NOT AFFORD SERVICES = 5 DID NOT THINK IT WAS A PROBLEM = 6 FELT IT WAS MY FAULT = 7 AFRAID OF BEING ABANDONED = 8 DID NOT NEED/WANT SERVICES = 9 SERVICES WERE NOT YOUTH-FRIENDLY = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF NO UNWANTED SEXUAL EXPERIENCES
1110	After any of these unwanted sexual experiences, did you tell anyone about it?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → END OF MODULE SKIP IF NO UNWANTED SEXUAL EXPERIENCES

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1111	Which of the following describes who you told about any of these unwanted sexual experience? READ RESPONSES ALOUD. SELECT ALL THAT APPLY i	PARENT/GUARDIAN = A SIBLING = B TEACHER = C FRIEND/CLASSMATE = D OTHER FAMILY MEMBER = E RELIGIOUS LEADER = F OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	SKIP IF NO UNWANTED SEXUAL EXPERIENCES
Interviewer says: "Thank you for sharing your personal experiences with me. I know it may have been difficult for you to talk about your experiences with me. If you would like to talk further about these experiences, I can refer you to a place that can provide you with help." **PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS.**			SKIP IF NEVER EXPERIENCED SEXUAL OR PHYSICAL VIOLENCE.

APPENDIX H SURVEY CONSENT FORMS

Title of Survey: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

Interviewer reads:

What language do you prefer for our discussion today?

___English

___French

___Fulfulde

Hello, my name is_____. I would like to invite you to take part in this research study about HIV in Cameroon. The Ministry of Public Health (MoPH) is leading this survey and is conducting it with the United States Centers for Disease Control and Prevention and ICAP at Columbia University and the National Institute of Statistics.

Purpose of survey

This survey will help us know how many people in Cameroon have HIV and need health services. It will also tell us about people's risk for getting HIV. We plan to ask about 14,000 households to join this survey. If you join, your taking part will help the MoPH make health services better in the country.

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

Survey Procedures

This survey will include: a household interview, individual interviews, and HIV tests. Some of those taking part may also be tested for Hepatitis B. In the household interview, we would like to ask you some questions about the people who live here and some of the things you have or own. The household interview will take up to 30 minutes.

After the household interview, we will invite you and others living in your household to take part in individual interviews. We will also offer an HIV test and related tests after the interview. We will ask each person to give permission to take part before joining the survey.

Right to refuse or withdraw

You do not have to take part in the survey. If you choose to join the survey, you may change your mind at any time and stop taking part. If you decide not to take part, it will not affect your healthcare in any way.

Risks and Benefits

The risks to taking part in the household interview are small. You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question. We will do everything we can to keep your information private. We cannot guarantee total confidentiality. If you take part, you and your household members will get free testing for HIV in your home. In addition, some people may be tested for Hepatitis B. The information you provide will also be used to improve the health of Cameroonians. Your responses will help us develop more effective programs to fight HIV and other diseases in Cameroon.

There is no cost to you for being part of the survey. You will not be paid.

Confidentiality and Access to Your Health Information

What we talk about will be kept private, even from your family, and will not be shown to anyone outside of the survey team. Your answers to the questions will be identified only by a number and not your name. Your name will not appear on any survey results that we share with MoPH or in data analysis. The survey information we collect during the survey will not be released outside of the survey groups listed unless there is an issue of safety.

[INTERVIEWER: INDICATE INFORMATION SHEET TO THE PARTICIPANT - DO NOT READ ALOUD]

The following individuals and/or 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 person taking part in a survey. These include the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) 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 person in this survey
- Study staff and study monitors

[READ FROM HERE]

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. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

[READ THIS STATEMENT]

If you have any questions about your rights as a person in this survey, you can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH) using the following addresses:

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

Prof Anne Bissek Zoung-Kanyi
Address: MoPH Division of Health Operations Research (DROS): Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

Do you want to ask me anything about the survey?

Verbal Consent Statement

I have read this form and/or someone has read it to me. Any questions that I had have been answered satisfactorily. I agree to take part in the household interview. I know that after choosing to be in the interview, I may withdraw at any time. My taking part 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 Then please state the following statement:

"I agree to take part in the household interview"

_____No Then please state the following statement:

"I do not wish to take part in the household interview" **[IF NO, STOP]**

Printed name of head of household_____

Signature of person obtaining consent_____ _____ Date: __/__/__

Printed name of person obtaining consent_____

Survey staff ID number _____

Title of Survey: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

Interviewer reads:

[IF PARTICIPANT HAS BEEN THROUGH HOUSEHOLD CONSENT]

Hello, my name is_____.

Survey Procedures

If you join us for this portion of the survey, we will ask you questions about your health, whether you have had any experience with HIV services, and your behavior. The interview will take about 40 minutes.

After the interview, we will offer you an HIV test. We will ask you for consent for the blood draw and HIV test after the interview. The testing and counseling session will also take about 40 minutes.

Right to refuse or withdraw

You do not have to take part in this interview, you may change your mind at any time and stop taking part. If you decide not to take part, it will not affect your healthcare in any way.

Confidentiality and access to your health information

We will do everything we can to keep your taking part in the survey private.

You can contact MoPH Division of Health Operations Research (DROS) and Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) should you have any questions or concerns.

[INDICATE ADDRESS OF POC]

Survey:

Prof Anne Bissek Zoung-Kanyi
Address: MoPH Division of Health Operations Research (DROS): Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

IRB:

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

→ GO TO PERMISSION STATEMENT

[IF PARTICIPANT HAS NOT BEEN THROUGH HOUSEHOLD CONSENT]

What language do you prefer for our discussion today?

___English

___French

___Fulfulde

Hello, my name is_____. We are doing a research study throughout Cameroon to learn more about HIV in the country. The Ministry of Public Health (MoPH) is leading this survey and is conducting it with the United States Centers for Disease Control and Prevention, ICAP at Columbia University, and the National Institute of Statistics.

Title of Survey: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

Purpose of the survey

This survey will help us know how many people in Cameroon have HIV and need health services. It will also tell us about people's risk for getting HIV. We plan to ask about 33,000 men, women, and children from about 14,000 households throughout Cameroon to take part in this survey. If you join, your taking part will help the Ministry of Public Health (MoPH) make health services better in the country.

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

Survey Procedures

If you join this survey, we will ask you questions about your age, whether you have had any experience with HIV services, and your behavior. The interview will take about 40 minutes.

After the interview, we will offer you HIV testing and may also offer Hepatitis B testing. We will ask you for consent for the blood draw and talk to you about your results. The testing and counseling session will take about 40 minutes. You may agree to the interview without agreeing to give your blood.

Right to refuse or withdraw

You do not have to take part in the survey. If you choose to join the survey, you may change your mind at any time and stop taking part. If you decide not to take part, it will not affect your healthcare in any way.

Risks and benefits

The risks in being in the survey are small. We will do everything we can to keep your information private. However, we cannot promise complete confidentiality. You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question. If you take part, you will be offered free testing for HIV in your own home. The information you provide will also be used to improve the health of Cameroonians. Your responses will help us develop more effective programs to fight HIV and other diseases in Cameroon.

There is no cost to you for being part of the survey. You should also know that you will not be paid.

Confidentiality, Privacy and Access to Your Health Information

What we talk about will be kept private, even from your family, and will not be shown to anyone outside of the survey team. Your answers to the questions will be identified only by a number and not your name. Your name will not appear on any survey results that we share with MoPH, publish or present at scientific meetings. The information we collect during the survey will not be released outside of the survey groups listed unless there is an issue of safety.

[INTERVIEWER: INDICATE INFORMATION SHEET TO THE PARTICIPANT- DO NOT READ ALOUD]

The following individuals and/or agencies will be able to look at your research 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 person in a study. These the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center, and Westat (statistical survey research organization)
- The United States. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this survey
- Study staff and study monitors

[READ FROM HERE]

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. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

[READ THIS STATEMENT]

If you have any questions about your rights as a person in this survey, you can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Cameroon National Ethics Committee for Research on Human Subjects (CNERSH)
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

Prof Anne Bissek Zoung-Kanyi
Ministry of Public Health, MoPH Division of Health Operations Research (DROS)
Address: Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

Do you want to ask me anything about the survey?

Verbal Consent Statement

I have read this form, and/or someone has read it to me. 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 the individual interview, I may withdraw at any time. My taking part is voluntary. I have been offered a copy of this consent form.

1. Do you agree to take part in the individual interview? 'YES' means that you agree to do the interview. "NO" means that you will NOT do the interview.

_____Yes Then please state the following statement:

"I agree to take part in the individual interview"

_____No Then please state the following statement:

"I do not wish to take part in the individual interview"

2. **FUTURE RESEARCH:** It is possible that you may be eligible to take part in future studies related to health in Cameroon. 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 about future studies, 'YES' means that you agree to be contacted about future studies. "NO" means that you do NOT want to be contacted about future studies.

_____Yes Then please state the following statement:

"I agree to be contacted for future studies"

_____No Then please state the following statement

"I do not wish to be contacted for future studies"

Printed name of participant_____

Participant ID number _____

Signature of person obtaining consent_____ _____ Date: ____/____/____

Printed name of person obtaining consent_____

Survey staff ID number _____

Title of Survey: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

Now I would like to ask you to let your son(s)/daughter(s) take part in the survey. Your child's participation will help the Ministry of Public Health make HIV services for children and families better.

[IF PARENT/GUARDIAN HAS BEEN THROUGH CONSENT PROCESS FOR BLOOD DRAW]

Survey Procedures

If you agree, the following will happen, as described in your own consent:

- **[IF CHILD IS 2 YEARS TO 9 YEARS OLD]** To do the HIV test in your home, a trained nurse or lab technician will take about 6 mL (a little more than a teaspoonful) of blood from your child's arm or a few drops of blood from your child's finger
- **[IF CHILD IS 0-23 MONTHS OLD]** A trained nurse or lab technician will take a few drops (about 1 mL) from your child's finger or heel for the HIV test
- We will discuss the results with you and your child if you decide to discuss them with him/her
- If your child has HIV, he/she will get a CD4 test and receive the results today.
- His/her blood will be sent to a laboratory to measure his/her viral load and the results will be returned to your preferred health facility in about 10-12 weeks.
- We will give you a referral form so you and your child can consult with a doctor or nurse regarding his/her HIV test, CD4 count, and viral load results
- We will ask for your permission to store your child's leftover blood for future research tests

[FOR CHILDREN less than or equal to 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 was 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 would then send your child's blood to a lab for a special test to determine if he/she is infected with HIV. If you provide us with the name of a health facility, we can send the result there in about 10-12 weeks. We will also contact you to inform you that the results have been sent to the facility, if you provide us with your contact information.

[FOR CHILDREN 0-5 YEARS ONLY]

If your child has HIV, we will also measure your child's weight and height to measure your child's growth and monitor their health. We will also measure weight and height for some children without HIV. The field team will tell you the results and you can go to your health facility to talk about the results.

Right to refuse and to withdraw

Your child may stop participation at any time. This will not affect your child's healthcare in any way.

Risks

The risks of taking part in the survey are small. For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. You may learn that your child is infected with HIV. Learning that your child has HIV may cause emotional discomfort. You will receive counseling on how to disclose the result to your child and how to cope with learning that your child has HIV. We will do everything we can to keep your child's test results private but we cannot guarantee total confidentiality.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. If your child has HIV, you will learn where to take your child for treatment. [IF LESS THAN 18 MONTHS OLD] If your infant is shown to be exposed to HIV, you will learn where to go to find out if he/she is infected with HIV and where to get treatment. 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 research could help us learn more about children and HIV in Cameroon and how HIV prevention and treatment programs are working.

Confidentiality and Access to Your Child's Health Information

We will do everything we can to keep your child's participation in the survey private. The information we collect from your child will not be released outside of the study partners we have mentioned during your consent unless there is an issue of safety. You can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and the Ministry of Public Health (MoPH) should you have any questions or concerns.

→ GO TO CONSENT STATEMENT

[IF PARENT/GUARDIAN HAS NOT BEEN THROUGH CONSENT PROCESS FOR BLOOD DRAW]

Interviewer reads:

What language do you prefer for our discussion today?

___English

___French

___Fulfulde

Purpose of the survey

This research study/survey will help us learn more about the health of children in Cameroon 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 taking part will help the MoPH make HIV services better.

Survey Procedures

[FOR CHILDREN 2 YEARS TO 9 YEARS OLD]

If you agree to allow your child to take part in the survey, a trained nurse or lab technician will take a small amount or about 6 mL (a little more than a teaspoonful) of blood from your child's arm to perform an HIV test here in your home. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.

[FOR CHILDREN LESS THAN OR EQUAL TO 23 MONTHS OLD]

If your child is 0-23 months old, we will take a few drops (about 1 mL) from your child's finger or heel for the HIV test.

[For children ages 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 is 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 the HIV infection. If you provide us with the name of a health facility, we can send the result there in about 10-12weeks from now. We will also contact you to inform you that the results have been sent to the facility, if you provide us with your contact information. You will be able to talk to a doctor or nurse at the facility about the test result.

We will give you the results today and provide counseling about the results and discuss with you how to share the 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.

[For children 0-5 years]

If your child has HIV, we will also measure your child's weight and height to measure your child's growth. We will also measure weight and height for some children without HIV. The results will be returned to you and you will be able to talk to a doctor or nurse at the facility about the result.

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 your immune system that fights HIV infection and other diseases. We will also test the CD4 level of some children without HIV. We will also send his/her blood to a laboratory to measure his/her viral load which is the amount of HIV in the blood. If you provide us with the name of a health facility, we can send your child's viral load results there about 10-12 weeks from now.

We will give you a referral form and information so that you and your child can consult with a doctor or nurse to learn more about his/her HIV test, CD4 count, viral load and health.

We will also do other additional tests related to HIV. If we have test results that might guide your child's care or treatment, we will contact you to tell you how you and your child's doctor or nurse may get these results.

Storage of specimens

We would like to ask your permission to store your child's leftover blood for future research tests.These tests may be about HIV or other health issues important for the health of Cameroonians such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your child's name will be on the sample for only three years. We will attempt to tell you about any test results during the three year period that are important 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 long-term storage of your child's blood samples, we will destroy your child's leftover blood samples after survey-related testing has been completed.

Right to refuse or withdraw

It is your decision about whether you will allow your child to take part the survey. Your child may stop taking part at any time. If your child does not take part, it will not affect your child's healthcare in any way.

Risks

The risks of taking part in the survey are small. For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. You may learn that your child is infected with HIV. Learning that your child has HIV may cause emotional discomfort. You will receive counseling on how to disclose the result to your child and how to cope with learning that your child has HIV. We will do everything we can to keep your child's test results private but we cannot guarantee total confidentiality.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. Some children who take part will test HIV positive. If this happens to your child, the benefit is that you will learn his/her HIV status and will learn where to take your child for life-saving treatment which is provided by the Ministry of Public Health for 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 research could help us learn more about children and HIV in Cameroon and how HIV prevention and treatment programs are working.

Costs for being in the survey

There is no cost to you for your child being in the survey. You and your child will not be paid for your child to be in the survey.

Confidentiality and Access to Your Health Information

We will do everything we can to keep your child's taking part in the survey private. The information we collect from your child will be identified by a number and not by your name or your child's name. Your name and your child's name will not appear when we share survey results. The information we collect from your child will not be released outside of the survey groups listed unless there is an issue of safety.

[INTERVIEWER: INDICATEINFORMATION SHEET TO THE PARTICIPANT – DO NOT READ ALOUD]

The following individuals and/or agencies will be able to look at your child's research records to help oversee the conduct of this survey:

- 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 person taking part in a study. These include Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) 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 United States 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 person taking part in this survey
- Study staff and study monitors

[READ ALOUD]

Your permission to allow us to use and share your child's name and contact information with the groups above will expire three years after the end of the survey. If you want your child to leave the study, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE POC]

Prof Lazare Kaptue
Cameroon National Ethics Committee for Research on Human Subjects (CNERSH)
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

[READ ALOUD]

If you have any questions about your child's rights as a person in this survey, you can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

Prof Anne Bissek Zoung-Kanyi
Address: MoPH Division of Health Operations Research (DROS): Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

Do you want to ask me anything about your child's taking part in the survey?

Verbal Consent Statement

I have read this form, and/or someone has read it to me. 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 take part, 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 give blood for HIV and related testing? 'YES' means that you give your permission to have the nurse or lab technician collect a sample of your child's blood for HIV testing and related testing. 'NO' means that your child will NOT give blood for HIV testing and related testing.

_____Yes Then please state the following statement:

"I agree for my child to give blood for HIV and related testing"

_____No Then please state the following statement:

"I do not wish for my child to take part in blood testing today"

(If agrees for child to take part in blood draw proceed to the next question)

2. Do you agree to have your child's leftover blood stored for future research? 'YES' means that you give permission for your child's blood samples to be stored for future research. 'NO' means that your child's blood samples will NOT be stored for future research.

_____Yes Then please state the following statement:

"I agree to have my child's leftover blood stored for future research"

_____No Then please state the following statement:

"I do not wish to have my child's leftover blood stored for future research"

Printed name of parent/guardian_____

Parent/guardian ID number_____(If applicable. If not applicable check here __)

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 _____

Permission for Interview and Blood Draw from Parents or Guardians for Minors ages 10-20 years

Title of Survey: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

[IF PARENT/GUARDIAN HAS BEEN THROUGH CONSENT PROCESS FOR INTERVIEW/BLOOD DRAW]

Now I would like to ask you to give us permission to invite your son/daughter to take part in this survey. Your child/teenager's participation will help the Ministry of Public Health (MoPH) make health services for children and young people better in Cameroon.

Survey Procedures

If you and your child/teenager agree, the following will happen, as described in your own consent:

- We will ask questions on HIV and your child/teenager's behaviors (about 40 minutes) in private. Your child/teenager's answers will not be shared with you.
- We will do an HIV test in your home. A trained nurse or lab technician will take about 6 mL (a little more than a teaspoonful) for children ages 10 to 14 years, and 14 mL (a little less than a tablespoonful) for children ages 15-20 of blood from your child's arm or a few drops of blood from your child's finger.
- [10-14] We will discuss the results with you. We can discuss the results with you and your child together, if you so choose.
- [15-20] We will return the results of the HIV and some of the related tests to you or your child today.
- If your child has HIV, he/she will get a CD4 test and the results will be available today. If your child is 15 or older and HIV+, he/she will also get a Hepatitis B test and may receive a referral today.
- We will send his/her blood to a laboratory to measure his/her viral load and the results will be returned to your preferred health facility in about 10-12 weeks.
- We will give you and your child/teenager a referral form so you and your child/teenager can consult with a doctor or nurse regarding his/her HIV test, CD4 count, Hepatitis B and viral load results.
- If your child/teenager is HIV negative, he/she may be randomly selected for CD4 testing and for Hepatitis B testing. If we have test results that might guide your child's care or treatment, we will contact you to tell you how you and your child's doctor or nurse may get these results.
- We will ask for your permission to store your child's leftover blood for future research tests
- **[For parents/guardians of children ages 15-20 only]** It is also possible that your child may be eligible to take part in future studies related to health in Cameroon. We will also ask permission to contact them through you in the next two years if such an opportunity occurs.

Right to refuse and to withdraw

Your child/teenager may stop participation at any time. Your child/teenager can refuse to answer any question. This will not affect your child/teenager's healthcare in any way.

Risks

The risks to your child/teenager of taking part in the survey are small. For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. You might learn that he/she has HIV. Learning that he/she has HIV may cause them to feel worried. We will talk to you/them and help you with this. We will do everything we can to keep your child's information private. However, we can't promise complete confidentiality.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about his/her health today, including if they have HIV. Your child's taking part in this research could also help us learn more about how to improve the health of children in Cameroon.

Confidentiality and Access to Your Child's Health Information

The information we collect from your child will not be released outside of the study partners we have mentioned unless there is an issue of safety. You can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH) and should you have any questions or concerns.

→ GO TO PERMISSION STATEMENT

[IF PARENT/GUARDIAN HAS NOT BEEN THROUGH CONSENT PROCESS FOR INTERVIEW/BLOOD DRAW]

Interviewer reads:

What language do you prefer for our discussion today?

___English

___French

___Fulfulde

Title of Survey: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

This survey will help us know how many people in Cameroon have HIV and need health services. It will also tell us about people's risk for getting HIV. We plan to ask about 33,000 men, women, and children from about 14,000 households throughout Cameroon to take part in this survey. If you join, your taking part will help the MoPH make health services better in the country.

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

Survey Procedures

If you agree to allow us to invite your child/teenager to take part in the survey, we will ask your child/teenager to do an interview with us in private to learn what your child knows about HIV and about your child's behaviors that may put him or her at risk for HIV. The interview will take about 40 minutes. We will not share your child/teenager's answers to the interview questions with you. The interview will take place in private here in your house or an area around your house.

If you and your child/teenager agree, a trained nurse or lab technician will take blood from your child's arm. They will take about 6 mL (a little more than a teaspoonful) for children ages 10-14, and 14 mL (a little less than a tablespoonful) for children ages 15-20. They will use the blood to perform an HIV test 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 today and provide counseling about the results and how to share them with your child if you so choose. If your child/teenager is 15 or older, we can test and counsel your child directly with your permission. If you give permission, the results would go directly to your older child rather than to you. If you do not give permission, your child's test results will come to you even if he/she is 15 years or older. 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 conduct a Hepatitis B test if the child is over 15. We will provide CD4 test results and, if needed, a Hepatitis B referral today. CD4 cells are the part of the body'simmune system that fights infections and other diseases. We will also test the CD4 level in some children without HIV. We may also do Hepatits B testing in some randomly selected HIV-negative children who are 15 or older.

We will also send his/her blood to a laboratory to measure his/her viral load which is the amount of HIV in the blood. If you provide us with the name of a health facility, we can send your child's viral load results there in about 10-12 weeks from now.

We will give you a referral form and information so that you and your child can consult with a doctor or nurse to learn more about his/her HIV test, CD4 count, viral load, and health.

We will also do other additional tests related to HIV and Hepatitis B. If we have test results that might guide your child's care or treatment, we will contact you to tell you how you and your child's doctor or nurse may get these results.

[For parents/guardians of children ages 15-20 only] It is also possible that your child may be eligible to take part in future studies related to health in Cameroon. We will also ask permission to contact them through you in the next two years if such an opportunity occurs.

Storage of specimens

We would like to ask your permission to store your child/teenager's leftover blood for future research tests. These tests may be about HIV or other health issues important for the health of Cameroonians. This sample will be stored for an indefinite amount of time but your child/teenager's name will be on the sample for three years. We will attempt to tell you about any test results during the three year period that are important for your child/teenager's health. Your child/teenager's leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your child's blood samples, we will destroy your child's leftover blood samples after survey-related testing has been completed.

Right to refuse or withdraw

It is your decision about whether you will allow us to invite your child/teenager to take part in the survey. Your child/teenager may stop taking part at any time. If your child/teenager does not want to answer some of the questions she/he may skip them and move to the next question. If you agree to allow us to invite your child to take part, your child will be able to test for HIV, Hepatitis B, and CD4 counts and the option to have his/her blood stored for future research. If your child does not take part, it will not affect your child's healthcare in any way.

Risks

The risks to your child of taking part in the survey are small. For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. You and your child/teenager may learn that they have HIV. Learning that they have HIV may cause some emotional discomfort. We will provide counseling to you/them on how to cope with learning that they have HIV. We will do everything we can to keep your child/teenager's information private. We cannot guarantee complete confidentiality.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. If your child tests HIV-positive and/or gets a referral for Hepatitis B you will learn where to take your child for life-saving treatment, which is provided by the Ministry of Public Health. 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/teenager's doctor or nurse judge how well the treatment is working. Your child's taking part in this research could help us learn more about children's health in Cameroon.

There is no cost to you for your child being in the survey. You and your child will not be paid to be in the survey.

Confidentiality and Access to Your Health Information

We will do everything we can to keep your child/teenager's taking part in the survey private. The information we collect from your child/teenager will be identified by a number and not by your name or your child/teenager's name. Your name and your child/teenager's name will not appear when we share survey results. The information we collect from your child/teenager will not be released outside of the study partners listed unless there is an issue of safety.

[INTERVIEWER: INDICATE THE INFORMATION SHEET TO THE PARTICIPANT- DO NOT READ ALOUD

The following individuals and/or agencies will be able to look at your child's research records to help oversee the conduct of this survey:

- 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 person. These include the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH)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 United States 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 person in this survey
- Study staff and study monitors

[READ ALOUD]

Your permission to allow us to use and share your child's name and contact information with the groups above will expire three years after the end of the survey. If you want your child to leave the study, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

READ ALOUD]

If you have any questions about your child's rights as a person in this survey, you can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

Prof Anne Bissek Zoung-Kanyi
Address: MoPH Division of Health Operations Research (DROS): Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

Do you want to ask me anything about your child's taking part in the survey?

Verbal Permission Statement

I have read this form, and/or someone has read it to me. 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 take part, 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 permission form.

2. 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 Then please state the following statement:

"I give permission to the study team to ask my child to take part in the interview"

_____No Then please state the following statement:

"I do not wish for the study team to ask my child to take part in the interview"

(If permission given proceed to the next question)

3. Do you agree for us to ask your child to give blood for HIV testing, and related testing and, if your child is over 15, to ask for Hepatitis B testing? 'YES' means that you give your permission for us to ask your child to have the nurse or lab technician collect a sample of your child's blood for HIV testing and related testing for ages 10-20, and, if your child is 15 or older, for Hepatitis B testing as well.'NO' means that we will NOT ask your child to give blood for HIV testing and related testing, if the child is between 10 and 20, or for additional Hepatitis B testing if your child is aged 15-20.

_____Yes Then please state the following statement:

"I give permission for the study team to ask my child to give blood for HIV and related testing and Hepatitis B testing for my child ages 15-20"

_____No Then please state the following statement:

"I do not wish for the study team to ask my child to give blood for HIV and related testing and Hepatitis B testing for my child ages 15-20" [IF NO, GO TO #5. Only for children ages 15-20]

(If permission given, proceed to the next question)

4 **[ONLY FOR PARENTS OF CHILDREN AGES 15 – 20]** For the test results available today, survey staff can give test results to you so that you can inform your older teenager. Alternatively, national testing policy allows older teenagers to receive their own results. If you feel he/she is sufficiently mature, survey staff can give the results directly to him/her with appropriate counseling. Either way, it is important for him/her to know his/her own test results. Do you agree to have your older teenager receive his or her own results confidentially? 'YES' means that you give your permission for us to give test results and counseling directly to your older teenager. 'NO' means that we give test results to you and you will be responsible for giving the results to him/her.

_____Yes Then please state the following statement:

"I give permission for the study team to provide counseling and give my child his/her tests results"

_____No Then please state the following statement:

"I do not wish for the study team to give my child's results back to my child, I will receive the results and I will be responsible for giving the results to him/her"

5. Do you agree for us to ask your child to have your child's leftover blood stored for future research? 'YES' means that you give permission for us to ask your child to store your child's blood samples for future research. 'NO' means that you do NOT give us permission to ask your child to store his/her blood samples for future research.

_____Yes Then please state the following statement:

"I give permission for the study team to ask my child to have his/her leftover blood stored for future research"

_____No Then please state the following statement:

"I do not wish for the study team to ask my child to have his/her leftover blood stored for future research"

6. **[ONLY FOR PARENTS OF CHILDREN AGES 15 – 20]** Do you agree for us to contact your child in the next two years to take part in future studies related to health in Cameroon? 'YES' means that you agree your child be contacted in the future if a study opportunity arises. 'NO' means that you will NOT your child to be contacted about future studies.

_____Yes Then please state the following statement:

"I give permission for the study team to contact my child about taking part in future studies"

_____No Then please state the following statement:

"I do not wish for the study team to contact my child about taking part in future studies"

Printed name of parent/guardian_____

Parent/guardian ID number_____ (If applicable. If not applicable check here __)

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 _____

Consent for Blood Draw (Adults 21-64 years and Special Case Minors 15-20 years)

Study title: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

[Interviewer introduces Laboratory Technician or Nurse if not drawing the blood]

My colleague is _____, who is a nurse or lab technician trained in drawing blood. He/she will also be providing you with information about testing options in this survey.

As a part of this survey, we are giving those taking part an opportunity to learn about their HIV status. We are also asking people if we can use their blood later in the laboratory for future testing.

Blood draw and HIV testing procedures

If you agree to the HIV testing and blood draw, we will take a small amount or about 14 mL (a little less than a table-spoonful) 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 and provide counseling today. The testing and counseling session will take about 40 minutes.

If you test positive for HIV, you will get a Hepatitis B test and you may receive a referral today. We will also measure the amount of CD4 cells in your blood which measures how well your body is fighting HIV infections and other diseases. We will also test the CD4 of some people without HIV. You will get your CD4 result today. We will also send your blood to a laboratory to measure your viral load which measures the amount of HIV in your blood. We will send your viral load result to a health facility in about 10-12 weeks from now. We will give you a referral form and information so that you can consult a nurse or doctor to learn more about your HIV, CD4 and viral load test results and your health.

We will also do other additional tests related to HIV. Also, whether you are HIV+ or HIV-, you may be randomly select-ed for Hepatitis B testing.

If we have test results that might help guide your care or treatment, we will contact you to tell you how you and your doctor or nurse may get these results.

Storage of specimens

We would also like your permission to store your leftover blood for future research tests. These tests may be about health issues important in Cameroon. This will help improve the health of Cameroonians. This sample will be stored for an indefinite amount of time but your name will only be on the sample for three years. We will attempt to tell you about any test results during the three year period that are important to your health. Your leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your blood samples, we will destroy your leftover blood samples after survey-related testing has been completed.

Right to refuse or to withdraw

You do not have to give blood and you are free to change your mind even after you have started the blood draw. If you decide not to take part, it will not affect your healthcare in any way.

Risks

The risks in drawing blood are very small. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. If you have any discomfort, bleeding or swelling at the site, please contact the study staff. You may learn that you are infected with HIV. Learning that you have HIV can cause some emotional discomfort. You will receive counselling on how to cope with learning that you are HIV positive. We will also tell you where you can go for care and treatment, which is provided by the Ministry of Public Health for free. We will do everything we can to keep your test results private, but we cannot guarantee total confidentiality.

Benefits

The main benefit for you to be in the survey is the chance to learn more about your health today. If you test HIV negative and/or Hepatitis B negative, you will learn about what you can do to stay HIV and Hepatitis B negative. If you test HIV-positive and/or Hepatitis B positive, you will learn your HIV status and Hepatitis B status and where to go for treatment. If you already know that you are HIV-positive and you are on HIV treatment, the CD4 and viral load tests can help your nurse or doctor judge how well your treatment is working. Your taking part in this survey could help us learn more about HIV in Cameroon and how HIV prevention and treatment programs are working.

Confidentiality, Privacy, and Access to Your Health Information

The blood we collect from you will be identified by a number and not by your name. This means that besides you, no one else will be able to know your test results except the people working on the survey. The information we collect during the survey will not be released outside of the survey groups listed unless there is an issue of safety.

[INTERVIEWER: PROVIDE THE FOLLOWING INFORMATION SHEET TO THE PARTICIPANT- DO NOT READ ALOUD]

The following individuals and/or agencies will be able to look at your research 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 person taking part in a survey. These include the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) 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 United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this survey
- Study staff and study monitors

[READ FROM HERE]

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. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

[READ THIS STATEMENT]

If you have any questions about your rights as a perons taking part in this survey, you can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

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Prof Anne Bissek Zoung-Kanyi
Address: MoPH Division of Health Operations Research (DROS): Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

Do you want to ask me anything about:

- Taking your blood for HIV or Hepatitis B testing?
- Testing in the laboratory?
- Storage of blood for future research testing?

Verbal Consent Statement

I have read this form, and/or someone has read it to me. Any questions that I had were answered satisfactorily. I know that after choosing to be in this survey, I may withdraw at any time. My taking part is voluntary. I have been offered a copy of this consent form.

7. Do you agree to give blood for HIV, Hepatitis B testing and related testing? 'YES' means that you agree to give blood for HIV testing and related testing. 'NO' means that you will NOT give blood for HIV testing, Hepatitis B and related testing.

_____Yes Then please state the following statement:

"I agree to give blood for HIV, hepatitis B testing and related testing"

_____No Then please state the following statement:

"I do not wish to take part in blood testing today"

(If agrees to blood testing proceed to next question)

8. Do you agree to have your leftover blood stored for future research? 'YES' means that you agree to have these blood samples stored for future testing. 'NO' means that these blood samples will NOT be stored for future research.

_____Yes Then please state the following statement:

"I agree to have my leftover blood stored for future research"

_____No Then please state the following statement:

"I do not wish to have my leftover blood stored for future research"

Printed name of participant_____

Participant ID number _____

Signature of person obtaining consent_____ _____ Date: ___/___/___

Printed name of person obtaining consent_____

Survey staff ID number _____

Assent to Interview (Minors ages 15-20 years)

Study title: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

Interviewer reads:

What language do you prefer for our discussion today?

___English

___French

___Fulfulde

Hello. My name is_____. We are doing a research study throughout Cameroon to learn more about HIV in the country. [IF NOT SPECIAL CASE MINOR]We have talked to your parent/guardian and they said it was okay to invite you take part in a research study.

Title of Survey: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

Purpose of the survey

This survey will help us learn more about the health of young people in Cameroon. It will also tell us about young people's risk for getting HIV. We plan to ask thousands of young people to take part in this survey. A survey is a way to learn new information about something by interviewing and testing many people. If you join, your taking part will help the Ministry of Public Health make health services better in the country.

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

Survey Procedures

If you agree to join, we will ask you questions about your age, your knowledge about HIV, and your behavior. We will ask you to answer these question without having others present. The interview will take about 40 minutes.

After the interview, we will offer you an HIV test. We will ask you for consent for the blood draw and HIV test and talk to you about your results. The testing and counseling session will take about 40 minutes.

Right to refuse or withdraw

You do not have to take part in the survey. If you choose to join the survey, you may change your mind at any time and stop taking part. If you decide not to take part, it will not affect your healthcare in any way and nobody will get upset with you.

Risks and benefits

The risks in being in the survey are small. We will do everything we can to keep your information private. However, we cannot promise complete confidentiality. You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question. If you take part, you will get free testing for HIV in your own home. Taking part in this research will help us learn more about HIV in Cameroon. Your taking part is important.

There is no cost to you for being part of the survey. You should also know that you will not be paid.

Confidentiality, Privacy and Access to Your Health Information

We will do everything we can to keep your taking part in the survey and your answers private. We will not tell your family about any of your responses. Your name and signed assent form will be kept separate from your answers to the questions, which will only be identified by a number. Your name will not appear on any survey results. Only people working on the survey will have access to the data during the survey.

The following individuals and/or agencies will be able to look at your research records:

[INTERVIEWER: INDICATE INFORMATION SHEET TO THE PARTICIPANT- DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a person taking part in a survey. These include: Cameroon National Ethics Committee for Research on Human Subjects (CNERSH)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 United States. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person in this survey
- Study staff and study monitors

[READ FROM HERE]

If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

[READ STATEMENT BELOW]

If you have any questions about your rights as a person in this survey, you can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
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Email: cnethique_minsante@yahoo.fr

Prof Anne Bissek Zoung-Kanyi
Address: MoPH Division of Health Operations Research (DROS): Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

Do you want to ask me anything about the survey?

Verbal Assent Statement

I have read this form, and/or someone has read it to me. Any questions that I had were answered satisfactorily. I agree to take part in the individual interview. I have been offered a copy of this assent form.

Verbal Assent Statement

1. Do you agree to take part in the individual interview? 'YES' means that you agree to do the interview. 'NO' means that you will NOT do the interview.

_____Yes Then please state the following statement:

"I agree to take part in the individual interview"

_____No Then please state the following statement:

"I do not wish to take part in the individual interview"

2. FUTURE RESEARCH: It is possible that you may be eligible to take part in future studies related to health in Cameroon. 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. '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 Then please state the following statement:

"I agree to be contacted about future studies"

_____No Then please state the following statement:

"I do not wish to be contacted about future studies"

Printed name of participant_____

Participant ID number _____

Printed name of parent/guardian_____

Signature of person obtaining assent_____ _____ Date: ___/___/___

Printed name of person obtaining assent_____

Survey staff ID number _____

Assent to Interview (Minors ages 10-14 years)

Title of Survey: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

Interviewer reads:

What language do you prefer to use for this discussion?

___English

___French

___Fulfulde

Hello. My name is_____. We have talked to your parents/guardian and they said it was okay to invite you to take part in a research survey. Surveys help us learn new things.

This form talks about our survey and the choice that you have to take part in it. We want you to ask us any questions that you have. You can ask questions any time.

Why are we doing this survey?

We are doing this survey to help us learn more about the health of young people in Cameroon. We plan to ask thousands of children to join this survey. A survey is a way to learn about something by interviewing and testing many people. We would like to invite you to join this survey.

This form might have some words that you may not have heard before. Please ask us to explain anything that you do not understand.

What would happen if I join this survey?

If you decide to join the survey, here is what would happen:

- We will ask you questions about your age, what you know about HIV, and some of your behaviors.
- The interview will take place in private here in your house or an area around your house. We will not tell your parents about any of your answers.
- 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 to store it for future studies.

Could bad things happen if I join this survey?

You may feel uncomfortable answering some of the questions we will ask. You can refuse to answer any question or stop the interview at any time. We will do everything we can to keep your information private.

Could the survey help me?

You will help figure out ways to help young people and learn more about health in Cameroon. Your taking part is important.

What else should I 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 to say 'no'. If you want to stop, please tell us.

We will not tell other people that you are in this survey and will not share information about you to anyone who does not work in the survey study. Any information about you will have a number on it instead of your name.

The following individuals and/or agencies will be able to look at your research records:

- Study staff and study monitors
- Staff members from groups that protect your rights to ensure that we are protecting your rights

If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and the Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

[READ THIS STATEMENT]

If you have any questions about your rights as a person in this survey, you can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and the Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

Prof Anne Bissek Zoung-Kanyi
Address: MoPH Division of Health Operations Research (DROS): Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

You should also know that you will not be paid to be in the study. You can ask questions any time. Ask us any questions you have. Take the time you need to make your choice.

Do you want to ask me anything?

Verbal Consent Statement

I have read this form, and/or someone has read it to me. Any questions that I had have been answered. I know that after choosing to be in this survey, I may stop at any time. My taking part is voluntary. I have been offered a copy of this assent form.

2. Do you agree to take part in the individual interview? 'YES' means that you agree to do the interview. 'NO' means that you will NOT do the interview.

_____Yes Then please state the following statement:

"I agree to take part in the individual interview"

_____No Then please state the following statement:

"I do not wish to take part in the individual interview"

Printed name of child _____

Child's participant ID number _____

Printed name of parent/guardian_____

Signature of person obtaining assent_____ _____ Date: ___/___/___

Printed name of person obtaining assent_____

Survey staff ID number _____

Assent to Blood Draw (Minors ages 10-14 years)

Study title: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

[IF A NEW INTERVIEWER]: Hello, my name is_____. I will give you information about blood testing in this survey.

As a part of this survey, we are giving people a chance to learn if they have HIV. We are also asking people if we can keep some of their blood for future testing.

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

What would happen if I agree to get blood testing?

If you agree to testing, here is what would happen:

- We will use a needle to take about a teaspoon (6 mL) of your blood from your arm. If it's not possible to take blood from your arm, then we will try to take a few drops of blood from your finger. Then we will test your blood for HIV here in your home.
- It will take about 40 minutes to do the test and to talk to you and your parents/guardians about the results.
- If you have HIV, we will do another test here at home on the blood we have already collected to measure some cells in your blood that fight HIV and other infections. We will also measure these cells from some young people without HIV
- If you test positive for HIV, we will send your blood to a laboratory to measure the amount of HIV in your blood. We will ask you if we can use some of your blood for future testing. These tests may be about HIV or other health issues important for Cameroon. This sample will be stored for an indefinite amount of time but your name will be on it for only three years. We will try to tell you and your parents/guardians about any test results during this period that are important to your health. Your leftover blood will not be sold. If you do not agree to future storage and testing of your blood, we will destroy your blood after survey-related testing has finished.

Could bad things happen if I agree to blood testing?

The needle may hurt when it is put into and taken out of your arm. This pain will go away quickly. Sometimes the needle can leave a bruise on the skin. You might bleed a little or feel a little dizzy afterwards. Rarely, an infection might occur where the needle enters the skin. And sometimes we may have to stick you with the needle more than one time in order to get the right amount of blood. We will do our best to make it hurt as little as possible. You may learn that you have HIV and/or Hepatitis B**.** Learning that you have HIV and/or Hepatitis B may cause you to feel worried or upset. We will talk to you and your parents/guardian and help you with this. We will do everything we can to keep your information private.

Could getting tested for HIV help me?

If you do not have HIV, you can learn about what you can do to stay that way. If you have HIV, we will tell you and your parent/guardian where to get help or treatment. If you already know you have HIV and are on HIV treatment, the tests may help your doctor/nurse judge how well your treatment is working. We also hope to learn something from this survey to help other children in Cameroon.

There is no cost to you or your parent/guardian for you being in the survey. You and your parent/guardian will not be paid for you to be in the survey.

What else should I know about this survey?

If you do not want to get a blood test, you do not have to. Nobody will get upset. You can say 'yes' and change your mind later to say 'no'. If you want to stop, please tell us.

We will not tell other people that you are in this survey and will not share information about you to anyone who does not work on the survey. Any information about you will have a number on it instead of your name.

We will not share your results with anyone else besides you and your parent/guardian. We will give your results to your parent/guardian and they will decide on the best time to tell you about your test results. If your parent or guardian wants to tell you about your test results today, we will talk with you about any questions or worries that you might have about the results.

The following individuals and/or agencies will be able to look at your survey records:

- Survey staff and survey monitors
- Staff members from groups that protect your rights to ensure that we are protecting your rights

Do you want to ask me anything?

Verbal Assent

I have read this form, and/or someone has read it to me. Any questions that I had have been answered satisfactorily. I know that after choosing to be in this survey, I may withdraw at any time. My taking part is voluntary. I have been offered a copy of this assent form.

1. Do you agree to give blood for HIV, testing and related testing? 'YES' means that you agree to give blood for HIV testing and related testing. 'NO' means that you will NOT give blood for HIV testing and related testing.

_____Yes Then please state the following statement:

"I agree to give blood for HIV and related testing"

_____No Then please state the following statement:

"I do not wish to take part in blood testing today"

(If agrees to blood testing and related testing, proceed to the next question)

2. If you agree to give your blood for future testing? 'YES' means that you agree to have your blood stored for future research. 'NO' means that your blood will NOT be stored for future research.

_____Yes Then please state the following statement:

"I agree to have my leftover blood stored for future research"

_____No Then please state the following statement:

"I do not wish to have my leftover blood stored for future research"

Printed name of child _____

Child's participant ID number _____

Printed name of parent/guardian_____

Signature of person obtaining assent_____ _____ Date: ___/___/___

Printed name of person obtaining assent_____

Survey staff ID number _____

Assent to Blood Draw (Minors ages 15-20 years)

Study title: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

[Interviewer introduces Laboratory Technician or Nurse if not drawing the blood]

My colleague is _____, who is a nurse or lab technician trained in drawing blood. He/she will also be providing you with information about testing options in this survey.

As a part of this survey, we are giving those that take part an opportunity to learn about their HIV status. We are also asking people if we can use their blood later in the laboratory for future testing.

Blood draw and HIV testing procedures

If you agree to the blood draw and HIV testing, we will take about 14 mL (a little less than a tablespoonful) 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. Depending on whether your parent has given permission for you to receive the results of your blood test directly, we will give either you or your parent or guardian the results and provide counseling today. The testing and counseling session will take about 40 minutes.

If you test positive for HIV, you will get a Hepatitis B test and you or your parent/guardian may receive a referral today. We will also measure the amount of CD4 cells in your blood which measures how well your body can fight HIV infections and other diseases. You or your parent/guardian will get your CD4 result today. We will also send your blood to a laboratory to measure your viral load which measures the amount of HIV in your blood. We will send your viral load result to a health facility in about ten to twelve weeks from now. We will give you or your parent/guardian a referral form and information so that you can consult a nurse or doctor to learn more about your test results and your health.

We will also do other additional tests related to HIV. Also, whether you are HIV positive or HIV negative, you may be randomly selected for Hepatitis B testing. If we have test results that might help guide your care or treatment, we will contact you or your parent/guardian to tell you how you and your doctor or nurse may get these results.

Storage of specimens

We would also like your permission to store your leftover blood for future health research studies in Cameroon. The findings from these studies will help improve the health status of Cameroonians. This sample will be stored for an indefinite amount of time but your name will only be on the sample for three years. Your leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your blood samples, we will destroy your blood samples after survey-related testing has been completed.

Right to refuse or to withdraw

You do not have to give blood and you are free to change your mind even after you have started the blood draw. If you don't want to give blood, please tell us. If you decide not to take part, it will not affect your healthcare in any way.

Risks

The risks in drawing blood are very small. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. If you have any discomfort, bleeding or swelling at the site, please contact the study staff. You may learn that you are infected with HIV. Learning that you have HIV can cause some emotional distress. You will receive counselling on how to cope with learning that you are HIV positive. We will also tell you where you can go for care and treatment, which is provided by the Ministry of Public Health for free. We will do everything we can to keep your test results private, but we cannot guarantee total confidentiality.

Benefits

The main benefit for you to be in the survey is the chance to learn more about your health today. If you test HIV negative, you will learn about what you can do to stay HIV negative. If you test HIV positive, you will learn your HIV and Hepatitis B status and where to go for treatment. If you already know that you are HIV-positive and you are on HIV treatment, the CD4 and viral load tests can help your nurse or doctor judge how well your treatment is working. In addition, if you are one of a small group of people randomly selected to be tested for Hepatitis B, you will learn information about your Hepatitis B status and, if necessary, be referred for follow-up testing and care. Your taking part in this research could help us learn more about HIV and Hepatitis B in Cameroon and how HIV prevention and treatment programs are working. Your taking part is important.

Confidentiality, Privacy and Access to Your Health Information

The blood we collect from you will be identified by a number and not by your name. This means that besides you, no one else will be able to know your test results except the people working on the survey. The information we collect during the survey will not be released outside of the survey groups listed unless there is an issue of safety.

[INTERVIEWER: INDICATE INFORMATION SHEET TO THE PARTICIPANT- DO NOT READ ALOUD]

The following individuals and/or agencies will be able to look at your research 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 person. These include the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) 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 United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person in this survey
- Study staff and study monitors

[READ FROM HERE]

If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and the Ministry of Public Health (MoPH):

[INDICATE POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

[READ THIS STATEMENT]

If you have any questions about your rights as a person taking part in this survey, you can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and the Ministry of Public Health (MoPH):

[INDICATE POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
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Prof Anne Bissek Zoung-Kanyi
Address: MoPH Division of Health Operations Research (DROS): Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

Do you want to ask me anything about:

- Taking your blood for HIV testing?
- Testing in the laboratory?
- Storage of blood for future research testing?

Verbal Assent statement

I have read this form, and/or someone has read it to me. Any questions that I had have been answered satisfactorily. I know that after choosing to be in this survey, I may withdraw at any time. My taking part is voluntary. I have been offered a copy of this assent form.

9. Do you agree to give blood for HIV, Hepatitis B testing and related testing? 'YES' means that you agree to give blood for HIV testing and related testing. 'NO' means that you will NOT give blood for HIV testing and related testing.

_____Yes Then please state the following statement:

"I agree to give blood for HIV, hepatitis B testing and related testing"

_____No Then please state the following statement:

"I do not wish to take part in blood testing today"

(If agrees to blood testing proceed to next question)

10. Do you agree to have your leftover blood stored for future research? 'YES' means that you agree to have these blood samples stored for future testing. 'NO' means that these blood samples will NOT be stored for future research.

_____Yes Then please state the following statement:

"I agree to have my leftover blood stored for future research"

_____No Then please state the following statement:

"I do not wish to have my leftover blood stored for future research"

Printed name of participant_____

Participant ID number _____

Printed name of parent/guardian_____

Signature of person obtaining assent_____ _____ Date: ___/___/___

Printed name of person obtaining assent_____

Survey staff ID number _____

Parental Consent/Permission for Interview and Blood Draw from Parents or Guardians for Minors ages 0-20 years

Title of Survey: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

Interviewer reads:

What language do you prefer for our discussion today?

___English

___French

___Fulfulde

Title of Survey: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

This survey will help us know how many people in Cameroon have HIV and need health services. It will also tell us about people's risk for getting HIV. We plan to ask about 33,000 men, women, and children from about 14,000 households throughout Cameroon to take part in this survey. If you join, your taking part will help the Ministry of Public Health (MoPH) make health services better in the country.

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

We are going to ask your permission to allow your children to take part in the research. For children who are under 10 years of age, we only ask for your permission. For children over 10 years of age, we ask both for your permission and for your child's assent before proceeding. The procedures are slightly different depending on your child's age. I will describe them to you in detail now.

Interview Procedures ages 10-20

If you agree to allow us to invite your child/teenager ages 10-20 to take part in the survey, we will ask your child/teenager to do an interview with us in private to learn what your child knows about HIV and about your child's behaviors that may put him or her at risk for HIV. The interview will take about 40 minutes. We will not share your child/teenager's answers to the interview questions with you. The interview will take place in private here in your house or an area around your house.

- **[If your child is 15-20 years]** It is also possible that your child may be eligible to take part in future studies related to health in Cameroon. We will also ask permission to contact them through you in the next two years if such an opportunity occurs.

Blood Procedures ages 0-20

- **[IF CHILD IS 0-23MONTHS OLD]** A trained nurse or lab technician will take a few drops (about 1 mL) from your child's finger or heel for the HIV test.
- **[IF CHILD IS 2 TO 9 YEARS OLD]** To do the HIV test, a trained nurse or lab technician will take about 6 mL (a little more than a teaspoonful) of blood from your child's arm or a few drops of blood from your child's finger.
- **[IF CHILD/TEENAGER IS 10-20 YEARS OLD]** If you and your child/teenager agree, trained nurse or lab technician will take about 6 mL (for children ages 10-14) and 14 mL (a little less than a tablespoonful) for children ages 15-20 of blood from your child's arm to perform an HIV test 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 today and provide counseling about the results and how to share them with your child if you so choose. If your child/teenager is 15 or older, we can test and counsel your child directly with your permission. If you give permission, the results would go directly to your older child rather than to you. If you do not give permission, your child's test results will come to you even if he/she is 15 years or older. The entire testing and counseling session will take about 40 minutes.
- **[If your child is less than or equal to 18 months]** we will conduct another test. 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 was 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 determine if he/she has the HIV infection. If you provide us with the name of a health facility, we can send the result there in about 10-12 weeks from now. We will also contact you to inform you that the results have been sent to the facility, if you provide us with your contact information. You will be able to talk to a doctor or nurse at the facility about the test result.
- If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and, if your child is over 15, we will conduct a Hepatitis B test. We will provide CD4 test results and, if needed, a Hepatitis B referral today. CD4 cells are the part of the body's immune system that fights infections and other diseases. We will also test the CD4 level in some children without HIV. We may also do Hepatits B testing in some randomly selected HIV-negative children who are 15 or older.
- We will also send his/her blood to a laboratory to measure his/her viral load which is the amount of HIV in the blood. If you provide us with the name of a health facility, we can send your child's viral load results there in about 10-12 weeks from now.
- We will give you a referral form and information so that you and your child can consult with a doctor or nurse to learn more about his/her HIV test, CD4 count, viral load, and health.
- We will also do other additional tests related to HIV and Hepatitis B for children 15+. If we have test results that might guide your child's care or treatment, we will contact you to tell you how you and your child's doctor or nurse may get these results.
- **[If your child is 0-5 years and has HIV]**, we will also measure your child's weight and height to measure your child's growth and monitor their health. We will also measure weight and height for some children without HIV. The results will be returned to you and you will be able to talk to a doctor or nurse at the facility about the result.

Storage of specimens

We would like to ask your permission to store your child/teenager's leftover blood for future research tests. These tests may be about HIV or other health issues important for the health of Cameroonians. This sample will be stored for an indefinite amount of time but your child/teenager's name will be on the sample for three years. We will attempt to tell you about any test results during the three year period that are important for your child/teenager's health. Your child/teenager's leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your child's blood samples, we will destroy your child's blood samples after survey-related testing has been completed.

Right to refuse or withdraw

It is your decision about whether you will allow your child ages 0-9 to take part or allow us to invite your child/teenager ages 10-20 to take part in the survey. Your child/teenager may stop taking part at any time. If your child/teenager ages 10-20 does not want to answer some of the questions she/he may skip them and move to the next question. If you agree to allow us to invite your child to take part, your child will be able to test for HIV, Hepatitis B, and CD4 counts and the option to have his/her blood stored for future research. If your child does not take part, it will not affect your child's healthcare in any way.

Risks

The risks to your child of taking part in the survey are small. For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. You and your child/teenager may learn that they have HIV. Learning that they have HIV may cause some emotional discomfort. We will provide counseling to you/them on how to cope with learning that they have HIV. We will do everything we can to keep your child/teenager's information private. We cannot guarantee complete confidentiality.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. If your child tests HIV positive and/or gets a referral for Hepatitis B if they are 15-20 years, you will learn where to take your child for life-saving treatment, which is provided by the Ministry of Public Health. 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/teenager's doctor or nurse judge how well the treatment is working. Your child's taking part in this research could help us learn more about children's health in Cameroon.

There is no cost to you for your child being in the survey. You and your child will not be paid to be in the survey.

Confidentiality and Access to Your Health Information

We will do everything we can to keep your child/teenager's taking part in the survey private. The information we collect from your child/teenager will be identified by a number and not by your name or your child/teenager's name. Your name and your child/teenager's name will not appear when we share survey results. The information we collect from your child/teenager will not be released outside of the study partners listed unless there is an issue of safety.

[INTERVIEWER: INDICATE THE INFORMATION SHEET TO THE PARTICIPANT- DO NOT READ ALOUD]

The following individuals and/or agencies will be able to look at your child's research records to help oversee the conduct of this survey:

- 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 person. These include the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH)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 United States 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 person in this survey
- Study staff and study monitors

[READ ALOUD]

Your permission to allow us to use and share your child's name and contact information with the groups above will expire three years after the end of the survey. If you want your child to leave the study, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and the Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

[READ ALOUD]

If you have any questions about your child's rights as a person in this survey, you can contact the Cameroon National Ethics Committee for Research on Human Subjects (CNERSH) and Ministry of Public Health (MoPH):

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

Prof Anne Bissek Zoung-Kanyi
Address: MoPH Division of Health Operations Research (DROS): Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

Do you want to ask me anything about your child's taking part in the survey?

Verbal Consent/Permission Statement

I have read this form, and/or someone has read it to me. Any questions I had have been answered satisfactorily. I know that after allowing my child to take part, 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/permission form.

11. **[FOR PARENTS OF CHILDREN AGES 10-20]** Do you agree for us to ask your eligible child/children ages 10-20 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 Then please state the following statement:

"I give permission to the study team to ask my eligible child/children ages 10-20 to take part in the interview."

_____No Then please state the following statement:

"I do not wish for the study team to ask my eligible child/children ages 10-20 to take part in the interview."

(IF 'NO' STOP)

12. Do you agree that your eligible child/children ages 0-9 give blood for HIV testing and related testing and for us to ask your eligible child/children ages 10-20 to give blood for HIV and related testing and Hepatitis B testing for children ages 15-20? 'YES' means that you give your permission/consent for us to collect a sample of blood from your eligible child/children ages 0-9 or for us to ask your eligible child/children ages 10-20 to have the nurse or lab technician collect a sample of their blood for HIV testing and related testing and Hepatitis B testing for children ages 15-20. 'NO' means that we will NOT collect a sample of blood from your eligible children ages 0-9 or ask your eligible child/children ages 10-20 to give blood for HIV testing and related testing and Hepatitis B testing for children ages 15-20.

_____Yes Then please state the following statement:

"I agree for my eligible child/children ages 0-9 to give blood for HIV and related testing and for the study team to ask my eligible child/children ages 10-20 to give blood for HIV related testing, and for the study team to ask my eligible child/children ages 15-20 to give blood for HIV, hepatitis B testing and related testing."

_____No Then please state the following statement:

"I do not wish for my child to take part in blood testing today"

(If permission not given, proceed to question #5)

13. **[ONLY FOR PARENTS OF CHILDREN AGES 15 – 20]** For the test results available today, survey staff can give test results to you so that you can inform your older eligible teenager(s). Alternatively, national testing policy allows older teenagers to receive their own results. If you feel he/she is sufficiently mature, survey staff can give the results directly to him/her with appropriate counseling. Either way, it is important for him/her to know his/her own test results. 'YES' means that you give your permission for us to give test results and counseling directly to your eligible child/children ages 15-20. 'NO' means that we give test results to you and not to your eligible child/children ages 15-20 and you will be responsible for giving the results to them.

_____Yes Then please state the following statement:

"I give permission for the study team to provide counseling and give my eligible child/children tests results to them"

_____No Then please state the following statement:

"I do not wish for the study team to give my eligible child/children ages 15-20 tests results back to them, I will receive the results and I will be responsible for giving the results to my eligible child/children"

14. Do you agree that your eligible child/children ages 0-9 leftover blood be stored for future research and for us to ask your eligible child/children ages 10-20 to have his/her leftover blood stored for future research? 'YES' means that you give permission/consent for us to store your eligible child/children ages 0-9 leftover blood samples for future research or for us to ask your eligible child/children ages 10-20 to store his/her blood samples for future research. 'NO' means that you do NOT give us permission/consent to store your eligible child/children ages 0-9 leftover blood samples for future research or to ask your eligible child/children ages 10-20 to store his/her blood samples for future research.

_____Yes Then please state the following statement:

"I agree for the study team to have the leftover blood of my eligible child/children ages 0-9 stored for future research and for the study team to ask my eligible child/children ages 10-20 to have his/her leftover blood stored for future research."

_____No Then please state the following statement:

"I do not wish to have the leftover blood of my child/children ages 0-9 stored for future research or for the study team to ask my eligible child/children ages 10-20 to have their leftover blood stored for future research."

15. **[FOR PARENTS OF CHILDREN AGES 15-20]** Do you agree for us to contact your eligible child/children ages 15-20 in the next two years to take part in future studies related to health in Cameroon? 'YES' means that you agree your eligible child/children be contacted in the future if a study opportunity arises. 'NO' means that you will NOT your eligible child/children to be contacted about future studies.

_____Yes Then please state the following statement:

"I give permission for the study team to contact my eligible child/children ages 15-20 about taking part in future studies."

_____No Then please state the following statement:

"I do not wish for the study team to contact my eligible child/children ages 15-20 about taking part in future studies."

Printed name of parent/guardian_____

Parent/guardian ID number_____ (If applicable. If not applicable check here __)

Signature of person obtaining consent/permission_____ Date: ___/___/___

Printed name of person obtaining consent/permission_____

Survey staff ID number _____

Child/Children's name(s) (print) _____

_____

Child/Children's participant ID number (s)_____

_____

Consent to Share Contact Information for Active Linkage to Care of Participants, 21-64 years and special case minors 15-20

Study title: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

What language do you prefer for our discussion today?

___English

___French

___Fulfulde

Purpose of consent

You had a positive HIV test today. We have provided you with a referral form to bring to a health clinic and seek HIV treatment and care. We would like to help you in accessing the health care that you need. If you agree, we may be able to provide your contact information and HIV test results to health care workers from the Ministry of Public Health (MoPH) or to a partner that the MoPH works with. This health care worker may contact you to talk to you about HIV and help you go for HIV care. Anyone who is provided with your details will be experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

What do you have to do if you agree to take part?

If you agree for your information to be shared and to be contacted, we may provide your name, phone number (if you provided it to us) and your address to those health care providers to provide you with support. The health care worker can contact you by SMS, phone, or in person.

What about confidentiality?

Your HIV test results and your contact information will not be shared with any other parties aside from what was specified in the other consent forms, and with this support organization. They will also do their utmost to maintain your confidentiality. However, we cannot guarantee complete confidentiality.

What are the potential risks?

As with all 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?

A health care worker will assist you in accessing the health care that you need.

Who should you contact if you have questions?

If you change your mind or have any questions or feel that you have been harmed by taking part, you should contact any of the Principal Investigators listed below:

INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

[READ STATEMENT BELOW]

If you have any questions about your rights as a person in this survey, you can contact either of the following persons:

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

Prof Anne Bissek Zoung-Kanyi
Address: MoPH Division of Health Operations Research (DROS): Located at Hygiene Mobil, Rue Rudolph Manga Bell, Yaounde, Center Region, Cameroon
Phone: +237 243234579
Email: minsantedros@yahoo.com

Consent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form.

Do you agree to allow us to share your contact information with the MoPH or a partner that MoPH works with who can help you go to a clinic to receive HIV treatment? 'Yes' means that you agree to allow us share your contact information with the MoPH or a partner that the MoPH works with. 'No' means that you do NOT agree to allow us to share your contact information with the MoPH or a partner that the MoPH works with.

_____Yes Then please state the following statement:

"I agree to allow my contact information to be shared with the MoPH or a partner that the MoPH works with, to help me go to a clinic to receive HIV treatment, care and support"

_____No Then please state the following statement:

"I DO NOT agree to allow my contact information to be shared with the MoPH or a partner that the MoPH works with, to help me go to a clinic to receive HIV treatment, care and support"

1. If yes, do you agree to be contacted by?

SMS _____Yes _____No

Phone call _____Yes _____No

In person _____Yes _____No

Participant ID number _____

Signature of person obtaining consent_____ _____ Date: ___/___/___

Printed name of person obtaining consent_____

Survey staff ID number _____

Consent to Share Contact Information for Active Linkage to Care of Participants, parents of children 0-20yearsw

Study title: Cameroon Population-based HIV Impact Assessment (CAMPHIA)

What language do you prefer for our discussion today?

___English

___French

___Fulfulde

Purpose of consent

Your child had a positive HIV test today. We have provided you with a referral form so that you and your child can take to a health clinic and seek HIV treatment and care. We would like to help you and your child in accessing the health care that your child needs. If you agree, we might be able to provide your contact information and your child's HIV results to health care workers from the Ministry of Public Health (MoPH) or a partner that the MoPH works with. This counselor may contact you to talk to you and your child about HIV and help you and your child go for HIV care. Anyone who is provided with you and your child's details will be experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

What do you have to do if you agree to take part?

If you agree for your child's information to be shared, and to be contacted, we may provide your name, phone number (if you provided it to us) and your address to those health care workers to provide you with support. The health care worker can contact you by SMS, phone, or in person.

What about confidentiality?

Your HIV test results and your contact information will not be shared with any other parties aside from what was specified in the other consent forms, and with this support organization. They will also do their utmost to maintain your confidentiality. However, we cannot guarantee complete confidentiality.

What are the potential risks?

As with all 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?

A health care worker will assist you in accessing the health care needed by your child.

Who should you contact if you have questions?

If you change your mind or have any questions or feel that you have been harmed by taking part, you should contact any of the Principal Investigators listed below:

[INDICATE ADDRESS OF POC]

Prof Lazare Kaptue
Address: CNERSH: Located at Hygiene Mobile, Yaounde, Center Region, Cameroon
Phone: +237 243674339
Email: cnethique_minsante@yahoo.fr

[READ STATEMENT BELOW]

If you have any questions about your rights as a person in this survey, you can contact either of the following persons:

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Phone: +237 243234579
Email: minsantedros@yahoo.com

Consent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form.

Do you agree to allow us to share your child's contact information with MoPH or a partner that MoPH work with who can help you and your child go to a clinic to receive HIV treatment, care and support? Yes' means that you agree to allow us share your child's contact information with the MoPH or a partner that the MoPH works with. 'No' means that you do NOT agree to allow us to share your child's contact information with the MoPH or a partner that the MoPH works with.

_____Yes Then please state the following statement:

"I agree to allow my child's contact information to be shared with the MoPH or a partner that the MoPH works with, to help me and my child go to a clinic to receive HIV treatment, care, and support"

_____No Then please state the following statement:

"I DO NOT agree to allow my child's contact information to be shared with the MoPH or a partner that the MoPH works with, to help me and my child go to a clinic to receive HIV treatment, care, and support"

2. If yes, do you agree to be contacted by?

SMS _____Yes _____No

Phone call _____Yes _____No

In person _____Yes _____No

Parent/guardian's Participant ID number _____

Child's Participant ID number _____

Signature of person obtaining consent_____ _____ Date: ___/___/___

Printed name of person obtaining consent_____

Survey staff ID number _____

Cameroon Population-based HIV Impact Assessment
CAMPHIA 2017-2018

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CAMPHIA A DROP THAT COUNTS
CAMEROON POPULATION-BASED HIV IMPACT ASSESSMENT

Ministère de la Santé Publique

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

INSTITUT NATIONAL DE LA STATISTIQUE
NATIONAL INSTITUTE OF STATISTICS

Westat

icap Global Health

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