

Côte d'Ivoire Population-based HIV Impact Assessment CIPHIA 2017-2018



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Côte d'Ivoire Population-based HIV Impact Assessment CIPHIA 2017-2018

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TABLE OF CONTENTS

List of Tables and Figures	5
Glossary of Terms.....	8
List of Abbreviations.....	10
Foreword.....	11
Executive Summary/Summary of Key Findings	12
Household Characteristics.....	13
Characteristics of Respondents.....	13
Incidence of HIV.....	13
Prevalence of HIV.....	13
HIV Testing.....	13
HIV Diagnosis and Treatment.....	13
Viral Load Suppression.....	14
UNAIDS 90-90-90 Targets.....	14
Clinical Perspective Among People Living with HIV	14
Prevention of Mother-to-Child Transmission (PMTCT)	14
Young People (Ages 15-24 Years)	14
HIV Risk Factors.....	15
Intimate Partner Violence (IPV).....	15
Discriminatory Attitudes Towards People Living with HIV	15
Tuberculosis.....	15
Gaps and Program Recommendations	15
1 INTRODUCTION.....	17
1.1 Background.....	18
1.2 Overview of CIPHIA 2017-2018 Survey.....	18
1.3 Goal.....	18
1.4 Objectives.....	18
2 SURVEY DESIGN, METHODS, AND RESPONSE RATES	20
2.1 Sample Frame and Design.....	21
2.2 Eligibility Criteria, Recruitment, and Consent Procedures	22
2.3 Survey Implementation.....	23
2.4 Field-based Biomarker Testing	24
2.5 Laboratory-based Biomarker Testing	26
2.6 Data Processing and Analysis	30
2.7 Response Rates.....	30
2.8 References.....	32
3 SURVEY HOUSEHOLD CHARACTERISTICS	33
3.1 Key Findings.....	33
3.2 Background.....	34
3.3 Results.....	34
Household Composition.....	34
Prevalence of Households Affected by HIV.....	37
3.4 References.....	39

4	SURVEY RESPONDENT CHARACTERISTICS	40
4.1	Key Findings	40
4.2	Background	41
4.3	Results	41
	Sociodemographic Characteristics of the Adult Population	41
	Sociodemographic Characteristics of the Pediatric Population	43
5	HIV INCIDENCE	44
5.1	Key Findings	44
5.2	Background	45
5.3	Results	45
5.4	Gaps and Unmet Needs	46
5.5	References	47
6	HIV PREVALENCE	48
6.1	Key Findings	48
6.2	Background	49
6.3	Results	49
	HIV Prevalence among Adults by Demographic Characteristics	49
	HIV Prevalence Among Adults Aged 15-49 Years by Demographic Characteristics	51
	HIV prevalence by age and sex	52
	HIV prevalence among adults by region	54
6.4	Gaps and Unmet Needs	55
7	HIV TESTING	56
7.1	Key Findings	56
7.2	Background	57
7.3	Results	57
7.4	Gaps and Unmet Needs	63
8	HIV DIAGNOSIS AND TREATMENT	64
8.1	Key Findings	64
8.2	Background	65
8.3	Results	65
	HIV diagnosis and self-reported treatment status in HIV-positive adults	65
	Concordance of self-reported treatment status versus detection of antiretrovirals in blood	71
8.4	Gaps and Unmet Needs	72
8.5	References	72
9	VIRAL LOAD SUPPRESSION	73
9.1	Key Findings	73
9.2	Background	74
9.3	Results	74
	VLS by sociodemographic characteristics	74
9.4	Gaps and Unmet Needs	77
10	UNAIDS 90-90-90 TARGETS	78
10.1	Key Findings	78
10.2	Background	79
10.3	Results	79
10.4	Gaps and Unmet Needs	83
10.5	References	83

11	CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV	84
11.1	Key Findings	84
11.2	Background	85
11.3	Results	85
	Median CD4 count and prevalence of immunosuppression	85
	Late diagnosis of HIV	88
	Retention on ART	89
	Resistance and HIV subtypes	93
11.4	Gaps and Unmet Needs.....	94
11.5	References.....	94
12	PREVENTION OF MOTHER-TO-CHILD TRANSMISSION	95
12.1	Key Findings	95
12.2	Background	96
12.3	Results	96
	Antenatal care	96
	Breastfeeding	98
	Knowledge of the mother's HIV status during pregnancy.....	98
12.4	Gaps and Unmet Needs.....	100
12.5	References.....	101
13	YOUNG PEOPLE	102
13.1	Key Findings	102
13.2	Background	103
13.3	Results	103
	Sex before the age of 15 years	103
	Knowledge about HIV.....	105
	HIV prevalence by sexual behaviors	110
13.5	References.....	110
14	HIV RISK FACTORS	111
14.1	Key Findings	111
14.2	Background	112
14.3	Results	112
	Prevalence of HIV by sexual behavior.....	112
	Condom use with a nonmarital and noncohabitating partner.....	113
	Male circumcision.....	119
14.4	Gaps and Unmet Needs.....	121
15	INTIMATE PARTNER VIOLENCE	122
15.1	Key Findings	122
15.2	Background	123
15.3	Results	123
15.4	Gaps and Unmet Needs.....	125
15.5	References.....	125
16	DISCRIMINATORY ATTITUDES TOWARDS PEOPLE LIVING WITH HIV	126
16.1	Key Findings	126
16.2	Background	127
16.3	Results	127
16.4	Gaps and Unmet Needs.....	129
16.5	References.....	129

17	TUBERCULOSIS	130
17.1	Key Findings	130
17.2	Background	131
17.3	Results	131
17.4	Gaps and Unmet Needs.....	131
17.5	References	131
Appendix A	Sample Design and Implementation	133
Appendix B	HIV Testing Methodology	137
Appendix C	Estimates of Sampling Errors.....	146
Appendix D	Survey Personnel.....	156
Appendix E	Household Questionnaire.....	161
Appendix F	Adult Questionnaire.....	174
Appendix G	Survey Consent Forms.....	197

LIST OF TABLES AND FIGURES

2	SURVEY DESIGN, METHODS, AND RESPONSE RATES	20
	Table 2.1.A Distribution of sampled enumeration areas and households, by region CIPHIA 2017-2018	21
	Figure 2.4.A Home-based HIV testing algorithm, CIPHIA 2017-2018	25
	Figure 2.4.B. Laboratory-based screening algorithm, CIPHIA 2017-2018	26
	Figure 2.5.A HIV-1 recent infection testing algorithm (LAg/VL algorithm), CIPHIA 2017-2018	28
	Figure 2.5.B HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), CIPHIA 2017-2018	29
	Table 2.7.A Household response rates	31
	Table 2.7.B Interview and blood draw response rates	31
3	SURVEY HOUSEHOLD CHARACTERISTICS	33
	Table 3.A Household composition	34
	Table 3.B Population pyramid	35
	Figure 3.A Distribution of the de facto population by sex and age, CIPHIA 2017-2018	35
	Figure 3.B Household population by age, sex, and residence, CIPHIA 2017-2018	36
	Table 3.C Household population by age, sex, and residence	36
	Table 3.D Prevalence of HIV-affected households	37
	Figure 3.C Prevalence of HIV-affected households by residence, CIPHIA 2017-2018	37
	Table 3.E HIV-affected households by the number of HIV-positive members	38
	Figure 3.D HIV-affected households by the number of HIV-positive members and residence, CIPHIA 2017-2018	38
	Table 3.F Prevalence of households with an HIV-positive head of household	38
	Figure 3.E Prevalence of households with an HIV-positive head of household by sex, CIPHIA 2017-2018	39
4	SURVEY RESPONDENT CHARACTERISTICS	40
	Table 4.A Demographic characteristics of the adult population	41
	Table 4.B Demographic characteristics of the pediatric population	43
5	HIV INCIDENCE	44
	Table 5.A Annual HIV incidence using limiting antigen (LAg)/viral load (VL) testing algorithm	45
	Table 5.B Annual HIV incidence using limiting antigen (LAg)/viral load (VL)/antiretroviral (ARV) detection testing algorithm	46
	Table 5.C People living with HIV and the number of new HIV infections per year	46
6	HIV PREVALENCE	47
	Figure 6.A HIV prevalence by marital status: Ages 15-64 years, CIPHIA 2017-2018	48
	Table 6.A HIV prevalence by demographic characteristics: Ages 15-64 years	49
	Table 6.B HIV prevalence by demographic characteristics: Ages 15-49 years	51
	Table 6.C HIV prevalence by age and sex	53
	Figure 6.B HIV prevalence by age and sex, CIPHIA 2017-2018	53
	Figure 6.C HIV prevalence among adults, by region, CIPHIA 2017-2018 (map)	54
	Figure 6.D HIV prevalence among adults, by region, CIPHIA 2017-2018 (bar graph)	55
7	HIV TESTING	56
	Table 7.A Self-reported HIV testing: Men	57
	Table 7.B Self-reported HIV testing: Women	59
	Table 7.C HIV testing: Total	61
	Figure 7.A Proportion of adults who reported having received an HIV test in the last 12 months, by age and sex, CIPHIA....	63

8	HIV DIAGNOSIS AND TREATMENT	64
Table 8.A	HIV treatment status: Men	65
Table 8.B	HIV treatment status: Women.....	67
Table 8.C	HIV treatment status: Total.....	69
Figure 8.A	Proportion of HIV-positive adults reporting awareness of HIV status and antiretroviral therapy status, by age and sex, CIPHIA 2017-2018	70
Table 8.D	Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Men.....	71
Table 8.E	Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Women	71
Table 8.F	Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Total	72
9	VIRAL LOAD SUPPRESSION	73
Table 9.A	Viral load suppression by demographic characteristics.....	74
Table 9.B	Viral load suppression by age (5-year age groups).....	76
Table 9.C	Viral load suppression by age (10-to-15-year age groups)	76
Figure 9.A	Viral load suppression (<1,000 copies/mL) among HIV-positive adults by Region, CIPHIA 2017-2018 (map).....	77
10	UNAIDS 90-90-90 TARGETS	78
Table 10.A	Adult 90-90-90 (self-reported antiretroviral therapy [ART] status; conditional percentages).....	80
Table 10.B	Adult 90-90-90 (self-reported antiretroviral therapy [ART] status and or laboratory antiretroviral data; conditional percentages).....	81
Table 10.C	Adult 90-90-90 (self-reported antiretroviral therapy [ART] status and laboratory antiretroviral data; overall percentages).....	82
Figure 10.A	Adult 90-90-90 (adjusted for laboratory antiretroviral data among adults aged 15-64 years), CIPHIA 2017-2018	83
11	CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV	84
Table 11.A	Median CD4 count and prevalence of immunosuppression.....	85
Figure 11.A	CD4 count distribution among HIV-positive adults, by antiretroviral therapy status, CIPHIA 2017-2018.....	87
Table 11.B	Late HIV diagnosis	88
Table 11.C	Retention on antiretroviral therapy (ART): people initiating antiretroviral therapy LESS THAN 12 months prior to the survey	90
Table 11.D	Retention on antiretroviral therapy (ART): people initiating antiretroviral therapy MORE THAN 12 months prior to the survey	92
Table 11.E	Resistance to antiretrovirals (ARVs)	94
Table 11.F	HIV subtypes.....	94
12	PREVENTION OF MOTHER-TO-CHILD TRANSMISSION	95
Table 12.A	Antenatal care	96
Table 12.B	Breastfeeding status by child's age and mother's HIV status.....	98
Table 12.C	Prevention of mother-to-child transmission, known HIV status.....	99
13	YOUNG PEOPLE	102
Table 13.A	Sex before the age of 15 years	103
Table 13.B	Young people, knowledge about HIV prevention: Older adolescent boys and young men	105
Table 13.C	Young people, knowledge about HIV prevention: Older adolescent girls and young women	107
Table 13.D	Young people, knowledge about HIV prevention: Total.....	108
Table 13.E	HIV prevalence by sexual behavior.....	110

14	HIV RISK FACTORS	111
	Table 14.A HIV prevalence by sexual behavior: Adults	112
	Table 14.B Condom use at last sex with a nonmarital, noncohabitating partner: Men	113
	Table 14.C Condom use at last sex with a nonmarital, noncohabitating partner: Women	116
	Table 14.D Condom use at last sex with a nonmarital, noncohabitating partner: Total	118
	Table 14.E Male circumcision	120
15	INTIMATE PARTNER VIOLENCE	122
	Table 15.A Prevalence of recent intimate partner violence	124
16	DISCRIMINATORY ATTITUDES TOWARDS PEOPLE LIVING WITH HIV	126
	Table 16.A Discriminatory attitudes toward people living with HIV	127
17	TUBERCULOSIS	130
	Table 17.A TB clinic attendance and services among HIV-positive adults	131

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 in this report, children aged 10-14 years are young adolescents; individuals aged 15-19 years are older adolescents. Note: Older adolescents are often categorized as part of the adult population for reporting purposes.

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

Antiretroviral (ARV): A type of medication used in the treatment of 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.

Assent: The agreement that an adolescent (ages 10-17 years) gives the following authorization by a parent or legal guardian for their participation in the survey.

CD4+ T Cells: CD4+ T cells (CD4) are white blood cells that are an essential part of the human immune system. These cells also are known 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 this report, individuals aged 0-14 years are collectively defined as children.

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

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

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

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 ribonucleic acid (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 household is a group of persons who usually live and eat together. These persons may not necessarily have family-related ties, but they share a common budget for food or other products of primary necessity and have among them one person who is the head of the household, who is considered as such by all members of the household.

Informed Consent: Informed consent is a legal condition whereby a person can give consent based upon a clear understanding of the facts, implications, and future consequences of an action. To provide informed consent, the individual concerned must have adequate reasoning faculties and have 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 essential part of national HIV prevention programs in most HIV high burden countries.

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

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

Tuberculosis: Tuberculosis (TB) is a contagious bacterial disease that spreads through the air when a person with pulmonary TB coughs or sneezes. TB is the leading cause of death among people living with HIV in Africa.

Young Adults: In this report, young adults are individuals aged 20-24 years.

Young People: In this report, the term young people includes older adolescents and young adults (ages 15-24 years).

LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome	MTCT	Mother-to-Child Transmission
ANC	Antenatal Care	NNRTIs	Non-Nucleoside Reverse Transcriptase Inhibitors
ART	Antiretroviral Therapy	NRTI	Nucleoside Reverse Transcriptase Inhibitors
ARV	Antiretroviral	OD_n	(normalized) Optical Density
CDC	US Centers for Disease Control and Prevention	PCR	Polymerase Chain Reaction
CD4	CD4+ T cell	PEPFAR	US President's Emergency Plan for AIDS Relief
CI	Confidence Interval	PFR	Proportion False Recent
CIPHIA	Côte d'Ivoire Population-based HIV Impact Assessment	PHIA	Population-based HIV Impact Assessment
DBS	Dried Blood Spot	PMTCT	Prevention of Mother-to-Child Transmission
EA	Enumeration Area	POC	Point of Care
EID	Early Infant Diagnosis	QA	Quality Assurance
HBTC	Home-Based Testing and Counseling	QC	Quality Control
HBV	Hepatitis B Virus	RR	Response Rate
HIV	Human Immunodeficiency Virus	SMS	Short Message Service
HPV	Human Papillomavirus	TB	Tuberculosis
ID	Identification Number	TNA	Total Nucleic Acid
INS	Institut National de la Statistique (National Statistics Institute)	TWG	Technical Working Group
IPV	Intimate Partner Violence	UNAIDS	Joint United Nations Programme on HIV and AIDS
LAg	Limiting Antigen	VL	Viral Load
mL	Milliliter	VLS	Viral Load Suppression
µL	Microliter	VMMC	Voluntary Medical Male Circumcision
MDRI	Mean Duration of Recent Infection	WHO	World Health Organization
MSHP	Ministère de la Santé et de l'Hygiène Publique (Ministry of Health and Public Hygiene)		



FOREWORD

HIV/AIDS remains a significant cause of morbidity and mortality among adults in Côte d'Ivoire. Several practices are considered to be the main drivers of the pandemic. Among others, there are multiple sexual partners and concurrent relationships, infrequent and inconsistent use of male and female condoms, and mother-to-child-transmission (MTCT) of HIV.

Since the diagnosis of the first case of AIDS in Côte d'Ivoire in 1985, the Ivorian government, with the support of technical and financial partners, has systematically implemented actions and mobilized resources to respond to problems associated with HIV. Domains of intervention include social and behavioral change, HIV counseling and testing, social marketing and distribution of condoms, prevention of MTCT (PMTCT), secondary prevention among HIV-positive persons, care of people living with HIV with access to antiretroviral therapy (ART), post-exposure prophylaxis (PEP), the fight against sexually transmitted infections, and maintaining the safety of blood products.

These efforts, evaluated in the adult population through household surveys in 2005 (AIDS Indicator Survey 2005) and 2012 (Demographic and Health Survey-Multiple Indicator Cluster Surveys 2012), have shown a significant reduction in the national prevalence of HIV infection. The results of these studies have been used to calibrate national estimates and have allowed for a better understanding of the spread of HIV and infection trends within the general population, placing side by side outcomes associated with HIV and demographic and behavioral data.

Although sentinel surveillance and household surveys conducted up to now have provided a useful outline of the HIV pandemic and efforts to fight HIV in Côte d'Ivoire, essential information was still lacking for a better understanding of the epidemic's dynamics and to guide future interventions. To offset this lack of information, the Ivorian government decided to conduct a survey, the Côte d'Ivoire Population-based HIV Impact Assessment (CIPHIA), in 2017. This survey sought to describe the HIV epidemic in the country through indicators of prevalence, incidence, level of achievement of the Joint United Nations Programme on HIV and AIDS (UNAIDS) 90-90-90 targets, and to assess actions carried out with PEPFAR financing.

The success of the CIPHIA survey was the result of a technical collaboration between the Institut National de la Statistique and ICAP at Columbia University, with the assistance of central agencies of the Ministry of Health and Public Hygiene, technical and financial support of the CDC, and the help of other development partners, such as U.S. Agency for International Development, UNICEF, UNAIDS, United Nations Population Fund (UNFPA) and the World Health Organization.

To all these institutions, I express my sincere thanks. In particular, my gratitude goes to the United States Government, which provided and technical support and worked collaboratively with ICAP at Columbia University in New York to develop and implement CIPHIA.

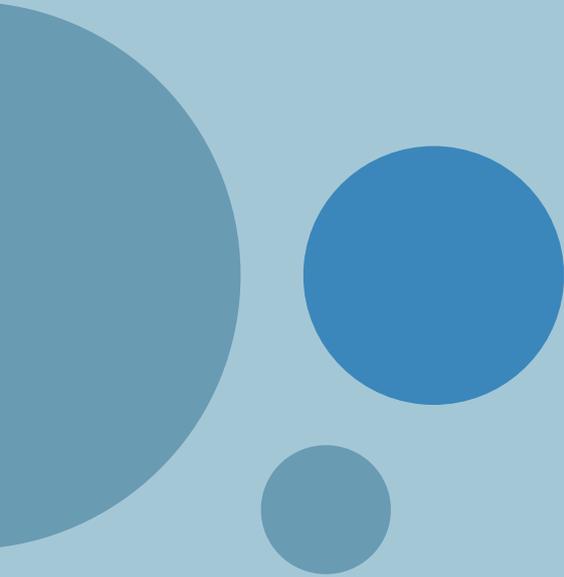
This final report of key conclusions from CIPHIA provides relevant and current information about the epidemic and the coverage and uptake of HIV services in Côte d'Ivoire, thereby making it a powerful tool for decision making and oversight of progress towards our national goals and international commitments seeking to reduce the impact and the burden of the HIV epidemic in Côte d'Ivoire.

I hope that all actors in the fight against HIV/AIDS in Côte d'Ivoire use this report to make informed policy decisions and undertake evidence-based actions to improve the health and well-being of the people of Côte d'Ivoire.



Dr Aka Aouélé

The Minister of Health and Public Hygiene



EXECUTIVE SUMMARY/ SUMMARY OF KEY FINDINGS

HOUSEHOLD CHARACTERISTICS

- Overall, 79.5% of households were headed by men, while 20.5% were headed by women.
- The median household size was four people in both urban and rural areas.
- Of all households, 5.4% had at least one HIV-positive member: 6.3% of households in urban areas and 4.2% of households in rural areas.
- Among the households in Côte D'Ivoire, 3.5% had an HIV-positive head of household: 7.4% of households were headed by a woman and 2.5% of households were headed by a man.

CHARACTERISTICS OF RESPONDENTS

- Most adults (defined as those aged 15-64 years) lived in urban areas: 61.5% of men and 63.5% of women.
- Among those surveyed, 48.7% of the men and 57.5% of the women were married or living together with a nonmarital partner at the time of the survey.
- Among adults, 9.8% of adults were in polygynous unions with at least one co-spouse: This was reported by 6.8% of men, while 13.0% of women reported having co-wives.
- The proportion of adults with no education was 35.7% among men and 46.8% among women.
- About a quarter (25.4%) of adults (23.3% of men, and 27.7% of women) lived in households in the poorest wealth quintile.

INCIDENCE OF HIV

- The annual incidence of HIV among adults in Côte D'Ivoire was 0.03% (using the recent infection algorithm based upon limiting antigen [LAg] plus the viral load [VL] and antiretroviral [ARV] detection results). That corresponded to approximately 4,000 new cases of HIV per year among adults.

PREVALENCE OF HIV

- The national HIV prevalence among adults aged 15-64 years was 2.9%: 4.1% among women and 1.7% among men and corresponded to about 382,000 adults living with HIV.
- The regional HIV prevalence ranged from 1.7% in Gôh-Djiboua to 3.4% in the district of Abidjan.
- In urban areas, HIV prevalence was 3.1%, whereas, in rural areas, it was 2.4%.
- The peak HIV prevalence was observed among women aged 40-44 years (8.7%) and among men aged 60-64 years (6.0%).
- The national HIV prevalence among children (ages 0-14 years) was 0.2%.
- HIV prevalence among adults aged 15-49 years was 2.5% (3.6% among women and 1.4% among men).

HIV TESTING

- A little more than four out of 10 adults aged 15-64 years (41.4%) reported that they had ever had an HIV test and received the result.
- According to self-report, 19.3% women had tested for HIV and received their results in the 12 months before the survey, almost twice the rate among men (10.2%).

HIV DIAGNOSIS AND TREATMENT

- Overall, almost two-thirds (62.8%) of HIV-positive adults reported that they were not aware of their HIV-positive status (75.8% among men and 56.8% among women).
- Less than a third (32.8%) of HIV-positive adults reported that they were on antiretroviral therapy (ART): 17.1% among men and 40% among women.

- A significant majority (87.8%) of HIV-positive adults who reported that they were on ART had ARVs detectable in their blood. Notably, 19.4% of those who said that they were not aware of their HIV-positive status before the survey had detectable ARVs in their blood.

VIRAL LOAD SUPPRESSION

- The national prevalence of viral load suppression (VLS) (defined as an HIV RNA less than 1,000 copies/milliliter [mL]) was 40.2% among all the adults living with HIV in Côte d'Ivoire (27.7% among men and 45.9% among women).
- The prevalence of VLS among people living with HIV was 38.3% in urban areas and 44.4% in rural areas.
- The national prevalence of VLS among adults who reported that they were taking ART was 75.9% (65.2% among men, 77.9% among women) (Note: The estimate among men was based on a denominator between 25-49 and should be interpreted with caution).

UNAIDS 90-90-90 TARGETS

- Based on self-reported data and the detection of ARVs in blood, 49.8% of adults knew their HIV status (40.4% among men, 54.0% among women); 92.0% of those who knew their HIV-positive status were on ART (85.0% among men and 94.4% among women); and 73.7% of those on ART had achieved VLS (62.8% among men and 76.9% among women).

CLINICAL PERSPECTIVE AMONG PEOPLE LIVING WITH HIV

- Among HIV-positive adults, 46.8% were immunosuppressed (having a CD4 count of less than 500 cells per microliter [μ L]) with a median CD4 count of 535 cells/ μ L.
- Among adults living with HIV who reported that they were HIV-negative and had no detectable ARVs in their blood, nearly one-quarter (24.2%) had a CD4 count below 350 cells/ μ L, and 7.4% had a CD4 count below 200 cells/ μ L.
- Self-reported retention on ART: Among adults living with HIV who reported that they had started ART within the 12 months before the survey, 90.7% said that they were still on ART at the time of the study, compared to 92.1% among those who reported that they had commenced ART more than 12 months before the survey. (Note: As the number of individuals who reported starting ART within 12 months of the survey was between 25-49, this estimate should be interpreted with caution.)

PREVENTION OF MOTHER-TO-CHILD TRANSMISSION (PMTCT)

- Nearly all (95.7%) of women of childbearing age (ages 15-49 years) who had given birth during the three years before the survey had at least one antenatal care (ANC) visit during their last pregnancy.
- Approximately half of the HIV-positive mothers (50.1%) and the HIV-negative mothers (53.8%) who had given birth in the three years before the survey, reported that they continued to breastfeed their babies. (Note: The estimate among HIV-positive mothers was based upon a denominator between 25-49 and should be interpreted with caution.)
- More than two-thirds (69.7%) of women who had given birth during the 12 months before the survey reported they had received an HIV test or already knew their HIV-positive status during their pregnancy.

YOUNG PEOPLE (AGES 15-24 YEARS)

- Among young people (older adolescents aged 15-19 years and young adults aged 20-24 years), one out of eight (12.5%) stated that they had had sexual relations before the age of 15 years (14.1% among older adolescent boys and young men and 10.8% among older adolescent girls and young women).
- One out of four young people (25.0%) correctly answered all questions evaluating knowledge on HIV transmission and prevention (28.1% of male respondents and 22.0% of the female respondents).
- HIV prevalence among young people was 0.6%: 0.3% among older adolescent boys and young men and 0.9% among older adolescent girls and young women.

- The prevalence of HIV among young people was 0.9% among those who had their first sexual relations before the age of 15 years.

HIV RISK FACTORS

- HIV prevalence among adults who reported that they did not use condoms the last time they had sex in the 12 months before the survey was 2.0% among men and 3.5% among women.
- Less than half of the adults (44.6%) had used a condom the last time that they had sex with a nonmarital and noncohabitating partner (49.3% among men and 36.9% among women).
- Among men, 28.2% reported that they were medically circumcised. Only 5.2% reported that they were uncircumcised. Roughly half (51.9%) of the men in the survey reported that they were circumcised in a nonmedical setting, with little difference between rural or urban settings.

INTIMATE PARTNER VIOLENCE (IPV)

- Among ever married or partnered women aged 15-64 years, 3.3% stated that they had been the victim of physical or sexual violence committed by an intimate partner in the 12 months before the survey. The prevalence of recent IPV was higher among ever married or partnered older adolescent girls and young women (6.7%) than older women. Note that the survey likely underestimates the magnitude of IPV based on other surveys and data sources.

DISCRIMINATORY ATTITUDES TOWARDS PEOPLE LIVING WITH HIV

- Almost half of adults (49.2%) held discriminatory attitudes towards people living with HIV.
- A larger number of adults in rural areas (58.6%) exhibited discriminatory attitudes towards HIV-positive people, compared to those in urban areas (43.9%).
- The prevalence of discriminatory attitudes among adults was highest in Woroba (70.2%) and Denguelé (67.3%).
- The prevalence of discriminatory attitudes was about three times higher among adults with no education (58.1%) than among those with higher education (21.9%).

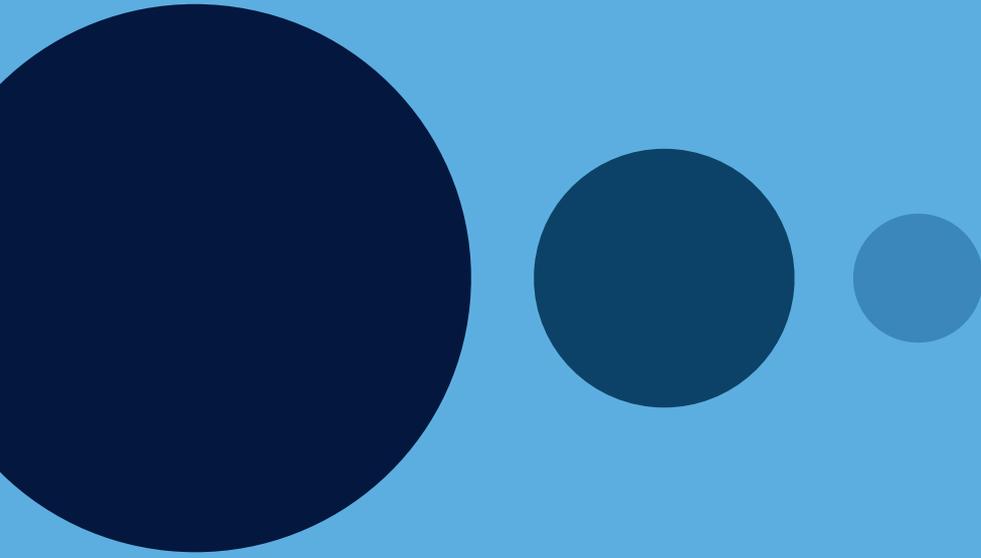
TUBERCULOSIS

- Among adults who reported they were HIV-positive, 29.4% said that they had visited tuberculosis (TB) clinics. Among them, 69.2% said that they had received a TB diagnosis. Among HIV-positive people who reported that they were diagnosed with TB, 87.2% said that they initiated TB treatment. (Note: the estimates for those diagnosed and treated were based on denominators between 25-49 and should be interpreted with caution.)

GAPS AND PROGRAM RECOMMENDATIONS

- CIPHIA's findings suggest that concerted efforts are necessary to improve HIV services by tailoring them to meet the needs of different age groups and genders. The implementation of differentiated service models across the HIV continuum of care should be strengthened to address the disparities observed by the survey.
- HIV testing strategies must be strengthened to particularly improve the coverage of testing in the community to reach adults who do not frequent health care facilities, and especially at places of employment to reach men.
- Focused actions to fight HIV should be developed to address regions with a high HIV prevalence, particularly those that have a prevalence of around 3% (Abidjan, Lagunes, Comoé, Lacs, Zanzan, Montagnes, Yamoussoukro, Sassandra Marahoué and Vallée du Bandama).
- The proportion of HIV-positive persons who reported not knowing their status was very high, particularly among young people. Hence, interventions should be tailored to this age group.
- The proportion of HIV-positive persons who reported receiving ART was low (less than a third in rural areas, and only slightly over a third in urban areas). Programs for intervention should account for the cultural and social factors in each region.

- Self-reported ART status was markedly lower than ART status as demonstrated by the presence of detectable ARVs. Special attention should be given to developing effective programs and interventions to reduce HIV stigma and discrimination that are commonly associated with a reluctance to disclose HIV and treatment status, particularly in light of the very high prevalence of HIV stigmatization and discriminatory attitudes against people living with HIV in the country.
- Adults had a low prevalence of VLS (below 50%), regardless of whether they lived in rural or urban areas. Studies should evaluate differentiated care models suited to the lifestyle and employment of individuals where they live, whether in a rural or urban setting.
- The observed gap in VLS between HIV-positive men and women suggests gender-related obstacles to diagnosis and adherence to antiretroviral treatment. Concerted efforts to strengthen testing services and adherence to ART among men could help address the imbalance between the responses in men and women.
- Achievement of VLS among young people living with HIV also fell short. Differentiated services that better respond to the needs of young people should receive more emphasis.
- Efforts should be undertaken to better reach at-risk populations in places with a high HIV prevalence to increase the coverage of HIV testing. Thus, strengthening testing strategies for women over 35 years of age and for men—as well as increasing the supply of testing in the community and at businesses—may be beneficial.
- New communication strategies that take advantage of new information and communication technologies should be developed and adapted to young people to increase their knowledge of HIV and to reduce behaviors that put them at risk of infection.
- Discriminatory attitudes were common among young people in rural areas and persons without an education. Consequently, interventions seeking to reduce discrimination of persons living with HIV should:
 - Target places frequented by young people (schools, recreational centers),
 - Adapt to specific characteristics of rural areas,
 - Account for the particular needs of persons without an education.
- Late diagnosis (CD4 count below 350 cells/ μ L among undiagnosed people living with HIV) was frequent, particularly among HIV-positive adults aged 30 years and older—and some were diagnosed with advanced HIV disease and severe immunosuppression (CD4 count < 200 μ L). It is critical to reach the population at high risk of disease progression and early mortality.
- Coverage of PMTCT services, with 100% HIV testing coverage, must be universal—including at private health care facilities.
- Public awareness should be raised through educational campaigns that show the economic, social, and health consequences of violence towards women and explain its relationship with the risk of HIV.
- Although IPV was likely under-reported, CIPHIA provides evidence to support strengthening the law (Law n° 98–757 of December 23, 1998, concerning enforcement against certain kinds of violence towards women) and policies concerning family violence and specifically addressing gender-related issues.
- Finally, the mechanisms of collaboration between HIV programs and TB programs should be strengthened in their joint struggle against HIV and TB.



1. INTRODUCTION

1.1 BACKGROUND

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

The Côte d'Ivoire Population-based HIV Impact Assessment 2017-2018 (CIPHIA) was led by the Government of Côte d'Ivoire under the *Ministère de la Santé et de l'Hygiène Publique* (MSHP—Ministry of Health and Public Hygiene) conducted with funding from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and technical assistance from the US Centers for Disease Control and Prevention (CDC). ICAP at Columbia University in collaboration with local partners, including the *Institut National de la Statistique* (INS – 'National Statistics Institute'), implemented the survey.

1.2 OVERVIEW OF CIPHIA 2017-2018 SURVEY

CIPHIA, a household-based national survey, was conducted between August 2017 and March 2018 to measure the status of Côte d'Ivoire's national HIV response. The CIPHIA survey offered home-based testing and counseling (HBTC) with the return of results and collected information about households and individuals' backgrounds, as well as the uptake of HIV care and treatment services. This survey is the first in Côte d'Ivoire to estimate the viral load (VL) suppression (VLS) among adults (defined as the population aged 15-64 years) living with HIV, and to estimate the size of specific populations that are key to the epidemic and response at the national level. It is also the first survey to assess the national coverage of antiretroviral therapy (ART), as well as HIV prevalence among children (defined as the population of individuals aged 0-14 years) of mothers who were HIV positive or whose status was unknown. The results provide information on national and subnational progress towards control of the HIV epidemic.

Although HIV facility-based sentinel surveillance and previously conducted population-based studies provided useful knowledge regarding Côte d'Ivoire'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. Also, the population-based data that were available for HIV focused mainly on knowledge, attitudes, and self-reported risk behaviors.

With its focus on measuring critical biological endpoints in a nationally representative sample of the population, the CIPHIA survey 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 Côte d'Ivoire's progress toward the achievement of the UNAIDS 90-90-90 targets.

1.3 GOAL

The goal of the survey was to examine the distribution of HIV incidence and prevalence in Côte d'Ivoire, to assess the coverage and impact of HIV services at the population level, and to measure HIV-related risk behaviors using a nationally representative sample of adults and children.

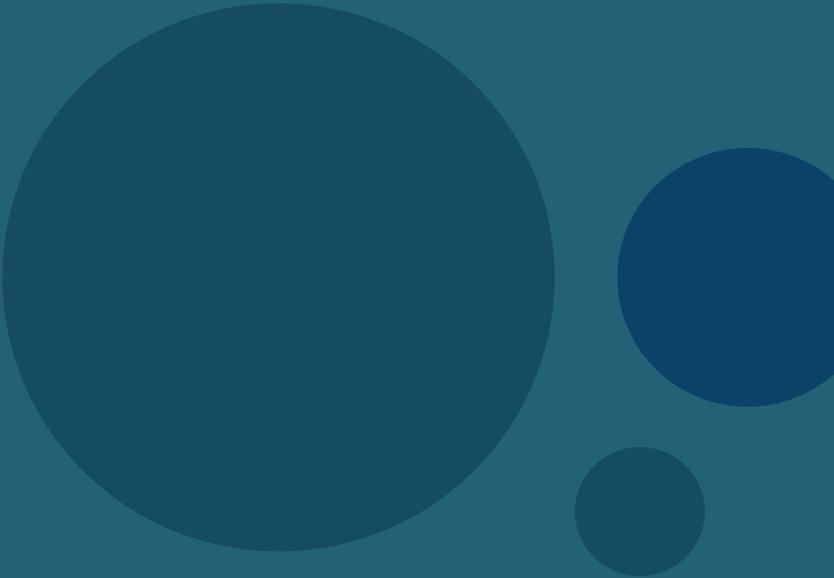
1.4 OBJECTIVES

Primary Objectives

- To estimate the regional prevalence of VLS (defined as HIV RNA less than 1,000 copies/mL of plasma) among HIV-positive adults.

Secondary Objectives

- To estimate national-level annual HIV incidence among adults.
- To estimate the national and regional HIV prevalence among adults.
- To measure the prevalence of HIV-related risk behaviors, assess knowledge and attitudes about HIV, and determine the behavioral and demographic determinants of HIV incidence and prevalence among adults in Côte d'Ivoire.
- To estimate the uptake of HIV-related services, including ART and exposure to HIV interventions among adults and children.
- To estimate national HIV prevalence among children whose mother is HIV positive (or deceased) or whose mother's HIV status is unknown.
- To estimate the prevalence of transmitted drug-resistance among HIV-positive children and adults.
- To estimate the distribution of CD4 counts among the HIV-positive population.
- To estimate the size of key populations including men who have sex with men (MSM), sex workers (SW), clients of sex workers (CSW), people who inject drugs (PWID), and transgender individuals both nationally and sub nationally. (Note: Key population data will be presented separately.)



2. SURVEY DESIGN, METHODS, AND RESPONSE RATES

CIPHIA was a nationally representative, cross-sectional population-based survey of households across Côte d'Ivoire. Its target population corresponded to children (those aged 0-14 years) and adults (those aged 15-64 years). The survey population excluded institutionalized children and adults.

2.1 SAMPLE FRAME AND DESIGN

CIPHIA used a two-stage, stratified cluster sample design. The sampling frame comprised all households in the country, based upon the General Population and Housing 2014 Census in Côte d'Ivoire, which included 23,508 enumeration areas (EAs), containing 4,171,496 households and 22,671,331 persons, with an average of 4.96 persons per household. In the first stage, 439 EAs (clusters) were drawn using a probability proportional to size method. The 439 EAs were broken down into 14 statistical regions (the study domain), then stratified into rural and urban areas. During the second stage, a sample of households was randomly selected within each EA, or cluster, using an equal probability method, where the average number of households selected per cluster was slightly more than 26 (Table 2.1.A).

The overall sample size was determined by the minimum number of blood samples needed to obtain regional estimates of the prevalence of viral load suppression with a 95% confidence interval (CI) of +/- 10% in regions with HIV prevalence >4% and +/-20% in regions with HIV prevalence <4%. The minimum number of EAs for each stratum was determined by estimating the minimum number of HIV-positive respondents and blood tests needed (considering response and testing rates from previous surveys). Since the denominator used for determining viral load suppression was the number of HIV-positive individuals, the required minimum number of blood samples in a stratum was inversely proportional to the expected HIV prevalence rate in that stratum.

Given the low HIV prevalence, reaching the pediatric sample size required to obtain an estimate of HIV prevalence in the general population with acceptable precision was not feasible. Instead, the CIPHIA survey included both a 'targeted' sample of 4,600 children more likely to be HIV positive—which included any child whose mother tested positive for HIV during the survey or who was deceased or whose HIV status was otherwise unknown—along with a smaller sample of approximately 1,000 children in the 'nontargeted' subpopulation for comparison purposes.

The planned sample size was 22,337 for adults (19,131 adults aged 15-49 years, and 3,206 aged 50-64 years) and 5,600 for children (4,600 targeted, and 1,000 nontargeted children).

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

Table 2.1.A Distribution of sampled enumeration areas and households, by region, CIPHIA 2017-2018

Distribution of sampled enumeration areas and households, by region, CIPHIA 2017-2018						
Region	Enumeration Areas			Households		
	Urban	Rural	Total	Urban	Rural	Total
Abidjan	59	2	61	1,542	56	1,598
Yamoussoukro	16	8	24	393	238	631
Bas-Sassandra	20	41	61	536	1,067	1,603
Comoé	9	11	20	234	294	528
Denguélé	10	14	24	306	327	633
Gôh-Djiboua	9	14	23	246	360	606
Lacs	7	14	21	219	335	554
Lagunes	9	11	20	264	260	524
Montagnes	7	14	21	236	317	553
Sassandra-Marahoué	11	15	26	335	359	694

Table 2.1.A Distribution of sampled enumeration areas and households, by region, CIPHIA 2017-2018 (continued)

Distribution of sampled enumeration areas and households, by region, CIPHIA 2017-2018						
Region	Enumeration Areas			Households		
	Urban	Rural	Total	Urban	Rural	Total
Savanes	10	15	25	312	373	685
Vallée du Bandama	29	25	54	719	705	1,424
Woroba	8	17	25	207	472	679
Zanzan	11	23	34	262	634	896
Total	215	224	439	5,811	5,797	11,608

2.2 ELIGIBILITY CRITERIA, RECRUITMENT, AND CONSENT PROCEDURES

The survey population is defined as individuals aged 10-64 years who slept in the household the night before the survey. The criteria for survey participation 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 Côte d'Ivoire, the eligible survey population included:

- Adults aged 18-64 years or emancipated minors aged 15-17 years living in the selected households and adult visitors who slept in the household the night before the survey, who were willing and able to provide written consent in French;
- Minors aged 10-17 years living in the selected households and visitors in the same age bracket who slept in the household the night before the survey, who were willing and able to provide written assent, and whose parents or guardians were willing and able to provide written consent in French for their participation;
- Children aged 0-9 years living in the selected households and child visitors who slept in the household the night before the survey, whose parents or guardians were willing and able to provide written consent in French 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 the consent form on the tablet and on a printed copy, which was retained by the participant. The identified head of household provided written consent to allow household members to participate in the survey, after which individual members were listed during an interview with the head of the household. Adults and emancipated minors then provided written consent on the tablet for an interview and participation in the biomarker component of the survey, including HBTC, with the return of HIV-testing results and CD4 counts during the household visit. The return of test results was a requirement for participation in the biomarker component. If an individual did not want to receive his or her HIV test result, this was considered a refusal, and the survey was concluded. Adults were also asked for written consent to store their blood samples in a bio-bank to perform additional tests in the future.

Minors aged 10-17 years were asked for assent to the interview (for those aged 15-17 years) and biomarker components (for those aged 10-17 years) after their parents or guardians granted permission. Parents provided consent for biomarker testing for children (ages 0-9 years). In both cases, if a parent or guardian did not want to receive his or her child's HIV test result, this was considered a refusal, and the survey concluded there.

Procedures with illiterate participants or participants with a sight disability involved the use of an impartial witness, chosen by the potential participant, who also signed the consent form on the tablet and the printed copy. If no witness could be identified, the prospective participant or household (if the head of the household was sight-disabled or did not understand French) was deemed ineligible.

All PHIA survey protocols, consent forms, screening forms, refusal forms, referral forms, recruitment materials and questionnaires were reviewed and approved by in-country ethics and regulatory bodies and the institutional review boards of Columbia University Medical Center, Westat, and the 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 rationale and objectives of the survey
- Survey design and methods
- Completion of survey forms
- Data collection
- Staff responsibilities
- Recruitment of participants
- Informed consent procedures, including participants' protection, privacy, and confidentiality
- Blood collection for children and adults, including venipuncture and taking a sample by finger/heel stick
- Home-based HIV testing and counseling
- CD4 count measurement using POC PIMA Analyzer
- Referral of participants to health and social services
- Management and transportation of blood specimens
- Biosafety and universal precautions
- Communication skills
- Protocol deviations, adverse events, and reporting of events
- Procedures for tablet and data security

The laboratory staff was trained in specimen management, including sample processing, labeling, HIV confirmatory testing, and quality assurance (QA). The central laboratory staff was trained in VL measurement, early infant diagnosis, and detection of recent HIV infection using the limiting antigen (LAG) avidity enzyme immunoassay (EIA).

Survey Staff

Fieldwork started at the beginning of August 2017 and was completed in March 2018. Fieldwork was conducted by 24 locally hired field teams composed of a team leader, three interviewers, three interviewers/sample-takers, and two drivers. Field teams included both male and female staff, and members were all proficient in French. Qualified staff was cross-trained to the extent possible. A total of 289 field staff (six field coordinators, 24 team leaders, 144 interviewers/interviewer-sample-takers, 24 community-mobilization coordinators, and 70 drivers and 21 satellite laboratory technicians) participated in data collection. The field teams were supervised by 24 team leaders, six field coordinators, and managed by 29 central staff members, who guided and oversaw data collection activities, performed quality checks, and provided technical support (Appendix D).

The lab staff was organized at different levels (Central laboratory staff, region field supervisors, onsite laboratory supervisors, satellite lab technicians, and satellite lab logisticians). Overall, 21 satellite laboratory technicians and six central lab technicians processed samples and performed additional procedures for HIV-1 VL, infant virological HIV testing, and quality control (QC) and QA. National and international monitors periodically conducted a direct observation of data collection activities in the field and in the laboratories to provide technical support and ensure quality.

Community Sensitization and Mobilization

In coordination with the MSHP, INS, and other relevant national institutions, community mobilization was conducted before data collection to maximize community support and participation in the survey. The mobilization began before data collection commenced in the field, 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 the initiation of data collection and partnered

with mobilizers identified in the community to meet key community leaders (chiefs, local officials, and religious and community leaders). The mobilization teams held community sensitization meetings, distributed written informational materials such as brochures and posters. Also, these teams held discussions with selected households and other 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. Monitors reviewed daily management forms for household and individual enrollment tracking 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. Furthermore, they identified and responded to challenges with data collection. Regular debriefing sessions were held between field-based supervisors and monitoring teams. Monitoring reports were shared with collaborating institutions and the CIPHIA survey Technical Working Group to respond to any issues.

Electronic Monitoring System

An automated dashboard system was established to monitor the progression of the survey. The dashboard summarized data uploaded to the PHIA project server daily. The dashboard tracked coverage and completion of enrollment of sampled households in EAs, household response, with eligible household members having consented to the interview, and biomarker components of the survey, blood draws, response rates (RRs), and overall progress towards reaching the target sample.

Questionnaire Data Collection

Questionnaire and field laboratory data were collected on mobile tablet devices using forms programmed in Open Data Kit (ODK), an open-source mobile data collection application. The household interview collected information on household residents, assets, economic support, recent deaths, and orphans and vulnerable children (see Appendix E). The adult interview was administered to participants aged 15-64 years and included modules on 1) demographic characteristics; 2) marriage, 3) reproductive history (women only): antenatal care (ANC) and PMTCT services uptake; 4) male circumcision, 5) sexual activity, 6) previous HIV testing experience, 7) HIV status, the care and treatment continuum (uptake of HIV care services), 8) tuberculosis and other health issues, 9) gender norms, 10) experiences with violence, 11) HIV-related risk behaviors and HIV knowledge and attitudes. Finally, participants aged 18-49 years were asked additional questions in order to estimate the size of key populations (including men who have sex with men [MSM], sex workers [SW], clients of sex workers [CSW], drug users, and transgender individuals [TI]) using the network scale-up method (NSUM) (see Appendix F). Parents also answered questions about their children's (ages 0-14 years) health and participation in HBTC services as a part of the individual adult interview. In each household, one woman 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 abuse and minors who reported being victims of sexual violence were provided with referrals to social services. The questionnaire was administered in French 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, 6 mL of venous blood from children and adolescents aged 2-14 years, and 1 mL of capillary blood from adults who either refused to give venous blood or were unable to have blood collected using vacuum tubes, as well as children aged 0-23 months using finger- or heel-stick.

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), then frozen within 24 hours of blood collection.

HIV Home-Based Testing and Counseling (HBTC)

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

The HIV rapid tests used in CIPHIA were Determine™ HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States), as a screening test, and Stat-PACK HIV 1/2 Assay (Chembio Diagnostic Systems Inc. Medford, New York, United States) as a confirmatory test. Individuals with a nonreactive result on the Determine test were reported as HIV negative. Individuals with a reactive Determine test underwent Stat-Pack testing. Those with reactive results on both the Determine and Stat-Pack tests were classified as HIV positive. Individuals with a reactive Determine test result followed by a nonreactive Stat-Pak result were classified as indeterminate and asked to go for a repeat testing immediately at a health facility, per national guidelines. Also, survey staff returned the household of those who had tested indeterminate in the field to deliver the results of tests (3-step rapid test algorithm) performed at the satellite lab, per national guidelines (Figure 2.4.B).

HIV-positive participants were referred to HIV care and treatment services at a health facility of their choice. For children and adolescents under the age of 16 years, results were returned to a parent or guardian. Results were returned to minors aged 16-17 years as to adult participants per the national HIV testing guidelines.

For participants who reported an HIV-positive status, but tested HIV negative at the time of the survey, an additional HIV rapid test was performed in a laboratory setting, as well as a polymerase chain reaction (PCR) test for confirmation of his/her status. In conjunction with MSHP, survey staff revisited these participants and health providers in charge of their care to provide counseling and guidance on the next steps to confirm these results, particularly for those on ART.

QC using a panel of positive and negative dried tube specimens was done every two weeks by each field staff member performing HBTC to ensure the proper functioning of testing kits.

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 analysis was performed using the Pima™ CD4 Analyzer (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere).

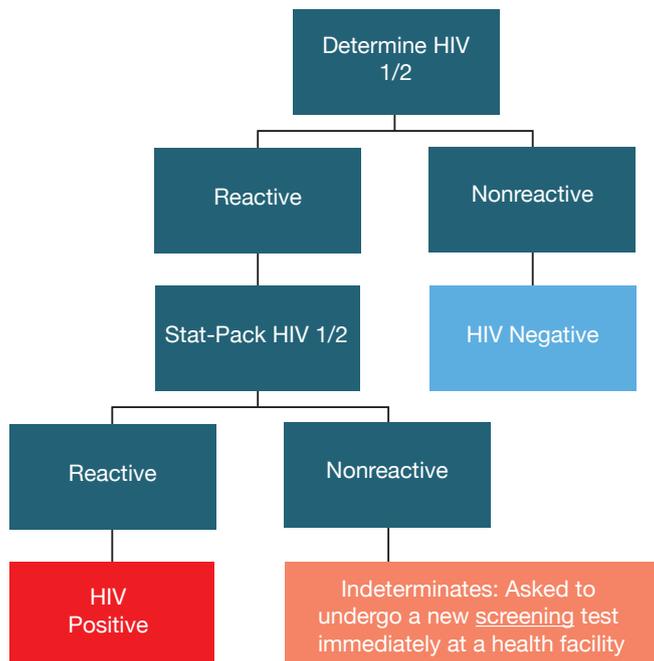
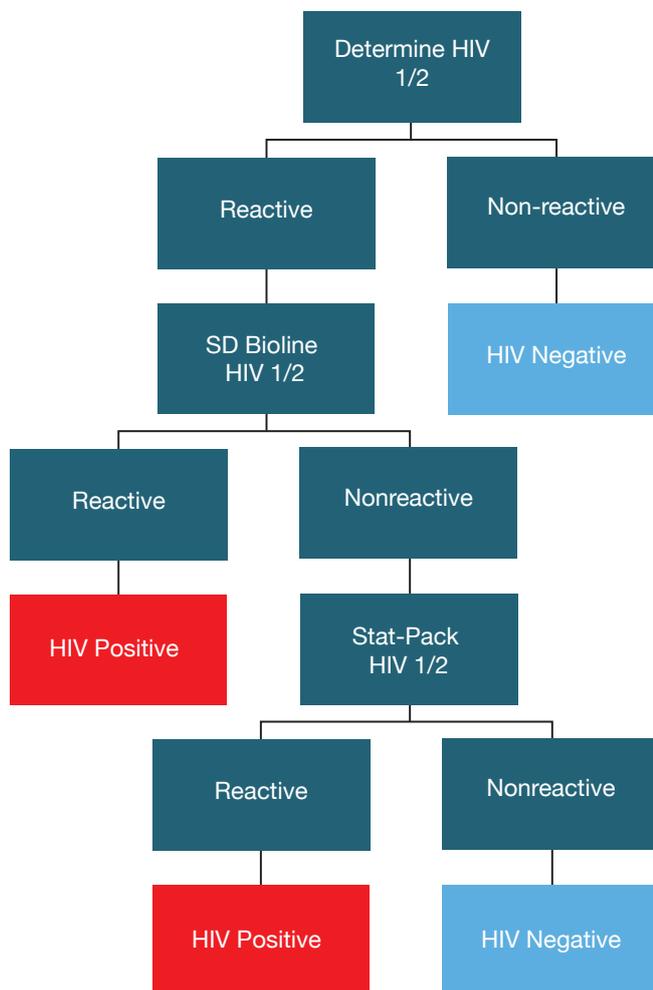


Figure 2.4.A
Home-based HIV testing algorithm, CIPHIA 2017-2018

Figure 2.4.B.
Laboratory-based
screening algorithm,
CIPHIA 2017-2018



2.5 LABORATORY-BASED BIOMARKER TESTING

Satellite and Central Laboratories

Fourteen (14) satellite laboratories for the survey were identified among existing health facility laboratories. 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 (dried blood spot) cards for temporary storage at -20°C. For QA of the HIV rapid testing conducted in the field, the first 50 samples tested by each field sampler-tester and a random sample of 5% of specimens that tested HIV negative during HBTC were retested in the laboratory using the national 3-step 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 an HIV-positive status for the survey.

Central laboratory procedures included HIV VL testing, HIV TNA (total nucleic acid) PCR for infant virological testing and for confirmation of the status of those who reported an HIV-positive status but tested negative in HBTC, HIV testing for recent infection, 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 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

Viral load of HIV-positive participants was measured using the Roche platform (COBAS® AmpliPrep/COBAS® TaqMan® HIV-1 Test, Roche Diagnostics, Indianapolis, Indiana, United States).

Viral load results were returned by the result returning coordinator (ROC) within 8 to 10 weeks to the health facility chosen by each HIV-positive participant. Participants were provided with a referral form (accompanied to the health facility with the consent of each person) during HBTC for subsequent retrieval of their results. Survey staff (ROC) 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.

Infant HIV Virological Testing

For infants, the HIV PCR TNA on DBS cards was tested at the central laboratory on the Roche COBAS® AmpliPrep Instrument and COBAS® TaqMan® 96 analyzer using the COBAS® AmpliPrep/COBAS® Taqman HIV-1 Qualitative Test (Roche Molecular Diagnostics, Branchburg, New Jersey, United States).

HIV Recent Infection Testing Algorithm

To distinguish recent from long-term HIV infections and 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 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 $\geq 1,000$ copies/mL were classified as recent infections (Figure 2.5.A). In the ARV-adjusted algorithm, specimens with VL $\geq 1,000$ copies/mL and with detectable ARVs were classified as long-term infections. Specimens with VL $\geq 1,000$ copies/mL and without detectable ARVs were classified as recent infections.

Detection of Antiretroviral Drug Resistance

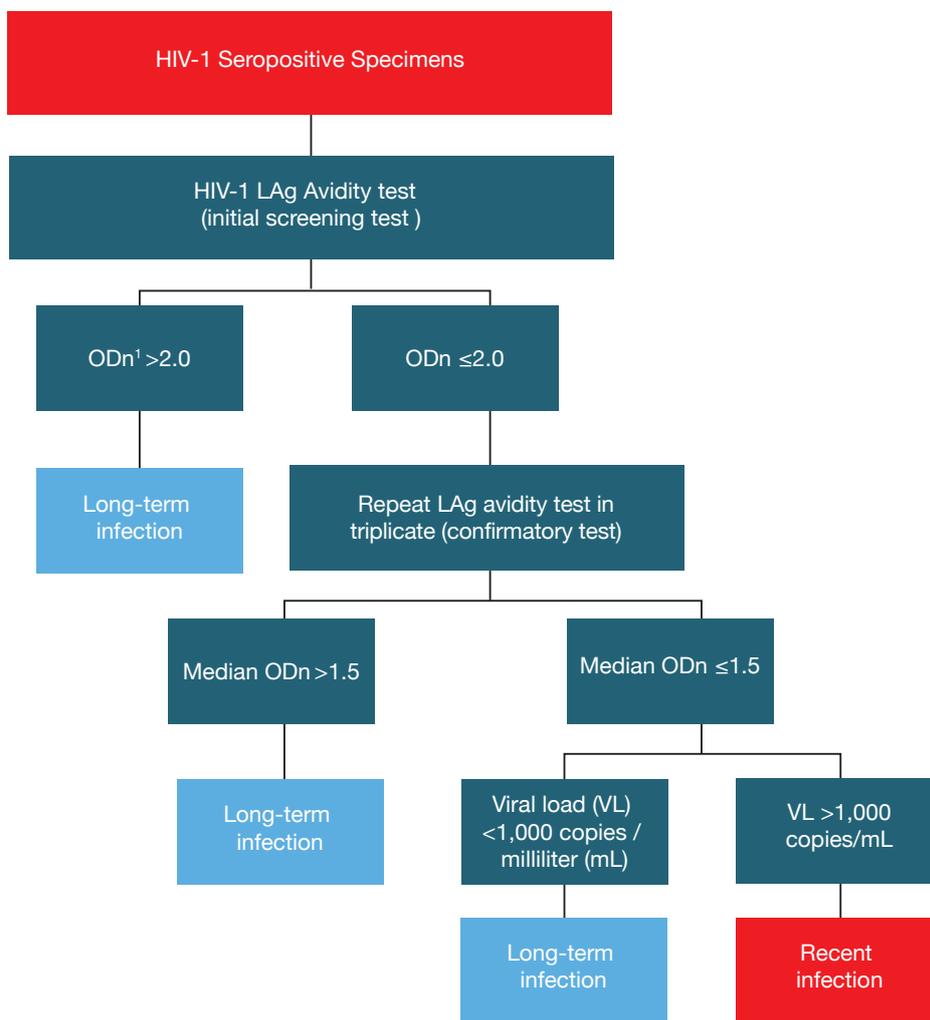
HIV resistance to ARVs was assessed for all those HIV-positive participants 18 months and older classified as recent HIV infections and a small subset of long-term infections. In addition, all infants under the age of 18 months with confirmed infection were evaluated to determine the vertical transmission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

The RETROCI Laboratory in Abidjan, Côte d'Ivoire, tested specimens 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 using high-resolution liquid chromatography coupled with tandem mass spectrometry. The method used for ARV detection was a modified version of the methodology described by Koal *et al.*² This qualitative assay was highly specific, as it separates the parent compound from the fragments, and highly sensitive, with a limit of detection of 0.02 $\mu\text{g/mL}$ 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, four ARVs in adults (dolutegravir, efavirenz, atazanavir, and lopinavir), and three in children (efavirenz, lopinavir, and nevirapine) were selected as markers for the most commonly prescribed first- and second-line regimens. Samples from participants who had VLS and/or self-reported being on ART, but had no evidence of the first three compounds, were tested

Figure 2.5.A
 HIV-1 recent infection testing algorithm (LAg/VL algorithm), CIPHIA 2017-2018



¹ODn= normalized optical density

for nevirapine. These ARVs were also selected based on their relatively long half-lives, allowing for a more extended 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 suggest 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.” Also, 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.

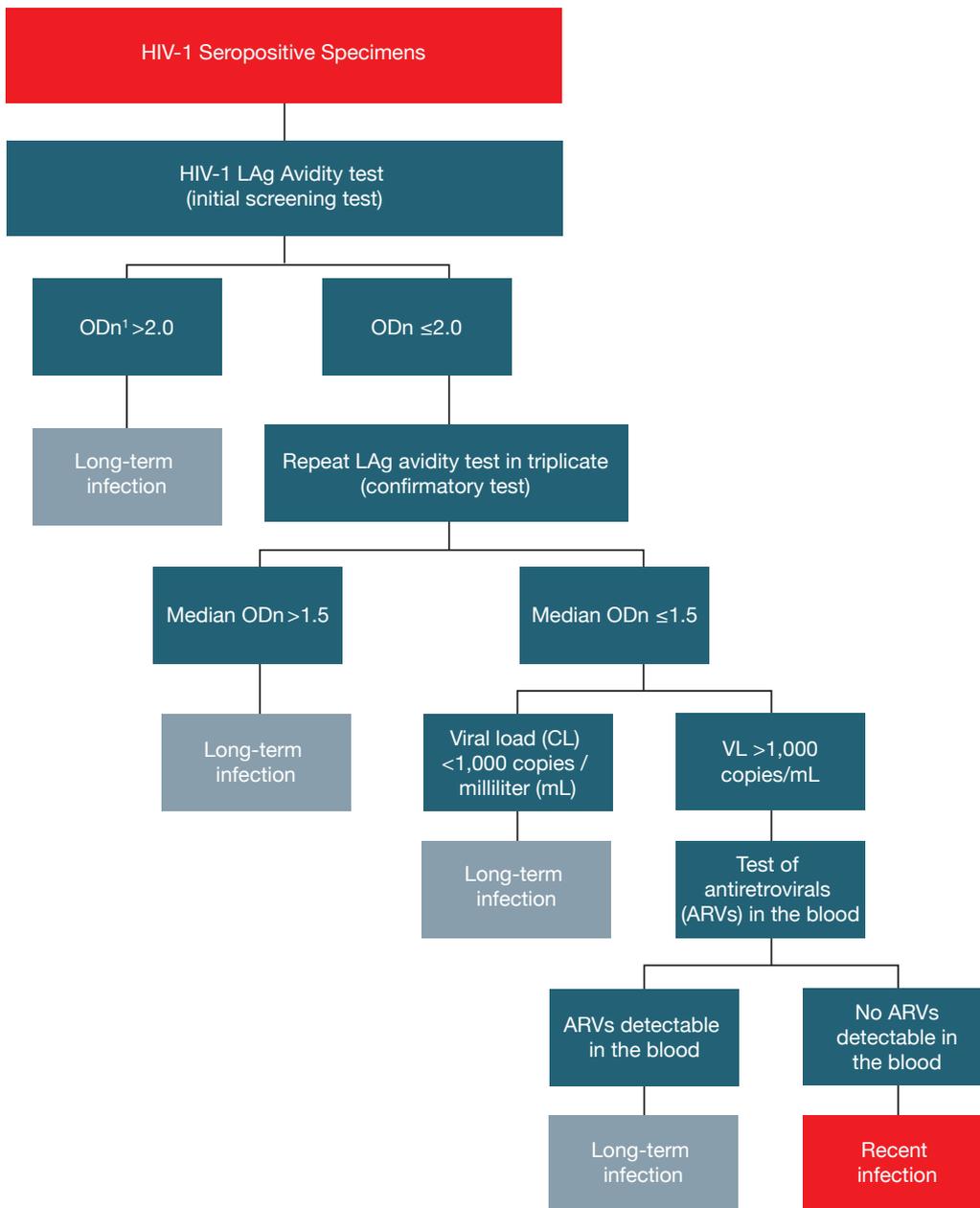


Figure 2.5.B
HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), CIPHA 2017-2018

¹ODn = normalized optical density

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 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.

For a detailed explanation of the sampling and weighting processes, including the pediatric sampling and prevalence estimation, see the Sampling and Weighting Technical Report, available on the PHIA website at <https://phia-data.icap.columbia.edu/>.

Descriptive analyses of response rate (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. It was obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays, and with assay performance characteristics of a mean duration of recent infection (MDRI) =130 days (95% CI: 118, 142), a time cutoff (T) = 1.0 year and percentage false recent (PFR) = 0.00.

2.7 RESPONSE RATES

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 sought, 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 11,608 selected households, 10,510 and 8,983 were occupied and interviewed, respectively. The overall household RR (unweighted) was 85.2%. After adjusting for differential sampling probabilities and nonresponse, the overall weighted household RR was 82.7% (Table 2.7.A).

A total of 21,312 adults (10,399 men and 10,913 women) were eligible to participate in the survey. A total of 18,927 adults participated in the individual interview: Interview response rates (unweighted) were 91.3% for men and 86.4% for women. Among adults who were interviewed, 93.6% of men and 94.7% of women (unweighted) also had their blood drawn (Table 2.7.B).

CIPHIA planned to enroll a targeted sample of approximately 4,600 children more likely to be HIV positive and a smaller sample of around 1,000 children in the nontargeted subpopulation for comparison purposes. Of the 3,563 eligible children aged 0-9 years, 76.5% of boys and 78.1% of girls had their blood drawn (unweighted RRs). Of the 2,360 eligible children aged 10-14 years, 85.8% of boys and 86.3% of girls had their blood drawn (unweighted RRs) (Table 2.7.B).

Table 2.7.A Household response rates

Result	Residence		Total
	Urban	Rural	
Household interviews			
Households selected	5,811	5,797	11,608
Households occupied	5,243	5,267	10,510
Households interviewed	4,365	4,618	8,983
Household response rate ¹ (unweighted)	83.0	87.4	85.2
Household response rate ¹ (weighted)	79.9	86.7	82.7

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

Table 2.7.B Interview and blood draw response rates

Result	Residence						Total		
	Urban		Total	Rural		Total	Male	Female	Total
	Male	Female		Male	Female				
Eligible individuals, under 2 years									
Number of eligible individuals	119	133	252	178	178	356	297	311	608
Blood draw response rate (unweighted)	48.7	54.9	52.0	61.8	67.4	64.6	56.6	62.1	59.4
Eligible individuals, ages 0-9 years									
Number of eligible individuals	714	799	1,513	999	1,051	2,050	1,713	1,850	3,563
Blood draw response rate (unweighted)	70.9	71.3	71.1	80.6	83.2	81.9	76.5	78.1	77.3
Eligible individuals, ages 10-14 years									
Number of eligible individuals	550	658	1,208	629	523	1,152	1,179	1,181	2,360
Blood draw response rate (unweighted)	84.0	83.7	83.9	87.4	89.5	88.4	85.8	86.3	86.1
Eligible individuals, ages 15-24 years									
Number of eligible individuals	1,934	2,245	4,179	1,286	1,529	2,815	3,220	3,774	6,994
Interview response rate (unweighted)	89.7	90.1	89.9	89.7	85.7	87.5	89.7	88.3	88.9
Interview response rate (weighted)	86.5	88.3	87.5	89.4	84.1	86.5	87.4	86.9	87.2
Blood draw response rate (unweighted)	94.5	94.5	94.5	96.4	96.4	96.4	95.3	95.3	95.3
Blood draw response rate (weighted)	92.1	91.8	91.9	95.5	95.2	95.3	93.2	92.9	93.0

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

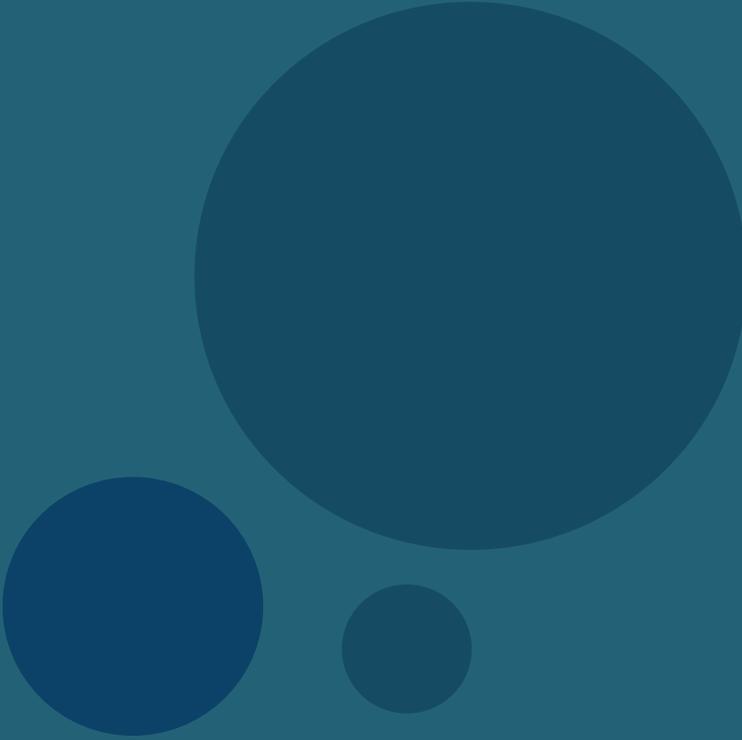
Result	Residence								
	Urban			Rural			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Eligible individuals, ages 15-49 years									
Number of eligible individuals	4,749	5,193	9,942	4,244	4,442	8,686	8,993	9,635	18,628
Interview response rate (unweighted)	89.2	88.7	88.9	93.5	86.6	90.0	91.2	87.7	89.4
Interview response rate (weighted)	86.3	86.9	86.6	93.1	86.5	89.8	88.8	86.7	87.8
Blood draw response rate (unweighted)	91.6	93.5	92.6	95.6	96.4	96.0	93.5	94.8	94.2
Blood draw response rate (weighted)	88.9	90.5	89.7	94.3	95.4	94.8	91.0	92.2	91.6
Eligible individuals, ages 15-64 years									
Number of eligible individuals	5,364	5,796	11,160	5,035	5,117	10,152	10,399	10,913	21,312
Interview response rate (unweighted)	89.1	87.6	88.3	93.7	85.0	89.3	91.3	86.4	88.8
Interview response rate (weighted)	86.3	86.1	86.2	93.4	85.1	89.3	89.0	85.7	87.3
Blood draw response rate (unweighted)	91.3	93.2	92.3	95.9	96.4	96.1	93.6	94.7	94.1
Blood draw response rate (weighted)	88.4	89.8	89.1	94.7	95.3	95.0	90.8	91.8	91.3

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

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

2.8 REFERENCES

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3. 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 May 6, 2019.



3. SURVEY HOUSEHOLD CHARACTERISTICS

3.1 KEY FINDINGS

- Overall, 79.5% of households were headed by men while 20.5% were headed by women.
- The median household size was 4 people, in both urban and rural areas.
- Of the household respondents, 40.4% were children (defined as those aged 0-14 years), 49.8% were adults aged 15-49 years and 9.7% were adults aged 50 years or older.
- Of all households, 5.4% had at least one HIV-positive member: 6.3% of households in urban areas and 4.2% of households in rural areas.
- Among the households in Côte d'Ivoire, 3.5% had an HIV-positive head of household: 7.4% of households headed by a woman and 2.5% of households headed by a man.

3.2 BACKGROUND

This chapter presents data on the demographic characteristics of households surveyed in CIPHIA. Household composition is described in terms of the sex of the head of the 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.

3.3 RESULTS

The tables and figures below describe the household characteristics in CIPHIA.

Household Composition

In Côte d'Ivoire, nearly eight out of 10 households (79.5%) were headed by men: 75.6% of urban households and 84.8% of rural households were male headed. Conversely, approximately two out of 10 households (20.5%) were headed by women. In urban areas, almost a quarter of households (24.4%) were headed by women, while in rural areas only 15.2% were headed by women. In addition, the median household size in Côte d'Ivoire was 4 people (interquartile range [IQR] 2-6), whether in urban or rural settings; and the median number of children per household was 1 (IQR) (Table 3.A).

Table 3.A Household composition

Percent distribution of households by sex of head of household; median (Q1, Q3) size of household and median (Q1, Q3) number of children under 18 years of age, by residence, CIPHIA 2017-2018						
Characteristic	Residence					
	Urban		Rural		Total	
	Percent	Number	Percent	Number	Percent	Number
Head of household						
Male	75.6	3,316	84.8	3,894	79.5	7,210
Female	24.4	1,049	15.2	724	20.5	1,773
Total	100.0	4,365	100.0	4,618	100.0	8,983
Characteristic	Residence					
	Urban		Rural		Total	
	Median	Q1, Q3	Median	Q1, Q3	Median	Q1, Q3
Size of households	4	(2, 6)	4	(2, 6)	4	(2, 6)
Number of children under 18 years of age	2	(0, 3)	2	(0, 4)	2	(0, 3)
Number of children 0-14 years of age	1	(0, 3)	2	(0, 3)	1	(0, 3)
Number of adults 15-64 years of age	2	(2, 3)	2	(1, 3)	2	(2, 3)

Weighted figures.

As shown in Table 3.B and Table 3.C, the population of Côte d'Ivoire was very young, as other studies have also reported.^{1,2,3} Children accounted for 40.4% of the total population surveyed. Young people (defined as those aged 15-24 years) accounted for 18.8% of the survey population. Adults aged 15-49 years accounted for 49.8% of the population, and those aged 50 years and older accounted for 9.7% (Table 3.B).

The age and sex distribution of the de facto population are illustrated by the population pyramid figure (Figure 3.A).

Table 3.B Population pyramid

Percent distribution of the de facto household population, by 5-year age groups and sex, CIPHIA 2017-2018						
Age	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
0-4	7.3	3,033	7.5	3,041	14.8	6,074
5-9	7.0	2,926	7.3	2,983	14.3	5,909
10-14	5.6	2,343	5.6	2,322	11.3	4,665
15-19	4.7	1,789	5.3	1,980	9.9	3,769
20-24	3.9	1,445	4.9	1,803	8.8	3,248
25-29	4.0	1,440	4.4	1,669	8.5	3,109
30-34	3.8	1,412	4.1	1,491	7.9	2,903
35-39	3.4	1,224	3.1	1,228	6.5	2,452
40-44	2.6	976	2.1	839	4.7	1,815
45-49	1.9	728	1.6	639	3.5	1,367
50-54	1.4	591	1.5	608	2.9	1,199
55-59	1.1	458	1.0	394	2.2	852
60-64	1.0	357	0.7	278	1.7	635
65-69	0.6	278	0.7	278	1.3	556
70-74	0.3	165	0.4	189	0.7	354
75-79	0.2	91	0.2	84	0.4	175
≥80	0.2	80	0.3	108	0.4	188
Total	49.2	19,336	50.8	19,934	100.0	39,270

Weighted figures.

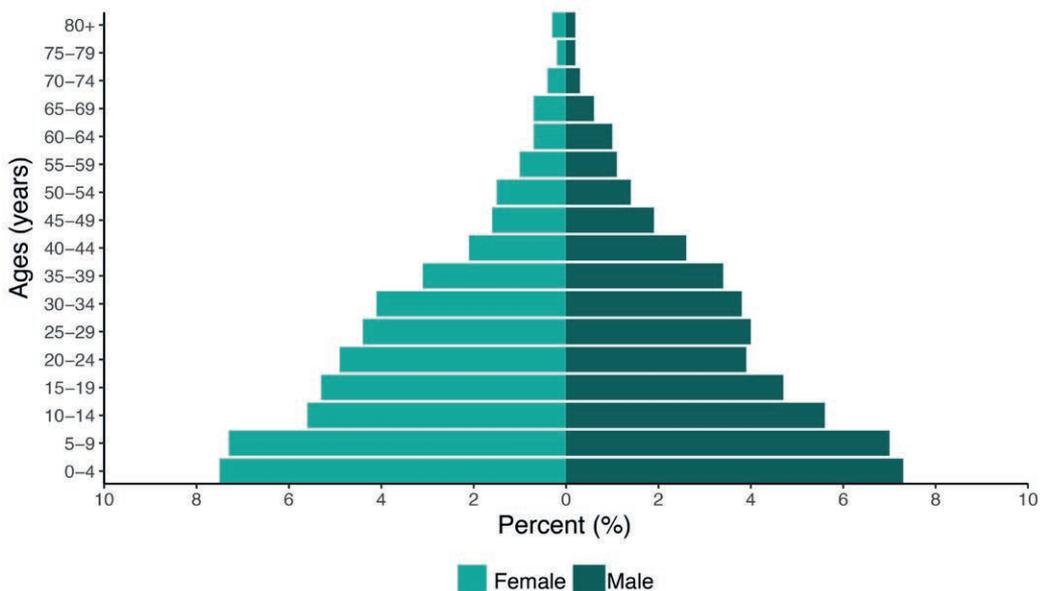


Figure 3.A
Distribution of the de facto population by sex and age, CIPHIA 2017-2018

Overall, the population of rural areas was younger than that of urban areas: children made up 45.4% of the rural population, and 36.7% of the urban population. (Note: Combined estimates may differ slightly from the product of estimates presented in the table due to rounding.) In urban areas, more than half (54.4%) of the population was aged 15-49 years (54.1% among men and 54.7% among women), and those who were over the age of 50 years accounted for 8.9%. In rural areas, less than half (43.8%) of the population was aged 15-49 years, and 10.8% were over 50 (Table 3.C). Figure 3.B shows that, by residence, within each age group, the gender disaggregation by age group did not differ significantly.

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

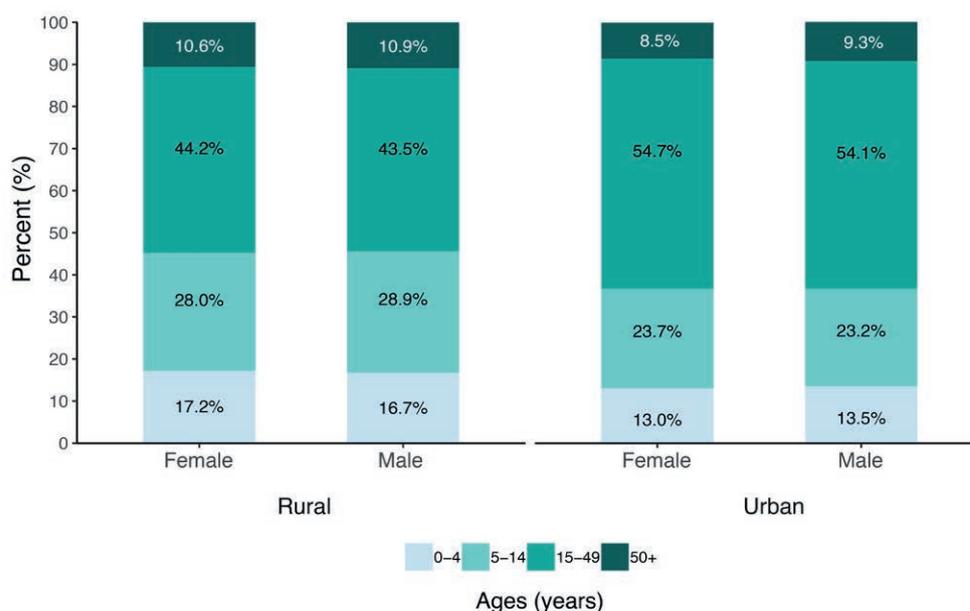


Table 3.C Household population by age, sex, and residence

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

Age	Urban					
	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
0-4	13.5	1,258	13.0	1,284	13.2	2,542
5-14	23.2	2,249	23.7	2,460	23.5	4,709
15-49	54.1	4,758	54.7	5,200	54.4	9,958
≥50	9.3	870	8.5	865	8.9	1,735
Total	100.0	9,135	100.0	9,809	100.0	18,944

Age	Rural					
	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
0-4	16.7	1,775	17.2	1,757	17.0	3,532
5-14	28.9	3,020	28.0	2,845	28.5	5,865
15-49	43.5	4,256	44.2	4,449	43.8	8,705
≥50	10.9	1,150	10.6	1,074	10.8	2,224
Total	100.0	10,201	100.0	10,125	100.0	20,326

Weighted figures.

Prevalence of Households Affected by HIV

The CIPHIA survey in Côte d'Ivoire found that 5.4% of households had at least one HIV-positive member: 6.3% of households in urban areas and 4.2% of the households in rural areas (Figure 3.C, Table 3.D).

Table 3.D Prevalence of HIV-affected households

Percentage of households with at least one HIV-positive household member, by residence, CIPHIA 2017-2018		
Residence	Percent	Number
Urban	6.3	3,952
Rural	4.2	4,261
Total	5.4	8,213

Weighted figures.

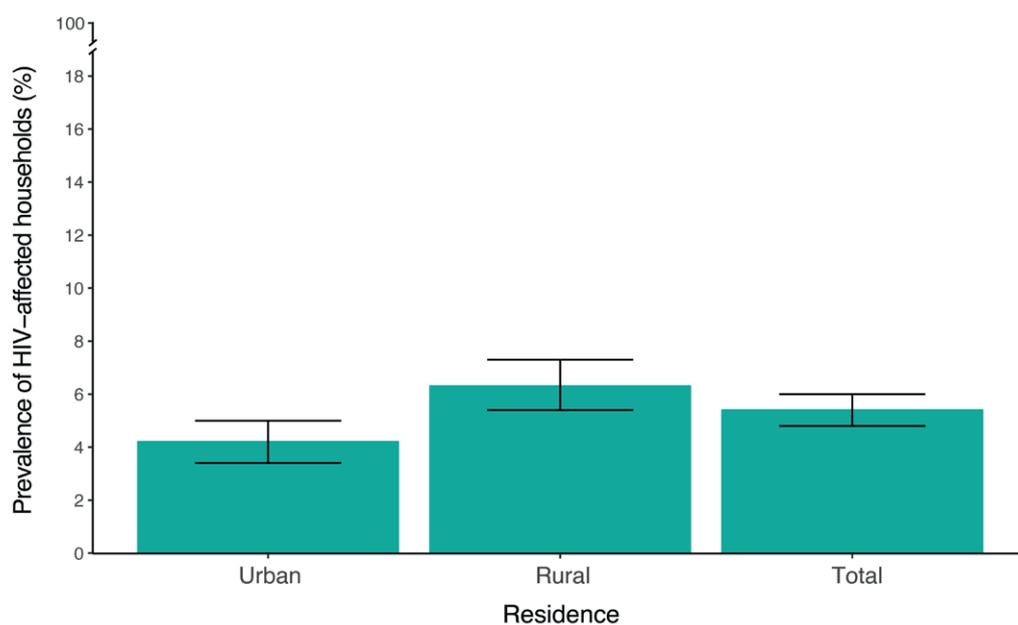


Figure 3.C
Prevalence of HIV-affected households by residence, CIPHIA 2017-2018

In Table 3.E and Figure 3.D, among the households affected by HIV, 86.6% had one member who was HIV-positive, and 12.1% had two HIV-positive members. This distribution was similar in urban and rural areas. Regardless of the area of residence, no household contained more than 4 HIV-positive persons.

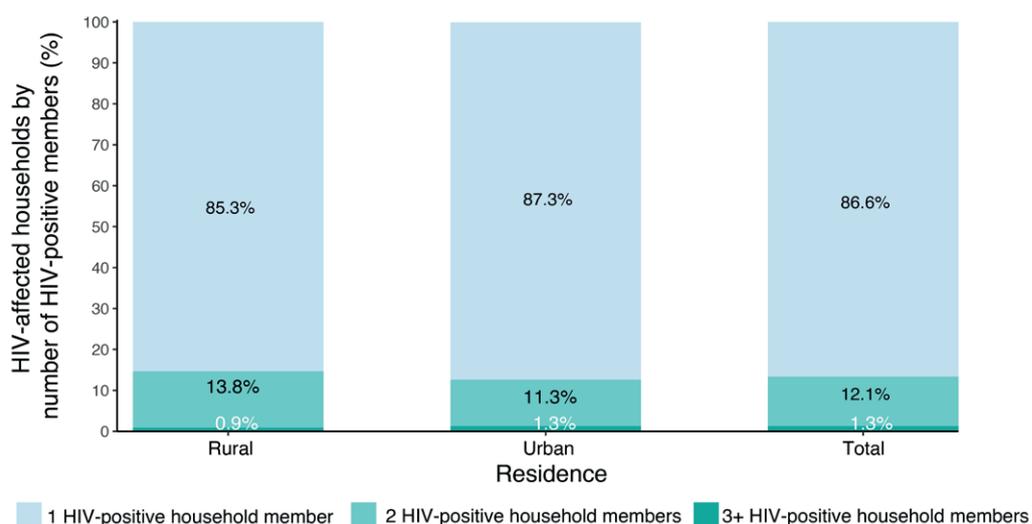
Table 3.E HIV-affected households by the number of HIV-positive members

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

Number of HIV-positive household members	Residence					
	Urban		Rural		Total	
	Percent	Number	Percent	Number	Percent	Number
1	87.3	212	85.3	138	86.6	350
2	11.3	29	13.8	20	12.1	49
3	1.1	4	0.9	2	1.1	6
4	0.2	1	0.0	0	0.2	1
Total	100.0	246	100.0	160	100.0	406

Weighted figures.

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



In 3.5% of Ivorian households, the head of the household was a person living with HIV: among female-headed households, 7.4% were headed by a woman living with HIV, while among male-headed households, 2.5% of the household heads were HIV positive (Table 3.F).

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, CIPHIA 2017-2018		
Sex of head of household	Percent	Number
Male	2.5	5,561
Female	7.4	1,289
Total	3.5	6,850

Weighted figures.

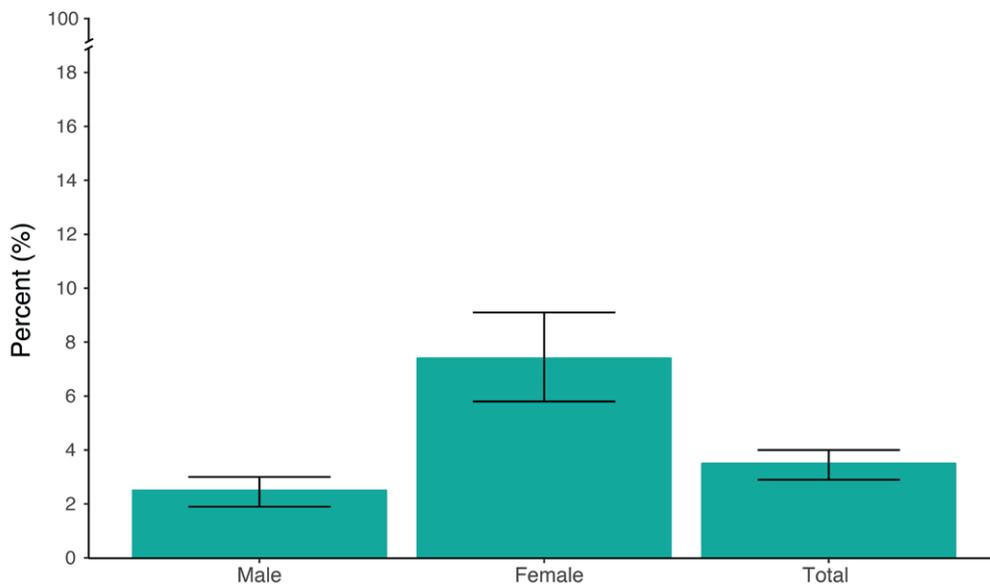
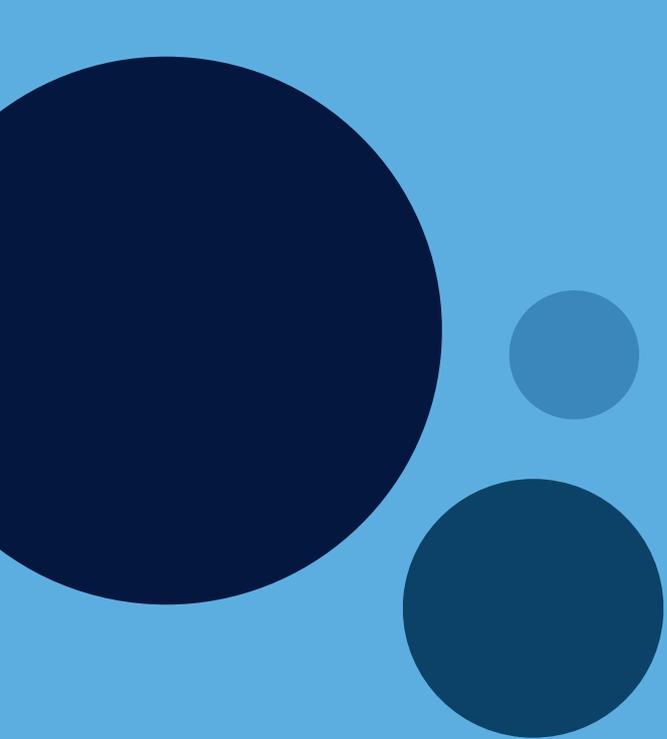


Figure 3.E
Prevalence of households with an HIV-positive head of household by sex, CIPHIA 2017-2018

3.4 REFERENCES

1. Institut National de la Statistique (INS) et ICF International. 2012. *Enquête Démographique et de Santé et à Indicateurs Multiples de Côte d'Ivoire 2011-2012*. Calverton, Maryland, USA: INS et ICF International, 2012.
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4. SURVEY RESPONDENT CHARACTERISTICS

4.1 KEY FINDINGS

- Most adults (defined as those aged 15-64 years) lived in urban areas: 61.5% of men and 63.5% of women.
- Among those surveyed, 48.7% of the men and 57.5% of the women were married or living together with a nonmarital partner at the time of the survey.
- Among adults, 9.8% of adults were in polygynous unions with at least one co-spouse: This was reported by 6.8% of men, while 13.0% of women reported having co-wives.
- The proportion of adults with no education was 35.7% among men and 46.8% among women.
- About a quarter (25.4%) of adults (23.3% of men and 27.7% of women), lived in households in the poorest wealth quintile.

4.2 BACKGROUND

This chapter presents the demographic and socio-economic characteristics of CIPHIA 2017-2018 survey respondents and includes children (those aged 0-14 years, including young adolescents aged 10-14 years), and adults (those aged 15-64 years) who have consented or assented to participate in the survey. The CIPHIA survey collected information from participants, whether male or female, to calculate key indicators presented in this report, and to stratify by these characteristics.

4.3 RESULTS

Sociodemographic Characteristics of the Adult Population

Table 4.A shows the distribution of women and men by selected demographic and socio-economic characteristics.

Area and region of residence: 62.5% of respondents lived in urban areas compared to 37.5% in rural areas at the time of the survey. Approximately 30% of adults (29.3% of men and 31.0% of women) lived in Abidjan. The distribution of respondents per region in the survey reflected the respective population density in each region of Côte d'Ivoire. No significant differences between men and women were observed (Table 4.A).

Marital status and type of union: Of the respondents, 53.0% were married or lived together with at least one partner, and 39.9% were never married. However, 51.1% of men and 42.3% of women were not part of a couple or in a polygynous relationship at the time of the survey. Polygynous unions were reported by 6.8% of men, and 13.0% of women reported having at least one co-wife in such a union.

Educational level: Overall, 41.1% of respondents (46.8% of women and 35.7% of men) had no education at the time of the survey. In addition, 33.6% of respondents (40.4% of men and 26.5% of women) had reached at least a secondary level at the time of the survey.

Ages: Overall, 33.4% of the adult respondents were young people (those aged 15-24 years), while 88.7% were aged 15-49 years.

Table 4.A Demographic characteristics of the adult population

Percent distribution of adults aged 15-64 years, by sex and selected demographic characteristics, CIPHIA 2017-2018						
Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Residence						
Urban	61.5	4,779	63.5	5,079	62.5	9,858
Rural	38.5	4,719	36.5	4,350	37.5	9,069
Region						
Abidjan	29.3	1,223	31.0	1,393	30.1	2,616
Yamoussoukro	1.5	621	1.5	664	1.5	1,285
Bas-Sassandra	10.0	1,372	8.8	1,223	9.4	2,595
Comoé	4.3	355	5.0	419	4.6	774
Denguélé	0.9	530	1.0	497	0.9	1,027
Gôh-Djiboua	5.6	497	5.7	505	5.6	1,002
Lacs	4.8	476	5.0	483	4.9	959
Lagunes	7.7	437	7.3	400	7.5	837
Montagnes	8.9	399	8.0	331	8.4	730
Sassandra-Marahoué	11.5	716	10.5	602	11.0	1,318
Savanes	4.6	507	4.6	477	4.6	984

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

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Vallée du Bandama	5.8	1,248	6.3	1,377	6.1	2,625
Woroba	2.7	585	2.7	505	2.7	1,090
Zanzan	2.5	532	2.6	553	2.5	1,085
Marital status						
Never married	46.6	3,990	32.9	2,953	39.9	6,943
Married or living together	48.7	5,019	57.5	5,617	53.0	10,636
Divorced or separated	4.1	384	5.2	445	4.7	829
Widowed	0.6	66	4.4	379	2.4	445
Type of union						
In polygynous union†	6.8	791	13.0	1,441	9.8	2,232
Not in polygynous union	41.6	4,226	42.2	4,008	41.9	8,234
Not currently in union	51.1	4,440	42.3	3,777	46.8	8,217
Don't know/missing	(0.5)	41	2.5	203	1.5	244
Education						
No education	35.7	3,663	46.8	4,637	41.1	8,300
Pre-school	*	16	*	24	(0.2)	40
Primary	23.8	2,438	26.4	2,571	25.0	5,009
Secondary	31.5	2,752	21.8	1,865	26.7	4,617
More than secondary	8.9	615	4.7	317	6.9	932
Wealth quintile						
Lowest	23.3	1,286	27.7	1,662	25.4	2,948
Second	18.7	1,594	19.3	1,800	19.0	3,394
Middle	18.3	2,179	18.1	2,121	18.2	4,300
Fourth	20.1	2,396	19.6	2,272	19.9	4,668
Highest	19.5	2,043	15.4	1,574	17.5	3,617
Age						
15-19	16.5	1,581	17.0	1,735	16.7	3,316
20-24	15.8	1,306	17.7	1,599	16.7	2,905
25-29	15.4	1,312	17.2	1,477	16.3	2,789
30-34	14.0	1,294	14.1	1,318	14.1	2,612
35-39	11.5	1,136	10.0	1,069	10.8	2,205
40-44	8.6	900	7.3	723	8.0	1,623
45-49	6.5	676	5.9	531	6.2	1,207
50-54	5.2	546	5.0	480	5.1	1,026
55-59	3.7	416	3.4	298	3.5	714
60-64	2.8	331	2.5	199	2.7	530
Total 15-24	32.3	2,887	34.7	3,334	33.4	6,221
Total 15-49	88.3	8,205	89.2	8,452	88.7	16,657
Total 15-64	100.0	9,498	100.0	9,429	100.0	18,927

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

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

* 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.

† A polygynous union is a marriage between a man and more than one wife.

Weighted figures.

Sociodemographic Characteristics of the Pediatric Population

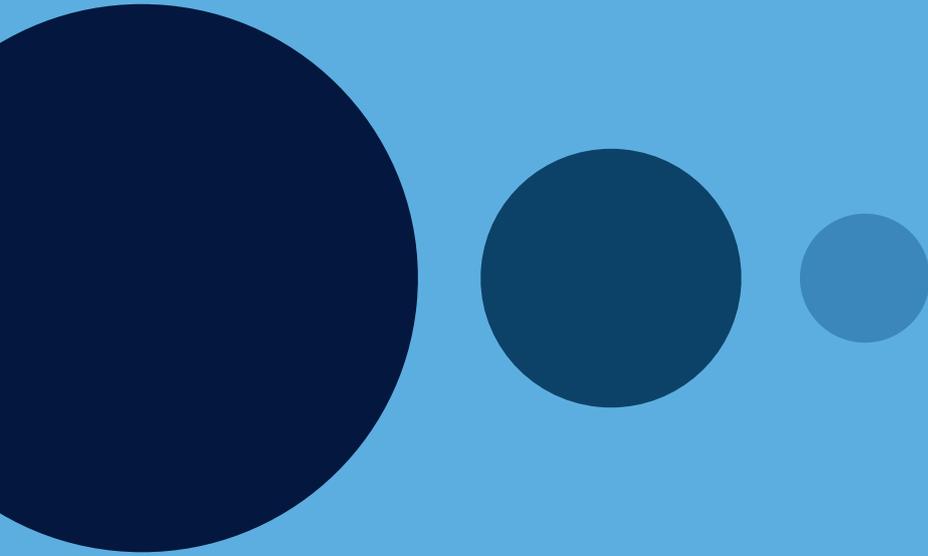
Table 4.B shows the distribution of children according to demographic and socio-economic characteristics. Children under 5 years of age (ages 0-4 years) accounted for 38.9% of the pediatric population surveyed, including 15.3% of children younger than 24 months of age.

Locale and region of residence: Nearly half (47.5%) of the children surveyed lived in rural areas, while 20.9% lived in Abidjan.

Table 4.B Demographic characteristics of the pediatric population

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Age						
0-11 months	7.5	566	7.9	609	7.7	1,175
12-17 months	4.0	314	3.5	282	3.8	596
18-23 months	3.9	279	3.7	259	3.8	538
24-59 months	23.1	1,697	24.0	1,731	23.5	3,428
0-17 months	11.6	880	11.4	891	11.5	1,771
18-59 months	27.0	1,976	27.7	1,990	27.4	3,966
5-9 years	33.2	2,768	33.6	2,824	33.4	5,592
10-14 years	28.2	2,249	27.2	2,215	27.7	4,464
Residence						
Urban	51.2	3,293	53.9	3,523	52.5	6,816
Rural	48.8	4,580	46.1	4,397	47.5	8,977
Region						
Abidjan	19.4	690	22.4	813	20.9	1,503
Yamoussoukro	1.3	386	1.3	425	1.3	811
Bas-Sassandra	10.3	1,045	10.3	1,085	10.3	2,130
Comoé	5.1	314	4.7	303	4.9	617
Denguélé	1.5	675	1.4	612	1.5	1,287
Gôh-Djiboua	6.7	438	7.3	481	7.0	919
Lacs	5.7	421	5.0	381	5.4	802
Lagunes	7.8	323	6.8	287	7.4	610
Montagnes	9.6	339	9.3	330	9.4	669
Sassandra-Marahoué	12.7	557	12.2	546	12.4	1,103
Savanes	5.6	448	5.8	473	5.7	921
Vallée du Bandama	7.3	1,174	7.2	1,188	7.3	2,362
Woroba	3.9	586	3.1	511	3.5	1,097
Zanzan	3.1	477	3.0	485	3.1	962
Wealth quintile						
Lowest	16.0	768	19.0	913	17.5	1,681
Second	15.8	1,089	16.7	1,172	16.2	2,261
Middle	18.9	1,741	19.3	1,832	19.1	3,573
Fourth	27.3	2,448	24.2	2,253	25.8	4,701
Highest	22.0	1,827	20.8	1,750	21.4	3,577
Total 0-4	38.6	2,856	39.2	2,881	38.9	5,737
Total 0-14	100.0	7,873	100.0	7,920	100.0	15,793

Weighted figures.



5. HIV INCIDENCE

5.1 KEY FINDINGS

- The annual incidence of HIV among adults in Côte D'Ivoire was 0.03% (using the recent infection algorithm based upon limiting antigen [LAg] plus viral load [VL] and antiretroviral [ARV] detection results). That corresponded to approximately 4,000 new cases of HIV per year among adults.

5.2 BACKGROUND

HIV incidence, the measure of new HIV infections in a population over time, provides essential 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 individuals aged 15-64 years in this survey) at the national level. For 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 CIPHIA was not powered to estimate incidence at the regional level or across different sub-groups. Incidence was determined using the LAg avidity test, viral load, and detection of ARVs in blood.

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

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

5.3 RESULTS

Tables 5.A and 5.B report HIV incidence in Côte d'Ivoire at the time of the CIPHIA survey. The estimated annual incidence of HIV among adults in Côte d'Ivoire using either algorithm was 0.03% with no difference by sex. This corresponds to an estimated 4,000 new HIV cases per year in Côte d'Ivoire among adults at the time of the survey (Table 5.C). The annual incidence peaked at 0.07% among young people (those aged 15-24 years) (0.09% among older adolescent boys and young men and 0.04% among young women) (Table 5.A and B) and corresponded to nearly 3,000 new HIV cases per year in this age group (approximately three-quarters of all new HIV cases) (Table 5.C).

Table 5.A Annual HIV incidence using limiting antigen (LAg)/viral load (VL) testing algorithm

Annual incidence of HIV among adults aged 15-49 years and 15-64 years, by sex and age, using LAg+VL recent infection algorithm, CIPHIA 2017-2018						
Age	Male		Female		Total	
	Percentage annual incidence ¹	95% CI ²	Percentage annual incidence ¹	95% CI ²	Percentage annual incidence ¹	95% CI ²
15-24	0.09	(0.00 – 0.27)	0.04	(0.00 – 0.15)	0.07	(0.00 – 0.17)
25-34	0.00	(0.00 – 0.43)	0.05	(0.00 – 0.20)	0.03	(0.00 – 0.10)
35-49	0.00	(0.00 – 0.43)	0.00	(0.00 – 0.51)	0.00	(0.00 – 0.23)
15-49	0.03	(0.00 – 0.10)	0.03	(0.00 – 0.10)	0.03	(0.00 – 0.08)
50-64	0.00	(0.00 – 0.88)	0.00	(0.00 – 1.26)	0.00	(0.00 – 0.53)
15-64	0.03	(0.00 – 0.09)	0.03	(0.00 – 0.09)	0.03	(0.00 – 0.07)

¹Relates to Global AIDS Monitoring Indicator 3.1: HIV incidence.

²95% CI (confidence interval) indicates the interval that is expected to include the true population parameter 95% of the time. Weighted figures.

Table 5.B Annual HIV incidence using limiting antigen (LAG)/viral load (VL)/antiretroviral (ARV) detection testing algorithm

Age	Annual incidence of HIV among adults aged 15-49 years and 15-64 years, by sex and age, using LAG+VL+ARVs algorithm, CIPHIA 2017-2018					
	Male		Female		Total	
	Percentage annual incidence ¹	95% CI ²	Percentage annual incidence ¹	95% CI ²	Percentage annual incidence ¹	95% CI ²
15-24	0.09	(0.00 – 0.27)	0.04	(0.00 – 0.15)	0.07	(0.00 – 0.17)
25-34	0.00	(0.00 – 0.43)	0.05	(0.00 – 0.20)	0.03	(0.00 – 0.10)
35-49	0.00	(0.00 – 0.43)	0.00	(0.00 – 0.51)	0.00	(0.00 – 0.23)
15-49	0.03	(0.00 – 0.10)	0.03	(0.00 – 0.10)	0.03	(0.00 – 0.08)
50-64	0.00	(0.00 – 0.88)	0.00	(0.00 – 1.26)	0.00	(0.00 – 0.53)
15-64	0.03	(0.00 – 0.09)	0.03	(0.00 – 0.09)	0.03	(0.00 – 0.07)

¹Relates to Global AIDS Monitoring Indicator 3.1: HIV incidence.

²95% CI (confidence interval) indicates the interval that is expected to include the true population parameter 95% of the time. Weighted figures.

Table 5.C People living with HIV and the number of new HIV infections per year

Age	People living with HIV and number of new HIV infections per year, by age, using LAG+VL+ARVs recent infection algorithm, CIPHIA 2017-2018			
	People living with HIV	95% CI ¹	Number of new infections per year	95% CI ¹
0-14	18,149	(7,851 – 28,447)	830	(0 – 4,470)
15-24	28,912	(17,492 – 40,333)	2,996	(0 – 8,048)
25-34	95,086	(66,828 – 123,345)	1,038	(0 – 4,077)
35-49	171,526	(138,647 – 204,406)	0	(0 – 8,977)
15-49	295,525	(255,809 – 335,241)	4,035	(0 – 9,862)
50-64	86,382	(63,829 – 108,934)	0	(0 – 9,670)
15-64	381,907	(335,845 – 427,968)	4,054	(0 – 9,898)

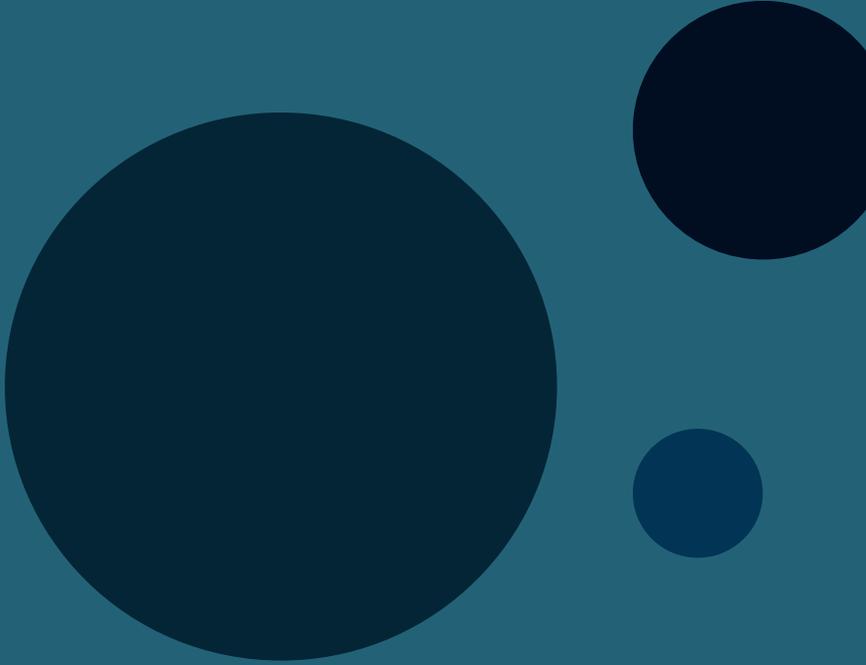
¹95% CI (confidence interval) indicates the interval that is expected to include the true population parameter 95% of the time. Weighted figures.

5.4 GAPS AND UNMET NEEDS

- **More than 4,000 new HIV infections occur each year in Côte d'Ivoire among adults. To achieve the UNAIDS goals of zero new HIV infections in 2030, efforts to break the chain of transmission must be stepped up.**
- **Among young people, the incidence of HIV is higher, especially among men. This suggests a need for more intensive primary prevention among young people without discriminating by sex.**
- **Systematic case reporting and case surveillance could provide the demographic profile of recently infected cases needed better target prevention efforts.**

5.5 REFERENCES

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



6. HIV PREVALENCE

6.1 KEY FINDINGS

- The national HIV prevalence among adults was 2.9%: 4.1% among women and 1.7% among men. This corresponded to about 382,000 adults living with HIV.
- The regional HIV prevalence ranged from 1.7% in Gôh-Djiboua to 3.4% in the district of Abidjan.
- In urban areas, HIV prevalence was 3.1%; whereas, in rural areas, it was 2.4%.
- The peak HIV prevalence was observed among women aged 40–44 years (8.7%) and among men aged 60–64 years (6.0%).
- The national HIV prevalence among children (ages 0–14 years) was 0.2%.
- HIV prevalence among adults aged 15–49 years was 2.5% (3.6% among women and 1.4% among men).

6.2 BACKGROUND

This chapter presents representative estimates of HIV prevalence among adults (ages 15-64 years) at the national and regional levels by selected demographic and behavioral characteristics. It also reports the estimates of the number of people living with HIV in Côte d’Ivoire and the prevalence in children (those aged 0-14 years). HIV prevalence testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Côte d’Ivoire’s national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. Appendix A describes the sample design and implementation, and Appendix C provides estimates of sampling errors. Appendix B describes the PHIA HIV testing methodology.

6.3 RESULTS

HIV Prevalence among Adults by Demographic Characteristics

HIV prevalence among adults was 2.9% (4.1% in women and 1.7% in men) (Table 6.A) and corresponds to approximately 382,000 adults aged 15-64 years living with HIV in Côte d’Ivoire (Table 5.C).

According to marital status, HIV prevalence ranged from 1.4% among never-married adults to 12.9% among widowed adults. Among women, HIV prevalence was three to four times higher among those who were divorced/separated (10.4%) or widowed (12.9%) than among those who had never been married (2.8%) or who were married or lived together (3.5%). Among men, the highest prevalence was found among widowers (13.3%) while among divorcées, HIV prevalence was 3.4% (Table 6.A, Figure 6.A).

HIV prevalence varied with the level of education, ranging from 0.8% among adults with higher levels to 3.4% among adults without schooling. HIV prevalence was estimated at 2.6% among women pregnant at the time of the survey, and 4.2% among women who were not (Table 6.A).

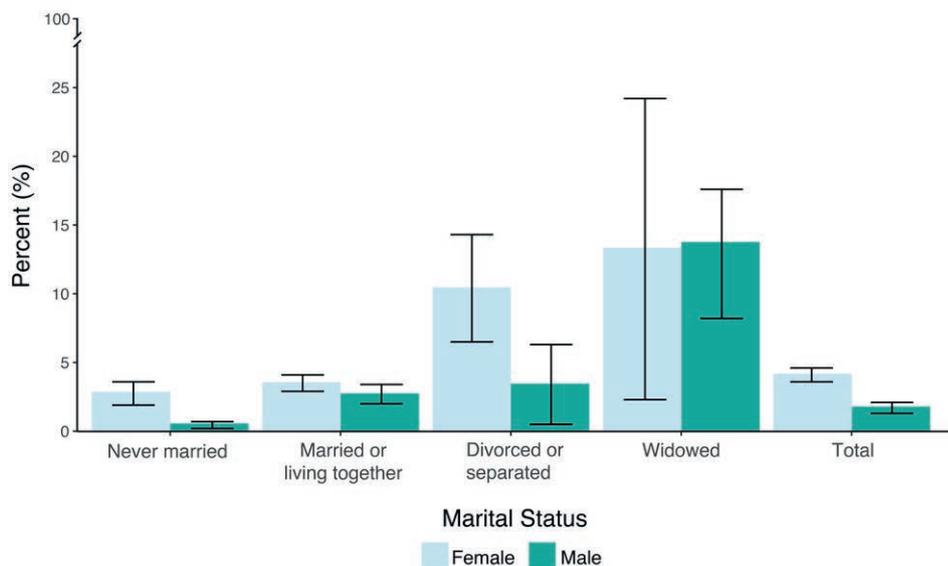


Figure 6.A
HIV prevalence by marital status: Ages 15-64 years, CIPHA 2017-2018

Table 6.A HIV-1 and HIV-2 prevalence by demographic characteristics: Ages 15-64 years

Prevalence of HIV ¹ among adults aged 15-64 years, by sex and selected demographic characteristics, CIPHIA 2017-2018						
Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	1.9	4,361	4.4	4,733	3.1	9,094
Rural	1.5	4,526	3.5	4,193	2.4	8,719
Region						
Abidjan	2.0	1,020	4.8	1,190	3.4	2,210
Yamoussoukro	1.8	581	4.0	629	2.9	1,210
Bas-Sassandra	1.2	1,346	3.2	1,208	2.1	2,554
Comoé	1.3	322	5.0	391	3.3	713
Denguélé	1.5	510	2.7	481	2.1	991
Gôh-Djiboua	1.1	490	2.3	497	1.7	987
Lacs	1.9	450	4.7	472	3.3	922
Lagunes	2.2	391	3.4	370	2.8	761
Montagnes	2.1	368	4.5	300	3.2	668
Sassandra-Marahoué	1.6	668	4.1	564	2.8	1,232
Savanes	1.1	486	3.1	461	2.0	947
Vallée du Bandama	1.2	1,163	4.1	1,317	2.7	2,480
Woroba	2.5	569	2.3	501	2.4	1,070
Zanzan	2.2	523	3.9	545	3.0	1,068
Marital status						
Never married	0.5	3,749	2.8	2,793	1.4	6,542
Married or living together	2.7	4,687	3.5	5,330	3.1	10,017
Divorced or separated	3.4	353	10.4	416	7.2	769
Widowed	13.3	63	12.9	354	12.9	417
Type of union						
In polygynous union†	1.9	758	3.2	1,397	2.7	2,155
Not in polygynous union	2.8	3,927	3.6	3,780	3.2	7,707
Not currently in union	0.8	4,165	4.8	3,563	2.6	7,728
Don't know/missing	(0.0)	37	3.5	186	2.9	223
Education						
No education	2.2	3,457	4.3	4,464	3.4	7,921
Primary	1.8	2,334	4.9	2,440	3.4	4,774
Secondary	1.4	2,552	3.1	1,740	2.1	4,292
More than secondary	0.8	531	0.8	269	0.8	800
Wealth quintile						
Lowest	1.6	1,109	4.2	1,481	3.0	2,590
Second	2.9	1,450	5.2	1,682	4.1	3,132
Middle	1.6	2,066	4.5	2,047	3.0	4,113
Fourth	1.6	2,297	3.3	2,196	2.4	4,493
Highest	0.9	1,965	2.6	1,520	1.7	3,485

Table 6.A HIV-1 and HIV-2 prevalence by demographic characteristics: Ages 15-64 years (continued)

Prevalence of HIV ¹ among adults aged 15-64 years, by sex and selected demographic characteristics, CIPHIA 2017-2018						
Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Pregnancy status						
Currently pregnant	NA	NA	2.6	813	NA	NA
Not currently pregnant	NA	NA	4.2	8,008	NA	NA
Total 15-64	1.7	8,887	4.1	8,926	2.9	17,813

¹HIV prevalence refers to the total prevalence of HIV, counting those with HIV-1 and/or HIV-2 as positive.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.
Weighted figures.
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.
† A polygynous union is a marriage between a man and more than one wife.

HIV Prevalence Among Adults Aged 15-49 Years by Demographic Characteristics

HIV in the population aged 15-49 years was 2.5% (1.4% for men and 3.6% for women). In rural areas, the prevalence was 2.1%, while in urban areas it was 2.7%. Patterns in HIV prevalence by other demographic characteristics among adults aged 15-49 years were similar to those observed among adults aged 15-64 years (Table 6.B).

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

Prevalence of HIV ¹ among adults aged 15-49 years, by sex and selected demographic characteristics, CIPHIA 2017-2018						
Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	1.5	3,879	3.9	4,308	2.7	8,187
Rural	1.2	3,794	3.0	3,708	2.1	7,502
Region						
Abidjan	1.5	915	4.0	1,081	2.8	1,996
Yamoussoukro	1.5	521	3.3	559	2.4	1,080
Bas-Sassandra	0.9	1,145	2.8	1,114	1.8	2,259
Comoé	1.5	292	4.3	365	2.9	657
Denguélé	1.0	425	3.0	449	2.0	874
Gôh-Djiboua	0.6	414	1.9	447	1.3	861
Lacs	1.5	371	3.0	385	2.2	756
Lagunes	2.3	341	3.1	317	2.6	658
Montagnes	1.7	314	5.0	273	3.2	587
Sassandra-Marahoué	1.4	587	3.7	513	2.5	1,100
Savanes	1.2	427	2.7	419	1.9	846
Vallée du Bandama	0.9	991	3.9	1,164	2.5	2,155

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

Prevalence of HIV ¹ among adults aged 15-49 years, by sex and selected demographic characteristics, CIPHIA 2017-2018						
Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Woroba	1.5	476	1.5	445	1.5	921
Zanzan	1.6	454	2.8	485	2.2	939
Marital status						
Never married	0.5	3,692	2.5	2,701	1.3	6,393
Married or living together	2.5	3,641	3.4	4,811	3.0	8,452
Divorced or separated	1.2	278	8.6	341	5.4	619
Widowed	(21.1)	27	14.6	132	15.5	159
Type of union						
In polygynous union†	2.1	491	3.3	1,190	2.9	1,681
Not in polygynous union	2.5	3,148	3.5	3,478	3.1	6,626
Not currently in union	0.6	3,997	3.7	3,174	1.9	7,171
Don't know/missing	(0.0)	37	3.0	174	2.5	211
Education						
No education	1.9	2,805	3.8	3,866	3.0	6,671
Primary	1.5	2,016	4.6	2,197	3.1	4,213
Secondary	1.2	2,349	2.6	1,679	1.8	4,028
More than secondary	0.3	493	0.8	264	0.5	757
Wealth quintile						
Lowest	1.2	1,012	3.7	1,358	2.5	2,370
Second	2.6	1,310	4.5	1,542	3.5	2,852
Middle	1.4	1,785	3.7	1,781	2.5	3,566
Fourth	1.3	1,924	3.2	1,951	2.2	3,875
Highest	0.6	1,642	2.4	1,384	1.4	3,026
Pregnancy status						
Currently pregnant	NA	NA	2.6	812	NA	NA
Not currently pregnant	NA	NA	3.6	7,101	NA	NA
Total 15-49	1.4	7,673	3.6	8,016	2.5	15,689
Total 15-64	1.7	8,887	4.1	8,926	2.9	17,813

¹HIV prevalence refers to the total prevalence of HIV, counting those with HIV-1 and/or HIV-2 as positive.

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

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

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

† A polygynous union is a marriage between a man and more than one wife.

Weighted figures.

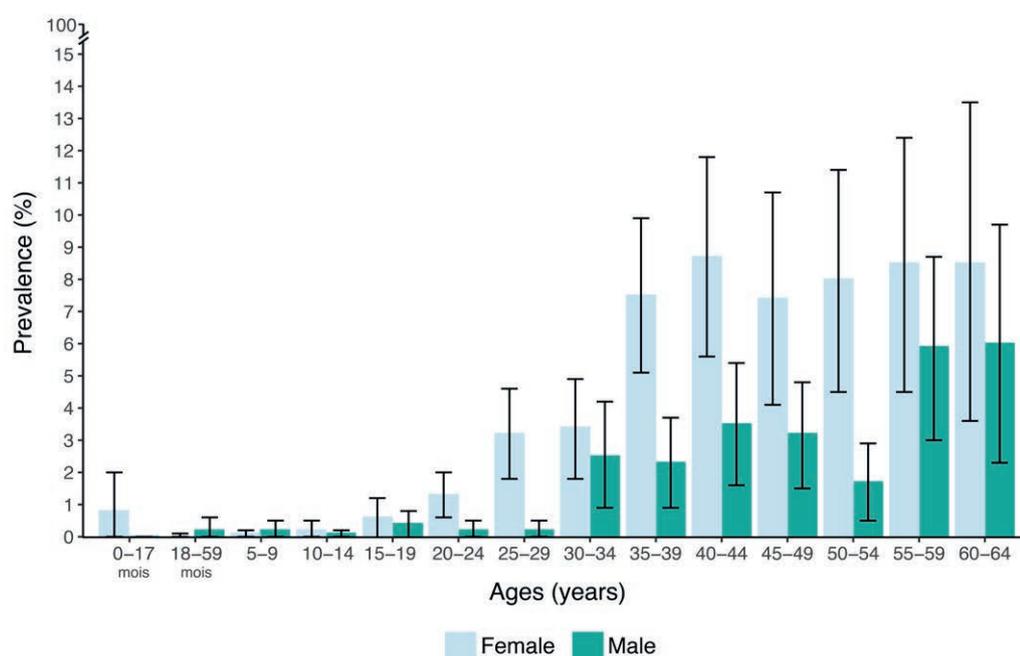
HIV prevalence by age and sex

HIV prevalence peaked among women aged 40-44 years at 8.7%, and among men aged 60-64 years at 6.0%. Among adults overall, HIV prevalence peaked at 7.2% among those aged 60-64 years (Table 6.C, Figure 6.B).

Table 6.C HIV-1 and HIV-2 prevalence by age and sex

Age	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
0-17 months	0.0	816	0.8	832	0.4	1,648
18-59 months	0.2	1,840	0.0	1,861	0.1	3,701
5-9	0.2	2,594	0.1	2,637	0.2	5,231
10-14	0.1	2,091	0.2	2,059	0.1	4,150
Total 0-4	0.2	2,656	0.3	2,693	0.2	5,349
Total 0-14	0.2	7,341	0.2	7,389	0.2	14,730
15-19	0.4	1,521	0.6	1,665	0.5	3,186
20-24	0.2	1,229	1.3	1,511	0.8	2,740
25-29	0.2	1,215	3.2	1,406	1.7	2,621
30-34	2.5	1,218	3.4	1,239	2.9	2,457
35-39	2.3	1,036	7.5	1,009	4.7	2,045
40-44	3.5	823	8.7	683	5.8	1,506
45-49	3.2	631	7.4	503	5.1	1,134
50-54	1.7	519	8.0	450	4.7	969
55-59	5.9	388	8.5	273	7.1	661
60-64	6.0	307	8.5	187	7.2	494
Total 15-24	0.3	2,750	0.9	3,176	0.6	5,926
Total 15-49	1.4	7,673	3.6	8,016	2.5	15,689
Total 15-64	1.7	8,887	4.1	8,926	2.9	17,813

¹HIV prevalence refers to the total prevalence of HIV, counting those with HIV-1 and/or HIV-2 as positive. This table excludes 8 children aged 0-14 who tested negative for HIV-1, but did not have conclusive HIV-2 test results.
Weighted figures.

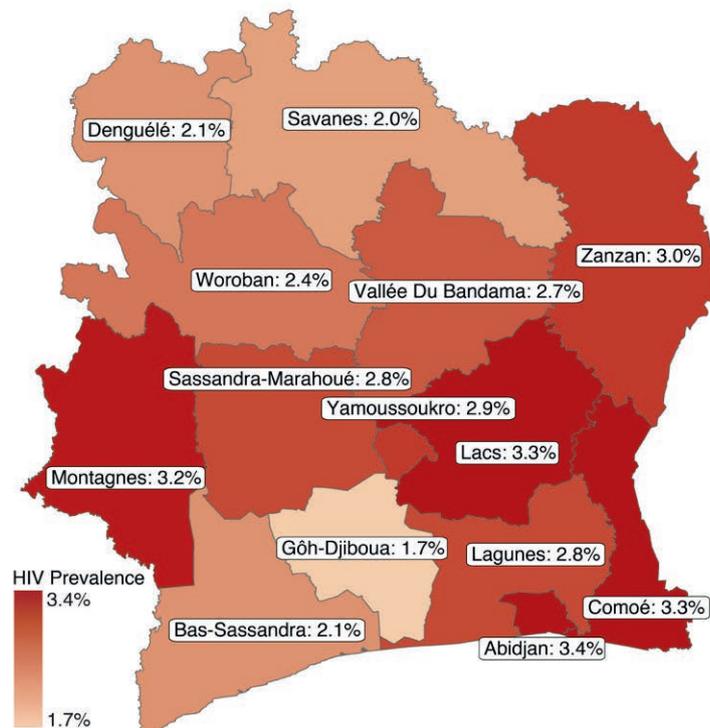
**Figure 6.B**
HIV prevalence by age and sex, CIPHIA 2017-2018

HIV prevalence among adults by region

According to Figures 6.C and 6.D, which show the prevalence of HIV in adults by geographical region, some regions in the east and center of the country have a prevalence of approaching or above 3% (Abidjan, Lagunes, Comoé, Lacs, Zanzan, Montagnes, Yamoussoukro, Sassandra Marahoué and Vallée du Bandama) while areas in the Northwest and Southwest had a prevalence of around 2% (Denguélé, Savanes, Woroba, Gôh-Djiboua, Bas-Sassandra). However, the confidence intervals for all of these estimates overlapped.

Figure 6.C

HIV prevalence among adults, by region, CIPHIA 2017-2018



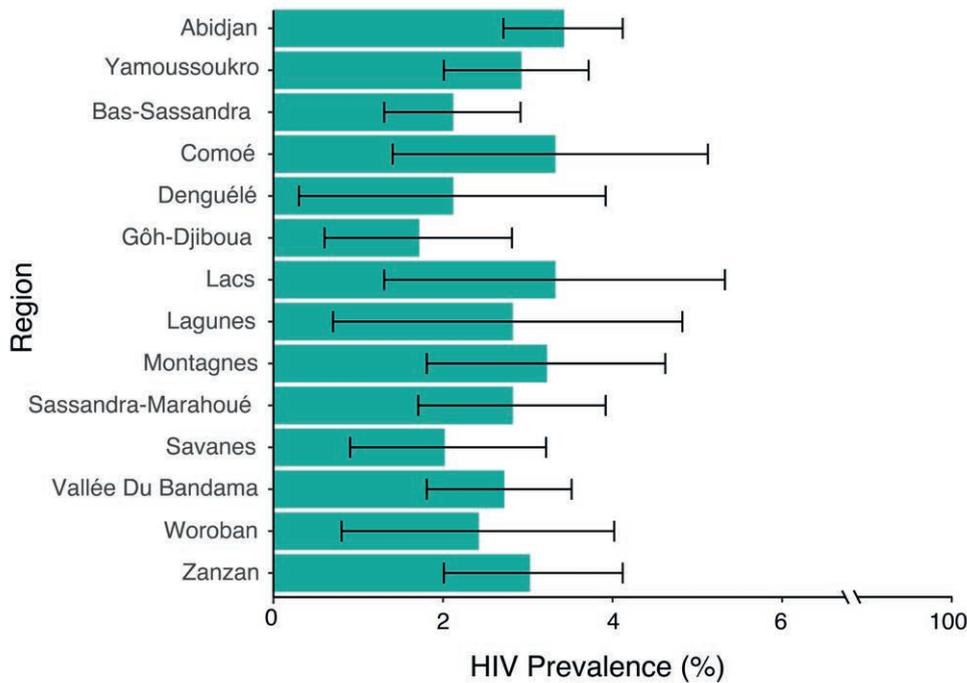
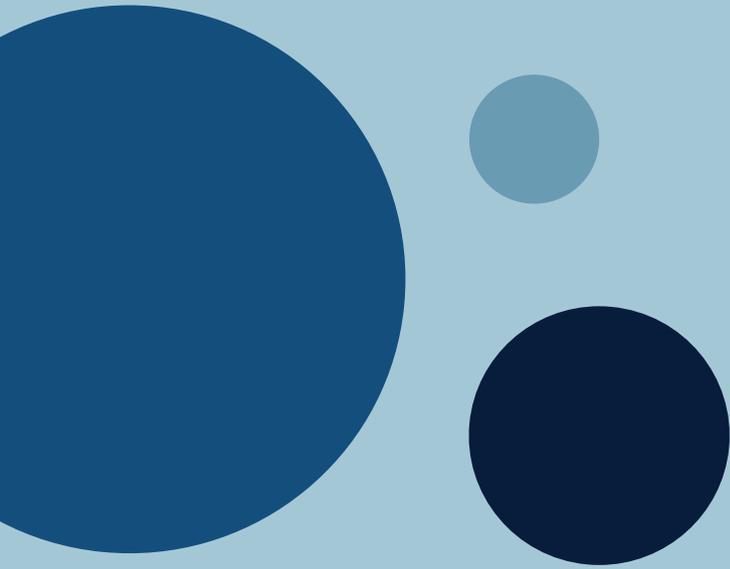


Figure 6.D
HIV prevalence among adults, by region, CIPHIA 2017-2018

6.4 GAPS AND UNMET NEEDS

- Despite a downward trend in national HIV prevalence, prevention efforts need to be increased in the population, especially among women and youth, and in urban areas.
- Actions to fight HIV should be developed specifically targeted to address regions with a high HIV prevalence, particularly those that have a prevalence around 3% (Abidjan, Lagunes, Comoé, Lacs, Zanzan, Montagnes, Yamoussoukro, Sassandra Marahoué and Vallée du Bandama).



7. HIV TESTING

7.1 KEY FINDINGS

- A little more than 4 out of 10 adults (those aged 15-64 years) (41.4%) reported that they had ever had an HIV test and received the result.
- According to self-report, 19.3% women had tested for HIV and received their results in the 12 months before the survey—almost twice the rate among men (10.2%).

7.2 BACKGROUND

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

This section reports data on adults, men, and women who reported ever receiving an HIV test and receiving the test results. HIV testing in the last 12 months and receipt of results are also presented to understand recent HIV testing.

7.3 RESULTS

Tables 7.A to 7.C and Figure 7.A present HIV test coverage rates among adults aged 15-64 years, by HIV status in CIPHIA and selected sociodemographic characteristics.

In general, coverage of HIV testing was higher among women.

Overall, 41.4% of adults (31.1% of men and 52.6% of women) reported that they had ever tested for HIV and received the result. HIV testing and receipt of results in the last 12 months was reported by 14.6% (10.2% among men and 19.3% among women) (Tables 7.A, 7.B, 7.C).

Among young people (those aged 15-24 years), 29.3% reported having tested and received the result (18.2% among older adolescent boys and young men and 40.5% among older adolescent girls and young women) and 11.5% reported having done so in the last 12 months (5.8% of older adolescent boys and young men and 17.2% of older adolescent girls and young women) (Tables 7.A, 7.B, 7.C). (Note: Breakdowns by 5-year age spans are presented in Figure 7.A.)

Among adults who tested HIV-positive in CIPHIA, 61.4% reported that they had ever tested for HIV and received a test result, (46.6% among HIV-positive men and 68.0% among HIV-positive women) (Tables 7.A, 7.B, 7.C). (Note: This may have been for a much earlier test result—awareness of HIV-positive status is presented in Chapter 8.)

In addition, the coverage rate of HIV testing varied from 31.6% in rural areas to 47.2% in urban areas. It varied by region from 21.6% in Woroba to 53.7% in the district of Abidjan (Table 7.C).

Finally, the percentage of adults who reported that they had ever tested for HIV and received the result was highest among those with some post-secondary education (69.0%) (Table 7.C).

Table 7.A Self-reported HIV testing: Men

Percentage of men aged 15-64 years who ever received HIV testing and their test results, and percentage who were tested and received their results in the 12 months before the survey, by result of PHIA HIV test and selected demographic characteristics, CIPHIA 2017-2018			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the previous 12 months and received results ¹	Number
Result of PHIA survey HIV test			
HIV positive	46.6	11.4	136
HIV negative	29.3	9.5	8,661
Not tested	46.8	17.1	606

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

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the previous 12 months and received results ¹	Number
Residence			
Urban	37.0	12.2	4,733
Rural	21.8	6.9	4,670
Region			
Abidjan	43.8	13.9	1,217
Yamoussoukro	37.7	12.1	619
Bas-Sassandra	24.0	8.7	1,353
Comoé	41.3	13.9	352
Denguélé	19.1	6.3	524
Gôh-Djiboua	26.4	8.8	493
Lacs	26.0	9.1	470
Lagunes	24.8	8.9	428
Montagnes	20.6	6.5	399
Sassandra-Marahoué	23.2	5.7	704
Savanes	26.3	9.4	500
Vallée du Bandama	35.8	13.4	1,236
Woroba	15.8	5.4	581
Zanzan	21.6	8.2	527
Marital status			
Never married	26.6	9.0	3,962
Married or living together	34.4	10.8	4,956
Divorced or separated	41.5	14.6	380
Widowed	37.1	14.2	66
Type of union			
In polygynous union†	32.3	11.0	771
Not in polygynous union	34.7	10.7	4,183
Not currently in union	28.0	9.5	4,408
Don't know/missing	(46.1)	(21.4)	41
Education			
No education	23.4	7.0	3,627
Primary	22.9	6.5	2,415
Secondary	36.4	13.2	2,737
More than secondary	65.2	21.7	611
Wealth quintile			
Lowest	50.9	17.6	1,276
Second	35.8	11.1	1,582
Middle	29.7	10.3	2,158
Fourth	20.2	6.0	2,366
Highest	15.5	4.6	2,021

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

Percentage of men aged 15-64 years who ever received HIV testing and their test results, and percentage who were tested and received their results in the 12 months before the survey, by result of PHIA HIV test and selected demographic characteristics, CIPHIA 2017-2018			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the previous 12 months and received results ¹	Number
Age			
15-19	10.9	4.3	1,567
20-24	25.7	7.5	1,298
25-29	37.9	13.3	1,305
30-34	41.1	13.2	1,283
35-39	41.8	13.3	1,127
40-44	34.0	10.9	890
45-49	38.4	15.7	665
50-54	29.9	8.4	538
55-59	27.2	8.3	410
60-64	32.0	6.5	320
Total 15-24	18.2	5.8	2,865
Total 15-49	31.4	10.5	8,135
Total 15-64	31.1	10.2	9,403

¹Relates to PEPFAR Indicator HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

Table 7.B Self-reported HIV testing: Women

Percentage of women aged 15-64 years who ever received HIV testing and their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of survey HIV test and selected demographic characteristics, CIPHIA 2017-2018			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the previous 12 months and received results ¹	Number
Result of PHIA survey HIV test			
HIV positive	68.0	30.0	295
HIV negative	49.9	17.5	8,270
Not tested	74.9	34.5	484
Residence			
Urban	57.9	22.0	4,942
Rural	43.1	14.5	4,107
Region			
Abidjan	63.7	24.7	1,368
Yamoussoukro	62.2	25.8	654
Bas-Sassandra	45.0	15.4	1,161
Comoé	63.2	23.1	405
Denguélé	30.9	9.9	470

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

Percentage of women aged 15-64 years who ever received HIV testing and their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of survey HIV test and selected demographic characteristics, CIPHIA 2017-2018			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the previous 12 months and received results ¹	Number
Gôh-Djiboua	52.3	17.1	487
Lacs	52.4	18.5	469
Lagunes	48.9	18.3	390
Montagnes	46.9	12.9	302
Sassandra-Marahoué	41.3	17.1	564
Savanes	41.1	13.5	456
Vallée du Bandama	51.8	19.9	1,332
Woroba	28.3	9.8	462
Zanzan	42.0	14.2	529
Marital status			
Never married	44.0	18.0	2,906
Married or living together	57.4	20.6	5,312
Divorced or separated	63.1	21.4	433
Widowed	42.2	10.5	366
Type of union			
In polygynous union†	43.4	15.1	1,343
Not in polygynous union	60.9	22.0	3,810
Not currently in union	46.2	17.7	3,705
Don't know/missing	70.5	25.2	191
Education			
No education	45.6	15.3	4,379
Primary	55.9	18.7	2,498
Secondary	57.9	24.6	1,842
More than secondary	76.8	35.6	315
Wealth quintile			
Lowest	66.0	26.8	1,644
Second	58.4	21.7	1,747
Middle	49.2	18.1	2,055
Fourth	41.6	14.1	2,151
Highest	37.6	10.2	1,452
Age			
15-19	23.0	9.5	1,701
20-24	57.5	24.7	1,546
25-29	67.9	26.1	1,414
30-34	68.6	25.9	1,241
35-39	66.6	21.7	1,016
40-44	53.8	14.6	694
45-49	45.8	12.8	505
50-54	37.0	9.8	460
55-59	40.3	13.6	287
60-64	31.2	12.0	185

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

Percentage of women aged 15-64 years who ever received HIV testing and their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of survey HIV test and selected demographic characteristics, CIPHA 2017-2018			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the previous 12 months and received results ¹	Number
Total 15-24	40.5	17.2	3,247
Total 15-49	54.5	20.3	8,117
Total 15-64	52.6	19.3	9,049

¹Relates to PEPFAR Indicator HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.
Weighted figures.
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.
† A polygynous union is a marriage between a man and more than one wife.

Table 7.C HIV testing: Total

Percentage of adults aged 15-64 years who ever received HIV testing and their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of PHIA survey HIV test and selected demographic characteristics, CIPHA 2017-2018			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the previous 12 months and received results ¹	Number
Result of PHIA survey HIV test			
HIV positive	61.4	24.2	431
HIV negative	39.1	13.3	16,931
Not tested	59.5	25.0	1,090
Residence			
Urban	47.2	17.0	9,675
Rural	31.6	10.4	8,777
Region			
Abidjan	53.7	19.3	2,585
Yamoussoukro	49.5	18.7	1,273
Bas-Sassandra	33.3	11.7	2,514
Comoé	52.7	18.7	757
Denguélé	25.0	8.1	994
Gôh-Djiboua	39.0	12.9	980
Lacs	39.0	13.7	939
Lagunes	36.1	13.3	818
Montagnes	32.1	9.3	701
Sassandra-Marahoué	31.2	10.8	1,268
Savanes	33.4	11.4	956
Vallée du Bandama	43.8	16.6	2,568
Woroba	21.6	7.5	1,043
Zanzan	31.6	11.1	1,056

Table 7.C HIV testing: Total (continued)

Percentage of adults aged 15-64 years who ever received HIV testing and their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of PHIA survey HIV test and selected demographic characteristics, CIPHIA 2017-2018			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the previous 12 months and received results ¹	Number
Marital status			
Never married	33.6	12.6	6,868
Married or living together	46.3	15.9	10,268
Divorced or separated	53.2	18.2	813
Widowed	41.5	11.0	432
Type of union			
In polygynous union†	39.4	13.6	2,114
Not in polygynous union	47.2	16.1	7,993
Not currently in union	35.9	13.1	8,113
Don't know/missing	65.9	24.5	232
Education			
No education	35.4	11.5	8,006
Primary	39.6	12.7	4,913
Secondary	44.8	17.7	4,579
More than secondary	69.0	26.3	926
Wealth quintile			
Lowest	58.8	22.5	2,920
Second	46.8	16.2	3,329
Middle	39.0	14.0	4,213
Fourth	30.2	9.8	4,517
Highest	24.6	6.9	3,473
Age			
15-19	16.8	6.8	3,268
20-24	41.8	16.2	2,844
25-29	53.0	19.8	2,719
30-34	54.2	19.3	2,524
35-39	52.8	17.0	2,143
40-44	42.7	12.5	1,584
45-49	41.8	14.4	1,170
50-54	33.2	9.1	998
55-59	33.2	10.8	697
60-64	31.7	8.9	505
Total 15-24	29.3	11.5	6,112
Total 15-49	42.5	15.2	16,252
Total 15-64	41.4	14.6	18,452

¹Relates to PEPFAR Indicator HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

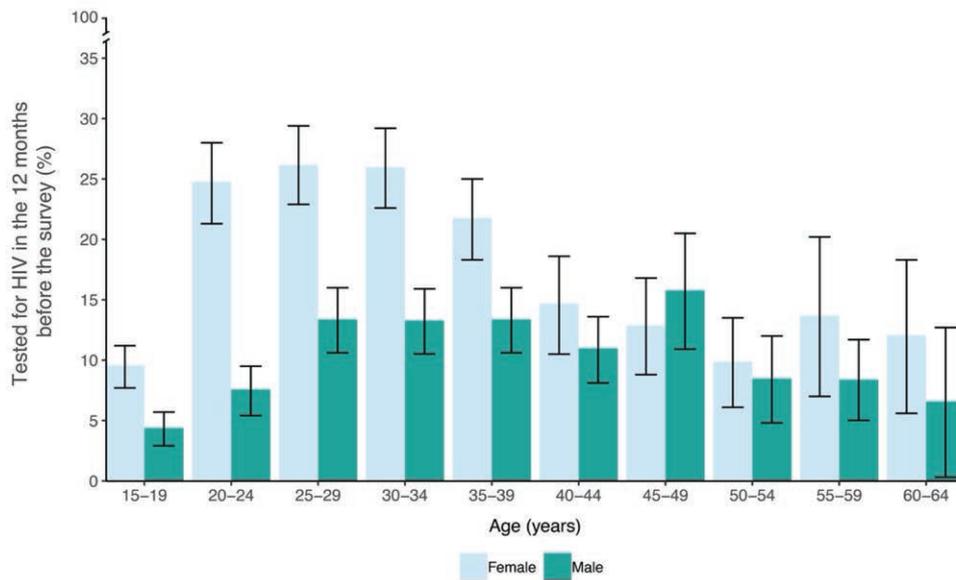
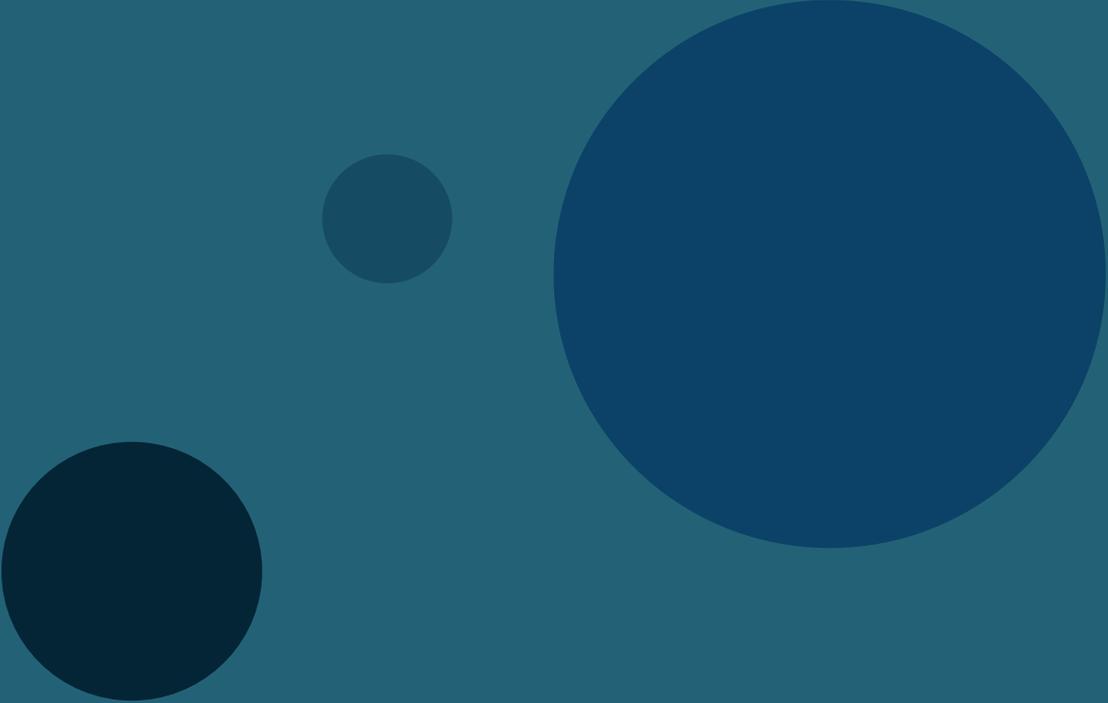


Figure 7.A
 Proportion of adults who reported having received an HIV test in the last 12 months, by age and sex, CIPHA

7.4 GAPS AND UNMET NEEDS

- **HIV testing strategies must be strengthened to particularly improve the coverage of testing in the community in order to reach adults who do not frequent health care facilities, and especially at places of employment to reach men.**



8. HIV DIAGNOSIS AND TREATMENT

8.1 KEY FINDINGS

- Overall, almost two-thirds (62.8%) of HIV-positive adults reported that they were not aware of their HIV-positive status (75.8% among men and 56.8% among women).
- Less than a third (32.8%) of HIV-positive adults reported that they were on antiretroviral therapy (ART): 17.1% among men and 40.0% among women.
- A significant majority (87.8%) of HIV-positive adults who reported that they were previously diagnosed with HIV were taking ART had ARVs detectable in their blood. Notably, 19.4% of those who said that they were not aware of their HIV-positive status before the survey also had detectable ARVs in their blood.

8.2 BACKGROUND

Recent studies have proven that treating people living with HIV at higher CD4 counts improves immune recovery, decreases the incidence of non-AIDS events and comorbidities and mortality, and reduces sexual and vertical transmission. In 2016, after an extensive review of the evidence of both the clinical and population-level benefits of expanding ART, the WHO changed their policy recommendation to “Treat 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 Côte d’Ivoire early 2017.

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

8.3 RESULTS

HIV diagnosis and self-reported treatment status in HIV-positive adults

Tables 8.A, 8.B, 8.C, and Figure 8.A describe the use of antiretroviral therapy in Côte d’Ivoire at the time of the CIPHIA survey. Among HIV-positive adults, 62.8% reported that they were unaware of their HIV-positive status at the time of the survey, ranging from 56.8% for women to 75.8% for men. Among HIV-positive young people, 87.8% reported that they were unaware of their HIV-status, although the estimate was based on a denominator between 25-49 and should be interpreted with caution.

By residential setting, 59.2% of those living in urban areas and 70.7% in rural areas reported that they were unaware of their HIV status.

By marital status, the proportion of adults who did not know their HIV-positive status peaked among the never-married (70.3%) and those who were married or living together (65.9%).

Among adults living with HIV, just under one-third (32.8%) of those with HIV-positive status reported current use of ART: 17.1% of men versus 40.0% of women. Overall, the proportions of people living with HIV who reported taking ART ranged from 27.6% in rural areas to 35.1% in urban areas.

Only 15.3% of HIV-positive people in the top wealth quintile reported that they were aware of their HIV-positive status and on ART.

Table 8.A HIV treatment status: Men

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART ¹		
Residence					
Urban	71.6	10.5	18.0	100.0	77
Rural	84.4	0.3	15.3	100.0	62
Region					
Abidjan	*	*	*	*	20
Yamoussoukro	*	*	*	*	11
Bas-Sassandra	*	*	*	*	16
Comoé	*	*	*	*	4
Denguélé	*	*	*	*	7

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

Characteristic	Aware of HIV status			Total	Number
	Unaware of HIV status	Not on ART	On ART ¹		
Gôh-Djiboua	*	*	*	*	6
Lacs	*	*	*	*	9
Lagunes	*	*	*	*	8
Montagnes	*	*	*	*	6
Sassandra-Marahoué	*	*	*	*	12
Savanes	*	*	*	*	5
Vallée du Bandama	*	*	*	*	15
Woroba	*	*	*	*	12
Zanzan	*	*	*	*	8
Marital status					
Never married	*	*	*	*	22
Married or living together	76.8	8.6	14.6	100.0	99
Divorced or separated	*	*	*	*	11
Widowed	*	*	*	*	7
Type of union					
In polygynous union†	*	*	*	*	15
Not in polygynous union	75.7	9.6	14.7	100.0	84
Not currently in union	(72.9)	(2.6)	(24.5)	(100.0)	40
Don't know/missing	*	*	*	*	0
Education					
No education	81.5	8.9	9.6	100.0	65
Primary	(73.5)	(11.9)	(14.6)	(100.0)	39
Secondary	(76.7)	(0.0)	(23.3)	(100.0)	30
More than secondary	*	*	*	*	5
Wealth quintile					
Lowest	*	*	*	*	18
Second	(84.5)	(10.5)	(5.0)	(100.0)	33
Middle	(50.6)	(5.5)	(43.9)	(100.0)	36
Fourth	(88.0)	(0.6)	(11.4)	(100.0)	29
Highest	*	*	*	*	23
Age					
15-19	*	*	*	*	6
20-24	*	*	*	*	5
25-29	*	*	*	*	4
30-34	*	*	*	*	17
35-39	*	*	*	*	22
40-44	*	*	*	*	23
45-49	*	*	*	*	20
50-54	*	*	*	*	9
55-59	*	*	*	*	18
60-64	*	*	*	*	15

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

Characteristic	Aware of HIV status			Total	Number
	Unaware of HIV status	Not on ART	On ART ¹		
Total 15-24	*	*	*	*	11
Total 15-49	79.6	9.0	11.4	100.0	97
Total 15-64	75.8	7.1	17.1	100.0	139

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

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

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.

† A polygynous union is a marriage between a man and more than one wife.

Table 8.B HIV treatment status: Women

Characteristic	Aware of HIV status			Total	Number
	Unaware of HIV status	Not on ART	On ART ¹		
Residence					
Urban	53.7	3.6	42.7	100.0	189
Rural	63.9	2.3	33.8	100.0	113
Region					
Abidjan	50.3	1.6	48.2	100.0	53
Yamoussoukro	*	*	*	*	22
Bas-Sassandra	(67.6)	(8.3)	(24.2)	(100.0)	35
Comoé	*	*	*	*	17
Denguélé	*	*	*	*	12
Gôh-Djiboua	*	*	*	*	8
Lacs	*	*	*	*	20
Lagunes	*	*	*	*	12
Montagnes	*	*	*	*	12
Sassandra-Marahoué	*	*	*	*	21
Savanes	*	*	*	*	14
Vallée du Bandama	(60.4)	(8.7)	(30.9)	(100.0)	44
Woroba	*	*	*	*	12
Zanzan	*	*	*	*	20
Marital status					
Never married	64.7	4.3	31.1	100.0	67
Married or living together	58.2	4.0	37.8	100.0	157
Divorced or separated	(53.7)	(0.0)	(46.3)	(100.0)	34
Widowed	(39.4)	(2.2)	(58.4)	(100.0)	43

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

Characteristic	Aware of HIV status			Total	Number
	Unaware of HIV status	Not on ART	On ART ¹		
Type of union					
In polygynous union†	(44.8)	(5.1)	(50.1)	(100.0)	36
Not in polygynous union	62.0	3.8	34.3	100.0	118
Not currently in union	54.5	2.5	43.0	100.0	144
Don't know/missing	*	*	*	*	4
Education					
No education	56.9	3.5	39.6	100.0	159
Primary	61.2	2.4	36.4	100.0	98
Secondary	(49.4)	(4.1)	(46.5)	(100.0)	40
More than secondary	*	*	*	*	5
Wealth quintile					
Lowest	45.8	4.5	49.7	100.0	59
Second	56.3	4.2	39.5	100.0	79
Middle	50.8	2.6	46.6	100.0	67
Fourth	72.7	1.1	26.1	100.0	65
Highest	(76.2)	(1.5)	(22.3)	(100.0)	32
Age					
15-19	*	*	*	*	10
20-24	*	*	*	*	17
25-29	(73.4)	(2.0)	(24.6)	(100.0)	38
30-34	(57.4)	(1.2)	(41.3)	(100.0)	43
35-39	45.4	9.6	45.1	100.0	59
40-44	(63.8)	(3.6)	(32.6)	(100.0)	40
45-49	(46.5)	(0.0)	(53.5)	(100.0)	30
50-54	(36.7)	(3.4)	(59.9)	(100.0)	29
55-59	*	*	*	*	24
60-64	*	*	*	*	12
Total 15-24	(86.6)	(1.3)	(12.0)	(100.0)	27
Total 15-49	60.6	3.5	35.9	100.0	237
Total 15-64	56.8	3.2	40.0	100.0	302

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

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

Table 8.C HIV treatment status: Total

Characteristic	Aware of HIV status			Total	Number
	Unaware of HIV status	Not on ART	On ART ¹		
Residence					
Urban	59.2	5.7	35.1	100.0	266
Rural	70.7	1.7	27.6	100.0	175
Region					
Abidjan	55.8	5.8	38.4	100.0	73
Yamoussoukro	(64.2)	(0.0)	(35.8)	(100.0)	33
Bas-Sassandra	63.3	7.2	29.5	100.0	51
Comoé	*	*	*	*	21
Denguélé	*	*	*	*	19
Gôh-Djiboua	*	*	*	*	14
Lacs	(68.7)	(0.0)	(31.3)	(100.0)	29
Lagunes	*	*	*	*	20
Montagnes	*	*	*	*	18
Sassandra-Marahoué	(66.1)	(0.0)	(33.9)	(100.0)	33
Savanes	*	*	*	*	19
Vallée du Bandama	52.6	11.0	36.4	100.0	59
Woroba	*	*	*	*	24
Zanzan	(73.1)	(6.6)	(20.3)	(100.0)	28
Marital status					
Never married	70.3	3.4	26.3	100.0	89
Married or living together	65.9	5.9	28.2	100.0	256
Divorced or separated	(53.5)	(0.0)	(46.5)	(100.0)	45
Widowed	41.6	3.7	54.6	100.0	50
Type of union					
In polygynous union†	55.0	3.8	41.2	100.0	51
Not in polygynous union	68.2	6.4	25.4	100.0	202
Not currently in union	58.0	2.5	39.5	100.0	184
Don't know/missing	*	*	*	*	4
Education					
No education	64.2	5.1	30.8	100.0	224
Primary	64.5	4.9	30.6	100.0	137
Secondary	60.3	2.5	37.2	100.0	70
More than secondary	*	*	*	*	10
Wealth quintile					
Lowest	50.0	6.5	43.5	100.0	77
Second	66.6	6.5	26.9	100.0	112
Middle	50.8	3.4	45.8	100.0	103
Fourth	78.0	1.0	21.0	100.0	94
Highest	83.7	1.0	15.3	100.0	55

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

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

Characteristic	Aware of HIV status			Total	Number
	Unaware of HIV status	Not on ART	On ART ¹		
Age					
15-19	*	*	*	*	16
20-24	*	*	*	*	22
25-29	(74.8)	(1.9)	(23.3)	(100.0)	42
30-34	63.8	11.9	24.3	100.0	60
35-39	54.4	7.4	38.2	100.0	81
40-44	71.2	3.1	25.7	100.0	63
45-49	57.8	1.9	40.4	100.0	50
50-54	(39.1)	(3.2)	(57.6)	(100.0)	38
55-59	(50.7)	(2.0)	(47.4)	(100.0)	42
60-64	(67.1)	(0.0)	(32.9)	(100.0)	27
Total 15-24	(87.8)	(1.0)	(11.2)	(100.0)	38
Total 15-49	66.3	5.2	28.5	100.0	334
Total 15-64	62.8	4.4	32.8	100.0	441

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

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

Weighted figures.

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.

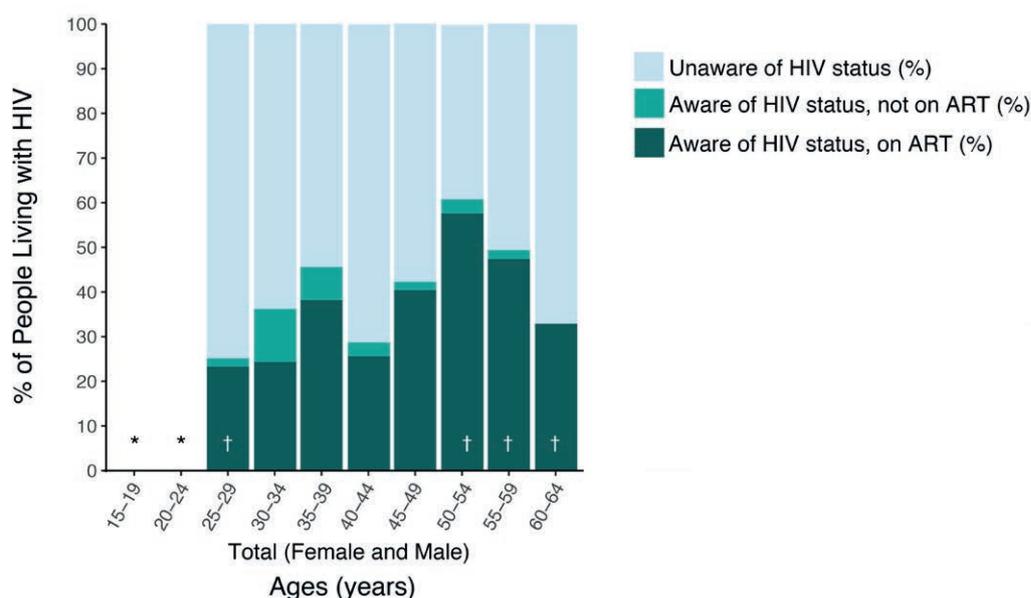
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

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

† A polygynous union is a marriage between a man and more than one wife.

Figure 8.A

Proportion of HIV-positive adults reporting awareness of HIV status and antiretroviral therapy status, by age and sex, CIPHIA 2017-2018



*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 marked by a dagger and should be interpreted with caution.

Concordance of self-reported treatment status versus detection of antiretrovirals in blood

Tables 8.D, 8.E, and 8.F describe whether the reported treatment status matched what could be inferred by the presence of ARVs in the subject's blood.

Among adults who reported that were living with HIV and taking ART, 87.8% had detectable ARVs in their blood (81% among men and 89.2% among women).

Conversely, 19.4% of the HIV-positive adults who reported that they had not tested positive for HIV prior to the survey, nonetheless, had ARVs detectable in their blood (21.4% among men and 18.2% among women).

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

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	78.6	21.4	100.0	99
Previously diagnosed, not on ART	*	*	100.0	7
Previously diagnosed, on ART	(19.0)	(81.0)	(100.0)	33
Total 15-24	*	*	*	11
Total 15-49	71.3	28.7	100.0	97
Total 15-64	68.9	31.1	100.0	139

¹ARV detection assay included only atazanavir, dolutegravir, efavirenz, and lopinavir.
Weighted figures.
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.E Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Women

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	81.8	18.2	100.0	183
Previously diagnosed, not on ART	*	*	*	13
Previously diagnosed, on ART	10.8	89.2	100.0	105
Total 15-24	(70.0)	(30.0)	(100.0)	27
Total 15-49	57.5	42.5	100.0	240
Total 15-64	53.0	47.0	100.0	304

¹ARV detection assay included only atazanavir, dolutegravir, efavirenz, and lopinavir.
Weighted figures.
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.F Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Total

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	80.6	19.4	100.0	282
Previously diagnosed, not on ART	*	*	*	20
Previously diagnosed, on ART	12.2	87.8	100.0	138
Total 15-24	(67.6)	(32.4)	(100.0)	38
Total 15-49	61.6	38.4	100.0	337
Total 15-64	58.0	42.0	100.0	443

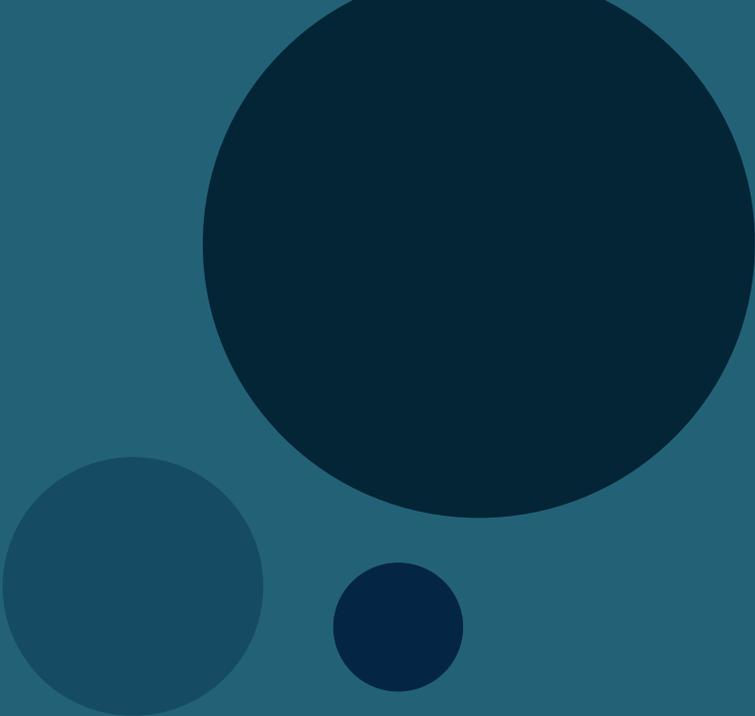
¹ARV detection assay included only atazanavir, dolutegravir, efavirenz, and lopinavir.
Weighted figures.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (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.

8.4 GAPS AND UNMET NEEDS

- **The proportion of HIV-positive persons who reported that they did not know their status was very high, particularly among young people (although this observation was based on a small denominator). To address these gaps, interventions should be tailored to meet the needs of men and women and across the various age groups.**
- **The proportion of HIV-positive people who reported current use of ART was low, particularly in certain regions in the country. Interventions should strengthen linkage and rapid initiation of ART using strategies that account for cultural and social factors specific to the country's regions.**
- **There was a marked discrepancy between self-reported ART status and the presence of detectable ARVs. As fear of disclosure is commonly associated with HIV stigma, special attention should be given to develop effective programs and interventions to reduce HIV stigma and discrimination.**

8.5 REFERENCES

1. World Health Organization. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Geneva: World Health Organization; 2016. <https://www.who.int/hiv/pub/arv/arv-2016/en/>. Accessed May 6, 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 May 6, 2019.



9. VIRAL LOAD SUPPRESSION

9.1 KEY FINDINGS

- The national prevalence of viral load suppression (VLS) (defined as an HIV ribonucleic acid [RNA] less than 1,000 copies/milliliter [mL]) was 40.2% among all the adults living with HIV in Côte d'Ivoire (27.7% among men and 45.9% among women).
- The prevalence of VLS among people living with HIV was 38.3% in urban areas and 44.4% in rural areas.
- The national prevalence of VLS among adults who reported that they were taking ART was 75.9% (65.2% among men, 77.9% among women) (Note: The estimate among men is based upon a denominator between 25-49 and should be interpreted with caution.)

9.2 BACKGROUND

Viral load suppression (VLS) is a key indicator of treatment success in HIV-positive individuals. For CIPHIA, VLS was defined as a VL of 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.

9.3 RESULTS

The following tables and figures present VLS data among HIV-positive individuals in Côte d'Ivoire at the time of the CIPHIA survey.

VLS by sociodemographic characteristics

The prevalence of VLS among HIV-positive adults (those aged 15-64 years) was 40.2%, and was significantly lower among men at 27.7% (95% CI: 19.0%-36.5%) than among women, at 45.9% (95% CI: 37.2%-54.5%). Three out of four people (75.9%) who reported they had previously been tested for HIV and were on ART had suppressed viral loads (65.2% for men and 77.9% for women). Approximately one-fifth (23.1%) of those who reported that they had not been previously diagnosed with HIV before the survey had suppressed viral loads (Table 9.A).

By marital status, the prevalence of VLS was lowest among married or living together (33.9%). VLS prevalence was 44.4% in rural areas and 38.3% in urban areas (Table 9.A).

Table 9.A Viral load suppression by demographic characteristics

Characteristic	Male		Female		Total	
	Percentage VLS ¹	Number	Percentage VLS ¹	Number	Percentage VLS ¹	Number
Self-reported diagnosis and treatment status						
Not previously diagnosed	21.1	99	24.3	183	23.1	282
Previously diagnosed, not on ART	*	7	*	13	*	20
Previously diagnosed, on ART	(65.2)	33	77.9	105	75.9	138
Missing	*	0	*	3	*	3
Residence						
Urban	22.6	77	45.2	191	38.3	268
Rural	38.2	62	47.5	113	44.4	175
Region						
Abidjan	*	20	46.3	54	39.8	74
Yamoussoukro	*	11	*	22	(53.6)	33
Bas-Sassandra	*	16	(39.1)	35	44.7	51
Comoé	*	4	*	17	*	21
Denguélé	*	7	*	12	*	19
Gôh-Djiboua	*	6	*	8	*	14
Lacs	*	9	*	20	(54.6)	29
Lagunes	*	8	*	12	*	20
Montagnes	*	6	*	12	*	18
Sassandra-Marahoué	*	12	*	21	(37.3)	33
Savanes	*	5	*	14	*	19

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

Characteristic	Male		Female		Total	
	Percentage VLS ¹	Number	Percentage VLS ¹	Number	Percentage VLS ¹	Number
Vallée du Bandama	*	15	(53.3)	44	49.9	59
Woroba	*	12	*	12	*	24
Zanzan	*	8	*	21	(51.4)	29
Marital status						
Never married	*	22	43.1	67	39.2	89
Married or living together	25.1	99	40.0	159	33.9	258
Divorced or separated	*	11	(47.0)	34	(52.6)	45
Widowed	*	7	(72.7)	43	63.2	50
Type of union						
In polygynous union†	*	15	(38.1)	36	38.6	51
Not in polygynous union	23.4	84	39.6	119	32.3	203
Not currently in union	(35.4)	40	52.6	144	49.3	184
Don't know/missing	*	0	*	5	*	5
Education						
No education	27.1	65	47.8	161	41.8	226
Primary	(26.5)	39	36.2	98	33.6	137
Secondary	(22.0)	30	(56.6)	40	42.7	70
More than secondary	*	5	*	5	*	10
Wealth quintile						
Lowest	*	18	53.1	61	44.8	79
Second	(26.0)	33	42.3	79	36.3	112
Middle	(40.8)	36	54.6	67	50.7	103
Fourth	(18.9)	29	42.7	65	34.5	94
Highest	*	23	(19.9)	32	27.5	55
Total 15-24	*	11	(21.9)	27	(19.6)	38
Total 15-49	20.1	97	38.4	240	33.0	337
Total 15-64	27.7	139	45.9	304	40.2	443

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

²HIV positive refers to persons testing positive for HIV-1.

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

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 (HIV ribonucleic acid [RNA] < 1,000 copies/mL), by sex and age, CIPHIA 2017-2018

Age	Male		Female		Total	
	Percentage VLS ¹	Number	Percentage VLS ¹	Number	Percentage VLS ¹	Number
0-4	*	4	*	5	*	9
5-9	*	5	*	2	*	7
10-14	*	1	*	6	*	7
15-19	*	6	*	10	*	16
20-24	*	5	*	17	*	22
25-29	*	4	(28.5)	38	(26.9)	42
30-34	*	17	(32.1)	43	20.2	60
35-39	*	22	49.2	61	40.7	83
40-44	*	23	(38.3)	41	37.9	64
45-49	*	20	(53.3)	30	45.1	50
50-54	*	9	(81.1)	29	(75.8)	38
55-59	*	18	*	23	(64.8)	41
60-64	*	15	*	12	(51.9)	27
Total 15-24	*	11	(21.9)	27	(19.6)	38
Total 15-49	20.1	97	38.4	240	33.0	337
Total 15-64	27.7	139	45.9	304	40.2	443

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

Weighted figures.

*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, CIPHIA 2017-2018

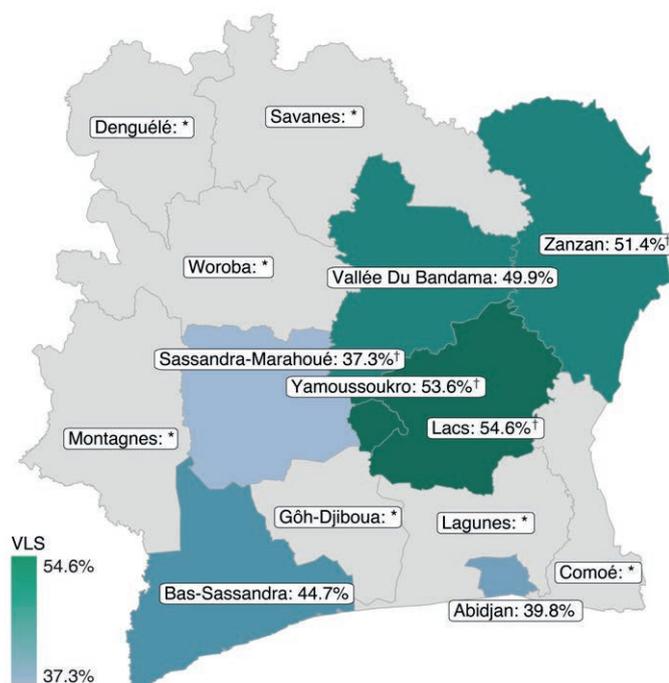
Age	Male		Female		Total	
	Percentage VLS ¹	Number	Percentage VLS ¹	Number	Percentage VLS ¹	Number
0-14	*	10	*	13	*	23
15-24	*	11	(21.9)	27	(19.6)	38
25-34	*	21	30.1	81	22.9	102
35-44	(28.6)	45	44.1	102	39.3	147
45-54	(35.6)	29	66.5	59	58.0	88
55-64	(49.3)	33	(68.3)	35	59.5	68

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

Weighted figures.

*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**

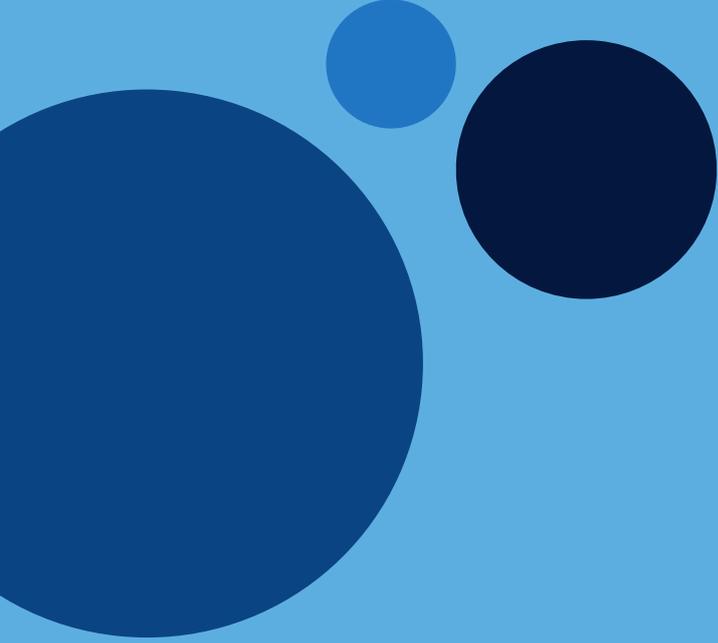
Viral load suppression (<1,000 copies/mL) among HIV-positive adults by Region, CIPHIA 2017-2018

*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 marked by a dagger and should be interpreted with caution.

9.4 GAPS AND UNMET NEEDS

- In addition to the low overall prevalence of VLS, the observed gap in VLS between HIV-positive men and women suggests there may be gender-related obstacles to diagnosis, ART initiation and adherence to treatment. Concerted efforts to strengthen testing services and adherence to ART, particularly among men, could improve VLS and address the imbalance between the responses in men and women.
- Young people living with HIV were lagging with regard to VLS. Research to better understand the root causes of this gap could guide the development of differentiated services that better respond to the needs of young people.
- Adults in urban areas and rural areas both had a low proportion of VLS (below 50%). Lifestyle and types of occupations in each setting may affect diagnosis, treatment, and adherence to ART. Research into differentiated care models suited to urban and rural factors and lifestyles may help improve virologic outcomes in each setting.



10. UNAIDS 90-90-90 TARGETS

10.1 KEY FINDINGS

- Based on self-reported and ARV detection data, 49.8% of adults knew their HIV status (40.4% among men, 54.0% among women); 92.0% of those who knew their HIV-positive status were on ART (85.0% among men and 94.4% among women); and 73.7% of those on ART had achieved VLS (62.8% among men and 76.9% among women).

10.2 BACKGROUND

In order to achieve HIV epidemic control, UNAIDS has set ambitious targets referred to as the 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 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 presented estimates of VLS among all HIV-positive individuals irrespective of knowledge of status or ART use. This chapter presents the status of the 90-90-90 indicators, which indicate program performance. Awareness of HIV-positive status and treatment status among those aware of their HIV-positive status are indicators of access to services. VLS among those who know their HIV status and on treatment not only provides an indication of access to and retention in care but also, when compared to VLS among all HIV-positive individuals, provides a measure of program success. VLS among all HIV-positive individuals on treatment of 73% (90 x 90 x 90) or higher 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 ARV status. Individuals were defined as ‘aware’ of their HIV-positive status if they reported knowing they were HIV-positive before testing as part of the CIPHIA survey. Individuals were defined as ‘on-treatment’ if they reported 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 such that individuals in whom ARVs were detected were classified as ‘aware’ and ‘on-treatment’ even if they did not report it. Individuals were classified as ‘aware’ of their HIV-positive status if they reported HIV-positive status and/or had detectable ARVs in their blood. Individuals were classified as ‘on-treatment’ if they reported that they were taking ART and/or had detectable ARVs in their blood. The prevalence of VLS is reported for all of those classified as on treatment.

Finally, Table 10.C, which is also based upon self-report and ARV-biomarker data—and shows the same percentage of adults who were aware of their HIV-positive status—also provides estimates of the prevalence of receiving treatment, but among *all* the adults living with HIV in the country. Finally, it reports the prevalence among all adults living with HIV in Côte d’Ivoire of achieving VLS after benefitting from HIV diagnosis and the receipt of ART.

It is important to note that in each cascade, individuals who had VLS, but were not aware of their HIV-positive status or were not on ARVs, were excluded from the numerator for the third 90 (VLS among those who are aware and on ARVs). It is for this reason that the prevalence of VLS in the overall 90-90-90 (in Table 10.C) is sometimes slightly lower than the reported VLS prevalence in the preceding chapter (which may also have included data from some individuals who had a low viral load measurement at the time of the survey but were not yet diagnosed and on treatment). Thus, the overall 90-90-90 VLS estimates may better reflect what percentage of the adult population living with HIV have been reached and are benefiting from the national HIV program.

10.3 RESULTS

Tables 10.A and 10.B, and Figure 10.A describe the progress made in achieving the 90-90-90 targets for adults at the time of the CIPHIA survey.

Based on the self-reported data, 37.2% of HIV-positive adults knew their HIV status prior to the survey (24.2% among men, 43.2% among women); 88.1% of those who reported that were aware of their status reported that they were also on ART (70.7% among men and 92.6% among women), and among those who reported current use of ART, 75.9% had achieved VLS (65.2% among men and 77.9% among women [Note: The estimate among men was based on a denominator between 25-49 and should be interpreted with caution]) (Table 10.A).

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

90-90-90 targets among adults living with HIV aged 15-64 years, by sex and age, CIPHIA 2017-2018						
Age	Male		Female		Total	
	Diagnosed					
	Percentage self-reported HIV positive	Number	Percentage self-reported HIV positive	Number	Percentage self-reported HIV positive	Number
15-24	*	11	(13.4)	27	(12.2)	38
25-34	*	21	34.0	81	31.7	102
35-49	19.1	65	47.6	129	38.4	194
15-49	20.4	97	39.4	237	33.7	334
50-64	(35.2)	42	57.0	65	49.3	107
15-64	24.2	139	43.2	302	37.2	441
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	*	4	*	5
25-34	*	4	(95.2)	30	(75.3)	34
35-49	*	20	89.4	53	88.6	73
15-49	(55.8)	25	91.1	87	84.6	112
50-64	*	15	(96.3)	31	(96.1)	46
15-64	(70.7)	40	92.6	118	88.1	158
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	*	3	*	4
25-34	*	2	(61.7)	28	(62.9)	30
35-49	*	17	(74.2)	46	69.0	63
15-49	*	20	71.4	77	68.6	97
50-64	*	13	(93.7)	28	(90.7)	41
15-64	(65.2)	33	77.9	105	75.9	138

Weighted figures.

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

Based on the self-reported and ARV detection data among HIV-positive adults aged 15-64 years: 49.8% were aware their HIV status prior to the survey (40.4% among men, 54.0% among women); 92.0% of those who had been diagnosed were also on ART (85.0% among men and 94.4% among women); and 73.7% of those on treatment had achieved VLS (62.8% for men and 76.9% for women) (Table 10.B). This demonstrates that once adults living with HIV become aware of their status, the national program reaches the targets for treatment and VLS. In Figure 10.A, the conditional percentages shown on the bars reflect the data shown in Table 10.B.

However, the heights of the bars in Figure 10.A are drawn from Table 10.C, the overall 90-90-90 analysis. This shows that when taking into consideration the adults not yet aware of their HIV-positive status, only 45.8% among all the adults living with HIV in the country were receiving ART (34.3% of all HIV-positive men and 51.0% of all HIV-positive women). Finally, among all the adults living with HIV in the country, only 33.7% had achieved VLS on treatment (21.6% of all HIV-positive men and 39.2% of all HIV-positive women).

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

90-90-90 targets among people living with HIV ¹ aged 15-64 years, by sex and age, CIPHA 2017-2018						
Age	Male		Female		Total	
	Diagnosed					
	Percentage who reported as HIV positive or with a detectable ARV ²	Number	Percentage who reported as HIV positive or with a detectable ARV ²	Number	Percentage who self-reported HIV positive AND/OR with a detectable ARV ²	Number
15-24	*	11	(31.3)	27	(33.5)	38
25-34	*	21	47.5	81	45.2	102
35-49	38.7	65	57.1	132	51.3	197
15-49	39.0	97	51.3	240	47.6	337
50-64	(44.4)	42	64.4	65	57.3	107
15-64	40.4	139	54.0	305	49.8	444
On Treatment Among Those Diagnosed						
Age	Percentage with a detectable ARV or self-reported current ARV usage ³	Number	Percentage with detectable ARVs or self-reported current ARV usage ³	Number	Percentage with detectable ARVs or self-reported current ARV usage ³	Number
15-24	*	3	*	8	*	11
25-34	*	7	(96.6)	42	(82.7)	49
35-49	(98.0)	31	91.9	73	93.3	104
15-49	(80.4)	41	93.6	123	90.3	164
50-64	*	21	(96.7)	39	96.7	60
15-64	85.0	62	94.4	162	92.0	224
Viral Load Suppression (VLS) Among Those on Treatment						
Age	Percentage with VLS ⁴	Number	Percentage with VLS ⁴	Number	Percentage with VLS ⁴	Number
15-24	*	3	*	7	*	10
25-34	*	5	(59.8)	40	(55.0)	45
35-49	(65.2)	30	76.6	67	73.8	97
15-49	(53.7)	38	70.8	114	67.1	152
50-64	*	19	(94.4)	36	91.1	55
15-64	62.8	57	76.9	150	73.7	207

¹Persons testing positive for HIV-1.

²Relates to Global AIDS Monitoring Indicator (GAM) 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);

³Relates to GAM 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy;

⁴Relates to GAM 1.4: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

Weighted figures.

*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; overall percentages)

90-90-90 targets among all people living with HIV ¹ aged 15-64 years, by sex and age, CIPHIA 2017-2018						
Age	Male		Female		Total	
	Diagnosed					
	Percentage who reported as HIV positive or with a detectable ARV ²	Number	Percentage who reported as HIV positive or with a detectable ARV ²	Number	Percentage who reported as HIV positive with a detectable ARV ²	Number
15-24	*	11	(31.3)	27	(33.5)	38
25-34	*	21	47.5	81	45.2	102
35-49	38.7	65	57.1	132	51.3	197
15-49	39.0	97	51.3	240	47.6	337
50-64	(44.4)	42	64.4	65	57.3	107
15-64	40.4	139	54.0	305	49.8	444
On Treatment						
Age	Percentage with a detectable ARV or self-reported current ARV usage ³	Number	Percentage with a detectable ARV or self-reported current ARV usage ³	Number	Percentage with a detectable ARV or self-reported current ARV usage ³	Number
15-24	*	11	(30.0)	27	(32.4)	38
25-34	*	21	45.9	81	37.4	102
35-49	37.9	65	52.5	132	47.9	197
15-49	31.4	97	48.0	240	43.0	337
50-64	(42.8)	42	62.2	65	55.4	107
15-64	34.3	139	51.0	305	45.8	444
On Treatment with Viral Load Suppression (VLS)						
Age	Percentage with VLS ⁴	Number	Percentage with VLS ⁴	Number	Percentage with VLS ⁴	Number
15-24	*	11	(20.6)	27	(17.6)	38
25-34	*	21	27.5	81	20.6	102
35-49	24.7	65	40.2	132	35.3	197
15-49	16.8	97	34.0	240	28.8	337
50-64	(35.2)	42	58.8	65	50.4	107
15-64	21.6	139	39.2	305	33.7	444

¹Persons testing positive for HIV-1.

²Relates to Global AIDS Monitoring Indicator (GAM) 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);

³Relates to GAM 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy;

⁴Relates to GAM 1.4: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

Weighted figures.

*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.

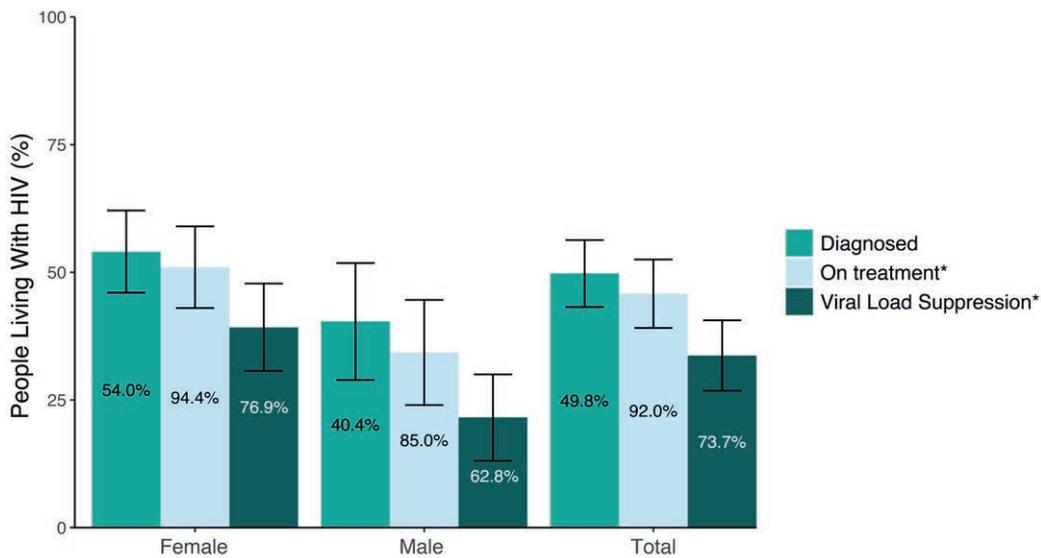


Figure 10.A
Adult 90-90-90 (adjusted for laboratory antiretroviral data among adults aged 15-64 years), CIPHIA 2017-2018

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 CIPHIA or had detectable ARVs in their blood. Participants are classified as 'on treatment' if they reported that they were on treatment or if they had detectable ARVs in their blood.

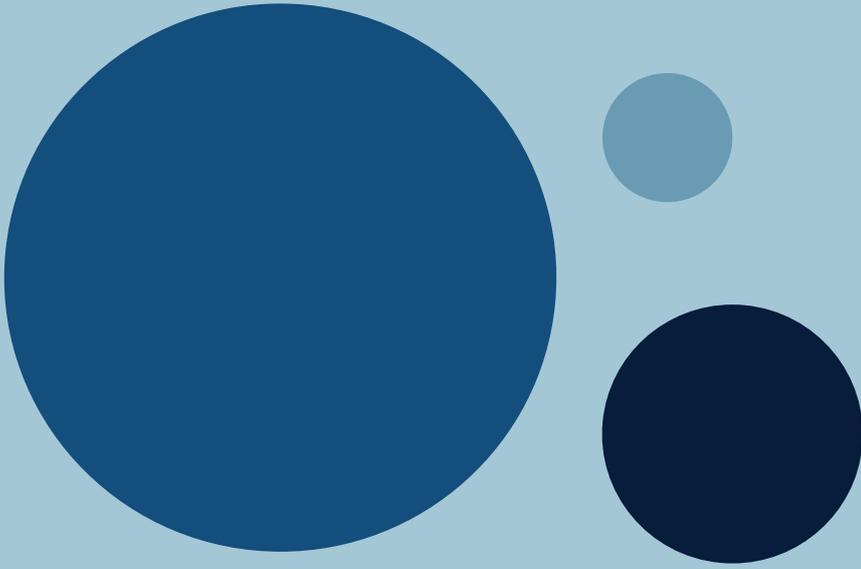
*Inset numbers are conditional proportions.

10.4 GAPS AND UNMET NEEDS

- **The greatest gap in reaching the 90-90-90 targets remains testing—which is the key cause for the shortfall reaching the targets for treatment and VLS among the overall population of people living with HIV in Côte d'Ivoire. Efforts should be undertaken to better reach at-risk populations in places with a high HIV prevalence to increase the coverage of HIV testing. Thus, strengthening testing strategies for women over 35 years of age and for men—as well as increasing the supply of testing in the community and at the workplace—may be beneficial.**
- **Concerted efforts are needed to strengthen linkage to ART services, including community-based strategies including task-shifting to ensure effective linkages to care (such as peer-accompanied referrals) and peer-based support for ART adherence.**
- **Improved differentiated service models need to be implemented across the entire continuum of care to better address the observed disparities.**

10.5 REFERENCES

1. Joint United Nations Programme on HIV/AIDS (UNAIDS). 90-90-90: An ambitious treatment target to help end the AIDS epidemic. Geneva: UNAIDS; 2014.
http://www.unaids.org/sites/default/files/media_asset/90-90-90_en_0.pdf. Accessed May 6, 2019.



11. CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV

11.1 KEY FINDINGS

- Among HIV-positive adults, 46.8% were immunosuppressed (having a CD4 count of less than 500 cells per microliter [μL]) with a median CD4 count of 535 cells/ μL .
- Among adults living with HIV who reported that they were HIV negative and had no detectable ARVs in their blood, nearly one-quarter (24.2%) had a CD4 count below 350 cells/ μL , while 7.4% were severely immunosuppressed, with a CD4 count of less than 200 cells/ μL .
- Self-reported retention on ART: Among adults living with HIV who reported that they had started ART within the 12 months before the survey, 90.7% said that they were still on ART at the time of the study, compared to 92.1% among those who reported that they had commenced ART more than 12 months before the survey.

11.2 BACKGROUND

As countries implement treatment for all people living with HIV, ensuring a sustainable health system that is people-centered and innovative requires diligent monitoring and responsiveness.¹ 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.

CIPHIA provided a unique opportunity to gauge progress in the expansion of HIV clinical services in Côte d'Ivoire, as well as identify gaps and future challenges.

CIPHIA estimated the prevalence of transmitted resistance to ARVs using samples from HIV-positive participants who were identified as recent HIV infections using the Recent Infection Testing Algorithm.

11.3 RESULTS

Median CD4 count and prevalence of immunosuppression

Among HIV-positive adults (those aged 15-64 years), 46.8% were immunosuppressed (CD4 count <500 cells/ μ L), and the median CD4 count was 535 cells/ μ L. In HIV-positive men, just over half (51.7%) were immunosuppressed (CD4 count <500 cells/ μ L), and the median CD4 count was 492 cells/ μ L. Among the HIV-positive women, 44.5% had CD4 counts below 500 cells/ μ L, and the median was 573 cells/ μ L (Table 11.A, Figure 11.A).

Among HIV-positive adults, 49.5% living in urban areas, and 40.8% living in rural areas were immunosuppressed (CD4 count <500 cells/ μ L) with CD4 medians of 504 cells/ μ L and 582 cells/ μ L, respectively (Table 11.A).

Table 11.A Median CD4 count and prevalence of immunosuppression

Characteristic	Male			Female			Total		
	Median (Q1, Q3)	Percentage < 500 cells/ μ L	Number	Median (Q1, Q3)	Percentage < 500 cells/ μ L	Number	Median (Q1, Q3)	Percentage < 500 cells/ μ L	Number
Self-reported diagnosis and treatment status									
Not previously diagnosed	493 (357, 807)	51.2	97	540 (350, 796)	44.9	180	524 (356, 803)	47.3	277
Previously diagnosed, not on ART	*	*	6	*	*	13	*	*	19
Previously diagnosed, on ART	369 (233, 616)	(54.5)	33	595 (363, 847)	42.6	104	579 (328, 818)	44.5	137
Missing	*	*	0	*	*	3	*	*	3
Residence									
Urban	452 (335, 617)	56.3	76	541 (338, 813)	46.5	187	504 (337, 762)	49.5	263
Rural	554 (386, 871)	42.5	60	600 (408, 873)	40.0	113	582 (406, 874)	40.8	173
Region									
Abidjan	*	*	20	428 (324, 779)	53.9	54	435 (329, 681)	55.0	74
Yamoussoukro	*	*	11	*	*	22	591 (338, 859)	(38.5)	33
Bas-Sassandra	*	*	15	607 (443, 874)	(31.1)	34	566 (405, 741)	(38.9)	49

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

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
Comoé	*	*	4	*	*	17	*	*	21
Denguélé	*	*	7	*	*	12	*	*	19
Gôh-Djiboua	*	*	6	*	*	8	*	*	14
Lacs	*	*	9	*	*	20	601 (459, 937)	(32.7)	29
Lagunes	*	*	8	*	*	12	*	*	20
Montagnes	*	*	6	*	*	12	*	*	18
Sassandra-Marahoué	*	*	12	*	*	21	642 (484, 814)	(26.5)	33
Savanes	*	*	5	*	*	13	*	*	18
Vallée du Bandama	*	*	13	608 (380, 782)	(40.4)	42	606 (373, 828)	41.8	55
Woroba	*	*	12	*	*	12	*	*	24
Zanzan	*	*	8	*	*	21	523 (394, 610)	(46.1)	29
Marital status									
Never married	*	*	21	516 (349, 707)	47.6	67	527 (351, 719)	45.1	88
Married or living together	511 (357, 727)	48.6	97	588 (341, 832)	43.5	156	552 (356, 814)	45.6	253
Divorced or separated	*	*	11	450 (361, 911)	(53.5)	34	419 (288, 754)	(61.6)	45
Widowed	*	*	7	608 (384, 760)	(37.7)	42	575 (339, 759)	(42.8)	49
Type of union									
In polygynous union†	*	*	15	421 (332, 775)	(58.1)	36	420 (334, 703)	63.1	51
Not in polygynous union	526 (357, 771)	45.2	82	605 (371, 831)	39.5	116	567 (364, 819)	42.1	198
Not currently in union	406 (234, 619)	(60.8)	39	538 (356, 764)	46.4	143	505 (347, 754)	49.1	182
Don't know/missing	*	*	0	*	*	5	*	*	5
Education									
No education	430 (337, 603)	58.7	64	579 (354, 812)	43.1	160	523 (346, 766)	47.6	224
Primary	465 (357, 554)	(57.9)	38	606 (344, 811)	38.0	97	540 (348, 775)	43.3	135
Secondary	723 (372, 964)	(29.2)	29	424 (325, 849)	(62.1)	39	509 (357, 873)	48.6	68
More than secondary	*	*	5	*	*	4	*	*	9
Wealth quintile									
Lowest	*	*	18	546 (338, 855)	43.0	59	465 (325, 815)	52.2	77
Second	506 (380, 806)	(45.5)	32	474 (318, 678)	53.0	80	485 (337, 682)	50.3	112
Middle	615 (365, 854)	(34.4)	35	605 (385, 825)	38.8	66	612 (385, 863)	37.5	101
Fourth	499 (358, 697)	(49.6)	29	623 (379, 845)	41.0	64	554 (379, 812)	44.0	93
Highest	*	*	22	558 (406, 803)	(44.8)	31	578 (406, 801)	45.0	53
Age									
15-19	*	*	5	*	*	10	*	*	15
20-24	*	*	5	*	*	15	*	*	20
25-29	*	*	4	533 (362, 907)	(42.3)	38	544 (367, 907)	(40.6)	42
30-34	*	*	16	649 (425, 861)	(36.9)	43	621 (400, 912)	39.2	59
35-39	*	*	22	634 (335, 849)	40.3	61	596 (335, 841)	45.1	83

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

Among HIV-positive persons aged 15-64 years, median (Q1, Q3) CD4 count and percentage with suppression (< 500 cells/μL), by sex, self-reported diagnosis and ART status, and selected demographic characteristics, CIPHIA 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
40-44	*	*	22	440 (249, 644)	(54.7)	40	464 (270, 594)	56.8	62
45-49	*	*	20	529 (368, 801)	(48.1)	30	531 (366, 812)	48.6	50
50-54	*	*	9	602 (443, 853)	(38.0)	29	511 (416, 805)	(40.5)	38
55-59	*	*	18	*	*	22	542 (328, 675)	(47.9)	40
60-64	*	*	15	*	*	12	512 (347, 647)	(49.4)	27
Total 15-24	*	*	10	360 (263, 619)	(62.9)	25	406 (311, 709)	(53.1)	35
Total 15-49	503 (360, 809)	48.8	94	546 (343, 807)	46.4	237	536 (356, 810)	47.1	331
Total 15-64	492 (347, 716)	51.7	136	573 (352, 815)	44.5	300	535 (353, 802)	46.8	436

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.

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

Weighted figures.

*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.

† A polygynous union is a marriage between a man and more than one wife.

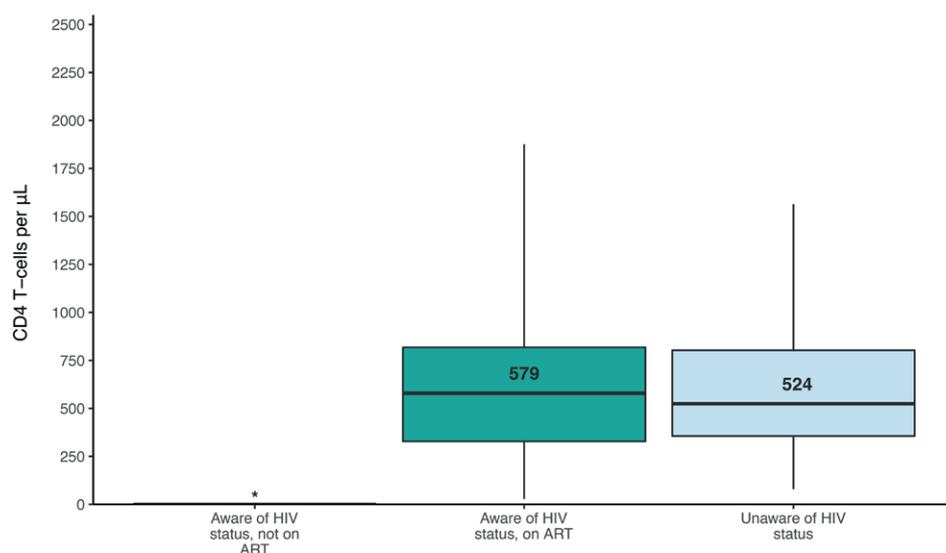


Figure 11.A
CD4 count distribution among HIV-positive adults, by antiretroviral therapy status, CIPHIA 2017-2018

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

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.

Late diagnosis of HIV

Among the HIV-positive adults who reported no prior HIV diagnosis, and who had no detectable ARVs in the blood, almost one-quarter (24.2%) had a CD4 count of less than 350 cells/ μL (22.0% of men and 25.5% of women) and 7.4% were severely immunosuppressed, with a CD4 count of less than 200 cells/ μL (5.8% of men and 8.4% of women) (Table 11.B).

Among these HIV-positive adults who reported no prior HIV diagnosis without detectable ARVs in the blood, the prevalence of severe immunosuppression (CD4 count <200 cells/ μL) was highest, by education level, in those without education (10.3%) and, by age, among those aged 40-44 years (11.1% [Note: This estimate was based on a denominator between 25-49 and should be interpreted with caution]) (Table 11.B).

Table 11.B Late HIV diagnosis

Characteristic	Male			Female			Total		
	Percentage < 200 cells/ μL^1	Percentage < 350 cells/ μL^1	Number	Percentage < 200 cells/ μL^1	Percentage < 350 cells/ μL^1	Number	Percentage < 200 cells/ μL^1	Percentage < 350 cells/ μL^1	Number
Residence									
Urban	(4.8)	(24.5)	41	9.4	29.0	84	7.7	27.3	125
Rural	(7.8)	(17.1)	34	6.5	18.5	56	7.0	18.0	90
Region									
Abidjan	*	*	13	(17.7)	(43.5)	25	(11.3)	(33.7)	38
Yamoussoukro	*	*	4	*	*	12	*	*	16
Bas-Sassandra	*	*	6	*	*	19	(3.5)	(12.4)	25
Comoé	*	*	3	*	*	6	*	*	9
Denguélé	*	*	5	*	*	8	*	*	13
Gôh-Djiboua	*	*	5	*	*	5	*	*	10
Lacs	*	*	5	*	*	8	*	*	13
Lagunes	*	*	4	*	*	5	*	*	9
Montagnes	*	*	6	*	*	7	*	*	13
Sassandra-Marahoué	*	*	8	*	*	9	*	*	17
Savanes	*	*	0	*	*	4	*	*	4
Vallée du Bandama	*	*	3	*	*	19	*	*	22
Woroba	*	*	8	*	*	5	*	*	13
Zanzan	*	*	5	*	*	8	*	*	13
Marital status									
Never married	*	*	12	(12.5)	(34.8)	31	(9.6)	(30.0)	43
Married or living together	5.3	23.3	57	8.5	26.6	70	6.9	25.0	127
Divorced or separated	*	*	3	*	*	18	*	*	21
Widowed	*	*	3	*	*	20	*	*	23
Type of union									
In polygynous union†	*	*	8	*	*	14	*	*	22
Not in polygynous union	(5.9)	(22.8)	49	10.8	22.6	54	8.2	22.7	103
Not currently in union	*	*	18	8.7	25.5	69	8.5	23.9	87
Don't know/missing	*	*	0	*	*	3	*	*	3

Table 11.B Late HIV diagnosis (continued)

Among persons aged 15-64 years who tested HIV positive in the PHIA survey but were self-reported as 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, CIPHIA 2017-2018

Characteristic	Male			Female			Total		
	Percentage < 200 cells/μL ¹	Percentage < 350 cells/μL ¹	Number	Percentage < 200 cells/μL ¹	Percentage < 350 cells/μL ¹	Number	Percentage < 200 cells/μL ¹	Percentage < 350 cells/μL ¹	Number
Education									
No education	(12.5)	(34.0)	36	9.1	26.4	74	10.3	29.1	110
Primary	*	*	20	(10.9)	(25.2)	48	7.8	23.4	68
Secondary	*	*	16	*	*	17	(0.0)	(14.4)	33
More than secondary	*	*	3	*	*	1	*	*	4
Wealth quintile									
Lowest	*	*	10	*	*	22	(5.4)	(38.7)	32
Second	*	*	20	(14.5)	(35.2)	39	9.9	21.2	59
Middle	*	*	14	(7.5)	(21.2)	28	(5.9)	(22.1)	42
Fourth	*	*	15	(7.2)	(21.8)	30	(13.0)	(25.1)	45
Highest	*	*	16	*	*	21	(0.0)	(7.4)	37
Age									
15-19	*	*	3	*	*	6	*	*	9
20-24	*	*	4	*	*	11	*	*	15
25-29	*	*	4	*	*	18	*	*	22
30-34	*	*	9	*	*	21	(7.8)	(9.6)	30
35-39	*	*	11	*	*	23	(7.0)	(34.9)	34
40-44	*	*	11	*	*	22	(11.1)	(16.1)	33
45-49	*	*	12	*	*	13	(3.7)	(19.8)	25
50-54	*	*	2	*	*	9	*	*	11
55-59	*	*	9	*	*	11	*	*	20
60-64	*	*	10	*	*	6	*	*	16
Total 15-24	*	*	7	*	*	17	*	*	24
Total 15-49	3.4	17.0	54	9.5	24.7	114	7.4	22.0	168
Total 15-64	5.8	22.0	75	8.4	25.5	140	7.4	24.2	215

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

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

Retention on ART

Among adults living with HIV who started ART less than 12 months before the survey, 90.7% (99.1% of women) reported that they were still on treatment at the time of the survey—100.0% of those with detectable ARVs. Note: These estimates were based on denominators between 25-49 and should be interpreted with caution (Table 11.C).

Among adults living with HIV who started antiretroviral therapy more than 12 months before the survey, 92.1% reported that they were still on treatment at the time of the survey (90.6% in women and 97.7% in men [Note: The estimate in men was based on a denominator between 25-49 and should be interpreted with caution]). Once again, all those (100.0%) with detectable ARVs reported that they were still taking their treatments (Table 11.D).

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

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

Characteristic	Male		Female		Total	
	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number
Presence of detectable ARVs						
Detectable	*	5	(100.0)	26	(100.0)	31
Not detectable	*	1	*	4	*	5
Residence						
Urban	*	1	*	19	*	20
Rural	*	5	*	11	*	16
Region						
Abidjan	*	1	*	7	*	8
Yamoussoukro	*	1	*	2	*	3
Bas-Sassandra	*	1	*	3	*	4
Comoé	*	0	*	0	*	0
Denguélé	*	0	*	2	*	2
Gôh-Djiboua	*	0	*	0	*	0
Lacs	*	0	*	3	*	3
Lagunes	*	0	*	2	*	2
Montagnes	*	0	*	2	*	2
Sassandra-Marahoué	*	0	*	4	*	4
Savanes	*	1	*	0	*	1
Vallée du Bandama	*	2	*	2	*	4
Woroba	*	0	*	0	*	0
Zanzan	*	0	*	3	*	3
Marital status						
Never married	*	1	*	5	*	6
Married or living together	*	5	*	18	*	23
Divorced or separated	*	0	*	5	*	5
Widowed	*	0	*	2	*	2
Type of union						
In polygynous union†	*	0	*	3	*	3
Not in polygynous union	*	5	*	14	*	19
Not currently in union	*	1	*	12	*	13
Don't know/missing	*	0	*	1	*	1
Education						
No education	*	2	*	16	*	18
Primary	*	3	*	10	*	13
Secondary	*	1	*	4	*	5
More than secondary	*	0	*	0	*	0

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

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

Characteristic	Male		Female		Total	
	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number
Wealth quintile						
Lowest	*	1	*	8	*	9
Second	*	0	*	6	*	6
Middle	*	3	*	6	*	9
Fourth	*	1	*	7	*	8
Highest	*	1	*	3	*	4
Age						
15-19	*	0	*	1	*	1
20-24	*	0	*	1	*	1
25-29	*	0	*	4	*	4
30-34	*	3	*	6	*	9
35-39	*	2	*	7	*	9
40-44	*	0	*	4	*	4
45-49	*	1	*	1	*	2
50-54	*	0	*	3	*	3
55-59	*	0	*	2	*	2
60-64	*	0	*	1	*	1
Total 15-24	*	0	*	2	*	2
Total 15-49	*	6	*	24	(88.2)	30
Total 15-64	*	6	(99.1)	30	(90.7)	36

¹Relates to Global AIDS Monitoring Indicator 1.3: Retention on antiretroviral therapy at 12 months.

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

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

Among HIV-positive persons aged 15-64 years who reported initiating ART 12 months or more prior to the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, CIPHIA 2017-2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number
Presence of detectable ARVs						
Detectable	*	22	100.0	64	100.0	86
Not detectable	*	6	*	12	*	18
Residence						
Urban	*	18	91.2	53	92.4	71
Rural	*	10	*	23	(91.0)	33
Region						
Abidjan	*	3	*	17	*	20
Yamoussoukro	*	3	*	5	*	8
Bas-Sassandra	*	6	*	8	*	14
Comoé	*	0	*	7	*	7
Denguélé	*	1	*	0	*	1
Gôh-Djiboua	*	0	*	1	*	1
Lacs	*	1	*	5	*	6
Lagunes	*	2	*	4	*	6
Montagnes	*	0	*	2	*	2
Sassandra-Marahoué	*	1	*	6	*	7
Savanes	*	2	*	6	*	8
Vallée du Bandama	*	6	*	11	*	17
Woroba	*	1	*	2	*	3
Zanzan	*	2	*	2	*	4
Marital status						
Never married	*	2	*	18	*	20
Married or living together	*	20	(84.9)	36	88.0	56
Divorced or separated	*	4	*	7	*	11
Widowed	*	2	*	15	*	17
Type of union						
In polygynous union†	*	5	*	10	*	15
Not in polygynous union	*	15	(84.8)	26	(88.4)	41
Not currently in union	*	8	(95.1)	40	(95.8)	48
Don't know/missing	*	0	*	0	*	0
Education						
No education	*	10	(88.7)	35	(89.1)	45
Primary	*	8	(92.1)	25	(93.3)	33
Secondary	*	8	*	13	*	21
More than secondary	*	2	*	3	*	5

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

Among HIV-positive persons aged 15-64 years who reported initiating ART 12 months or more prior to the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, CIPHA 2017-2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number
Wealth quintile						
Lowest	*	5	*	18	*	23
Second	*	5	*	23	(90.1)	28
Middle	*	12	*	21	(94.3)	33
Fourth	*	6	*	11	*	17
Highest	*	0	*	3	*	3
Age						
15-19	*	0	*	0	*	0
20-24	*	1	*	2	*	3
25-29	*	0	*	8	*	8
30-34	*	0	*	10	*	10
35-39	*	6	*	16	*	22
40-44	*	5	*	5	*	10
45-49	*	3	*	13	*	16
50-54	*	4	*	12	*	16
55-59	*	7	*	7	*	14
60-64	*	2	*	3	*	5
Total 15-24	*	1	*	2	*	3
Total 15-49	*	15	88.6	54	89.5	69
Total 15-64	(97.7)	28	90.6	76	92.1	104

¹Relates to Global AIDS Monitoring Indicator 1.3: Retention on antiretroviral therapy at 12 months.

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

Resistance and HIV subtypes

The following tables present the findings on drug resistance among the recently infected in Côte d'Ivoire and described the HIV subtypes found among the population living with HIV.

Table 11.E Resistance to ARVs

Among persons aged 15-64 years who were recently infected with HIV, percentage with resistance to ARVs, by class of ARV resistance, CIPHIA 2017-2018			
	Percent	Number	DR Mutations Detected ¹
Successfully amplified ²	60.0	3	
Any	33.3	1	K103N
Nucleoside reverse transcriptase inhibitor (NRTI)	0.0	0	
Non-nucleoside reverse transcriptase inhibitor (NNRTI)	33.3	1	K103N
Protease inhibitor (PI)	0.0	0	
NRTI & NNRTI	0.0	0	
NRTI, NNRTI & PI	0.0	0	

¹Based on *Stanford Database for HIV Drug Resistance Mutations* <https://cms.hivdb.org/prod/downloads/resistance-mutation-handout/resistance-mutation-handout.pdf>.
²Unweighted figures, from a total of five samples from recently infected persons.

Table 11.F HIV subtypes

	Total	
	Percent	Number
Subtype A	9.4	8
Subtype B	0.0	0
Subtype C	0.0	0
Subtype D	1.2	1
Subtype G	2.4	2
Recombinant ¹	87.1	74
Total	100.0	85

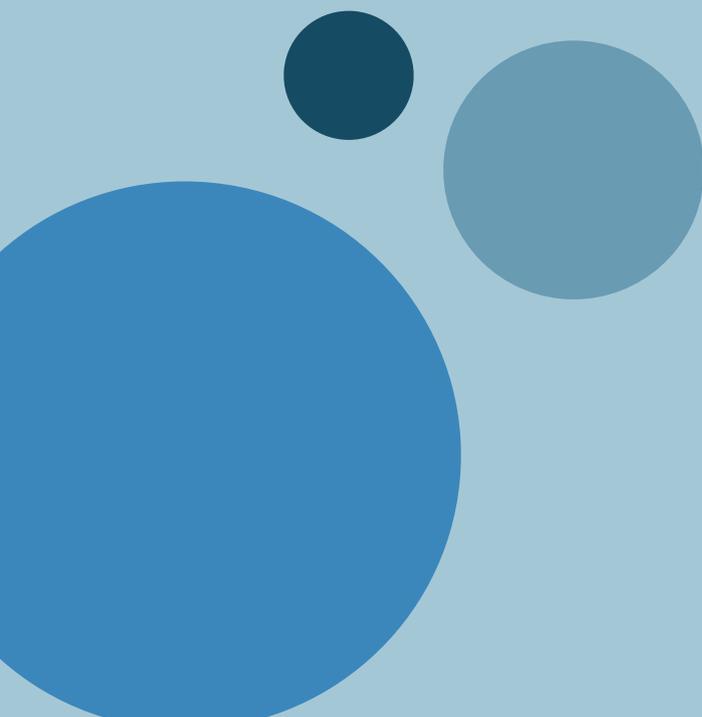
Unweighted figures.
¹Recombinant strains detected [counts in brackets]: CRF 02_AG [52], G (02_AG) [10], A1/G [6], CRF 06_CPX [3], CRF 09_CPX [1], 02_AG/A1 [1], other [1].

11.4 GAPS AND UNMET NEEDS

- **Late diagnosis (or CD4 count below 350 cells/μL among undiagnosed people living with HIV) is frequent, particularly among HIV-positive adults aged 30 years and older. A small proportion also had advanced HIV disease (CD4 count < 200 cells/μL). It is critical to reach population at high risk of disease progression and early mortality.**

11.5 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 May 6, 2019.



12. PREVENTION OF MOTHER-TO-CHILD TRANSMISSION

12.1 KEY FINDINGS

- Nearly all (95.7%) of women of childbearing age (ages 15-49 years) who had given birth during the three years before the survey had at least one antenatal care (ANC) visit during their last pregnancy.
- Approximately half of the HIV-positive mothers (50.1%) and the HIV-negative mothers (53.8%) who had given birth in the three years before the survey reported that they continued to breastfeed their babies. Note: The estimate among HIV-positive mothers was based upon a denominator between 25-49 and should be interpreted with caution.
- Roughly two-thirds (69.7%) of women who had given birth during the 12 months before the survey reported they had received an HIV test or already knew their HIV-positive status during their pregnancy.

12.2 BACKGROUND

Pregnant women living with HIV are at high risk of transmitting HIV to their infants during pregnancy, during birth, or through breastfeeding. Over 90% of new infections among infants and young children occur through MTCT.¹ Without any interventions, between 20%-45% of infants may become infected with HIV, with an estimated risk of 5%-10% during pregnancy, 10%-20% during labor and delivery, and 5%-20% through breastfeeding.² 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 the virtual elimination of MTCT.³

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

12.3 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.

Antenatal care

Among women who gave birth in the three years preceding the survey, 95.7% had at least one antenatal visit for their last pregnancy. This proportion varied very little according to demographic characteristics, except for the geographical regions where it ranged from 77.9% in Denguélé to 99.0% in Lagunes and 99.2% in the Lacs (Table 12.A).

Table 12.A Antenatal care

Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one antenatal care visit for her most recent birth, by selected demographic characteristics, CIPHIA 2017-2018		
Characteristic	Percentage who attended at least one ANC visit	Number
Residence		
Urban	97.4	1,146
Rural	93.8	1,483
Region		
Abidjan	98.6	262
Yamoussoukro	97.3	124
Bas-Sassandra	93.8	361
Comoé	98.4	107
Denguélé	77.9	213
Gôh-Djiboua	94.6	174
Lacs	99.2	112
Lagunes	99.0	84
Montagnes	97.5	122
Sassandra-Marahoué	91.1	181
Savanes	93.1	136
Vallée du Bandama	97.7	390

Table 12.A Antenatal care (continued)

Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one antenatal care visit for her most recent birth, by selected demographic characteristics, CIPHA 2017-2018		
Characteristic	Percentage who attended at least one ANC visit	Number
Woroba	96.5	178
Zanzan	87.4	185
Marital status		
Never married	95.4	416
Married or living together	95.9	2,120
Divorced or separated	90.6	71
Widowed	*	17
Type of union		
In polygynous union†	94.2	489
Not in polygynous union	96.3	1,571
Not currently in union	94.7	504
Don't know/missing	97.5	65
Education		
No education	93.9	1,471
Primary	97.3	780
Secondary	98.9	324
More than secondary	(100.0)	49
Wealth quintile		
Lowest	98.8	294
Second	99.2	361
Middle	95.2	601
Fourth	94.6	784
Highest	92.4	589
Age		
15-19	94.1	281
20-24	95.6	634
25-29	95.8	646
30-34	96.1	529
35-39	96.2	382
40-44	94.4	131
45-49	(98.1)	26
Total 15-24	95.2	915
Total 15-49	95.7	2,629

Weighted figures.

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

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

*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.

† A polygynous union is a marriage between a man and more than one wife.

Breastfeeding

Overall, approximately three in four children aged 0-17 months continued to be breastfed at the time of the survey (73.3% among those aged 12-17 months). This proportion dropped to 35.0% for children aged 18-23 months and then to 7.1% for children aged 24-36 months. Only 1.0% of children born in the three years preceding the survey had never been breastfed (Table 12.B).

Among women who gave birth in the 3 years preceding the survey, half of those screened as HIV positive (50.1%), as well as those with an HIV-negative status (53.8%), continued to breastfeed at the time of the survey (Table 12.B).

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, CIPHIA 2017-2018					
Characteristic	Never breastfed	Ever breastfed, but not currently breastfeeding	Currently breastfeeding	Total	Number
Child's age (months)					
0-1	0.4	20.8	78.8	100.0	180
2-3	0.2	18.4	81.4	100.0	177
4-5	0.0	19.2	80.8	100.0	164
6-8	0.8	14.3	84.9	100.0	225
9-11	0.7	23.4	75.9	100.0	237
12-17	0.3	26.4	73.3	100.0	485
18-23	0.7	64.3	35.0	100.0	356
24-36	1.7	91.2	7.1	100.0	617
Result of mother's PHIA survey HIV test					
HIV positive	(1.1)	(48.8)	(50.1)	100.0	43
HIV negative	0.7	45.5	53.8	100.0	2,458
Not tested	5.2	47.5	47.4	100.0	104
Total	1.0	45.7	53.3	100.0	2,605

Weighted figures.

*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.

Knowledge of the mother's HIV status during pregnancy

Among women who gave birth in the 12 months preceding the survey, 69.7% said they knew their HIV status: 69.1% were screened for HIV and received their HIV test result during pregnancy (all of these reported their result was HIV negative), while 0.7% reported that they already knew they were HIV positive at the time of pregnancy (Table 12.C).

Depending on the place of residence, 77.9% of women in urban areas compared to 59.0% of women in rural areas who gave birth in the 12 months preceding the survey knew their HIV status at the time of pregnancy (Table 12.C).

Among women who gave birth in the 12 months preceding the survey, the proportion who knew their HIV status at the time of pregnancy ranged from 48.4% in Denguelé to 88.7% in Abidjan. This proportion decreased according to the quintiles of economic well-being, from 91.7% among women living in the poorest households to 54.2% among those who lived in the richest households (Table 12.C).

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 reported that they were tested for HIV during antenatal care and received their results or who reported that they already knew they were HIV positive, by selected demographic characteristics, CIPHA 2017-2018

Characteristic	Tested for HIV during ANC and received results			Total percentage with known HIV status ¹	Number of women who gave birth within the past 12 months
	Percentage who reported that they tested HIV positive	Percentage who reported that they tested HIV negative	Percentage who reported that they already knew they were HIV positive		
Residence					
Urban	0.0	77.0	0.9	77.9	442
Rural	0.0	58.6	0.4	59.0	488
Region					
Abidjan	0.0	88.7	0.0	88.7	95
Yamoussoukro	0.0	82.2	0.0	82.2	58
Bas-Sassandra	0.0	60.8	1.7	62.5	113
Comoé	(0.0)	(69.0)	(0.0)	(69.0)	45
Denguélé	0.0	48.4	0.0	48.4	59
Gôh-Djiboua	0.0	65.0	0.0	65.0	56
Lacs	(0.0)	(68.1)	(3.2)	(71.3)	39
Lagunes	(0.0)	(64.0)	(0.0)	(64.0)	34
Montagnes	(0.0)	(59.1)	(0.0)	(59.1)	41
Sassandra-Marahoué	0.0	62.3	2.5	64.8	73
Savanes	(0.0)	(58.6)	(0.0)	(58.6)	44
Vallée du Bandama	0.0	70.2	0.6	70.7	157
Woroba	0.0	54.6	0.0	54.6	62
Zanzan	0.0	58.3	0.0	58.3	54
Marital status					
Never married	0.0	69.9	0.0	69.9	169
Married or living together	0.0	68.8	0.8	69.6	734
Divorced or separated	*	*	*	*	18
Widowed	*	*	*	*	5
Type of union					
In polygynous union†	0.0	65.9	0.0	65.9	142
Not in polygynous union	0.0	70.1	1.1	71.1	565
Not currently in union	0.0	70.1	0.0	70.1	192
Don't know/missing	(0.0)	(60.2)	(0.0)	(60.2)	31
Education					
No education	0.0	64.8	0.6	65.4	515
Primary	0.0	66.9	1.0	67.9	266
Secondary	0.0	82.7	0.0	82.7	131
More than secondary	*	*	*	*	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 reported that they were tested for HIV during antenatal care and received their results or who reported that they already knew they were HIV positive, by selected demographic characteristics, CIPHIA 2017-2018

Characteristic	Tested for HIV during ANC and received results		Percentage who reported that they 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 reported that they tested HIV positive	Percentage who reported that they tested HIV negative			
Wealth quintile					
Lowest	0.0	90.9	0.7	91.7	117
Second	0.0	73.3	0.3	73.6	141
Middle	0.0	68.5	0.9	69.4	226
Fourth	0.0	60.5	0.6	61.1	275
Highest	0.0	53.5	0.7	54.2	171
Age					
15-19	0.0	59.2	0.0	59.2	132
20-24	0.0	59.5	0.0	59.5	232
25-29	0.0	67.0	1.8	68.8	224
30-34	0.0	84.4	0.0	84.4	178
35-39	0.0	75.1	1.4	76.5	135
40-44	(0.0)	(77.1)	(0.0)	(77.1)	26
45-49	*	*	*	*	3
Total 15-24	0.0	59.4	0.0	59.4	364
Total 15-49	0.0	69.1	0.7	69.7	930

¹Relates to PEPFAR Indicator PMTCT_STAT_NAT / SUBNAT: Percentage of pregnant women with known HIV status.

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

Weighted figures.

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.

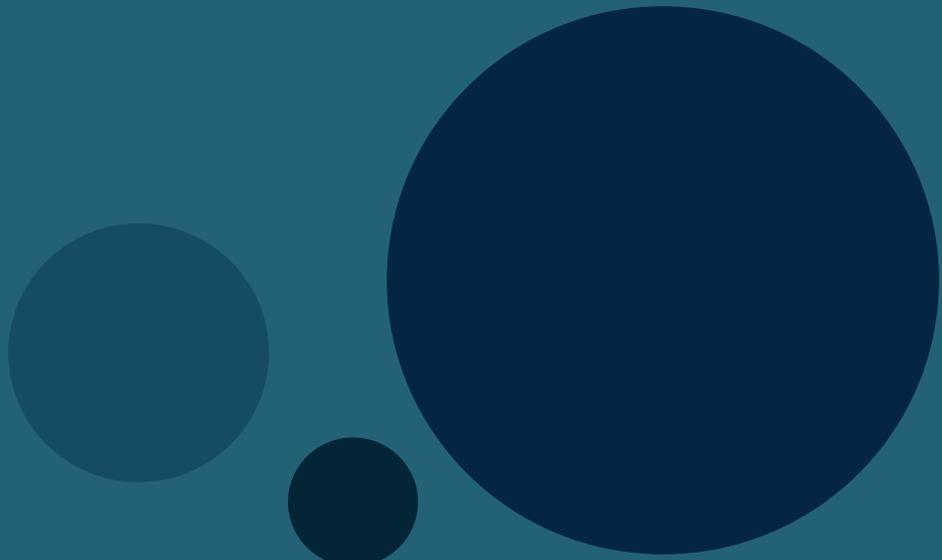
† A polygynous union is a marriage between a man and more than one wife.

12.4 GAPS AND UNMET NEEDS

- **Coverage of PMTCT services, with 100% HIV testing coverage, must be universal—including at private health care facilities.**
- **Any pregnant woman identified as HIV positive and her children should be provided enhanced follow-up to improve retention in care.**

12.5 REFERENCES

1. World Health Organization. Prevention of Mother-To-Child Transmission (PMTCT). Briefing note. Geneva: World Health Organization; 2007. <https://www.who.int/hiv/pub/toolkits/PMTCT%20HIV%20Dept%20brief%20Oct%2007.pdf>
2. 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.
3. 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 May 6, 2019.



13. YOUNG PEOPLE

13.1 KEY FINDINGS

- Among young people (older adolescents and young adults aged 15-24 years), one out of eight (12.5%) stated that they had had sexual relations before the age of 15 years (14.1% among older adolescent boys and young men and 10.8% among older adolescent girls and young women).
- One out of four young people (25.0%) answered all questions correctly evaluating knowledge on HIV transmission and prevention (28.1% of male respondents and 22.0% the female respondents).
- HIV prevalence among young people was 0.6%: 0.3% among older adolescent boys and young men and 0.9% among older adolescent girls and young women.
- The prevalence of HIV among young people was 0.9% among those who had their first sexual relations before the age of 15 years.

13.2 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 years) 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.

13.3 RESULTS

Table 13.A shows the prevalence of early sexual debut before the age of 15 years among male and female young people by region and socio-demographic characteristics. Tables 13.B, 13.C, and 13.D describe knowledge of HIV transmission and prevention among young people. These data were measured by asking participants to agree or disagree with specific and inaccurate statements about HIV transmission or prevention.

Sex before the age of 15 years

Among young people, 12.5% reported having sex before the age of 15 years (14.1% for older adolescent boys and young men and 10.8% for older adolescent girls and young women). The proportions were the same in older adolescents (ages 15-19 years) and young adults (ages 20-24 years), at 12.4% and 12.5%, respectively (Table 13.A).

In urban areas, 14.7% of older adolescent boys and young men reported having sex before the age of 15 years, compared with 8.4% among their female counterparts. However, this proportion among older adolescent girls and young women was twice as high when they resided in rural areas (16.4%). Overall, the proportion of young people reporting having sex before the age of 15 years ranged from 9.7% and 9.6% in the Abidjan and Comoé regions, respectively, to 16.7% and 17.2% in the Gôh-Djiboua and Montagnes regions. (Table 13.A).

Among older adolescent girls and young women, the proportion reporting having sex before the age of 15 years decreased with the education level achieved, from 13.3% among youth with no education to 2.2% among those who have reached post-secondary education (Table 13.A).

Table 13.A Sex before the age of 15 years

Percentage of young people aged 15–24 years who have had sexual intercourse before the age of 15 years; by sex and selected demographic characteristics, CIPHA 2017-2018						
Characteristic	Male		Female		Total	
	Percentage who had sex before age of 15 years	Number	Percentage who had sex before age of 15 years	Number	Percentage who had sex before age of 15 years	Number
Residence						
Urban	14.7	1,701	8.4	1,976	11.4	3,677
Rural	13.1	1,130	16.4	1,248	14.7	2,378
Region						
Abidjan	16.5	354	4.0	512	9.7	866
Yamoussoukro	13.4	241	11.9	241	12.7	482
Bas-Sassandra	12.0	385	15.5	440	13.7	825
Comoé	10.9	97	8.8	158	9.6	255
Denguélé	12.1	126	15.9	155	14.2	281
Gôh-Djiboua	14.2	141	19.4	150	16.7	291
Lacs	14.3	162	14.7	151	14.5	313
Lagunes	11.5	131	10.4	145	10.9	276
Montagnes	20.7	103	12.9	95	17.2	198

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

Characteristic	Male		Female		Total	
	Percentage who had sex before age of 15 years	Number	Percentage who had sex before age of 15 years	Number	Percentage who had sex before age of 15 years	Number
Sassandra-Marahoué	9.4	253	16.0	206	12.3	459
Savanes	14.7	115	11.9	156	13.2	271
Vallée du Bandama	15.5	416	15.1	487	15.3	903
Woroba	8.6	147	15.8	151	12.5	298
Zanzan	15.9	160	15.9	177	15.9	337
Marital status						
Never married	13.5	2,545	9.1	2,034	11.7	4,579
Married or living together	22.2	228	14.0	1,107	15.4	1,335
Divorced or separated	(16.4)	39	16.8	66	16.7	105
Widowed	*	0	*	2	*	2
Type of union						
In polygynous union†	*	16	16.5	164	17.1	180
Not in polygynous union	22.1	212	14.3	910	15.8	1,122
Not currently in union	13.6	2,584	9.3	2,102	11.8	4,686
Don't know/missing	*	19	(1.8)	48	4.8	67
Education						
No education	11.8	588	13.3	1,083	12.8	1,671
Primary	13.0	695	12.5	852	12.7	1,547
Secondary	15.4	1,419	8.9	1,165	12.6	2,584
More than secondary	15.8	127	2.2	121	9.2	248
Wealth quintile						
Lowest	15.7	419	5.7	659	10.0	1,078
Second	15.7	596	7.3	701	11.6	1,297
Middle	14.6	694	15.3	711	14.9	1,405
Fourth	12.0	651	15.8	665	13.8	1,316
Highest	12.0	471	14.9	488	13.3	959
Age						
15-19	13.6	1,562	11.3	1,693	12.4	3,255
20-24	14.7	1,269	10.4	1,531	12.5	2,800
Total 15-24	14.1	2,831	10.8	3,224	12.5	6,055

Weighted figures.

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

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

*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.

† A polygynous union is a marriage between a man and more than one wife.

Knowledge about HIV

Among older adolescent boys and young men, 28.1% answered the five questions on HIV prevention and transmission correctly, 31.8% among those living in urban areas, and 20.5% among those residing in rural areas. Knowledge about HIV transmission and prevention increased with education and decreased by wealth quintile. Among men aged 15-24 years with no education, 17.6% answered all five questions correctly, compared to 56.8% among those with a higher level of education. As for the welfare quintiles, the correct answer scores for all questions went from 35.5% of the poorest quintile to 16.0% of those in the wealthiest quintile (Table 13.B).

Table 13.B Young people, knowledge about HIV prevention: Older adolescent boys and young men

Characteristic	Percentage who correctly answered the questions:					All five questions	Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who is infected?		
Residence							
Urban	72.7	76.7	67.1	58.8	72.3	31.8	834
Rural	62.4	67.5	56.0	41.8	58.8	20.5	534
Region							
Abidjan	78.5	75.3	70.9	59.4	71.8	35.3	171
Yamoussoukro	76.0	80.1	67.5	59.1	68.2	26.6	115
Bas-Sassandra	69.4	74.1	69.9	42.0	67.5	20.4	191
Comoé	62.3	82.4	70.9	62.9	83.9	33.8	58
Denguélé	64.7	68.4	54.7	45.0	61.3	21.1	66
Gôh-Djiboua	74.3	75.4	67.7	52.1	79.3	26.3	57
Lacs	72.6	78.7	61.7	55.8	71.2	30.3	82
Lagunes	56.9	65.3	56.7	44.8	62.3	24.3	51
Montagnes	(76.2)	(81.7)	(53.9)	(54.5)	(60.2)	(30.3)	38
Sassandra-Marahoué	54.1	66.3	53.3	49.7	62.3	21.8	134
Savanes	74.4	79.4	65.6	52.9	60.9	31.9	52
Vallée du Bandama	74.7	72.9	62.7	59.0	69.4	29.5	196
Woroba	47.3	57.8	47.5	43.0	52.1	11.7	79
Zanzan	72.0	75.3	60.5	44.6	60.2	20.4	78
Marital status							
Never married	69.6	73.8	63.5	53.1	68.3	27.9	1,233
Married or living together	66.9	73.9	58.6	48.8	64.0	29.2	110
Divorced or separated	*	*	*	*	*	*	14
Widowed	*	*	*	*	*	*	0
Type of union							
In polygynous union†	*	*	*	*	*	*	11
Not in polygynous union	67.6	75.6	59.9	48.0	62.5	29.3	99
Not currently in union	69.7	73.8	63.7	53.4	68.4	28.2	1,247
Don't know/missing	*	*	*	*	*	*	11

Table 13.B Young people, knowledge about HIV prevention: Older adolescent boys and young men (continued)

Characteristic	Percentage who correctly answered the questions:					All five questions	Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who is infected?		
Education							
No education	53.3	61.1	47.8	37.7	52.0	17.6	303
Primary	60.4	64.8	51.1	34.1	53.3	13.2	323
Secondary	77.5	81.0	72.1	65.4	77.8	35.7	680
More than secondary	90.5	90.0	93.1	76.3	95.1	56.8	61
Wealth quintile							
Lowest	78.1	78.4	75.0	61.3	73.2	35.5	216
Second	76.1	77.8	66.2	66.1	73.0	34.8	313
Middle	66.8	73.2	64.5	52.3	72.1	25.0	312
Fourth	64.4	70.5	60.0	43.9	61.0	23.6	311
Highest	54.9	64.8	45.2	33.9	55.8	16.0	216
Age							
15-19	67.8	72.4	61.5	52.4	68.3	25.0	755
20-24	71.0	75.1	65.6	54.2	67.6	31.4	613
Total 15-24	69.4	73.7	63.5	53.3	67.9	28.1	1,368

¹Relates to Global AIDS Monitoring Indicator 5.1: Young people: Knowledge about HIV prevention.

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

Among older adolescent girls and young women, one in five (22.0%) correctly answered all questions about HIV prevention and transmission, with the same trends as their male counterparts by area of residence (24.8% of participants in urban areas and 15.8% in rural areas) and by educational attainment (10.2% among those with no education compared to 57.4% among those reaching post-secondary education). Finally, there were also similar trends seen by economic status, with 30.4% correctly answering all questions in the poorest quintile and 8.7% among those in the wealthiest quintile (Table 13.C).

Table 13.C Young people, knowledge about HIV prevention: Older adolescent girls and young women

Characteristic	Percentage who correctly answered the questions:					All five questions	Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who is infected?		
Residence							
Urban	69.6	69.1	65.8	58.3	69.0	24.8	1,019
Rural	58.6	56.7	50.9	48.0	59.2	15.8	664
Region							
Abidjan	70.9	74.1	68.1	63.8	72.7	27.8	263
Yamoussoukro	71.8	66.7	61.7	63.6	66.8	25.9	110
Bas-Sassandra	63.2	62.5	51.8	47.8	62.3	23.3	224
Comoé	64.7	68.5	61.6	55.0	62.9	18.6	76
Denguélé	59.1	65.3	43.4	35.8	62.0	14.3	92
Gôh-Djiboua	63.5	60.3	59.8	54.8	62.8	20.4	83
Lacs	71.4	72.3	71.4	54.4	72.9	27.0	80
Lagunes	63.7	61.0	63.0	53.9	60.8	16.4	81
Montagnes	60.8	51.0	54.8	37.0	54.8	14.6	57
Sassandra-Marahoué	58.8	58.6	55.4	52.4	63.4	14.6	125
Savanes	73.2	57.9	56.3	63.3	66.9	25.0	72
Vallée du Bandama	65.5	65.0	56.7	53.4	69.0	21.2	246
Woroba	62.0	52.4	49.3	39.2	55.9	15.9	83
Zanzan	71.1	69.3	68.1	54.5	59.8	27.8	91
Marital status							
Never married	69.2	68.8	64.4	60.1	70.2	25.0	1,055
Married or living together	59.8	56.8	55.1	45.3	56.6	16.8	580
Divorced or separated	(72.6)	(86.3)	(50.1)	(42.9)	(71.2)	(8.6)	39
Widowed	*	*	*	*	*	*	2
Type of union							
In polygynous union†	63.6	47.7	47.5	42.9	45.1	18.6	99
Not in polygynous union	59.4	58.2	56.2	46.7	58.7	17.0	466
Not currently in union	69.3	69.4	63.8	59.5	70.2	24.3	1,096
Don't know/missing	*	*	*	*	*	*	22
Education							
No education	52.4	54.5	49.8	40.4	52.9	10.2	604
Primary	67.8	62.3	61.5	51.7	58.7	18.4	437
Secondary	75.3	74.2	67.8	67.1	79.6	30.1	575
More than secondary	87.0	87.7	87.7	81.5	89.7	57.4	65
Wealth quintile							
Lowest	73.7	75.7	72.5	63.2	74.9	30.4	333
Second	70.9	69.0	66.7	60.8	69.3	24.9	369
Middle	64.3	65.5	58.8	50.2	65.4	19.5	363
Fourth	63.0	57.2	53.0	48.6	57.7	18.4	344
Highest	50.8	49.2	43.7	44.1	54.1	8.7	274

Table 13.C Young people, knowledge about HIV prevention: Older adolescent girls and young women (continued)

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who is infected?	All five questions	
Age							
15-19	65.5	62.9	57.2	57.5	64.2	19.0	894
20-24	66.8	67.5	64.9	52.7	67.6	24.9	789
Total 15-24	66.2	65.3	61.1	55.1	66.0	22.0	1,683

¹Relates to Global AIDS Monitoring Indicator 5.1: Young people: Knowledge about HIV prevention.
 Note: Education categories refer to the highest level of education attended, whether or not that level was completed.
 Weighted figures.
 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.
 † A polygynous union is a marriage between a man and more than one wife.

Overall, 25.0% of young people responded correctly to all questions assessing knowledge about HIV transmission and prevention. Knowledge scores for each of the five questions among youth varied, ranging from 54.2% of participants who correctly answered the question “Can a person get HIV from a mosquito bite?” to 69.5% of participants who correctly answered the question “Can a person reduce the risk of contracting HIV using a condom every time they have sex?” (Table 13.D).

Table 13.D Young people, knowledge about HIV prevention: Total

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who is infected?	All five questions	
Residence							
Urban	71.1	72.9	66.4	58.5	70.6	28.2	1,853
Rural	60.5	62.2	53.5	44.8	59.0	18.2	1,198
Region							
Abidjan	74.4	74.7	69.4	61.8	72.3	31.3	434
Yamoussoukro	74.3	74.8	65.2	60.9	67.7	26.3	225
Bas-Sassandra	66.5	68.6	61.5	44.7	65.1	21.8	415
Comoé	63.5	75.4	66.3	58.9	73.4	26.2	134
Denguélé	61.5	66.6	48.3	39.8	61.6	17.3	158
Gôh-Djiboua	68.6	67.3	63.5	53.5	70.5	23.1	140

Table 13.D Young people, knowledge about HIV prevention: Total (continued)

Characteristic	Percentage who correctly answered the questions:					All five questions	Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who is infected?		
Lacs	72.1	76.0	65.8	55.2	71.9	28.9	162
Lagunes	60.6	62.9	60.1	49.7	61.5	20.0	132
Montagnes	68.0	65.3	54.4	45.1	57.4	21.9	95
Sassandra-Marahoué	56.1	62.9	54.2	50.9	62.8	18.6	259
Savanes	73.7	68.1	60.7	58.4	64.0	28.3	124
Vallée du Bandama	70.1	69.0	59.7	56.2	69.2	25.4	442
Woroba	54.6	55.1	48.4	41.1	54.0	13.8	162
Zanzan	71.6	72.4	64.2	49.4	60.0	24.0	169
Marital status							
Never married	69.4	71.7	63.9	56.0	69.1	26.7	2,288
Married or living together	61.0	59.6	55.7	45.9	57.8	18.8	690
Divorced or separated	75.8	84.4	59.2	52.2	72.9	19.4	53
Widowed	*	*	*	*	*	*	2
Type of union							
In polygynous union†	63.2	48.3	47.2	44.4	48.7	19.5	110
Not in polygynous union	60.8	61.3	56.8	46.9	59.4	19.3	565
Not currently in union	69.5	71.9	63.8	56.0	69.2	26.5	2,343
Don't know/missing	(51.5)	(58.8)	(73.2)	(53.4)	(58.8)	(15.0)	33
Education							
No education	52.8	56.9	49.1	39.4	52.6	12.9	907
Primary	64.2	63.5	56.4	43.1	56.1	15.8	760
Secondary	76.6	78.2	70.4	66.1	78.5	33.4	1,255
More than secondary	88.6	88.8	90.2	79.1	92.2	57.1	126
Wealth quintile							
Lowest	75.6	76.9	73.6	62.3	74.1	32.7	549
Second	73.6	73.6	66.4	63.5	71.2	30.0	682
Middle	65.6	69.5	61.8	51.3	68.9	22.4	675
Fourth	63.7	64.1	56.6	46.2	59.4	21.1	655
Highest	52.8	57.0	44.4	39.0	54.9	12.3	490
Age							
15-19	66.7	67.7	59.4	54.9	66.2	22.0	1,649
20-24	68.9	71.2	65.3	53.5	67.6	28.1	1,402
Total 15-24	67.8	69.5	62.3	54.2	66.9	25.0	3,051

¹ Relates to Global AIDS Monitoring Indicator 5.1: Young people: Knowledge about HIV prevention.

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

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.

† A polygynous union is a marriage between a man and more than one wife.

HIV prevalence by sexual behaviors

The prevalence of HIV among young people was 0.6% (0.3% among older adolescent boys and young men and 0.9% among older adolescent girls and young women). HIV prevalence among young people was almost 1% among those who had first sex before age 15 (0.9%) and among those who did not use condoms at last sex paid in the last 12 months (0.9%). (Note: The latter estimate is based upon a denominator between 25 and 49 and should be interpreted with caution) (Table 13.E).

Table 13.E HIV prevalence by sexual behavior

Prevalence of HIV among persons aged 15-24 years, by sex and sexual behavior characteristics, CIPHIA 2017-2018						
Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Age at first sexual intercourse						
<15	0.5	362	1.4	401	0.9	763
15-19	0.1	1,156	1.0	1,883	0.6	3,039
20-24	0.0	167	0.0	110	0.0	277
Number of sexual partners in the past 12 months						
0	0.0	268	0.6	264	0.3	532
1	0.2	780	1.3	1,817	0.9	2,597
≥2	0.3	653	0.7	382	0.5	1,035
Condom use at last sexual intercourse in the past 12 months						
Used condom	0.2	621	1.0	512	0.6	1,133
Did not use condom	0.4	575	1.3	1,495	1.0	2,070
Paid sexual intercourse in the past 12 months						
Yes ¹	0.0	54	(0.9)	39	0.3	93
Used condom at last paid sexual intercourse	(0.0)	34	*	18	0.0	52
Did not use condom at last paid sexual intercourse	*	19	*	17	(0.9)	36
No ²	0.3	1,376	1.2	2,155	0.8	3,531
Total 15-24	0.3	2,750	0.9	3,176	0.6	5,926

¹Includes persons who paid or received money for sexual intercourse.

²No paid sexual intercourse or no sexual intercourse in the past 12 months.

Weighted figures.

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

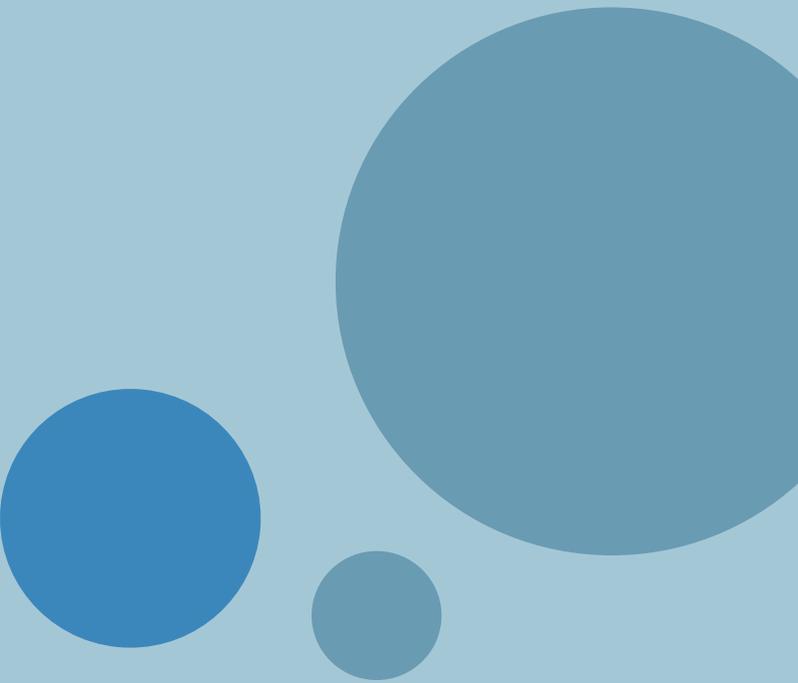
() Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

13.4 GAPS AND UNMET NEEDS

- **New communication strategies adapted to young people should be developed that take advantage of new information and communication technologies.**
- **As noted earlier, tailored prevention interventions are needed for older adolescent boys and young men, in addition to the existing services tailored to older adolescent girls and young women.**

13.5 REFERENCES

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



14. HIV RISK FACTORS

14.1 KEY FINDINGS

- HIV prevalence among adults aged 15-64 years who reported that they did not use condoms the last time they had sex in the 12 months before the survey was 2.0% among men and 3.5% among women.
- Less than half of the adults (44.6%) had used a condom the last time that they had sex with a nonmarital and noncohabitating partner (49.3% among men and 36.9% among women).
- Among men, 28.2% reported that they were medically circumcised. Only 5.2% reported that they were uncircumcised. Roughly half (51.9%) of the men in the survey reported that they were circumcised in a nonmedical setting, with little difference between rural or urban settings.

14.2 BACKGROUND

This chapter describes the prevalence of sexual behaviors that increase the risk of HIV infection. CIPHIA asked adults (those aged 15–64 years) 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 nonmarital, noncohabitating 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. Men were asked if they had been medically or traditionally circumcised to inform voluntary medical male circumcision programs.

14.3 RESULTS

The following tables present CIPHIA's data on HIV risk factors in Côte d'Ivoire.

Prevalence of HIV by sexual behavior

Among adults who had sex before the age of 15 years, HIV prevalence was 4.0% for women compared with 1.3% for men. Among adults who reported not using condoms at last intercourse in the 12 months preceding the survey, 2.0% of men and 3.5% of women were HIV positive (Table 14.A).

Among adults who reported having paid sex in the 12 months preceding the survey, the prevalence of HIV was 2.9% among those who did not use condoms at last paid intercourse: 0.2% among men and 6.5% among women. (Note: The estimates disaggregated by sex were based on a denominator between 25 and 49 and should be interpreted with caution.) (Table 14.A).

Table 14.A HIV prevalence by sexual behavior: Adults

Prevalence of HIV among persons aged 15–64 years, by sex and sexual behavior characteristics, CIPHIA 2017–2018						
Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Age at first sexual intercourse						
<15	1.3	857	4.0	900	2.5	1,757
15–19	1.9	3,955	3.9	5,526	3.0	9,481
20–24	2.2	1,939	5.9	1,074	3.6	3,013
≥25	2.1	604	7.9	139	3.3	743
Number of sexual partners in the past 12 months						
0	3.0	1,039	7.2	1,361	5.4	2,400
1	1.9	4,096	3.6	6,161	2.9	10,257
≥2	1.4	2,505	3.7	625	1.9	3,130
Condom use at last sexual intercourse in the past 12 months						
Used condom	1.2	1,220	4.1	808	2.3	2,028
Did not use condom	2.0	4,619	3.5	5,660	2.8	10,279
Paid sexual intercourse in the past 12 months						
Yes ¹	1.3	139	3.6	65	2.0	204
Used condom at last paid sexual intercourse	0.3	93	(0.9)	31	0.5	124
Did not use condom at last paid sexual intercourse	(0.2)	44	(6.5)	30	2.9	74
No ²	1.7	6,450	3.6	6,702	2.7	13,152

Table 14.A HIV prevalence by sexual behavior: Adults (continued)

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Total 15-24	0.3	2,750	0.9	3,176	0.6	5,926
Total 15-49	1.4	7,673	3.5	8,016	2.4	15,689
Total 15-64	1.7	8,887	3.9	8,926	2.8	17,813

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

Condom use with a nonmarital and noncohabitating partner

Approximately half of the men (49.7%) reported having had sex in the last 12 months with a nonmarital, noncohabitating partner. Among these, almost half (49.3%) reported using a condom at last intercourse with the nonmarital and noncohabitating partner. Among married or cohabitating adult men, 22.9% reported having sex in the last 12 months with a nonmarital, noncohabitating partner, 40.6% of whom used a condom at last intercourse with their nonmarital and noncohabitating partner (Table 14.B).

Among older adolescent boys and young men (ages 15-24 years), 87.1% reported having sex in the past 12 months with a nonmarital, noncohabitating partner, and among those, approximately 6 out of 10 (61.1%) reported that they had used a condom at last intercourse with the nonmarital and noncohabitating partner (Table 14.B).

Table 14.B Condom use at last sex with a nonmarital, noncohabitating partner: Men

Characteristic	Among men who reported having sex in the past 12 months		Among men who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner ¹	Number
Residence				
Urban	56.4	3,403	54.3	1,496
Rural	39.6	3,672	38.9	1,165
Region				
Abidjan	61.8	917	53.1	447
Yamoussoukro	58.4	424	46.2	197
Bas-Sassandra	41.4	1,045	42.7	351
Comoé	46.6	285	61.5	109
Denguélé	23.2	380	50.4	66
Gôh-Djiboua	36.4	327	47.0	99

Table 14.B Condom use at last sex with a nonmarital, noncohabitating partner: Men (continued)

Among men aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, CIPHIA 2017-2018

Characteristic	Among men who reported having sex in the past 12 months		Among men who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner ¹	Number
Lacs	52.1	350	50.0	161
Lagunes	49.7	329	45.8	142
Montagnes	45.2	307	45.7	112
Sassandra-Marahoué	48.1	503	45.9	191
Savanes	35.4	414	49.8	119
Vallée du Bandama	51.2	927	47.7	394
Woroba	29.5	459	36.7	124
Zanzan	43.1	408	47.7	149
Marital status				
Never married	87.2	2,248	55.6	1,594
Married or living together	22.9	4,513	40.6	826
Divorced or separated	87.6	263	33.8	201
Widowed	(92.3)	28	*	23
Type of union				
In polygynous union†	22.8	724	25.1	132
Not in polygynous union	22.9	3,787	43.3	693
Not currently in union	87.3	2,539	53.0	1,818
Don't know/missing	(87.2)	25	*	18
Education				
No education	32.4	2,901	43.4	753
Primary	48.9	1,823	43.8	688
Secondary	66.1	1,822	55.2	948
More than secondary	70.9	517	53.6	269
Wealth quintile				
Lowest	61.8	943	57.3	457
Second	59.1	1,158	54.9	551
Middle	51.3	1,567	49.1	614
Fourth	37.5	1,854	38.1	571
Highest	37.9	1,553	38.6	468
Age				
15-19	94.1	572	65.5	469
20-24	83.2	936	58.2	607
25-29	63.5	1,065	45.2	481
30-34	44.8	1,109	42.2	397
35-39	36.6	1,008	43.9	289
40-44	29.8	787	38.1	178

Table 14.B Condom use at last sex with a nonmarital, noncohabitating partner: Men (continued)

Among men aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, CIPHA 2017-2018

Characteristic	Among men who reported having sex in the past 12 months		Among men who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner ¹	Number
45-49	21.1	575	33.0	102
50-54	19.2	458	29.0	74
55-59	14.2	331	(16.5)	40
60-64	10.4	234	*	24
Total 15-24	87.1	1,508	61.1	1,076
Total 15-49	54.6	6,052	50.4	2,523
Total 15-64	49.7	7,075	49.3	2,661

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

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

Overall, just under a third of women (30.5%) reported having sex in the last 12 months with a nonmarital, noncohabitating partner. Of these, 36.9% reported using a condom at last intercourse with the nonmarital and noncohabitating partner. Among women who were married or living with a partner, 7.3% reported having sex in the past 12 months with a nonmarital, noncohabitating partner. However, among these, only 30.0% used a condom at last intercourse with their nonmarital and noncohabitating partner (Table 14.C).

Among older adolescent girls and young women (aged 15-24 years), a little over half (52.5%) reported having had sex in the past 12 months with a nonmarital and noncohabitating partner, and among these almost half (47.6%) used a condom at last intercourse with the nonmarital and noncohabitating partner (Table 14.C).

Table 14.C Condom use at last sex with a nonmarital, noncohabitating partner: Women

Among women aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, CIPHIA 2017-2018

Characteristic	Among women who reported having sex in the past 12 months		Among women who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner ¹	Number
Residence				
Urban	37.8	3,684	40.5	1,189
Rural	19.0	3,474	26.3	578
Region				
Abidjan	42.5	963	42.8	335
Yamoussoukro	40.9	467	29.0	169
Bas-Sassandra	18.4	969	36.3	163
Comoé	36.6	322	41.8	110
Denguélé	8.5	396	(26.0)	34
Gôh-Djiboua	22.7	391	31.5	79
Lacs	32.8	371	36.7	120
Lagunes	34.1	295	39.4	85
Montagnes	24.7	267	24.0	60
Sassandra-Marahoué	25.0	466	31.1	106
Savanes	15.2	366	29.5	55
Vallée du Bandama	31.5	1,062	31.0	299
Woroba	10.3	412	(31.9)	46
Zanzan	25.9	411	31.7	106
Marital status				
Never married	79.6	1,783	41.7	1,241
Married or living together	7.3	5,014	30.0	267
Divorced or separated	81.1	262	22.5	191
Widowed	66.5	70	(17.6)	45
Type of union				
In polygynous union†	6.3	1,278	(13.1)	47
Not in polygynous union	7.1	3,586	34.1	200
Not currently in union	79.4	2,115	38.4	1,477
Don't know/missing	27.3	179	(34.7)	43
Education				
No education	18.6	3,677	26.9	542
Primary	28.1	1,963	33.7	456
Secondary	56.3	1,254	47.1	639
More than secondary	58.3	254	40.4	128

Table 14.C Condom use at last sex with a nonmarital, noncohabitating partner: Women (continued)

Among women aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, CIPHA 2017-2018

Characteristic	Among women who reported having sex in the past 12 months		Among women who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner ¹	Number
Wealth quintile				
Lowest	45.6	1,138	44.3	455
Second	36.9	1,313	43.6	442
Middle	31.1	1,605	27.5	416
Fourth	18.4	1,795	27.3	297
Highest	14.7	1,307	22.9	157
Age				
15-19	68.4	958	51.4	560
20-24	42.6	1,341	43.7	449
25-29	29.2	1,311	28.7	295
30-34	23.6	1,157	20.4	200
35-39	13.5	922	28.6	109
40-44	12.1	582	28.8	56
45-49	14.7	373	(13.2)	46
50-54	15.0	302	(20.4)	34
55-59	11.7	140	*	9
60-64	10.4	72	*	9
Total 15-24	52.5	2,299	47.6	1,009
Total 15-49	31.8	6,644	37.4	1,715
Total 15-64	30.5	7,158	36.9	1,767

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

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

Among all adults, 40.3% reported having sex with a nonmarital, noncohabitating partner in the last 12 months, and of these, less than half (44.6%) reported using a condom at last intercourse with the nonmarital and noncohabitating partner (Table 14.D).

The proportion among adults who reported using a condom at last intercourse with a nonmarital and noncohabitating partner in the past 12 months varied by residence and wealth quintile: 48.7% of those residing in urban and 34.9% of those residing in rural areas; 51.5% of those in the poorest quintile and 34.8% of those in the wealthiest quintile. Similar patterns were observed in both sexes (Table 14.D).

Table 14.D Condom use at last sex with a nonmarital, noncohabitating partner: Total

Among persons aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, CIPHIA 2017-2018

Characteristic	Among persons who reported having sex in the past 12 months		Among persons who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner ¹	Number
Residence				
Urban	47.3	7,087	48.7	2,685
Rural	29.7	7,146	34.9	1,743
Region				
Abidjan	52.5	1,880	49.0	782
Yamoussoukro	49.7	891	38.9	366
Bas-Sassandra	30.7	2,014	40.8	514
Comoé	41.5	607	52.2	219
Denguélé	15.1	776	42.7	100
Gôh-Djiboua	29.0	718	40.3	178
Lacs	42.4	721	44.6	281
Lagunes	42.3	624	43.5	227
Montagnes	35.4	574	38.0	172
Sassandra-Marahoué	36.8	969	40.8	297
Savanes	25.7	780	43.7	174
Vallée du Bandama	41.1	1,989	40.9	693
Woroba	19.9	871	35.4	170
Zanzan	34.5	819	41.5	255
Marital status				
Never married	84.1	4,031	50.1	2,835
Married or living together	14.7	9,527	37.8	1,093
Divorced or separated	84.3	525	28.3	392
Widowed	74.0	98	18.2	68
Type of union				
In polygynous union†	12.4	2,002	21.5	179
Not in polygynous union	15.1	7,373	41.1	893
Not currently in union	83.9	4,654	46.9	3,295
Don't know/missing	35.1	204	36.0	61
Education				
No education	24.8	6,578	36.6	1,295
Primary	38.1	3,786	39.8	1,144
Secondary	62.2	3,076	52.2	1,587
More than secondary	66.8	771	49.7	397

Table 14.D Condom use at last sex with a nonmarital, noncohabitating partner: Total (continued)

Among persons aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, CIPHA 2017-2018

Characteristic	Among persons who reported having sex in the past 12 months		Among persons who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner ¹	Number
Wealth quintile				
Lowest	53.5	2,081	51.5	912
Second	48.2	2,471	50.5	993
Middle	41.3	3,172	40.8	1,030
Fourth	28.2	3,649	34.5	868
Highest	27.4	2,860	34.8	625
Age				
15-19	79.2	1,530	58.4	1,029
20-24	60.6	2,277	52.4	1,056
25-29	45.2	2,376	39.2	776
30-34	34.4	2,266	34.7	597
35-39	26.3	1,930	40.2	398
40-44	22.3	1,369	35.7	234
45-49	18.5	948	25.8	148
50-54	17.5	760	26.1	108
55-59	13.3	471	(23.8)	49
60-64	10.4	306	(17.1)	33
Total 15-24	67.6	3,807	55.1	2,085
Total 15-49	43.2	12,696	45.4	4,238
Total 15-64	40.3	14,233	44.6	4,428

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

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

Weighted figures.

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.

† A polygynous union is a marriage between a man and more than one wife.

Male circumcision

Among men, very few (5.2%) reported that they were uncircumcised. Half of the men (51.9%), however, reported that they were circumcised in a nonmedical environment, with similar proportions in both rural and urban areas (51.3% and 52.3%, respectively). Among men who tested HIV positive in the survey, 6.9% said they had not been circumcised while 50.2% said they had been circumcised in a nonmedical setting. The proportion of uncircumcised men ranged from 1.9% in Abidjan to 24.6% in Zanzan (Table 14.E).

Table 14.E Male circumcision

Characteristic	Circumcised ¹		Uncircumcised	Unknown ²	Total	Number
	Medical circumcision	Non-medical circumcision				
Result of PHIA survey HIV test						
HIV positive	26.1	50.2	6.9	16.8	100.0	139
HIV negative	27.5	52.4	5.3	14.8	100.0	8,748
Not tested	34.9	47.1	4.1	13.9	100.0	611
Residence						
Urban	28.2	52.3	3.8	15.7	100.0	4,779
Rural	28.1	51.3	7.5	13.2	100.0	4,719
Region						
Abidjan	30.1	53.6	1.9	14.4	100.0	1,223
Yamoussoukro	29.5	53.2	2.5	14.8	100.0	621
Bas-Sassandra	32.1	48.1	6.5	13.2	100.0	1,372
Comoé	23.7	56.7	2.4	17.2	100.0	355
Denguélé	16.4	67.5	2.6	13.4	100.0	530
Gôh-Djiboua	27.7	55.5	6.0	10.8	100.0	497
Lacs	29.2	53.7	3.1	13.9	100.0	476
Lagunes	30.7	42.3	10.3	16.7	100.0	437
Montagnes	35.9	50.8	5.4	7.9	100.0	399
Sassandra-Marahoué	22.6	48.7	8.0	20.7	100.0	716
Savanes	21.6	57.0	5.1	16.4	100.0	507
Vallée du Bandama	27.8	53.2	4.1	15.0	100.0	1,248
Woroba	14.3	61.2	4.3	20.1	100.0	585
Zanzan	17.1	46.4	24.6	11.9	100.0	532
Marital status						
Never married	26.9	49.9	5.3	17.9	100.0	3,990
Married or living together	29.1	53.8	5.2	11.9	100.0	5,019
Divorced or separated	31.3	50.3	4.9	13.5	100.0	384
Widowed	18.9	67.1	3.3	10.7	100.0	66
Type of union						
In polygynous union†	27.1	52.9	7.3	12.8	100.0	791
Not in polygynous union	29.4	54.0	4.9	11.8	100.0	4,226
Not currently in union	27.2	50.1	5.2	17.5	100.0	4,440
Don't know/missing	(39.1)	(47.3)	(6.3)	(7.3)	100.0	41
Education						
No education	24.6	54.2	7.6	13.6	100.0	3,679
Primary	26.3	53.4	5.5	14.7	100.0	2,438
Secondary	31.7	49.1	3.5	15.7	100.0	2,752
More than secondary	34.9	48.4	0.9	15.9	100.0	615

Table 14.E Male circumcision (continued)

Characteristic	Circumcised ¹		Uncircumcised	Unknown ²	Total	Number
	Medical circumcision	Non-medical circumcision				
Wealth quintile						
Lowest	31.0	51.4	1.8	15.9	100.0	1,286
Second	27.0	53.7	2.1	17.1	100.0	1,594
Middle	27.8	52.0	3.8	16.3	100.0	2,179
Fourth	26.5	54.4	6.1	13.0	100.0	2,396
Highest	27.9	48.0	12.8	11.3	100.0	2,043
Age						
15-19	25.1	47.4	6.9	20.6	100.0	1,581
20-24	25.4	50.7	7.0	16.9	100.0	1,306
25-29	32.7	48.0	3.9	15.4	100.0	1,312
30-34	30.7	49.7	4.6	15.0	100.0	1,294
35-39	28.3	55.7	4.0	12.0	100.0	1,136
40-44	30.1	52.2	2.9	14.8	100.0	900
45-49	25.5	59.0	4.7	10.8	100.0	676
50-54	25.5	59.8	5.5	9.2	100.0	546
55-59	24.1	62.4	7.7	5.8	100.0	416
60-64	33.7	55.1	5.6	5.6	100.0	331
Total 15-24	25.2	49.0	6.9	18.8	100.0	2,887
Total 15-49	28.3	50.9	5.1	15.7	100.0	8,205
Total 15-64	28.2	51.9	5.2	14.7	100.0	9,498

¹Relates to Global AIDS Monitoring Indicator 3.16: Voluntary male medical circumcision and PEPFAR VMMC_TOTALCIRC NAT / SUBNAT.

²Includes participants who did not know whether their circumcision was performed by a doctor or nonmedical practitioner (n = 1353), who refused to answer the question (n = 20), who answered "other" to the question who had circumcised them (n = 19) or who did not know if they were circumcised (n = 13).

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

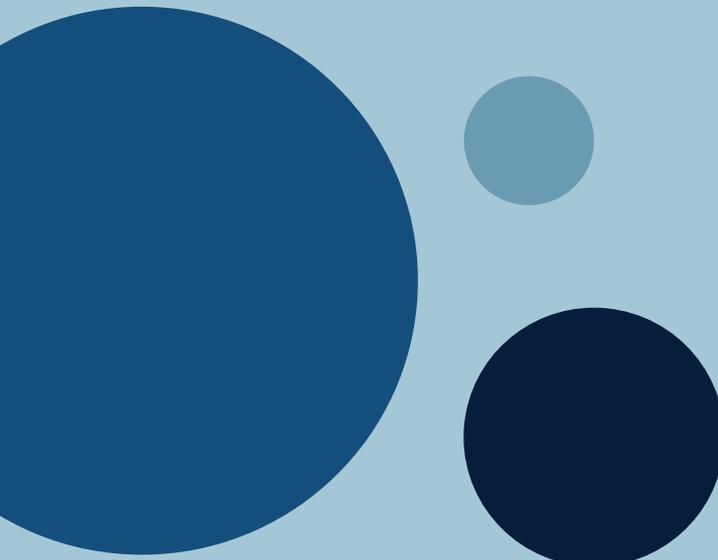
Weighted figures.

*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. † A polygynous union is a marriage between a man and more than one wife.

14.4 GAPS AND UNMET NEEDS

- **Novel communication strategies are needed to improve the uptake of prevention interventions, particularly among young people.**



15. INTIMATE PARTNER VIOLENCE

15.1 KEY FINDINGS

- Among ever-married or partnered women (ages 15-64 years), 3.3% stated that they had been the victim of physical or sexual violence committed by an intimate partner in the 12 months before the survey. The prevalence of recent IPV was higher among ever married or partnered older adolescent girls and young women aged 15-24 years (6.7%) than among older women.

15.2 BACKGROUND

Intimate partner violence (IPV) is defined as physical violence, sexual violence, stalking, and psychological aggression (including coercive tactics) by a current or former intimate partner (ie, spouse, boyfriend/girlfriend, dating partner, or ongoing sexual partner).¹ Exposure to IPV has been implicated in an 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).²

Data from CIPHIA 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 an intimate partner in the last 12 months among ever married or partnered women. In this study, sexual violence was experiencing physical force or pressure to have sex. Physical violence was 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 weapons. 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.

Questions about violence included in the survey were adapted from those used in Demographic and Health Surveys as well as the Violence Against Children Survey, which measures physical, emotional, and sexual violence in childhood, adolescence, and young adulthood. Anyone reporting violence was offered referrals to social services.

15.3 RESULTS

Among ever married or partnered women, 2.7% reported experiencing physical violence, 0.9% sexual violence, and 0.2% physical and sexual violence in the 12 months before the survey. A total of 3.3% of women reported experiencing either physical or sexual violence from an intimate partner in the past 12 months. A higher prevalence of recent IPV was reported by older adolescent girls and young women who were ever married or in a relationship (6.7% among those aged 15-24 years overall) (Table 15.A).

Of HIV-positive women who were ever married or in a relationship, 2.6% reported experiencing recent intimate partner physical violence and 1.6% recent sexual violence. A similar pattern was observed among HIV-negative women who were already married or in a relationship (2.6% and 0.8% for physical violence and sexual violence, respectively) (Table 15.A).

The prevalence of recent sexual IPV was similar among women who were ever married or in a relationship living in urban areas and in rural areas (0.9% in both locales). By region, reported recent sexual or physical IPV peaked in Montagnes at 6.2% (Table 15.A).

It should be noted that the estimates for IPV in CIPHIA were markedly lower than observed in other studies. This pattern has been observed across PHIA in other countries, suggesting that IPV may be significantly under-reported.

Table 15.A Prevalence of recent intimate partner violence

Characteristic	Physical violence	Sexual violence	Physical and sexual violence	Physical or sexual violence ¹	Number of ever-married or partnered women
Result of PHIA survey HIV test					
HIV positive	2.6	1.6	1.6	2.7	173
HIV negative	2.6	0.8	0.2	3.3	3,988
Not tested	2.7	1.1	0.0	3.8	233
Residence					
Urban	2.4	0.9	0.2	3.1	1,953
Rural	3.0	0.9	0.3	3.6	2,441
Region					
Abidjan	2.5	0.9	0.1	3.3	465
Yamoussoukro	2.5	1.1	0.0	2.9	245
Bas-Sassandra	1.7	0.0	0.0	1.7	679
Comoé	2.4	0.2	0.3	2.4	177
Denguélé	2.8	0.0	0.0	2.8	294
Gôh-Djiboua	2.2	0.3	0.3	2.2	278
Lacs	1.2	0.0	0.0	1.2	187
Lagunes	2.7	1.5	0.0	4.2	177
Montagnes	3.8	3.6	1.3	6.2	202
Sassandra-Marahoué	4.3	0.7	0.0	5.1	284
Savanes	2.5	0.0	0.0	2.5	257
Vallée du Bandama	2.5	0.7	0.2	3.0	586
Woroba	2.1	0.2	0.2	2.1	269
Zanzan	1.3	0.3	0.0	1.6	294
Marital status					
Never married	*	*	*	*	0
Married or living together	2.8	0.7	0.1	3.5	3,904
Divorced or separated	1.0	1.7	0.3	2.5	252
Widowed	2.6	1.9	1.9	2.6	222
Type of union					
In polygynous union†	2.8	0.4	0.2	3.1	795
Not in polygynous union	2.8	0.7	0.1	3.5	2,998
Not currently in union	1.8	1.8	1.1	2.6	474
Don't know/missing	2.9	2.6	0.0	5.6	127
Education					
No education	3.0	0.8	0.3	3.6	2,617
Primary	2.3	0.8	0.1	3.0	1,272
Secondary	1.6	1.4	0.3	2.9	420
More than secondary	4.4	0.6	0.5	4.6	80

Table 15.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 past 12 months, by woman's HIV status and selected demographic characteristics, CIPHIA 2017-2018					
Characteristic	Physical violence	Sexual violence	Physical and sexual violence	Physical or sexual violence ¹	Number of ever-married or partnered women
Wealth quintile					
Lowest	1.9	0.7	0.0	2.7	499
Second	1.9	1.6	0.4	3.0	699
Middle	2.7	0.7	0.0	3.3	996
Fourth	3.6	0.8	0.1	4.3	1,182
Highest	2.9	0.8	0.7	3.1	1,018
Age					
15-19	8.5	2.9	2.9	8.6	232
20-24	4.9	1.3	0.1	6.0	677
25-29	1.9	1.0	0.1	2.8	841
30-34	3.5	0.9	0.1	4.2	789
35-39	2.3	1.7	0.3	3.9	666
40-44	0.3	0.0	0.0	0.3	420
45-49	0.6	0.0	0.0	0.6	269
50-54	3.2	0.0	0.0	3.2	252
55-59	0.0	0.0	0.0	0.0	139
60-64	0.4	0.0	0.0	0.4	109
Total 15-24	5.8	1.7	0.8	6.7	909
Total 15-49	2.8	1.0	0.3	3.6	3,894
Total 15-64	2.7	0.9	0.2	3.3	4,394

¹Relates to Global AIDS Monitoring 4.3: Prevalence of recent intimate partner violence.

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

Weighted figures.

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.

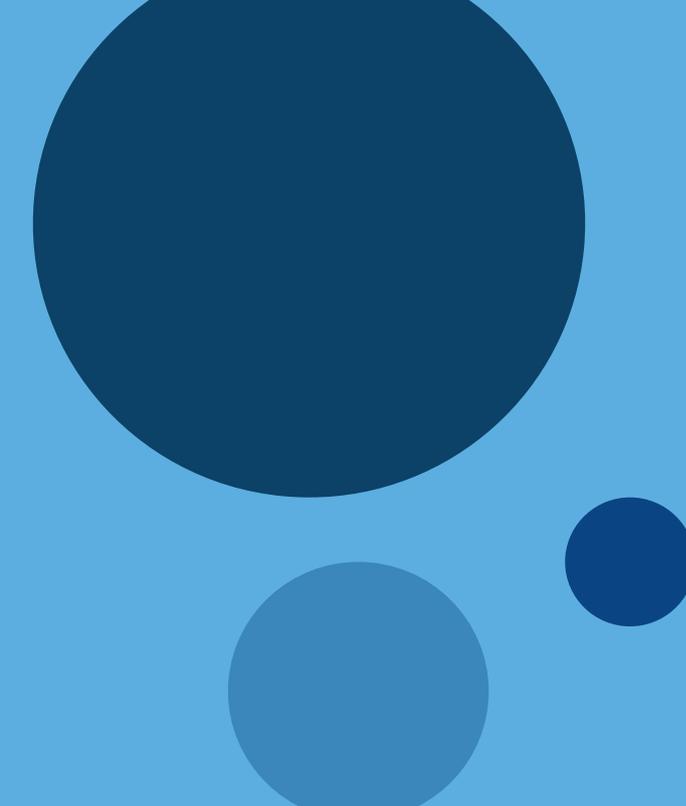
† A polygynous union is a marriage between a man and more than one wife.

15.4 GAPS AND UNMET NEEDS

- **Public awareness should be raised through educational campaigns that show the economic, social, and health consequences of violence towards women, and explain its relationship with the risk of HIV.**
- **While IPV is likely under-reported, CIPHIA's findings provide support for strengthening the law (Law n° 98-757 of December 23, 1998, concerning enforcement against certain kinds of violence towards women) and policies concerning family violence and specifically addressing gender-related issues.**

15.5 REFERENCES

1. Breiding MJ, Basile KC, Smith SG, Black MC, Mahendra RR. *Intimate Partner Violence Surveillance: Uniform Definitions and Recommended Data Elements, Version 2.0*. Atlanta (GA): National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2015.
2. Maman S, Campbell J, Sweat MD, Gielen AC. The intersections of HIV and violence: directions for future research and interventions. *Soc Sci Med*. 2000 Feb;50(4):459-78.



16. DISCRIMINATORY ATTITUDES TOWARDS PEOPLE LIVING WITH HIV

16.1 KEY FINDINGS

- Almost half of adults (49.2%) held discriminatory attitudes towards people living with HIV.
- A larger number of adults in rural areas (58.6%) exhibited discriminatory attitudes towards HIV-positive people, compared to those in urban areas (43.9%).
- The prevalence of discriminatory attitudes among adults was highest in Woroba (70.2%) and Denguelé (67.3%).
- The prevalence of discriminatory attitudes was about three times higher among adults with no education (58.1%) than among those with higher education (21.9%).

16.2 BACKGROUND

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

This chapter focuses on potential stigmatization directed against HIV and people living with HIV. In CIPHIA, the assessment of discriminatory attitudes among adults (those aged 15-64 years) towards people living with HIV follows the guidance for global AIDS monitoring by UNAIDS and is based on two questions: 1) Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV, and 2) Do you think that children living with HIV should be able to attend school with children who are HIV negative. Responses of “No” to either question would indicate a discriminatory attitude (UNAIDS 2016). This data can help to explain how HIV-related stigma may be negatively impacting efforts aimed at HIV prevention, HIV testing, and access to HIV treatment and care.

16.3 RESULTS

About half of adults (49.2%) had discriminatory attitudes toward people living with HIV: 43.2% reported “they would not buy fresh vegetables from a trader or salesperson if they knew that person had HIV” and 31.6% did not think “that children living with HIV should be able to go to school with HIV-negative children” (Table 16.A).

Variations in the prevalence of discriminatory attitudes towards people living with HIV depended upon the respondents’ place of residence, region, level of education, wealth quintile, and age. More adults in rural areas (58.6%) had discriminatory attitudes compared to those in urban areas (43.9%). Looking at the regional disaggregation, the proportions of people who reported having HIV-related discriminatory attitudes ranged from 40.1% in the district of Abidjan to 67.3% in Denguelé and 70.2% in Woroba. The prevalence of discriminatory attitudes reported by adults with no education (58.1%) was about triple that of higher education (21.9%). The prevalence of discriminatory attitudes increased by wealth quintile, ranging from 36.9% among adults in the poorest quintile to 63.3% among those in the wealthiest quintile. Finally, young people (those aged 15-24 years) had higher proportions of discriminatory attitudes towards people living with HIV (54.6%) than other adults (Table 16.A).

Table 16.A Discriminatory attitudes toward people living with HIV

Among persons aged 15-64 years, percentage who report discriminatory attitudes towards people living with HIV, by selected demographic characteristics, CIPHIA 2017-2018						
Characteristic	Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?		Do you think that children living with HIV should be able to attend school with children who are HIV negative?		Both questions	
	Percentage who responded “No”	Number	Percentage who responded “No”	Number	Percentage who responded “No” to either question ¹	Number
Residence						
Urban	37.6	4,462	25.7	4,462	43.9	4,462
Rural	53.1	3,904	42.2	3,904	58.6	3,904

Table 16.A Discriminatory attitudes toward people living with HIV (continued)

Characteristic	Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?		Do you think that children living with HIV should be able to attend school with children who are HIV negative?		Both questions	
	Percentage who responded "No"	Number	Percentage who responded "No"	Number	Percentage who responded "No" to either question ¹	Number
Region						
Abidjan	33.9	1,208	21.6	1,208	40.1	1,208
Yamoussoukro	38.4	575	25.4	575	43.5	575
Bas-Sassandra	46.6	1,159	34.9	1,159	51.8	1,159
Comoé	36.3	364	25.2	364	42.4	364
Denguélé	58.7	459	49.5	459	67.3	459
Gôh-Djiboua	42.4	437	35.1	437	46.5	437
Lacs	43.8	418	31.2	418	48.8	418
Lagunes	46.5	363	30.8	363	52.5	363
Montagnes	54.0	313	42.8	313	61.6	313
Sassandra-Marahoué	52.4	557	39.3	557	57.8	557
Savanes	41.7	408	36.3	408	47.1	408
Vallée du Bandama	46.2	1,187	36.0	1,187	53.9	1,187
Woroba	63.5	467	53.5	467	70.2	467
Zanzan	48.5	451	38.5	451	53.9	451
Marital status						
Never married	41.9	3,101	29.6	3,101	48.3	3,101
Married or living together	45.2	4,645	34.1	4,645	51.0	4,645
Divorced or separated	34.4	407	23.9	407	39.5	407
Widowed	45.2	181	33.2	181	49.1	181
Type of union						
In polygynous union†	55.4	961	42.2	961	61.6	961
Not in polygynous union	43.3	3,618	32.6	3,618	49.0	3,618
Not currently in union	41.3	3,689	29.1	3,689	47.4	3,689
Don't know/missing	26.9	98	16.9	98	35.6	98
Education						
No education	52.4	3,551	40.0	3,551	58.1	3,551
Primary	47.5	2,230	36.2	2,230	53.1	2,230
Secondary	33.4	2,144	21.3	2,144	40.1	2,144
More than secondary	15.3	434	9.3	434	21.9	434
Wealth quintile						
Lowest	30.4	1,402	19.1	1,402	36.9	1,402
Second	38.2	1,630	24.7	1,630	43.6	1,630
Middle	44.7	1,892	32.6	1,892	51.0	1,892
Fourth	53.4	1,924	42.7	1,924	59.3	1,924
Highest	57.3	1,518	47.3	1,518	63.3	1,518

Table 16.A Discriminatory attitudes toward people living with HIV (continued)

Among persons aged 15-64 years, percentage who report discriminatory attitudes towards people living with HIV, by selected demographic characteristics, CIPHIA 2017-2018

Characteristic	Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?		Do you think that children living with HIV should be able to attend school with children who are HIV negative?		Both questions	
	Percentage who responded "No"	Number	Percentage who responded "No"	Number	Percentage who responded "No" to either question ¹	Number
Age						
15-19	50.9	1,475	37.0	1,475	57.1	1,475
20-24	45.0	1,249	33.6	1,249	52.0	1,249
25-29	40.8	1,223	30.6	1,223	46.7	1,223
30-34	38.7	1,196	27.3	1,196	44.2	1,196
35-39	40.6	981	30.6	981	48.0	981
40-44	37.1	732	25.6	732	42.0	732
45-49	45.7	531	33.8	531	50.3	531
50-54	43.3	444	33.4	444	50.3	444
55-59	44.8	315	31.6	315	47.7	315
60-64	42.7	220	26.5	220	46.4	220
Total 15-24	48.0	2,724	35.3	2,724	54.6	2,724
Total 15-49	43.1	7,387	31.6	7,387	49.3	7,387
Total 15-64	43.2	8,366	31.6	8,366	49.2	8,366

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

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

Weighted figures.

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.

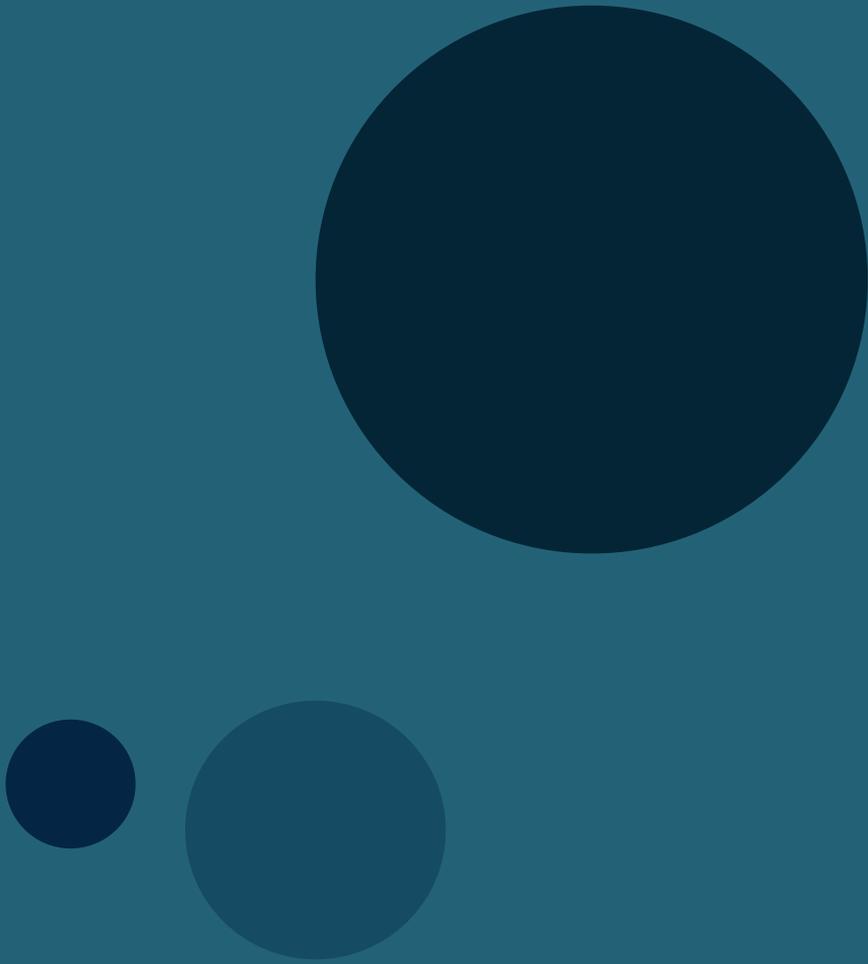
† A polygynous union is a marriage between a man and more than one wife.

16.4 GAPS AND UNMET NEEDS

- **Discriminatory attitudes were more common among young people in rural areas and persons without an education. Consequently, interventions seeking to reduce discrimination should:**
 - Target places frequented by young people (schools, recreational centers),
 - Adapt to specific characteristics of rural areas,
 - Account for the particular needs of individuals without an education.

16.5 REFERENCES

1. Joint United Nations Programme on HIV/AIDS. UNAIDS data tables, 2017. <http://aidsinfo.unaids.org/>. Accessed May 6, 2019.



17. TUBERCULOSIS

17.1 KEY FINDINGS

- Among adults who reported they were HIV positive, 29.4% said that they had visited tuberculosis (TB) clinics. Among them, 69.2% reported that they had received a TB diagnosis. (Note: The denominator for this estimate was between 25-49 and should be interpreted with caution.) Among HIV-positive adults who reported a TB diagnosis, 87.2% reported initiating treatment for TB. Note: The estimates of those reporting on diagnosis and treatment are based on a denominator between 25-49 and should be interpreted with caution.

17.2 BACKGROUND

People living with HIV are at risk for acquiring other diseases, including TB, the leading causes 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 critical. WHO estimates there were 2,600 (1,600-3,800) TB-related deaths among HIV-positive persons in Côte d'Ivoire 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.

17.3 RESULTS

Table 17.A shows the cascade of clinical care for TB among HIV-positive people by sex, based upon self-report. Less than one-third of adults (29.4%) self-reported as HIV positive said that they had ever visited a tuberculosis service (34.1% of men and 28.1% of women). (Note: the denominator among men was between 25-49 and should be interpreted with caution.) Of these, 69.2% said that they were diagnosed with TB, 87.2% of whom said that they also initiated treatment for TB. (Note: These estimates were also based on denominators between 25-49 and should be interpreted with caution.)

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

Among self-reported HIV-positive persons 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, CIPHIA 2017-2018

Characteristic	Among HIV-positive persons		Among HIV-positive persons who ever visited a TB clinic		Among HIV-positive persons who were diagnosed with TB	
	Percentage who ever visited a TB clinic	Number	Percentage who were diagnosed with TB	Number	Percentage who were treated for TB	Number
Sex						
Male	(34.1)	44	*	12	*	9
Female	28.1	133	(66.4)	32	*	21
Total 15-64	29.4	177	(69.2)	44	(87.2)	30

Weighted figures.
 *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.

17.4 GAPS AND UNMET NEEDS

- **Mechanisms of collaboration between HIV programs and TB programs should be strengthened in their joint struggle against HIV and TB.**

17.5 REFERENCES

1. Joint United Nations Programme on HIV/AIDS. UNAIDS data tables, 2017. <http://aidsinfo.unaids.org/>. Accessed May 6, 2019.



APPENDICES

APPENDIX A SAMPLE DESIGN AND WEIGHTING

Appendix A provides a high-level overview of sampling and weighting procedures for CIPHIA 2017-2018. In-depth details are provided in the *CIPHIA 2017-2018 Sampling and Weighting Technical Report*, which may be found on the [PHIA Project website](#).

A.1 SAMPLE DESIGN

Overview

The sample design for CIPHIA 2017-2018 is a stratified multistage probability sample design, with strata defined by the 14 regions of the country, first-stage sampling units defined by EAs within strata, second-stage sampling units defined by households within EAs, and finally eligible persons within households. Within each region, the first-stage sampling units (also referred to as PSUs) were selected with probabilities proportionate to the number of households in the PSU based on the 2014 Cote d'Ivoire Population and Housing Census. The allocation of the sample PSUs to the 14 regions of the country was made in a manner designed to achieve specified precision levels for (1) a national estimate of the HIV incidence rate and (2) 14 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 (defined as those aged 15-64 years) were included in the study sample for data collection. As for children (defined as those aged 0-14 years), given the low HIV prevalence, reaching the sample size required to obtain an estimate of HIV prevalence in the general population with acceptable precision was not feasible. Instead, CIPHIA included both a 'targeted' sample of 4,600 children more likely to be HIV positive—which included any child whose mother tested positive for HIV during the survey or who was deceased or whose HIV status was otherwise unknown—along with a smaller sample of approximately 1,000 children in the 'nontargeted' subpopulation for comparison purposes.

Population of Inference

The population of inference for CIPHIA 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 before 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 before the household interview.

Precision Specifications and Assumptions

The following specifications were used to develop the sample design for CIPHIA 2017-2018:

- 95% confidence bounds of ± 0.10 or less around an estimated VLS rate among all HIV-positive adults aged 15-49 years for the three high HIV prevalence regions of Cote d'Ivoire (ie, regions with a prevalence of 4% or greater).
- 95% confidence bounds of ± 0.20 or less around an estimated VLS rate among all HIV-positive adults aged 15-49 years for the 11 low HIV prevalence regions of Cote d'Ivoire (ie, regions with prevalence less than 4%).

The following assumptions were used to develop the sample design for CIPHIA:

- A national HIV prevalence rate of 0.035 (3.5%) for adults aged 15-49 years that varies by district. Source: 2011 Cote d'Ivoire Demographic and Health Survey (DHS),
- An annual national HIV incidence rate for adults aged 15-49 years of $P_a = 0.0021$ (0.21%). 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 $P_m = 0.0021/2.8077 = 0.0007$ (0.07%),
- A viral load suppression (VLS) rate of $P_{vh} = 0.50$ (50%) among HIV-positive adults aged 15-49 in each district. This is a conservative assumption because it will overstate the actual variance of the estimated VLS rate,
- An expected average sample size of 25 occupied households per sampled EA (cluster),
- An intra-cluster correlation (ICC) of $\rho = 0.02$ for prevalence and VLS rates. The ICC provides an average measure of the homogeneity of responses within the first-stage sampling units,
- An occupancy rate of 94.8% for sampled dwellings (Note that this is not included in the calculation of the overall survey response rate, but does determine the initial number of dwelling units to be sampled. Source: 2011 Cote d'Ivoire DHS),
- An overall household response rate of 98.1% among occupied households. Source: 2011 Cote d'Ivoire DHS,
- The average number of adults aged 15-49 years per household is 2.23. Source: 2011 Cote d'Ivoire DHS,
- The overall percentage of children in households is 44.2% (Source: 2011 Cote d'Ivoire DHS),
- The overall percentage in households of older adults aged 50-64 years is 7.5%. Source: 2011 Cote d'Ivoire DHS,
- Among the eligible adults aged 15-64 years completing the household roster, a biomarker response rate of 75.5% (Source: Conservative assumption derived from the 2011 Cote d'Ivoire DHS),

- Among the eligible children 0-14 years of age in households designated for child data collection, a biomarker response rate of 70.5%. This value is the corresponding biomarker response rate for adults minus 5%.

Selection of the Primary Sampling Units

The PSUs for CIPHIA 2017-2018 were defined as the EAs created for the 2014 Cote d'Ivoire Population and Housing Census. The sampling frame consisted of slightly over 23,000 EAs containing an estimated 4.2 million households and 22,671,000 persons.

A stratified sample of 442 EAs was selected from the sampling frame. However, three of the originally-sampled EAs were determined to no longer contain households and were deleted from the study sample, leaving 439 EAs in the study for data collection. The 14 strata specified for sampling were the 14 regions of Côte d'Ivoire. The EA samples were selected systematically and with probabilities proportionate to a measure of size (MOS) equal to the number of households in the EA based on the 2014 Cote d'Ivoire Population and Housing Census. Before the selection, the EAs were sorted by type, including urban/rural, by district, urban-rural status within district, department within urban-rural status, sub-prefecture within department, commune within sub-prefecture, and EA within commune. Sorting of the EAs before 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 had the property that the probability of selecting an EA within a particular stratum was proportional to the MOS of the EA in the stratum.

Details regarding EA substitution and segmentation may be found in the *CIPHIA 2017-2018 Sampling and Weighting Technical Report* available on the [PHIA Project website](#).

Selection of Households

For both sampling and analysis purposes, a household was defined as a group of individuals who reside in a physical structure such as a house, apartment, compound, or homestead, and share in housekeeping arrangements. The physical structure in which people reside was referred to as the dwelling unit, which may have contained more than one household meeting the above definition. Households were eligible for participation in the study if they were located within the sampled EA.

The selection of households for the CIPHIA 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 *CIPHIA 2017-2018 Sampling and Weighting Technical Report* on the [PHIA Project website](#).

Selection of households utilized an equal probability design. To achieve equal probability samples of households within each of the 14 regions of Côte d'Ivoire, the sampling rates required to select dwelling units/households within an EA depended on the difference between the MOS used in sampling and the actual number of dwelling units/households found at the time of listing. Thus, application of these within-EA sampling rates could have yielded more or less than the desired 25 households in EAs where the sampling MOS differs from the actual listing count. *The CIPHIA 2017-2018 Sampling and Weighting Technical Report* provides an in-depth description of the equal probability sample design, as well as a detailed summary of the results of the household selection.

Selection of Individuals

The selection of individuals for the CIPHIA 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 were eligible for data collection; and (3) selecting those individuals who met the age and residency requirements of the study. However, only those individuals who slept in the household the night before the household interview (ie, the de facto population) were retained for subsequent weighting and analysis.

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

District	Number of sample PSUs (EAs)	Number of sampled dwelling units/households	Minimum PSU sample size	Maximum PSU sample size	UEW DEFF for dwelling unit sample
Abidjan	61	1,598	15	40	1.08
Yamoussoukro	24	631	15	40	1.10
Bas-Sassandra	61	1,603	15	40	1.07
Comoe	20	528	15	40	1.05
Denguele	24	633	15	40	1.02
Goh-Djiboua	23	606	15	40	1.04
Lacs	21	554	15	40	1.03
Lagunes	20	524	15	40	1.05
Montagnes	21	553	15	40	1.04
Sassandra-Marahoue	26	694	15	40	1.25
Savanes	25	685	15	40	1.01
Vallee du Bandama	54	1,424	15	40	1.06
Woroban	25	679	15	40	1.28
Zanzan	34	896	15	40	1.01
Total	439	11,608	15	40	1.47 ¹

¹Overall design effect (DEFF) reflects total variation in weights within and across districts; PSU: primary sampling units; UEW: unequal weighting.

The *CIPHIA 2017-2018 Sampling and Weighting Technical Report* provides a brief description of the process for listing and selecting individuals for participation in the CIPHIA 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 as the reciprocal of the probability of including a household or person in the sample. The base weights are used to inflate the responses of the sampled units to population levels and are generally unbiased (or consistent) if there is no nonresponse or noncoverage in the sample. When nonresponse or noncoverage occurs in the survey, weighting adjustments are applied to the base weights to compensate for both types of sample omissions.

Nonresponse is unavoidable in virtually all surveys of human populations. For CIPHIA 2017-2018, nonresponse could have occurred at different stages of data collection, for example, (1) before the enumeration of individuals in the household, (2) after household enumeration and selection of persons, but before completion of the individual interview, and (3) after completion of the interview, but before collection of a viable blood sample.

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

Methods

The overall weighting approach for CIPHIA 2017-2018 included several steps. Methods and results for each of the steps below are detailed in the *CIPHIA 2017-2018 Sampling and Weighting Technical Report*.

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

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

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

Calculation of household weights: The next step was to calculate household weights. The household base weights were calculated as the PSU weights times the reciprocal of the within-PSU household selection probabilities. The household base weights were adjusted first to account for dwelling units for which it could not be determined whether the dwelling unit contained an eligible household and then the responding households had their weights adjusted to account for nonresponding eligible households. This adjustment was made based on the EA the households were in, and the resulting weight was the final household weight.

Calculation of person-level interview weights: Once the household weights were determined, they were used to calculate the individual base weights. The individual base weights were then adjusted for nonresponse among the eligible individuals, 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 were, in turn, the initial weights for the HIV testing data sample, with a further adjustment for nonresponse to HIV testing, and a final post-stratification adjustment to compensate for under-coverage.

Application of weighting adjustments to jackknife replicates: All of the adjustment processes were applied to the full sample and the replicate samples so that the final set of the full sample and replicate weights could be used for variance estimation that accounted for the complex sample design and every step of the weighting process.

A.3 REFERENCES

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APPENDIX B HIV TESTING METHODOLOGY

B.1 SPECIMEN COLLECTION AND HANDLING

Blood was collected by qualified survey staff from consenting participants: 14 mL of venous blood from adults aged 15-64 years; 6 mL from children aged 2-14 years; and 1 mL of capillary blood from adults who either refused to give venous blood or were unable to have blood collected using vacuum tubes, as well as children aged 0-23 months using finger- or heel-stick.

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

B.2 HOUSEHOLD-BASED PROCEDURES

HIV Rapid Testing

HIV Home-Based Testing and Counseling (HBTC)

HIV HBTC was conducted in each household following national guidelines. As per these guidelines, the survey used a sequential rapid-testing algorithm in the field (Figure B.2.A). Individuals classified as indeterminate were asked to go for a repeat screening test immediately at a health facility, per national guidelines (Figure B.2.B).

HIV-positive samples underwent additional testing at a satellite laboratory, as described in section B.3. For participants who reported an HIV positive status, but tested HIV negative at the time of the survey, an additional HIV RT was performed in a laboratory setting, as well as a DNA PCR test for confirmation of his/her status as described in section B.3. In CIPHIA, children of mothers who tested HIV positive underwent additional testing in a laboratory setting, as described in section B.3.

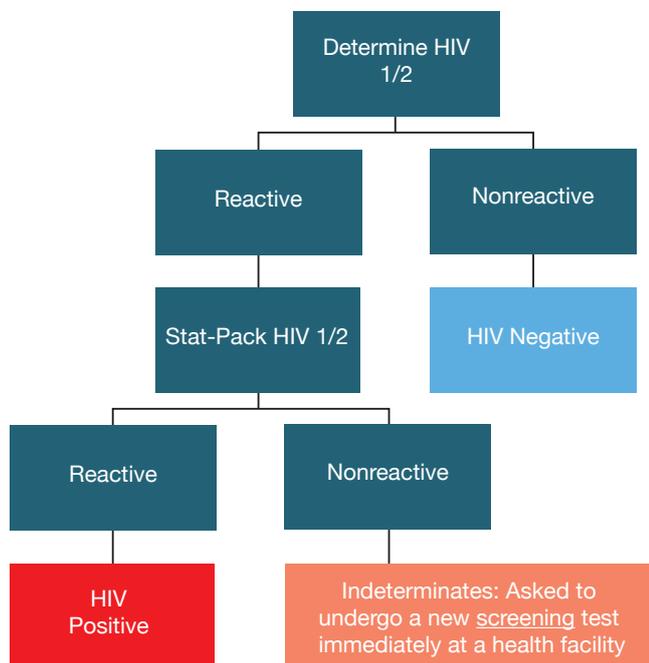
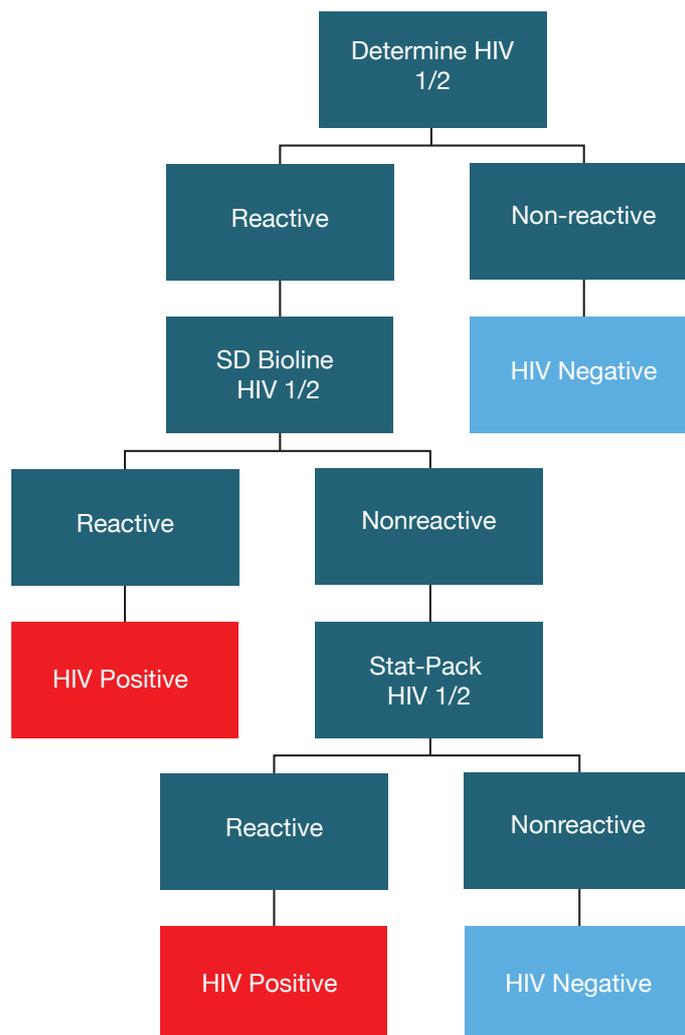


Figure B.2.A

Household-based HIV testing algorithm, ages 18 months and older, CIPHIA 2017-2018

Figure B.2.B.
Laboratory-based screening algorithm, CIPHIA 2017-2018



CD4 Testing

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

Counseling, Referral to Care, and Active Linkage to Care

Pre- and post-test counseling were conducted in each household following Côte d'Ivoire's national guidelines. For older adolescents aged 16-17 years, and adults aged 18 years or older, results were communicated directly to the participant, while for minors aged 0-15 years results were delivered to the participant's parent or guardian. The process for disclosure of test results to children was discussed and planned with the parents to assess the child's knowledge and coping capacity. HIV disclosure should take into consideration the child's age, maturity, and the complexity of family dynamics.

Participants with an HIV-positive test result were referred to HIV care and treatment at the health facility of their choice using a referral form showing their PTID. Further, HIV-positive participants were asked to consent to be contacted by a trained local social service organization or NGO to facilitate active linkage to receive HIV care, including ART, and support in Côte d'Ivoire's healthcare system.

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

Quality Assurance and Control

To control the quality of the performance of HIV rapid tests, field staff conducted testing of a panel of HIV-positive and HIV-negative DTS on a weekly basis. To assure the quality of the performance of field staff conducting HIV testing, proficiency testing using a panel

of blinded HIV-positive and HIV-negative DTS was evaluated twice during fieldwork. Additionally, sample re-testing was conducted at a satellite lab for (1) the first 50 samples tested by each field staff member, and (2) a random sample of 5% of HIV-negative specimens.

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

B.3 LABORATORY-BASED PROCEDURES

Fourteen (14) satellite laboratories for the survey were identified among existing health facility laboratories. One central reference laboratory was chosen for more specialized tests.

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, USA) (Figure B.3.A). Testing was conducted at the central laboratory following the manufacturer-specified protocol.

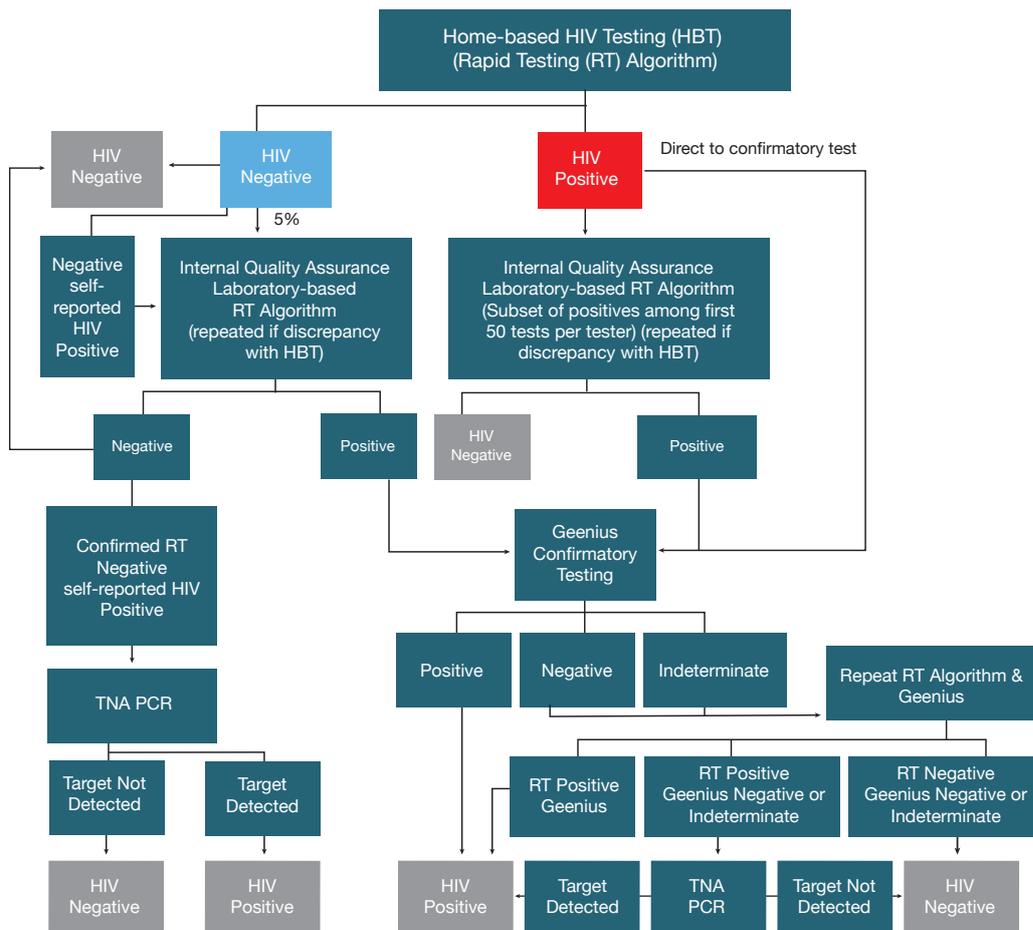
HIV Total Nucleic Acid (TNA) Polymerase Chain Reaction (PCR)

For infants below the age of 18 months who were HIV exposed (as determined by maternal serology during household-based testing), HIV TNA PCR was conducted (Figure B.3.A). Additionally, HIV TNA PCR was evaluated for participants who reported an HIV-positive status but tested HIV negative during the survey, as well as for samples that were HIV positive by the rapid testing algorithm, but were HIV negative or indeterminate by Geenius testing (Figure B.3.B). HIV TNA PCR was conducted on the Roche COBAS® AmpliPrep Instrument and COBAS® TaqMan® 96 analyzer using the COBAS® AmpliPrep/COBAS® Taqman HIV-1 Qualitative Test (Roche Molecular Diagnostics, Branchburg, New Jersey, United States) following the manufacturer-specified protocol.

Classification of Final HIV Status

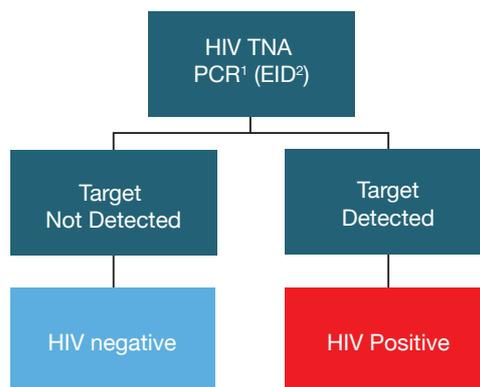
For participants aged 18 months or older, the algorithm for classification of final HIV status included results from HIV rapid testing, Geenius testing, and HIV TNA PCR. For infants younger than 18 months of age, the algorithm for classification of final HIV status was based on their HIV TNA PCR results. (Note: WHO currently recommends that virological testing be performed on all infants who are HIV exposed at 4-6 weeks, at 9 months and repeated at the age of 18 months or three months after the last breastfeeding, to make a final determination of HIV status).¹ Classification of final HIV status was used to determine estimates for HIV prevalence and to inform estimates for HIV incidence.

Figure B.3.A
 Final HIV Status
 Classification
 Algorithm (≥18
 months), CIPHIA 2017-
 2018



¹TNA PCR: Total Nucleic Acid polymerase chain reaction.
 Note: Grey boxes indicate the Final HIV status determination.

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



¹TNA PCR: total nucleic acid polymerase chain reaction; ²EID: early infant diagnosis.

Viral Load Testing

HIV VL from confirmed HIV-positive participants was measured using the Roche platform (COBAS® AmpliPrep/COBAS® TaqMan® HIV-1 Test, [Roche Diagnostics, Indianapolis, Indiana, United States]). The COBAS® AmpliPrep instrument (Roche Molecular Systems) was used to prepare plasma samples and controls while the COBAS® TaqMan® 96 analyzer was used for nucleic acid amplification and detection of HIV-1 RNA (Roche Molecular Systems, Branchburg, New Jersey, United States). The Roche COBAS® AmpliPrep/COBAS® TaqMan® 96 analyzer HIV-1 Test, version 2.0 (v2.0) was also used to measure viral load from DBS samples from infants, children, and adults with insufficient volume of plasma.

Viral load results were returned by the result returning coordinator (ROC) within 8-12 weeks to the health facility chosen by each HIV-positive participant. Participants were provided with a referral form (accompanied to the health facility with the consent of each person) during HBTC for subsequent retrieval of their results. Survey staff (ROC) 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.

HIV Recency Testing

Estimation of annualized HIV-1 incidence was based on the classification of confirmed HIV-positive cases as recent or long-term HIV infections. The survey used two laboratory-based testing algorithms to estimate incidence. The first estimate used an algorithm that employed a combination of the HIV-1 LAg-Avidity EIA (Sedia Biosciences Corporation, Portland, Oregon, United States) and VL results (Figure B.3.C).

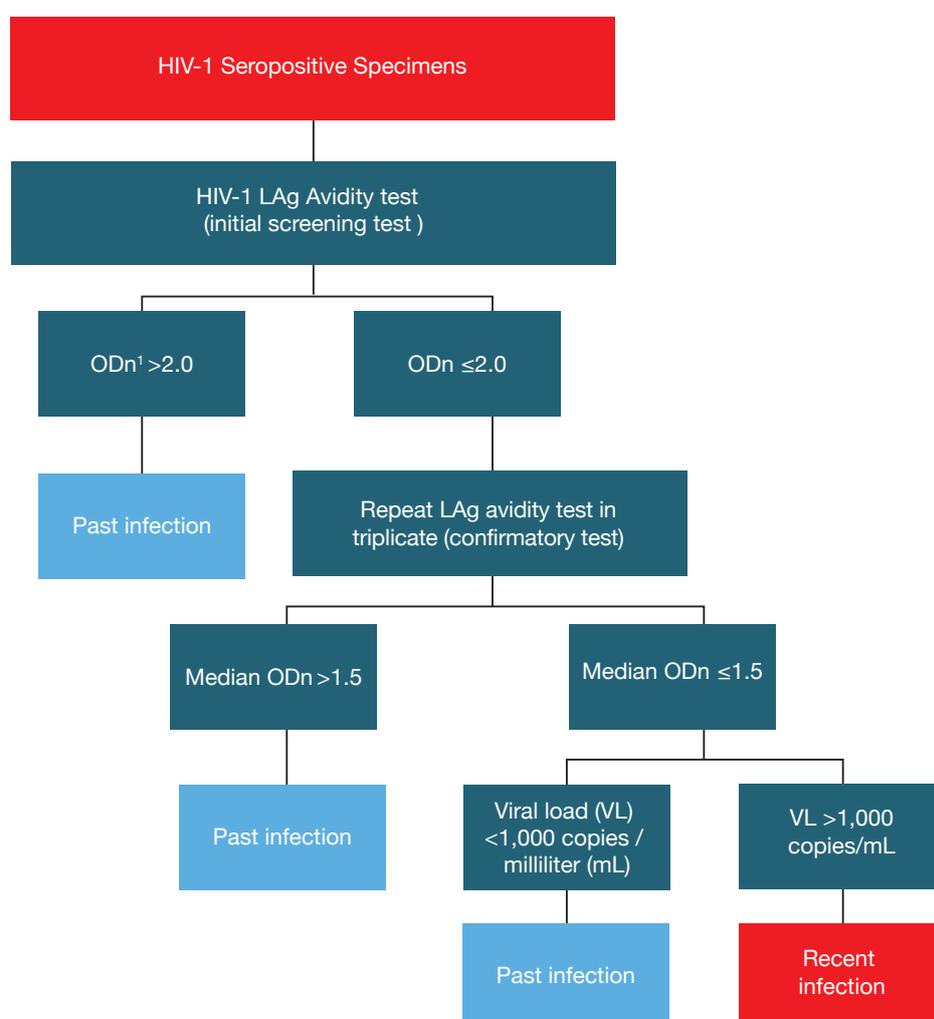


Figure B.3.C

HIV-1 recent infection testing algorithm (LAg/VL algorithm), CIPHIA 2017-2018

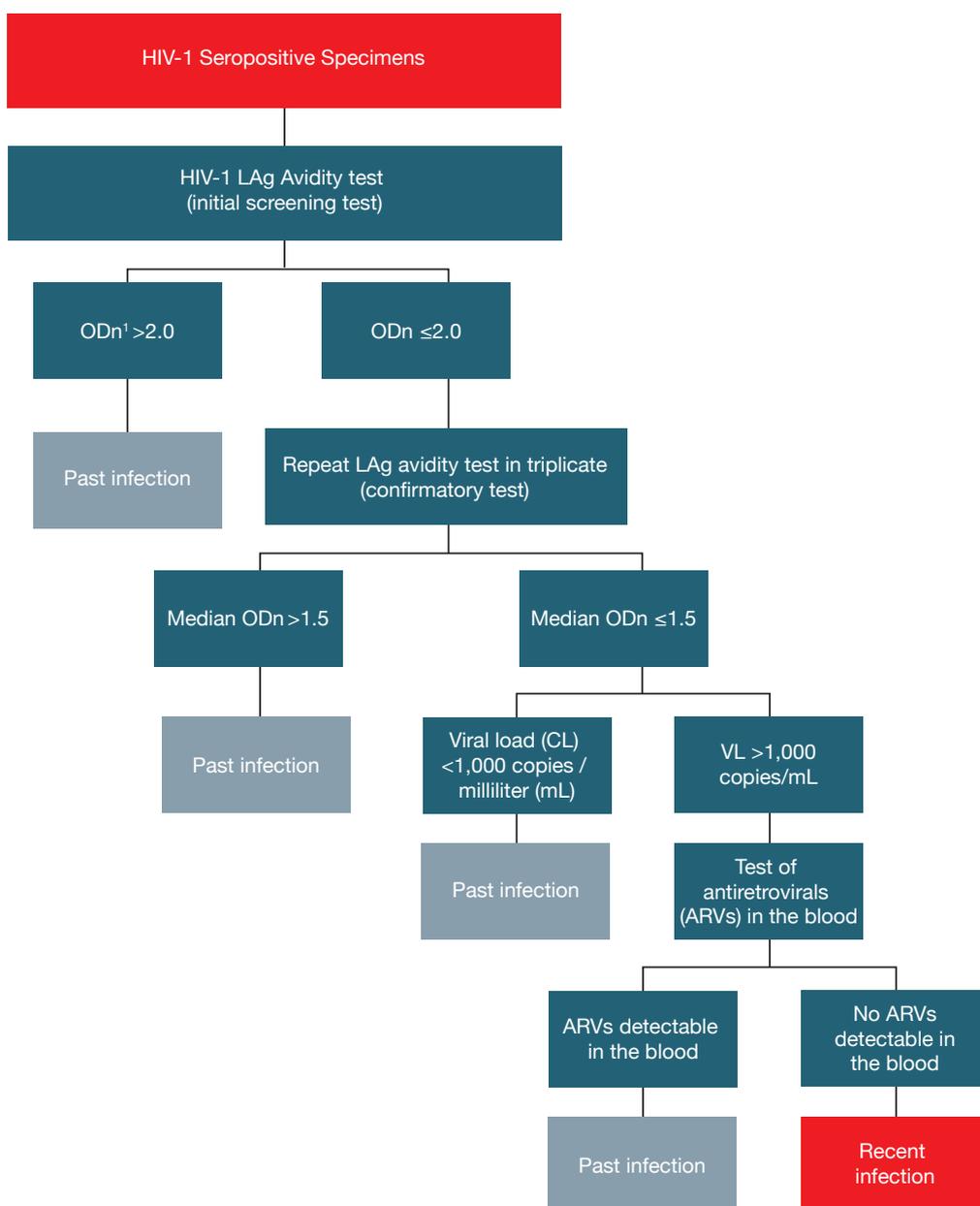
¹ODn = normalized optical density

Antiretroviral 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.

Limiting antigen avidity testing was performed twice, with an initial screening test followed by a confirmatory test. Samples with a $ODn > 2.0$ during initial testing were classified as long-term infections, while those with $ODn \leq 2.0$ underwent further testing of the specimen in triplicate. Samples with a median $ODn > 1.5$ during confirmatory testing were classified as long-term infections. Samples with a median $ODn < 0.4$ were retested using the HIV diagnostic testing algorithm to confirm HIV-1 positive classification, and samples identified as HIV-1 negative were excluded from the total number of HIV positives and incorporated into the total number of negative specimens for incidence estimation.

Samples with a median $ODn \leq 1.5$ were classified as potential HIV recent infections, and their VL results were assessed. For the first incidence testing algorithm, specimens with $VL < 1,000$ copies/mL were classified as long-term infections, while those with $VL \geq 1,000$ copies/mL were classified as recent infections. For the updated incidence algorithm, those classified as recent infections by the first algorithm were reclassified using ARV detection data. Those specimens in which ARVs were detected were classified as long-term infections and those in which no ARVs were detected remained classified as recent infections.

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



¹ODn = normalized optical density

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 avidity assay (Q); and numbers HIV recent (R) were provided for use in incidence calculations or the Joint United Nations Programme on HIV/AIDS Spectrum models (Tables B.3.A, B.3.B). Incidence estimates were calculated using the following parameters: MDRI = 130 days (95% CI: 118-142 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year. In-depth details are provided in the CIPHIA Technical Report, which may be found online on the PHIA Project website.

Table B.3.A Annual HIV incidence auxiliary data: N, P, Q, R, MDRI, PFR, and T

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

Age	Male				Female				Total			
	Number HIV negative ¹ (N)	Number HIV positive ¹ (P)	Number tested on LAg assay ¹ (Q)	Number HIV recent ¹ (R)	Number HIV negative ¹ (N)	Number HIV positive ¹ (P)	Number tested on LAg assay ¹ (Q)	Number HIV recent ¹ (R)	Number HIV negative ¹ (N)	Number HIV positive ¹ (P)	Number tested on LAg assay ¹ (Q)	Number HIV recent ¹ (R)
15-24	2741.11	8.89	8.89	0.90	3146.30	29.70	29.70	0.44	5888.58	37.42	37.42	1.38
25-34	2401.07	31.93	31.93	0.00	2558.73	86.27	86.27	0.47	4961.74	116.26	116.26	0.45
35-49	2418.02	71.98	71.98	0.00	2028.10	166.90	166.90	0.00	4449.53	235.47	235.47	0.00
15-49	7563.67	109.33	109.33	0.92	7736.35	279.65	279.65	0.93	15307.23	381.77	381.77	1.86
50-64	1169.03	44.97	44.97	0.00	839.57	70.43	68.23	0.00	2005.35	118.65	116.25	0.00
15-64	8736.61	150.39	150.39	0.94	8573.50	352.50	350.16	0.93	17316.11	496.89	494.62	1.87

¹Weighted 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 ARVs Annual HIV incidence auxiliary data: N, P, Q, R, MDRI, PFR, and T

The annual incidence of HIV among persons aged 15-49 years and 15-64 years, by sex and age, using the limiting antigen (LAg) + viral load + antiretroviral detection recent infection algorithm, CIPHIA 2017-2018

Age	Male				Female				Total			
	Number HIV negative ¹ (N)	Number HIV positive ¹ (P)	Number tested on LAg assay ¹ (Q)	Number HIV recent ¹ (R)	Number HIV negative ¹ (N)	Number HIV positive ¹ (P)	Number tested on LAg assay ¹ (Q)	Number HIV recent ¹ (R)	Number HIV negative ¹ (N)	Number HIV positive ¹ (P)	Number tested on LAg assay ¹ (Q)	Number HIV recent ¹ (R)
15-24	2741.11	8.89	8.89	0.90	3146.30	29.70	29.70	0.44	5888.58	37.42	37.42	1.38
25-34	2401.07	31.93	31.93	0.00	2558.73	86.27	86.27	0.47	4961.74	116.26	116.26	0.45
35-49	2418.02	71.98	71.98	0.00	2028.10	166.90	166.90	0.00	4449.53	235.47	235.47	0.00
15-49	7563.67	109.33	109.33	0.92	7736.35	279.65	279.65	0.93	15307.23	381.77	381.77	1.86
50-64	1169.03	44.97	44.97	0.00	839.57	70.43	68.23	0.00	2005.35	118.65	116.25	0.00
15-64	8736.61	150.39	150.39	0.94	8573.50	352.50	350.16	0.93	17316.11	496.89	494.62	1.87

¹Weighted 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
 Weighted figures were calculated using (normalized) btwt0.

Detection of Antiretrovirals

To understand recent exposure to ARVs and hence level of ART coverage, samples from all confirmed HIV-positive participants were evaluated for the presence of selected ARVs, using high-resolution liquid chromatography coupled with tandem mass spectrometry to detect ARVs from DBS specimens.² As detection of all ARVs in use at the time of the survey was cost-prohibitive, four ARVs in adults (dolutegravir, efavirenz, atazanavir, and lopinavir), and three in children (efavirenz, lopinavir, and nevirapine) were selected as markers for the most commonly prescribed first- and second-line regimens. Samples from participants who had VLS and/or were self-reported as on ART, but had no evidence of the first three compounds, were tested for nevirapine. The ARVs were selected based on their long half-lives, allowing for a longer window period from drug exposure to detection.

To qualitatively detect ARVs, a single DBS was eluted, and chromatographic separation carried out on a Luna 5 µm PFP column (110 Å, 50 x 2 mm) (Phenomenex, Torrance, California, USA). Each ARV was detected using an API 4000 LC/MS/MS instrument (Applied Biosystems, Foster City, California, USA). Internal standards and in-house QC cut-off samples, including negative controls, were utilized in each run. This qualitative method used a limit of detection of 0.02 µg/mL for each ARV, with a signal-to-noise ratio of at least 5:1 for all ARVs. Samples with concentrations above 0.02 µg/mL were considered positive for each ARV. Testing was conducted 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 CIPHIA 2017-2018, samples from confirmed HIV-positive infants below the age of 18 months and HIV-positive participants aged 18 months or older who were classified as recent infections, as well as an equal or greater number of whom were classified as long-term infections, were evaluated using a TaqMan® SNP Genotyping Assay (Applied Biosystems) to identify mutations within the HIV-1 *pol* gene region, which encodes amino acid substitutions known to be responsible for resistance to specific ARVs.

Viral RNA or TNA from plasma or DBS was extracted using the NucliSENS® easyMAG® (bioMérieux) platform. The HIV *pol* gene was amplified by one-step reverse transcription polymerase chain reaction (RT-PCR), which was followed by nested PCR. Sequencing of the approximately one-kilobase amplicons was performed on the ABI 3730 DNA Analyzer (Applied Biosystems).^{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 QA measures and in-house QC 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 was designed to use phylogenetic methods to identify the HIV-1 subtype of a specific sequence. The sequence was 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: nonsampling 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 CIPHIA 2017-2018 implemented numerous QA and QC measures minimize nonsampling errors, these errors are impossible to avoid and difficult to evaluate statistically.

In contrast, sampling errors can be evaluated statistically. The sample of respondents selected for CIPHIA 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, mean, rate, count). In turn, the standard error can be used to calculate confidence intervals within which the true value for the population can reasonably be assumed to fall. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range of approximately plus or minus two times the standard error of that statistic in 95% of all possible samples of identical size and design.

CIPHIA 2017-2018 utilized a multi-stage stratified sample design, which required complex calculations to obtain sampling errors. Specifically, a variant of the jackknife replication method was implemented in SAS to estimate variance for proportions (eg, HIV prevalence), rates (eg, annual HIV incidence), and counts (eg, numbers of people living with HIV). Each replication considered all but one cluster in the calculation of the estimates. Pseudo-independent replications were thus created. In CIPHIA 2017-2018, a jackknife replicate was created by randomly deleting one cluster from each variance-estimation stratum and retaining all of the clusters in the remaining strata. A total of 218 variance-estimation strata were created by pairing (or occasionally tripling) the sample clusters in the systematic order in which they had been selected. Hence, 218 replications were created. The variance of a sample-based statistic, y , was calculated as follows:

$$\text{var}(y) = \sum_{k=1}^K (y_k - y)^2$$

where y is the full-sample estimate, and y_k is the corresponding estimate for jackknife replicate k ($k = 1, 2, \dots, K$).

In addition to the standard error, the design effect for each estimate was also calculated. The design effect is defined as the ratio of the standard error using the given sample design to the standard error that would result if a simple random sample had been used. A design effect of 1.0 indicates that the sample design is as efficient as a simple random sample, while a value greater than 1.0 indicates the increase in the sampling error due to the use of a more complex and less statistically efficient design. Confidence limits for the estimates, which are calculated as

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

where $t(0.975; K)$ is the 97.5th percentile of a t -distribution with K degrees of freedom, were also computed.

Sampling errors for selected variables from the CIPHIA 2017-2018 are presented in tables C.1 through C.8, and sampling errors for all survey estimates may be found online on the PHIA website. For each variable, sampling error tables include the weighted estimate, unweighted denominator, standard error, design effect, and lower and upper 95% confidence limits.

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

Age (years)	Weighted estimate (%)	Design effect	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL				
15-24	0.07	0.46	0.00	0.17
25-34	0.03	0.24	0.00	0.10
35-49	0.00	0.00	0.00	0.23
15-49	0.03	0.41	0.00	0.08
50-64	0.00	0.00	0.00	0.53
15-64	0.03	0.41	0.00	0.07
MALE				
15-24	0.09	0.46	0.00	0.27
25-34	0.00	0.00	0.00	0.43
35-49	0.00	0.00	0.00	0.43
15-49	0.03	0.47	0.00	0.10
50-64	0.00	0.00	0.00	0.88
15-64	0.03	0.48	0.00	0.09
FEMALE				
15-24	0.04	0.44	0.00	0.15
25-34	0.05	0.25	0.00	0.20
35-49	0.00	0.00	0.00	0.51
15-49	0.03	0.34	0.00	0.10
50-64	0.00	0.00	0.00	1.26
15-64	0.03	0.34	0.00	0.09

Table C.2 Sampling errors: HIV-1 and HIV-2 prevalence by age, CIPHIA 2017-2018

Ages	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
0-17 months	0.4	1,648	0.3	0.0	1.0
18-59 months	0.1	3,701	0.1	0.0	0.3
5-9	0.2	5,231	0.1	0.0	0.3
10-14	0.1	4,150	0.1	0.0	0.3
Total 0-4	0.2	5,349	0.1	0.0	0.4
Total 0-14	0.2	14,730	0.0	0.1	0.3
15-19	0.5	3,186	0.2	0.1	0.9
20-24	0.8	2,740	0.2	0.4	1.2
25-29	1.7	2,621	0.3	1.1	2.4
30-34	2.9	2,457	0.5	1.9	4.0
35-39	4.7	2,045	0.7	3.3	6.0
40-44	5.8	1,506	0.9	3.9	7.7
45-49	5.1	1,134	0.8	3.4	6.9
50-54	4.7	969	0.9	2.9	6.5
55-59	7.1	661	1.1	4.8	9.3
60-64	7.2	494	1.4	4.2	10.1
Total 15-24	0.6	5,926	0.1	0.4	0.9
Total 15-49	2.5	15,689	0.2	2.1	2.8
Total 15-64	2.9	17,813	0.2	2.5	3.2

Table C.2 Sampling errors: HIV-1 and HIV-2 prevalence by age, CIPHIA 2017-2018 (continued)

Ages	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
MALE					
0-17 months	0.0	816	0.0	0.0	0.0
18-59 months	0.2	1,840	0.2	0.0	0.6
5-9	0.2	2,594	0.1	0.0	0.5
10-14	0.1	2,091	0.1	0.0	0.2
Total 0-4	0.2	2,656	0.1	0.0	0.4
Total 0-14	0.2	7,341	0.1	0.0	0.3
15-19	0.4	1,521	0.2	0.0	0.8
20-24	0.2	1,229	0.1	0.0	0.5
25-29	0.2	1,215	0.1	0.0	0.5
30-34	2.5	1,218	0.8	0.9	4.2
35-39	2.3	1,036	0.7	0.9	3.7
40-44	3.5	823	0.9	1.6	5.4
45-49	3.2	631	0.8	1.5	4.8
50-54	1.7	519	0.6	0.5	2.9
55-59	5.9	388	1.4	3.0	8.7
60-64	6.0	307	1.8	2.3	9.7
Total 15-24	0.3	2,750	0.1	0.1	0.6
Total 15-49	1.4	7,673	0.2	1.0	1.8
Total 15-64	1.7	8,887	0.2	1.3	2.1
FEMALE					
0-17 months	0.8	832	0.6	0.0	2.0
18-59 months	0.0	1,861	0.0	0.0	0.1
5-9	0.1	2,637	0.1	0.0	0.2
10-14	0.2	2,059	0.1	0.0	0.5
Total 0-4	0.3	2,693	0.2	0.0	0.6
Total 0-14	0.2	7,389	0.1	0.0	0.3
15-19	0.6	1,665	0.3	0.0	1.2
20-24	1.3	1,511	0.3	0.6	2.0
25-29	3.2	1,406	0.7	1.8	4.6
30-34	3.4	1,239	0.7	1.8	4.9
35-39	7.5	1,009	1.2	5.1	9.9
40-44	8.7	683	1.5	5.6	11.8
45-49	7.4	503	1.6	4.1	10.7
50-54	8.0	450	1.7	4.5	11.4
55-59	8.5	273	1.9	4.5	12.4
60-64	8.5	187	2.4	3.6	13.5
Total 15-24	0.9	3,176	0.2	0.5	1.4
Total 15-49	3.6	8,016	0.2	3.0	4.1
Total 15-64	4.1	8,926	0.2	3.6	4.6

Table C.3 Sampling errors: HIV-1 and HIV-2 prevalence by residence and region, ages 15-64 years, CIPHIA 2017-2018

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Residence					
Urban	3.1	9,094	0.2	2.7	3.6
Rural	2.4	8,719	0.3	1.9	3.0
District					
Abidjan	3.4	2,210	0.3	2.7	4.1
Yamoussoukro	2.9	1,210	0.4	2.0	3.7
Bas-Sassandra	2.1	2,554	0.4	1.3	2.9
Comoé	3.3	713	0.9	1.4	5.1
Denguélé	2.1	991	0.9	0.3	3.9
Gôh-Djiboua	1.7	987	0.5	0.6	2.8
Lacs	3.3	922	1.0	1.3	5.3
Lagunes	2.8	761	1.0	0.7	4.8
Montagnes	3.2	668	0.7	1.8	4.6
Sassandra-Marahoué	2.8	1,232	0.5	1.7	3.9
Savanes	2.0	947	0.6	0.9	3.2
Vallée du Bandama	2.7	2,480	0.4	1.8	3.5
Woroba	2.4	1,070	0.8	0.8	4.0
Zanzan	3.0	1,068	0.5	2.0	4.1
MALE					
Residence					
Urban	1.9	4,361	0.2	1.4	2.4
Rural	1.5	4,526	0.3	0.9	2.1
District					
Abidjan	2.0	1,020	0.4	1.2	2.8
Yamoussoukro	1.8	581	0.5	0.8	2.9
Bas-Sassandra	1.2	1,346	0.3	0.5	1.9
Comoé	1.3	322	0.6	0.0	2.6
Denguélé	1.5	510	0.6	0.3	2.7
Gôh-Djiboua	1.1	490	0.5	0.2	2.1
Lacs	1.9	450	0.9	0.0	3.8
Lagunes	2.2	391	1.3	0.0	4.8
Montagnes	2.1	368	0.8	0.5	3.7
Sassandra-Marahoué	1.6	668	0.4	0.7	2.5
Savanes	1.1	486	0.7	0.0	2.4
Vallée du Bandama	1.2	1,163	0.3	0.5	1.9
Woroba	2.5	569	1.3	0.0	5.2
Zanzan	2.2	523	0.7	0.8	3.6
FEMALE					
Residence					
Urban	4.4	4,733	0.3	3.7	5.1
Rural	3.5	4,193	0.3	2.8	4.2
District					
Abidjan	4.8	1,190	0.5	3.7	5.9
Yamoussoukro	4.0	629	0.8	2.4	5.6
Bas-Sassandra	3.2	1,208	0.5	2.0	4.3
Comoé	5.0	391	1.5	2.0	8.0

Table C.3 Sampling errors: HIV-1 and HIV-2 prevalence by residence and region, ages 15-64 years, CIPHIA 2017-2018
(continued)

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
Denguélé	2.7	481	1.5	0.0	5.8
Gôh-Djiboua	2.3	497	0.7	0.9	3.7
Lacs	4.7	472	1.3	2.0	7.5
Lagunes	3.4	370	0.9	1.5	5.3
Montagnes	4.5	300	1.2	2.0	7.0
Sassandra-Marahoué	4.1	564	1.0	2.2	6.1
Savanes	3.1	461	1.0	1.1	5.1
Vallée du Bandama	4.1	1,317	0.7	2.6	5.6
Woroba	2.3	501	0.4	1.4	3.1
Zanzan	3.9	545	0.6	2.8	5.1

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

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
0-14	*	23	10.7	2.5	46.5
15-24	(19.6)	38	9.1	0.8	38.5
25-34	22.9	102	6.4	9.8	36.1
35-44	39.3	147	5.4	28.2	50.5
45-54	58.0	88	6.7	44.3	71.7
55-64	59.5	68	7.9	43.3	75.7
Total 15-24	19.6	38	9.1	0.8	38.5
Total 15-49	33.0	337	3.6	25.6	40.3
Total 15-64	40.2	443	3.4	33.2	47.2
MALE					
0-14	*	10	16.5	12.6	80.7
15-24	*	11	9.5	0.0	32.7
25-34	*	21	3.0	0.0	11.2
35-44	(28.6)	45	7.7	12.7	44.4
45-54	(35.6)	29	8.4	18.2	52.9
55-64	(49.3)	33	13.7	21.2	77.5
Total 15-24	*	11	9.5	0.0	32.7
Total 15-49	20.1	97	4.0	11.9	28.3
Total 15-64	27.7	139	4.3	19.0	36.5
FEMALE					
0-14	*	13	3.9	0.0	11.7
15-24	21.9	27	11.2	0.0	44.9
25-34	30.1	81	7.5	14.7	45.6
35-44	44.1	102	6.2	31.4	56.8
45-54	66.5	59	7.4	51.2	81.7
55-64	68.3	35	8.9	49.9	86.6
Total 15-24	21.9	27	11.2	0.0	44.9
Total 15-49	38.4	240	4.5	29.2	47.7
Total 15-64	45.9	304	4.2	37.2	54.5

*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, CIPHIA 2017–2018

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Residence					
Rural	38.3	268	4.5	29.1	47.5
Urban	44.4	175	4.8	34.5	54.2
Region					
Abidjan	39.8	74	7.4	24.5	55.1
Yamoussoukro	(53.6)	33	8.2	36.6	70.5
Bas-Sassandra	44.7	51	8.6	26.9	62.5
Comoé	*	21	9.7	35.4	75.5
Denguélé	*	19	7.4	13.2	43.9
Gôh-Djiboua	*	14	16.6	6.9	75.3
Lacs	(54.6)	29	8.9	36.3	73.0
Lagunes	*	20	4.7	25.3	44.7
Montagnes	*	18	5.4	7.0	29.2
Sassandra-Marahoué	(37.3)	33	13.1	10.3	64.3
Savanes	*	19	12.9	24.4	77.5
Vallée du Bandama	49.9	59	8.2	33.0	66.9
Woroba	*	24	15.9	0.0	52.3
Zanzan	(51.4)	29	8.2	34.5	68.2
MALE					
Residence					
Rural	22.6	77	5.4	11.4	33.7
Urban	38.2	62	7.0	23.8	52.6
Region					
Abidjan	*	20	9.3	5.3	43.5
Yamoussoukro	*	11	11.8	38.2	86.7
Bas-Sassandra	*	16	9.5	37.4	76.4
Comoé	*	4	20.8	0.0	79.8
Denguélé	*	7	17.0	19.6	89.6
Gôh-Djiboua	*	6	18.7	0.0	62.1
Lacs	*	9	13.7	13.4	70.0
Lagunes	*	8	18.2	0.0	55.1
Montagnes	*	6	0.0	0.0	0.0
Sassandra-Marahoué	*	12	15.0	2.5	64.4
Savanes	*	5	14.2	6.4	65.0
Vallée du Bandama	*	15	14.3	9.3	68.1
Woroba	*	12	22.1	0.0	63.0
Zanzan	*	8	19.2	3.3	82.4
FEMALE					
Residence					
Rural	45.2	191	5.6	33.7	56.6
Urban	47.5	113	5.2	36.8	58.1
Region					
Abidjan	46.3	54	8.7	28.4	64.3
Yamoussoukro	*	22	11.1	26.4	72.2
Bas-Sassandra	(39.1)	35	11.2	16.0	62.3
Comoé	*	17	11.1	37.5	83.0

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

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
Denguélé	*	12	7.2	2.0	31.6
Gôh-Djiboua	*	8	19.8	11.4	92.9
Lacs	*	20	10.2	38.7	80.8
Lagunes	*	12	7.5	31.8	62.7
Montagnes	*	12	9.1	9.4	46.9
Sassandra-Marahoué	*	21	16.4	5.3	72.8
Savanes	*	14	12.2	31.8	81.9
Vallée du Bandama	(53.3)	44	8.9	35.0	71.7
Woroba	*	12	13.7	0.0	50.3
Zanzan	*	21	8.9	36.6	73.3

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

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Diagnosed					
15-24	(33.5)	38	10.4	12.1	54.8
25-34	45.2	102	7.4	30.0	60.4
35-49	51.3	197	5.2	40.6	62.0
15-49	47.6	337	3.4	40.6	54.6
50-64	57.3	107	7.0	42.8	71.8
15-64	49.8	444	3.2	43.2	56.3
On Treatment					
15-24	*	11	3.0	90.8	100.0
25-34	(82.7)	49	9.5	63.1	100.0
35-49	93.3	104	2.7	87.7	99.0
15-49	90.3	164	3.4	83.2	97.4
50-64	96.7	60	1.7	93.2	100.0
15-64	92.0	224	2.6	86.6	97.4
Viral Load Suppression					
15-24	*	10	18.3	16.5	92.0
25-34	(55.0)	45	13.5	27.2	82.9
35-49	73.8	97	5.1	63.2	84.3
15-49	67.1	152	5.8	55.1	79.0
50-64	91.1	55	4.7	81.4	100.0
15-64	73.7	207	4.7	64.1	83.2

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

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
MALE					
Diagnosed					
15-24	*	11	18.9	0.7	78.8
25-34	*	21	17.0	4.4	74.5
35-49	38.7	65	7.5	23.3	54.1
15-49	39.0	97	6.8	24.9	53.1
50-64	(44.4)	42	11.9	19.8	68.9
15-64	40.4	139	5.6	28.9	51.8
On Treatment					
15-24	*	3	0.0	100.0	100.0
25-34	*	7	31.9	0.0	100.0
35-49	(98.0)	31	2.1	93.7	100.0
15-49	(80.4)	41	11.1	57.5	100.0
50-64	*	21	2.8	90.7	100.0
15-64	85.0	62	8.3	67.9	100.0
Viral Load Suppression					
15-24	*	3	17.6	0.0	58.8
25-34	*	5	55.9	0.0	100.0
35-49	(65.2)	30	10.1	44.3	86.1
15-49	(53.7)	38	10.6	31.8	75.6
50-64	*	19	10.4	60.8	100.0
15-64	62.8	57	8.8	44.7	80.9
FEMALE					
Diagnosed					
15-24	(31.3)	27	11.7	7.2	55.4
25-34	47.5	81	8.1	30.8	64.3
35-49	57.1	132	5.9	45.0	69.2
15-49	51.3	240	4.2	42.7	59.8
50-64	64.4	65	7.0	49.9	78.9
15-64	54.0	305	3.9	46.0	62.1
On Treatment					
15-24	*	8	4.5	86.5	100.0
25-34	(96.6)	42	2.6	91.2	100.0
35-49	91.9	73	3.6	84.6	99.2
15-49	93.6	123	2.4	88.7	98.4
50-64	(96.7)	39	2.0	92.6	100.0
15-64	94.4	162	1.9	90.5	98.2
Viral Load Suppression					
15-24	*	7	20.3	26.8	100.0
25-34	(59.8)	40	11.0	37.1	82.6
35-49	76.6	67	5.8	64.8	88.5
15-49	70.8	114	5.8	59.0	82.7
50-64	(94.4)	36	5.7	82.8	100.0
15-64	76.9	150	4.6	67.4	86.5

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

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Diagnosed					
15-24	(33.5)	38	10.4	12.1	54.8
25-34	45.2	102	7.4	30.0	60.4
35-49	51.3	197	5.2	40.6	62.0
15-49	47.6	337	3.4	40.6	54.6
50-64	57.3	107	7.0	42.8	71.8
15-64	49.8	444	3.2	43.2	56.3
On Treatment					
15-24	(32.4)	38	10.4	11.1	53.8
25-34	37.4	102	7.9	21.2	53.6
35-49	47.9	197	5.2	37.3	58.5
15-49	43.0	337	3.5	35.8	50.2
50-64	55.4	107	7.2	40.6	70.1
15-64	45.8	444	3.3	39.1	52.5
Viral Load Suppression					
15-24	(17.6)	38	9.0	0.0	36.1
25-34	20.6	102	6.3	7.7	33.5
35-49	35.3	197	4.6	25.9	44.7
15-49	28.8	337	3.4	21.8	35.9
50-64	50.4	107	6.9	36.2	64.7
15-64	33.7	444	3.3	26.8	40.6
MALE					
Diagnosed					
15-24	*	11	18.9	0.7	78.8
25-34	*	21	17.0	4.4	74.5
35-49	38.7	65	7.5	23.3	54.1
15-49	39.0	97	6.8	24.9	53.1
50-64	(44.4)	42	11.9	19.8	68.9
15-64	40.4	139	5.6	28.9	51.8
On Treatment					
15-24	*	11	18.9	0.7	78.8
25-34	*	21	12.4	0.0	41.7
35-49	37.9	65	7.5	22.4	53.4
15-49	31.4	97	5.8	19.4	43.3
50-64	(42.8)	42	12.0	18.2	67.5
15-64	34.3	139	5.0	24.0	44.6
Viral Load Suppression					
15-24	*	11	8.3	0.0	26.1
25-34	*	21	2.3	0.0	8.1
35-49	24.7	65	6.2	11.9	37.5
15-49	16.8	97	3.8	9.1	24.6
50-64	(35.2)	42	12.0	10.5	59.9
15-64	21.6	139	4.1	13.1	30.0

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

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
FEMALE					
Diagnosed					
15-24	(31.3)	27	11.7	7.2	55.4
25-34	47.5	81	8.1	30.8	64.3
35-49	57.1	132	5.9	45.0	69.2
15-49	51.3	240	4.2	42.7	59.8
50-64	64.4	65	7.0	49.9	78.9
15-64	54.0	305	3.9	46.0	62.1
On Treatment					
15-24	(30.0)	27	11.6	6.0	53.9
25-34	45.9	81	8.2	29.1	62.7
35-49	52.5	132	5.9	40.3	64.7
15-49	48.0	240	4.1	39.6	56.4
50-64	62.2	65	7.2	47.5	77.0
15-64	51.0	305	3.9	43.0	59.0
Viral Load Suppression					
15-24	(20.6)	27	11.1	0.0	43.3
25-34	27.5	81	7.4	12.2	42.7
35-49	40.2	132	5.4	29.0	51.4
15-49	34.0	240	4.3	25.1	42.8
50-64	58.8	65	6.6	45.2	72.4
15-64	39.2	305	4.2	30.7	47.8

*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 C.8 Sampling errors: Number of new infections annually and the number of people living with HIV (ages 15-64 years) CIPHIA 2017-2018

	Weighted estimate	Standard error	Lower confidence limit	Upper confidence limit
Number of new infections annually (using the limiting antigen [LAg]/viral load [VL] algorithm)	4,054	1,964	0	9,898
Number of new infections annually (using LAg/VL/antiretroviral [ARV] algorithm)	4,054	1,964	0	9,898
Number of people living with HIV	381,907	22,365	335,845	427,968

APPENDIX D SURVEY PERSONNEL

Name	Organization
Abib Coulibaly	Personnel Ministry of Health and Public Hygiene (MSHP)
Aboudramane Kaba	Personnel Ministry of Health and Public Hygiene (MSHP)
Ahoua Aguia	Personnel Ministry of Health and Public Hygiene (MSHP)
Alia Silue-Coulibaly	Personnel Ministry of Health and Public Hygiene (MSHP)
Bozam Yao	Personnel Ministry of Health and Public Hygiene (MSHP)
Harding N'Guessan	Personnel Ministry of Health and Public Hygiene (MSHP)
Hugues E. Assi	Personnel Ministry of Health and Public Hygiene (MSHP)
Isabelle Tondoh-Koui	Personnel Ministry of Health and Public Hygiene (MSHP)
Kouame Abo	Personnel Ministry of Health and Public Hygiene (MSHP)
Monique Lattah	Personnel Ministry of Health and Public Hygiene (MSHP)
Oumar Coulibaly	Personnel Ministry of Health and Public Hygiene (MSHP)
Raphael Soro	Personnel Ministry of Health and Public Hygiene (MSHP)
Rebecca N'Guessan	Personnel Ministry of Health and Public Hygiene (MSHP)
Noel Assoumou	Personnel Ministry of Health and Public Hygiene (MSHP)
Serge G. Ekong	Personnel Ministry of Health and Public Hygiene (MSHP)
Serge J. Lathro	Personnel Ministry of Health and Public Hygiene (MSHP)
Timothe Ouassa	Personnel Ministry of Health and Public Hygiene (MSHP)
Toussaint Latte	Personnel Ministry of Health and Public Hygiene (MSHP)
Vida G. Natchia	Personnel Ministry of Health and Public Hygiene (MSHP)
Viviane A. N'Da	Personnel Ministry of Health and Public Hygiene (MSHP)
Wilfried Dohou	Personnel Ministry of Health and Public Hygiene (MSHP)
Armand Brou Achy	Pasteur Institute—Cote d'Ivoire
Daouda Sevede	Pasteur Institute—Cote d'Ivoire
Aime Dago	National Institute of Statistics (INS)
Appolinaire V. Kehoua	National Institute of Statistics (INS)
Berthe A. Kouakou	National Institute of Statistics (INS)
Brahima Toure	National Institute of Statistics (INS)
Bruno Kouassi	National Institute of Statistics (INS)
Desire D. Aka	National Institute of Statistics (INS)
Didier Ko-Fié Kra	National Institute of Statistics (INS)
Doria A. Deza	National Institute of Statistics (INS)
Edmond K. Yao	National Institute of Statistics (INS)
Hugues Salomon Kochou	National Institute of Statistics (INS)
Justin Akpa	National Institute of Statistics (INS)
Mardoché Ajavon	National Institute of Statistics (INS)
Massoma Bakayoko	National Institute of Statistics (INS)
Michel A. Tanoh	National Institute of Statistics (INS)
Mireille Z. Taho	National Institute of Statistics (INS)
N'Goran Semon	National Institute of Statistics (INS)
Noël Nangah Grah	National Institute of Statistics (INS)
Olivier A. Tanoh	National Institute of Statistics (INS)
Severin K. Kouakou	National Institute of Statistics (INS)
Soumaïla N. Traore	National Institute of Statistics (INS)
Abigail Greenleaf	ICAP at Columbia University—New York
Andrea Low	ICAP at Columbia University—New York
Charles Wentzel	ICAP at Columbia University—New York
Chelsea Solmo	ICAP at Columbia University—New York
David Hoos	ICAP at Columbia University—New York
David Takassi	ICAP at Columbia University—New York
Hugh Siegel	ICAP at Columbia University—New York
Jacqueline Maxwell	ICAP at Columbia University—New York
Jessica Justman	ICAP at Columbia University—New York

Name	Organization
John Wylie	ICAP at Columbia University—New York
Katherine Evans	ICAP at Columbia University—New York
Katherine Johnson	ICAP at Columbia University—New York
Leticia Froix	ICAP at Columbia University—New York
Mekleet Teferi	ICAP at Columbia University—New York
Monique Millington	ICAP at Columbia University—New York
Natasha McLeod	ICAP at Columbia University—New York
Natazia Fistrovic	ICAP at Columbia University—New York
Noelle Esquire	ICAP at Columbia University—New York
Stephen Delgado	ICAP at Columbia University—New York
Theo Smart	ICAP at Columbia University—New York
Thomas Carpino	ICAP at Columbia University—New York
Zach Keefer	ICAP at Columbia University—New York
Agathe E. Mbia	ICAP at Columbia University—Cote d'Ivoire
Aime-Desire Leogniny	ICAP at Columbia University—Cote d'Ivoire
Alexandre K. Kanga	ICAP at Columbia University—Cote d'Ivoire
Alex K. Djatto	ICAP at Columbia University—Cote d'Ivoire
Alexis N'dri Kouame	ICAP at Columbia University—Cote d'Ivoire
Anderson O. Awasso	ICAP at Columbia University—Cote d'Ivoire
Annick A. Konin	ICAP at Columbia University—Cote d'Ivoire
Arsene K. Adou	ICAP at Columbia University—Cote d'Ivoire
Bamory Bamba	ICAP at Columbia University—Cote d'Ivoire
Bernardin N. Zewou	ICAP at Columbia University—Cote d'Ivoire
Bouake Bakayoko	ICAP at Columbia University—Cote d'Ivoire
Charles R. Kouadio	ICAP at Columbia University—Cote d'Ivoire
Charles K. N'Guessan	ICAP at Columbia University—Cote d'Ivoire
Christian Abou	ICAP at Columbia University—Cote d'Ivoire
Christine E. Kouame	ICAP at Columbia University—Cote d'Ivoire
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Cyrille D. Wogou	ICAP at Columbia University—Cote d'Ivoire
Ekato K. Kouame	ICAP at Columbia University—Cote d'Ivoire
Felicien K. Konan	ICAP at Columbia University—Cote d'Ivoire
Greet Vandebriel	ICAP at Columbia University—Cote d'Ivoire
Hermann Brou	ICAP at Columbia University—Cote d'Ivoire
Ilanit Gloria Ligan	ICAP at Columbia University—Cote d'Ivoire
Innocent N. N'Dri	ICAP at Columbia University—Cote d'Ivoire
Jacqueline A. Kouassi	ICAP at Columbia University—Cote d'Ivoire
Jean-Luc Kacou	ICAP at Columbia University—Cote d'Ivoire
Jean-Marc Komenan	ICAP at Columbia University—Cote d'Ivoire
Joachim K. Ouffoue	ICAP at Columbia University—Cote d'Ivoire
July Ped Bly	ICAP at Columbia University—Cote d'Ivoire
Kevin Y. Koffi	ICAP at Columbia University—Cote d'Ivoire
Laurent K. Dje	ICAP at Columbia University—Cote d'Ivoire
Ludovic Assande	ICAP at Columbia University—Cote d'Ivoire
Mahamadou Konate	ICAP at Columbia University—Cote d'Ivoire
Madelaine R. Dougrou	ICAP at Columbia University—Cote d'Ivoire
Mamadou Toure	ICAP at Columbia University—Cote d'Ivoire
Mariame Kamate	ICAP at Columbia University—Cote d'Ivoire
Marina A. Koffi	ICAP at Columbia University—Cote d'Ivoire
Modeste K. Assi	ICAP at Columbia University—Cote d'Ivoire
Nouho Toure	ICAP at Columbia University—Cote d'Ivoire
Olivier A. Noutoa	ICAP at Columbia University—Cote d'Ivoire
Patrice F. Ake	ICAP at Columbia University—Cote d'Ivoire
Patricia A. Kanga	ICAP at Columbia University—Cote d'Ivoire
Rosemonde M. Aka	ICAP at Columbia University—Cote d'Ivoire
Siaka Djourte	ICAP at Columbia University—Cote d'Ivoire

Name	Organization
Soumaila Ballo	ICAP at Columbia University –Cote d'Ivoire
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Stephane D. Sanogo	ICAP at Columbia University –Cote d'Ivoire
Stephania Koblavi-Deme	ICAP at Columbia University –Cote d'Ivoire
Victorien K. N'guessan	ICAP at Columbia University –Cote d'Ivoire
Yannick Marc. Meless	ICAP at Columbia University –Cote d'Ivoire
Youssef Karamoko	ICAP at Columbia University –Cote d'Ivoire
Zoumana Coulibaly	ICAP at Columbia University –Cote d'Ivoire
Belete Tegbaru Erkyhun	ICAP at Columbia University –South Africa
Blanche Pitt	ICAP at Columbia University –South Africa
Bright Phiri	ICAP at Columbia University –South Africa
Charles Wentzel	ICAP at Columbia University –South Africa
Herbert Longwe	ICAP at Columbia University –South Africa
Oliver Murangandi	ICAP at Columbia University –South Africa
Pule Mphohle	ICAP at Columbia University –South Africa
Takura Kupamupindi	ICAP at Columbia University –South Africa
Yvonne Mavengere	ICAP at Columbia University –South Africa
Aime Nicoue	CDC Cote d'Ivoire
Alexandre Ekra	CDC Cote d'Ivoire
Christiane Adje-Toure	CDC Cote d'Ivoire
Judith Hedje	CDC Cote d'Ivoire
Natacha Kohemun	CDC Cote d'Ivoire
Roger Lobognon	CDC Cote d'Ivoire
Ornella N. Leukou	CDC Cote d'Ivoire
Anne McIntyre	CDC Atlanta
Bharat Parekh	CDC Atlanta
Carin Molchan	CDC Atlanta
Daniel Yavo	CDC Atlanta
Drew Voetsch	CDC Atlanta
Hetal Patel	CDC Atlanta
Katina Pappas-Deluca	CDC Atlanta
Kristin Brown	CDC Atlanta
Laura Porter	CDC Atlanta
Mervi Detorio	CDC Atlanta
Nikhil Kothehal	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
Emmanuel Bentuni	USAID – Côte d'Ivoire
Etien Koua	USAID – Côte d'Ivoire

Interviewers

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 Affoue Marie Jeanne Ako
 Aime Xavier Kouassi
 Aka Didier N'Da
 Ake Youha Akoua-Kouassi
 Albertine Z. Soha
 Alexandre K. Tchémou
 Alexis A. Tanoh
 Alexis E. Somian
 Alisthaire O. Meledje
 Ange Desiree Kei
 Ange Nadege Amani
 Ange Tatiana Kouakou
 Anna Odile Gueï
 Anselme N. Sagbahi
 Aristide K. Zadi
 Arnaud B. Serikpa
 Arsene M. Akosso
 Arthur Sirius Bah
 Benoit Sande
 Brahima S. Sanogo
 Brigitte A. Koffi
 Celestin G. Kleu
 Celestin Goulizan Bi
 Cherif Mawa
 China N. Kakouan
 Chofolo Charles Coulibaly
 Christelle Ouele
 Christian G. Kodjo
 Christine N. Konan
 Christophe Wognin
 Clarisse D. Kouï
 Clovis K. Kouame
 Constance M. Lago
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 Cyprien A. Kouame
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 Daniel T. Tehoua
 Darius K. N'Zue
 Degaully S. Houga
 Djadja F. Agnero
 Djenebou Safa
 Dominique G. Djela Lou
 Donakan Silue
 Edmond K. Akaffou
 Effrem Benyouah Yao
 Elvis Rodrigue Kouassi
 Emma Charlotte Loboue
 Emma Judith Assouho
 Emmanuel K. Kouame
 Epiphaine D. Laine
 Eri Eveline Dah
 Esaïe N'Guessan Aye
 Ester Nadege Biny
 Etienne T. Ouattara
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 Franck Olivier Assagou
 Grace Chantal Amane-Yao
 Guy Sory Bly
 Herve Z. Adjehi
 Hobi Ulrich N'Cho
 Hortense T. Gohiri
 Jean Gabin Etekou
 Jean Hugues N. Assanvo
 Jean Michel Obin
 Jean Sebastien Yao
 Jeannine K. Nele
 Jessica A. Kouame
 Jetheme Y. Dje Bi
 Jocelyn E. Gue
 Jocelyn K. Dolet
 Josephine D. Kpra
 Josiane A. Amankan
 Josiane L. Toalo
 Julienne B. Yao
 Kadja Edjane Degaule
 Kanadjo G. Silue
 Karim Kouyate
 Kouadjo Kouman
 Kouame Charles Brou
 Kouassi Yao
 Kouman Nina Yeboua
 Ladjï Soro
 Landry K. Hie
 Landry K. Kouassi
 Lavarenne A. Youssouf
 Lea Atchinan Popoin
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 Lise Audrey Y. Aka
 Luc Claver Bomisso
 Mabintou Doukoure
 Mariam Ouattara
 Mariame Konate
 Marie Antoinette Beugre
 Marie Brou Kouakou
 Marie Estelle Konan
 Marie France Zadi
 Marie Reine Agnima
 Marie-Prisca Kouakou-Yaro
 Marina Ines N'Cho
 Marina Irie Lou
 Martial A. Gaury
 Massandje Diakite
 Mathias Mabea Monh
 Mathieu Koffi Ado
 Maurice Kouassi N'Da
 Mireille Christelle N'Cho
 Mireille N'Taho Akaffou

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 Nado Fabrice Ble
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 Ouattara Soualio
 Parfait Poe
 Parfait Y. Sahode
 Parfait Z. Konan
 Patricia Estelle Anoh
 Praxede K. Mea
 Prisca Noun Abran
 Prisca Valerie Zahi
 Prosper A. Assoumou
 Pulcherie Z. Seri
 Rachelle Lea Legre
 Raymond K. Kouassi
 Richard K. Akpagni
 Rigobert G. Tonneu
 Roger-Emil Essoh
 Romeo K. Amane
 Rose Flora N'Cho
 Roseline Dorcas Sahie
 Salimata Bamba
 Salimata Meite
 Sarah Boli Lou Boli
 Saran Sylla
 Saturnin K. Kouakou
 Seraphin Balet Djani
 Sidigui Coulibaly
 Stefan B. Deza
 Suzane B. Gbatode
 Sylvain K. Koffi
 Sylvestre G. Gaury
 Sylvia Deli
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 Tenedja Silue
 Therese Brou Kouadio
 Ulrich K. Koua
 Valerie Gounedre Lou
 Vanessa C. Agnehoura
 Veronique S. Loua
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 Virginie A. Yao
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 Yao Aubin Kra
 Yvette A. Koffi
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Community Mobilization Coordinators

Achy Ignace Amon
 Alix A. Kramo
 Amlan Marie Doua
 Charles Y. Yapi
 Didier Zogoue
 Donatien Zou Bi Zou
 Euphrasie A. Kouame
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 Florence Y. Doublade
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 Ludovic D. N'Guessan
 Mathurin L. Bonga
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 Olga Danielle Kouemy
 Pierre T. De Lorng
 Rachel J. Kouba
 Rebecca D. Ty-Sokouri
 Romain G. Ble
 Sylvain JB. Ako
 Vivian K. Soudjane
 Yao Romeo Deza
 Yves K. Gakpa

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?	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? IF LESS THAN 2 YEARS, RECORD IN MONTHS.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)				
1		<input type="text"/> <input type="text"/>	M	F	Y	N	Y	N	<input type="text"/> <input type="text"/>	MONTHS <input type="text"/> YEARS <input type="text"/>	
2		<input type="text"/> <input type="text"/>	M	F	Y	N	Y	N	<input type="text"/> <input type="text"/>	MONTHS <input type="text"/> YEARS <input type="text"/>	
3		<input type="text"/> <input type="text"/>	M	F	Y	N	Y	N	<input type="text"/> <input type="text"/>	MONTHS <input type="text"/> YEARS <input type="text"/>	
4		<input type="text"/> <input type="text"/>	M	F	Y	N	Y	N	<input type="text"/> <input type="text"/>	MONTHS <input type="text"/> YEARS <input type="text"/>	
5		<input type="text"/> <input type="text"/>	M	F	Y	N	Y	N	<input type="text"/> <input type="text"/>	MONTHS <input type="text"/> YEARS <input type="text"/>	
6		<input type="text"/> <input type="text"/>	M	F	Y	N	Y	N	<input type="text"/> <input type="text"/>	MONTHS <input type="text"/> YEARS <input type="text"/>	
7		<input type="text"/> <input type="text"/>	M	F	Y	N	Y	N	<input type="text"/> <input type="text"/>	MONTHS <input type="text"/> YEARS <input type="text"/>	
8		<input type="text"/> <input type="text"/>	M	F	Y	N	Y	N	<input type="text"/> <input type="text"/>	MONTHS <input type="text"/> YEARS <input type="text"/>	
9		<input type="text"/> <input type="text"/>	M	F	Y	N	Y	N	<input type="text"/> <input type="text"/>	MONTHS <input type="text"/> YEARS <input type="text"/>	
10		<input type="text"/> <input type="text"/>	M	F	Y	N	Y	N	<input type="text"/> <input type="text"/>	MONTHS <input type="text"/> YEARS <input type="text"/>	

HOUSEHOLD SCHEDULE

TICK HERE IF CONTINUATION SHEET USED

CODES FOR COLUMN 3: RELATIONSHIP TO HOUSEHOLD HEAD

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 ←

- 01 = HEAD
- 02 = WIFE/HUSBAND/
PARTNER
- 03 = SON OR DAUGHTER
- 04 = SON-IN-LAW/
DAUGHTER-IN-LAW
- 05 = GRANDCHILD
- 06 = PARENT
- 07 = PARENT-IN-LAW
- 08 = BROTHER/SISTER

- 09 = CO-WIFE
- 10 = OTHER RELATIVE
- 11 = ADOPTED/FOSTER/
STEPCHILD
- 12 = NOT RELATED
- 13 = COUSIN
- 14 = NEPHEW/NIECE
- 15 = UNCLE/AUNT
- 98 = DON'T KNOW

HOUSEHOLD SCHEDULE (continued)							
IF (NAME) IS 0-17 YEARS							
LINE NO.	EMANC STATUS	ORPHAN STATUS/PARENT OR GUARDIAN			IF (NAME) IS 0-14 YEARS		
	Is (NAME) emancipated? An Emancipated Minor is between the ages of 15 and 17 AND is 1. Married; OR 2. Head of their own household; OR 3. Free from legal representation (parent or guardian) by the decision of the court	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.	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.	Is (NAME)'s natural mother alive?	Is (NAME)'s natural father alive?	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 MEN (ADULTS 15+ YEARS AND EMANCIPATED MINORS) TOTAL

--	--

ELIGIBLE WOMEN (ADULTS 15+ YEARS AND EMANCIPATED MINORS)

--	--

TOTAL ELIGIBLE CHILDREN (10 TO 14 YEARS) TOTAL

--	--

ELIGIBLE CHILDREN (0 MONTHS TO 9 YEARS)

--	--

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

* OPTIONAL

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES			SKIP
SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN					
101	DO NOT READ: CHECK COLUMN 7 IN THE HOUSEHOLD SCHEDULE. ANY CHILD AGE 0-17 YEARS?	NUMBER OF CHILDREN 0-17 YRS:	<input type="text"/>	<input type="text"/>	NONE→114
102	DO NOT READ: CHECK COLUMN 16 IN THE HOUSEHOLD SCHEDULE. ANY SICK ADULT AGE 18+ YEARS?	YES _____ 1 NO _____ 2			YES→105
103	DO NOT READ: CHECK COLUMN 21 IN THE HOUSEHOLD SCHEDULE. ANY CHILD WHOSE MOTHER HAS DIED OR IS VERY SICK?	YES _____ 1 NO _____ 2			YES→105
104	DO NOT READ: CHECK COLUMN 22 IN THE HOUSEHOLD SCHEDULE. ANY CHILD WHOSE FATHER HAS DIED OR IS VERY SICK?	YES _____ 1 NO _____ 2			NO→114
105	Record names, line numbers, and ages of all children 0-17 who are identified in columns 16, 21, and 22 as having a sick adult in their household or having a mother and/or father who has died or has been very sick.				
		child (1)	child (1)	child (1)	
	NAME	_____	_____	_____	
	LINE NUMBER (FROM COLUMN 1)	<input type="text"/>	<input type="text"/>	<input type="text"/>	
	AGE (FROM COLUMN 7)	<input type="text"/>	<input type="text"/>	<input type="text"/>	
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	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	
107	In the last 12 months, has your household received any emotional or psychological support for (NAME) , such as companionship, 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 NO, DK → 109	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8 NO, DK → 109	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8 NO, DK → 109	
108	Did your household receive any of this emotional or psychological support for (NAME) in the past 3 months?	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	
109	In the last 12 months, has your household received any material support for (NAME) , such as clothing, food, or financial support, for which you did not have to pay?	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8 NO, DK → 111	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8 NO, DK → 111	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8 NO, DK → 111	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES		SKIP
SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN (continued)				
110	Did your household receive any of this material support for (NAME) in the past 3 months?	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8
111	In the last 12 months, has your household received any social support for (NAME) such as help in household work, training for a caregiver, or legal services, for which you did not have to pay?	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8 NO, DK → 113	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8 NO, DK → 113	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8 NO, DK → 113
112	Did your household receive any of this social support for (NAME) in the past 3 months?	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8
113	In the last 12 months, has your household received any support for (NAME) 's schooling, such as allowance, free admission, books, or supplies, for which you did not have to pay?	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 0-17 YEARS IN THE HOUSEHOLD WHO HAS BEEN IDENTIFIED IN COLUMNS 17, 19, 21 AND 22 AS HAVING A MOTHER/FATHER WHO HAS DIED OR IS VERY SICK BESIDES **(NAME)** → CONTINUE TO 106 AND ASK ABOUT THE NEXT CHILD.

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

TICK IF CONTINUATION SHEET REQUIRED.

IF NO OTHER CHILDREN, CONTINUE HOUSEHOLD INTERVIEW.

HOUSEHOLD DEATHS (OPTIONAL)

114	Now I would like to ask you more questions about your household. Has any usual resident of your household died since January 1, [INSERT CURRENT YEAR- 2]?	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	NO → 201
115	How many usual household residents died since January 1, [INSERT CURRENT YEAR - 2]?	NUMBER OF DEATHS <input type="text"/> <input type="text"/> 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 1 ST DEATH _____	NAME 2 ND DEATH _____	NAME 3 RD DEATH _____
-----	--	-------------------------------------	-------------------------------------	-------------------------------------

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES			SKIP		
117	When did (NAME) die? Please give your best guess.	DAY	<input type="text"/>	DAY	<input type="text"/>	DAY	<input type="text"/>
		MONTH	<input type="text"/>	MONTH	<input type="text"/>	MONTH	<input type="text"/>
		YEAR	<input type="text"/>	YEAR	<input type="text"/>	YEAR	<input type="text"/>
		DON'T KNOW DAY =-8 DON'T KNOW MONTH = -8 DON'T KNOW YEAR= -8	DON'T KNOW DAY =-8 DON'T KNOW MONTH = -8 DON'T KNOW YEAR= -8	DON'T KNOW DAY =-8 DON'T KNOW MONTH = -8 DON'T KNOW YEAR= -8			
118	Was (NAME) male or female?	MALE _____1	MALE _____1	MALE _____1	FEMALE _____2	FEMALE _____2	FEMALE _____2
		CURRENT DATE> DATE OF DEATH 1 > JANUARY 1, [INSERT YEAR]	CURRENT DATE> DATE OF DEATH 1 > JANUARY 1, [INSERT YEAR]	CURRENT DATE> DATE OF DEATH 1 > JANUARY 1, [INSERT YEAR]			
		DAYS	<input type="text"/>	DAYS	<input type="text"/>	DAYS	<input type="text"/>
		MONTHS	<input type="text"/>	MONTHS	<input type="text"/>	MONTHS	<input type="text"/>
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.	YEARS	<input type="text"/>	YEARS	<input type="text"/>	YEARS	<input type="text"/>
		DON'T KNOW88	DON'T KNOW88	DON'T KNOW88			

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	
		PIPED TO NEIGHBOR'S HOUSE _____14	
		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 (OR BAGGED) WATER _____91	
OTHER _____96			
(SPECIFY) _____			

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD CHARACTERISTICS (continued)			
202	Do you do anything to the water to make it safer to drink?	YES _____ 1 NO _____ 2 DON'T KNOW _____ 8	NO, DK → 204
203	What do you do to make your water safe for drinking?	BOILING _____ 1 FILTRATION (CHARCOAL FILTER) _____ 2 SEDIMENTATION _____ 3 DISINFECTION (WATERGUARD, CHLORINE) _____ 4 USE BOTTLED WATER _____ 5 OTHER _____ 96 (SPECIFY) _____	
204	What kind of toilet facility do members of your household usually use?	FLUSH OR POUR FLUSH TOILET _____ 11 TRADITIONAL PIT LATRINE _____ 21 VENTILATED IMPROVED PIT LATRINE (VIP) _____ 22 NO FACILITY/BUSH/FIELD _____ 61 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 DUNG _____ 12 RUDIMENTARY FLOOR WOOD PLANKS _____ 21 PALM / BAMBOO _____ 22 FINISHED FLOOR PARQUET OR POLISHED WOOD _____ 31 VINYL OR ASPHALT STRIP _____ 32 CERAMIC TILES _____ 33 CEMENT/TERAZO _____ 34 CARPET _____ 35 OTHER _____ 96 (SPECIFY) _____	
214	MAIN MATERIAL OF THE ROOF RECORD OBSERVATION.	NATURAL ROOFING NO ROOF _____ 11 THATCH/PALM LEAF (MAKUTI) _____ 12 DUNG / MUD _____ 13 RUDIMENTARY ROOFING CORRUGATED IRON (MABATI) _____ 21 TIN CANS _____ 22 FINISHED ROOFING ASBESTOS SHEET _____ 31 CONCRETE _____ 32 TILES _____ 33 OTHER _____ 96 (SPECIFY) _____	
215	MAIN MATERIAL OF THE EXTERIOR WALLS RECORD OBSERVATION.	NATURAL WALLS NO WALLS _____ 11 CANE/PALM/TRUNKS _____ 12 DUNG / MUD _____ 13 RUDIMENTARY WALLS BAMBOO WITH MUD _____ 21 STONE WITH MUD _____ 22 PLYWOOD/CARDBOARD _____ 23 CARTON _____ 24 REUSED WOOD _____ 25 FINISHED WALLS CEMENT _____ 31 STONE WITH LIME/CEMENT _____ 32 BRICKS _____ 33 CEMENT BLOCKS _____ 34 WOOD PLANKS/SHINGLES _____ 35 OTHER _____ 96 (SPECIFY) _____	
216	How many rooms are used for sleeping?	number of rooms:	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
ECONOMIC SUPPORT			
Now I will ask you questions on economic support you have received.			
301	Has your household received any of the following forms of external economic support in the last 12 months? SELECT ALL THAT APPLY.	NOTHING _____ A CASH TRANSFER (E.G., PENSIONS, DISABILITY GRANTS, CHILD GRANT) _____ B ASSISTANCE FOR SCHOOL FEES _____ C MATERIAL SUPPORT FOR EDUCATION (E.G., UNIFORMS, SCHOOL BOOKS, EDUCATION, TUITION SUPPORT, BURSARIES) _____ D INCOME GENERATION SUPPORT IN CASH OR KIND (E.G., AGRICULTURAL INPUTS) _____ E FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION _____ F MATERIAL OR FINANCIAL SUPPORT FOR SHELTER _____ G SOCIAL PENSION _____ H OTHER _____ X (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.

HOUR:

USE 24 HOUR TIME.

MINUTES:

IF START TIME IS 3:12 PM,
RECORD 15 HOURS, 12 MINUTES,
NOT 03 HOURS, 12 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			
L3	NATIVE LANGUAGE OF PARTICIPANT	FRENCH = 1 OTHER = 4 SPECIFY:	
Interviewer says: "Thank you for agreeing to participate in this survey. The first set of questions is about your life in general. Afterwards, we will move on to other topics."			
101	Are you in school or have you ever attended school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 105
102	Are you currently enrolled in school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	DK, REFUSED → 105
103	What is the highest level of school you attended: preschool, primary, secondary or higher?	PRESCHOOL = 0 PRIMARY = 1 SECONDARY = 2 HIGHER = 3 DON'T KNOW = -8 REFUSED = -9	ADAPT RESPONSES TO COUNTRY CONTEXT.
104	What is the highest [class/level/year] you completed at that level?	CLASS/LEVEL/YEAR _____ DON'T KNOW = -8 REFUSED = -9	
105	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
106	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 includes those in civil, customary, and/or religious marriages.	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 spouse 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

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
204	The Household Schedule listed [INSERT NUMBER OF REPORTED PARTNERS] household members as your wives/partners. Please review the list below. Are all of the listed household members your wives/partners who live in the household?	YES = 1 NO = 2	YES → 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 spouse(s)/partner(s) that live with you?	YES = 1 NO = 2	SKIP IF FEMALE
208	How many additional spouse(s)/partners(s) live with you?	NUMBER OF SPOUSES OR LIVE-IN PARTNERS _____	SKIP IF FEMALE
209	Please enter the name of your spouse/partner that lives with you.	NAME OF SPOUSE/PARTNER _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF FEMALE
210	How many wives or live-in partners do you have who live elsewhere?	NUMBER OF ADDITIONAL SPOUSE(S)/PARTNERS _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF FEMALE
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 → 212 SKIP IF MALE
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 → 216 DK, REF → 217 SKIP IF MALE
213	Please select the spouse/partner that lives with you.	NOT LISTED IN HOUSEHOLD = 1 [LIST OF PERSONS ON HH ROSTER]	LISTED → 216 SKIP IF MALE
214	Please enter the name of your spouse/partner that lives with you.	NAME OF SPOUSE/PARTNER _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF MALE
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 live-in partners does your husband or partner have?	NUMBER OF WIVES OR LIVE-IN PARTNERS _____ DON'T KNOW = -8 REFUSE TO ANSWER = -9	SKIP IF MALE
MODULE 3: REPRODUCTION			
Interviewer says: "Now I would like to ask you questions about your pregnancies and your children."			MALE → 337
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, DK, REFUSED → 337

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
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 → 335
303	In total, how many children have you given birth to who were born alive? These include children who were born alive but later died. They could have been children who have lived with you or have not lived with you.	NUMBER OF CHILDREN _____ DON'T KNOW = -8 REFUSED = -9	
304	How many children have you given birth to since 1st January 2014 ? CODE '00' IF NONE.	NUMBER OF CHILDREN _____ DON'T KNOW = -8 REFUSED = -9	NONE, DK, REFUSED → 335 YEAR IS SURVEY YEAR - 3 YEARS
Interviewer says: "Now I would like to ask you some questions about the last pregnancy that resulted in a live birth since [January 1, 2014]."			
305	Did your last pregnancy result in birth to twins or more?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
306	What is the name of the child from your last pregnancy that resulted in a live birth? A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement. IF MULTIPLE BIRTH, LIST ALL NAMES. IF THE CHILD (CHILDREN) WAS NOT NAMED BEFORE DEATH, INPUT BIRTH 1.	NAME _____	
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 → 311 DK, REFUSED → 318
308	What is the <u>main</u> reason you did not visit a clinic for antenatal care when you were pregnant with [NAME] ?	CLINIC WAS TOO FAR AWAY = 1 COULD NOT TAKE TIME OFF WORK/ TOO BUSY = 2 COULD NOT AFFORD TO PAY FOR THE VISIT = 3 DID NOT TRUST THE CLINIC STAFF = 4 RECEIVED CARE AT HOME = 5 DID NOT WANT AN HIV TEST DONE = 6 HUSBAND/FAMILY WOULD NOT LET ME GO = 7 USED TRADITIONAL BIRTH ATTENDANT/ HEALER = 8 COST OF TRANSPORT = 9 RELIGIOUS REASONS = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL → 318 ADAPT RESPONSES TO LOCAL CONTEXT.
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

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
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
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 SPOUSE/ PARTNER / FAMILY = 2 AFRAID OTHERS WOULD KNOW ABOUT TEST RESULTS = 3 DID NOT NEED TEST/LOW RISK = 4 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL → 318 ADAPT RESPONSES BASED ON LOCAL CONTEXT.
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	NEGATIVE, UNK, NO RESULTS, DK, REF → 318
316	Did you take ARVs during your pregnancy with [NAME] to stop [NAME] from getting HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES, DK, REFUSED → 318
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 SPOUSE/ PARTNER/ FAMILY = 9 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
318	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 → 326

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
319	Were you offered an HIV test during labor?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
320	Were you offered an HIV test during labor?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
321	Did you test for HIV during labor?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 326 SKIP IF HIV POSITIVE
322	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 → 326 SKIP IF HIV POSITIVE
323	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.
324	During labor, did you take ARVs to protect [NAME] against HIV?	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 326 ADAPT BASED ON COUNTRY CONTEXT. ELECTRONIC AID IF DON'T KNOW.
325	Did you continue to take the ARVs after delivery?	YES = 1 NO= 2 DON'T KNOW =8 REFUSED = -9	ADAPT TO LOCAL COUNTRY CONTEXT.
326	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	
327	Is [NAME] still alive?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES, DK, REFUSED → 330 IF MULTIPLE BIRTH, ASK 327-334 FOR EACH CHILD.
328	How old was [NAME] when he/she died? KEY '0' IF CHILD WAS LESS THAN ONE YEAR OLD.	YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	>0, DK, REF → 332
329	How old was [NAME] in months when he/she died? KEY '0' IF LESS THAN ONE MONTH OLD.	MONTHS _____ DON'T KNOW = -8 REFUSED = -9	ALL → 332

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
330	Is [NAME] living with you?	YES = 1 NO = 2	NO → 332
331	RECORD HOUSEHOLD LINE NUMBER OF CHILD RECORD '00' IF CHILD NOT LISTED IN HOUSEHOLD	[LIST OF CHILDREN IN HOUSEHOLD] NOT LISTED IN HOUSEHOLD = 96	
332	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 → 335
333	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	
334	Thank you for the information regarding [NAME]. DID THE RESPONDENT HAVE MORE THAN ONE CHILD (I.E. TWINS, TRIPLETS)?	YES = 1 NO = 2	YES → 327 FOR MULTIPLES
Interviewer says: "I will now ask about current pregnancies."			MALE → 358
335	Are you pregnant now?	YES = 1 NO = 2 DON'T KNOW/UNSURE = -8 REFUSED = -9	NO, DK, REFUSED → END OF MODULE
Interviewer says: "I will now ask you about family planning."			
336	Would you like to have a/another child?	YES = 1 NO = 2 UNDECIDED/DON'T KNOW = 3 REFUSED = -9	NO → UNDECIDED/DK, REFUSED →
337	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
338	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	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
MODULE 4 CHILDREN			
THE HOUSEHOLD SCHEDULE NOTED THAT [NAME OF RESPONDENT] WILL FILL OUT THE CHILDREN'S MODULE FOR [NUMBER OF CHILDREN].			
I am going to ask you a number of questions about your child/children regarding their health and where they get their health services. We will ask you about these children: [LIST OF CHILDREN]			
[LINE NUMBER] [CHILD'S NAME]			
401	Now I am going to ask you questions for [NAME].	_____	
402	How old was [NAME] at his/her last birthday?	YEARS _____	IF >5 → 403 IF >0 AND ≤ 5 → 402
	KEY '0' IF CHILD IS LESS THAN ONE YEAR OLD AT PRESENT.		AGE CANNOT BE GREATER THAN 14 YEARS.
	How old is [NAME] in months?	MONTHS _____	ALL → 403
	You said that [CHILD*] was [KIDAGEY*]. How many months over [KIDAGEY*] is [CHILD*]?	MONTHS _____	
403	Is [NAME] a boy or girl?	BOY = 1 GIRL = 2 DON'T KNOW = -8 REFUSED = -9	
404	Is [NAME] enrolled in school?	YES = 1 NO, CURRENTLY NOT IN SCHOOL = 2 NO, TOO YOUNG TO BE IN SCHOOL = 3 DON'T KNOW = -8 REFUSED = -9	NO, TOO YOUNG, DK, REFUSED → 407
405	What is the highest level of school [NAME] has attended: Preschool, primary or secondary?	PRESCHOOL=0 PRIMARY = 1 SECONDARY = 2 DON'T KNOW = -8 REFUSED = -9	DK, REF À
406	What class/level is [NAME] in now?	CLASS/LEVEL/ _____ DON'T KNOW = -8 REFUSED = -9	ALL → 407 SKIP IF 404 = NO, CURRENTLY NOT IN SCHOOL
407	Was [NAME] enrolled in school during the previous school year?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 409
408	What class/level was [NAME] during the previous school year?	CLASS/LEVEL _____ DON'T KNOW = -8 REFUSED = -9	
409	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 → 411 SKIP IF FEMALE CHILD. ELECTRONIC AID IF DON'T KNOW.
410	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	SKIP IF FEMALE CHILD. ADAPT RESPONSES BASED ON COUNTRY CONTEXT

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
411	Has [NAME] ever been tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 413 DK, REFUSED → 430
412	Why has [NAME] never been tested for HIV? SELECT ALL THAT APPLY.	DON'T KNOW WHERE TO TEST = A TEST COSTS TOO MUCH = B TRANSPORT COSTS TOO MUCH = C TOO FAR AWAY = D AFRAID OTHERS WILL KNOW ABOUT TEST RESULTS = E DON'T NEED TEST/LOW RISK = F DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY = G AFRAID SPOUSE/PARTNER/FAMILY WILL KNOW RESULTS = H DON'T WANT TO KNOW CHILD HAS HIV = I CANNOT GET TREATMENT FOR HIV = J TEST KITS NOT AVAILABLE = K RELIGIOUS REASONS = L OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	ALL → 430
413	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
414	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 → NEXT MODULE
415	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	
416	Has [NAME] ever received HIV medical care from a doctor, clinical officer or nurse?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 418 DK, REFUSED → NEXT MODULE ADAPT HEALTHCARE PROVIDER TERMS BASED ON LOCAL CONTEXT.
417	What is the main reason why [NAME] has never seen a doctor, clinical officer, or nurse for HIV medical care?	FACILITY IS TOO FAR AWAY = 1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE FOR CHILD = 2 COST OF CARE = 3 COST OF TRANSPORT = 4 I DON'T THINK CHILD NEEDS IT, HE/SHE IS NOT SICK = 5 I FEAR PEOPLE WILL KNOW THAT CHILD HAS HIV IF I TAKE HIM/HER TO A CLINIC = 6 RELIGIOUS REASONS = 7 CHILD IS TAKING TRADITIONAL MEDICINE = 8 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL → 430 ADAPT RESPONSES TO LOCAL CONTEXT. ADAPT HEALTHCARE PROVIDER TERMS BASED ON LOCAL CONTEXT.

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
418	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	
419	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 → 432
420	What is the <u>main</u> 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 I DON'T THINK CHILD NEEDS IT, HE/SHE IS NOT SICK = 5 I FEAR PEOPLE WILL KNOW THAT CHILD HAS HIV IF I TAKE HIM/HER TO A CLINIC = 6 RELIGIOUS REASONS = 7 CHILD IS TAKING TRADITIONAL MEDICINE = 8 NO APPOINTMENT SCHEDULED/DID NOT MISS MOST RECENT APPOINTMENT = 9 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
421	Has [NAME] ever had a CD4 count test? The CD4 count tells you how sick you are with HIV and if you need to take ARVs or other HIV medications.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 432 NO, DK, REFUSED & NEVER IN HIV CARE → NEXT MODULE
422	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 → NEXT MODULE
423	Has [NAME] ever taken ARVs, that is, antiretroviral medications to treat his/her HIV infection?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 425 DK, REFUSED → 429 ELECTRONIC AID IF DON'T KNOW
424	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 ALL → 3041 ADAPT RESPONSES BASED ON COUNTRY CONTEXT. REFUSED = -9	ALL → 429 ADAPT RESPONSES BASED ON COUNTRY CONTEXT

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
425	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	
426	Is [NAME] currently taking ARVs, that is, antiretroviral medications? By currently, I mean that [NAME] may have missed some doses but [NAME] is still taking ARVs.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 428 DK, REFUSED → 429
427	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 → 429 ADAPT RESPONSES BASED ON COUNTRY CONTEXT.
428	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	
429	Is [NAME] currently taking Septrin or cotrimoxazole? Septrin or cotrimoxazole is a medicine recommended for people with HIV, even if they have not started treatment for HIV. It helps prevent certain infections but it is not treatment for HIV. By currently, I mean that [NAME] may have missed some doses but is still taking Septrin or cotrimoxazole.	YES = 1 NO = 2 I DON'T KNOW WHAT IT IS = 3 REFUSED = -9	YES, DK REFUSED → ADAPT TERM 'SEPTRIN' BASED ON COUNTRY CONTEXT. ELECTRONIC AID IF DON'T KNOW
430	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 → 432
431	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	
432	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 → NEXT CHILD ADAPT TERMS FOR HEALTHCARE PROVIDER TO COUNTRY CONTEXT.

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
433	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	ADAPT TERMS FOR HEALTHCARE PROVIDER TO COUNTRY CONTEXT.
434	Was [NAME] ever treated for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 436
435	The last time [NAME] was treated for TB, did [NAME] complete at least 6 months of treatment?	YES = 1 NO, THE MEDICINE WAS STOPPED IN LESS THAN 6 MONTHS = 2 NO, CHILD IS STILL ON TREATMENT = 3 DON'T KNOW = -8 REFUSED = -9	
436	Thank you for the information about [NAME]. DOES THE RESPONDENT HAVE ANOTHER CHILD AGED 0-14 YEARS?	YES = 1 NO = 2	YES → 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.

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 → 406 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	
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."

NO.	QUESTIONS	CODING CATEGORIES		SKIPS/FILTERS
601	How old were you when you had vaginal sex for the very <u>first</u> time? Vaginal sex is when a penis enters a vagina.	AGE IN YEARS _____ NEVER HAD VAGINAL SEX = 96 DON'T KNOW = -8 REFUSED = -9		
602	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 → 536
Interviewer says: "Now I would like to ask you some questions about the people you have had sex with in the last 12 months. Let me assure you again that your answers are completely confidential and will not be told to anyone. I will first ask you about your most recent partner."				
603	Does your sexual partner live in this household?	YES = 1 NO = 2 NO → 605		
604	Please select the partner you had sex with that lives in the household from the list below.	[LIST] ALL → 609	[LIST] ALL → 609	[LIST] ALL → 609
605	I would like to ask you for the initials of this partner so I can keep track. They do not have to be the actual initials of your partner.	INITIALS	INITIALS	INITIALS
606	What is your relationship with (INITIALS)?	HUSBAND/WIFE = 1 LIVE-IN PARTNER = 2 PARTNER, NOT LIVING WITH RESPONDENT = 3 EX-SPOUSE/EX-PARTNER = 4 FRIEND/ACQUAINTANCE = 5 SEX WORKER = 6 SEX WORKER CLIENT = 7 STRANGER = 8 OTHER = 96 SPECIFY: _____	HUSBAND/WIFE = 1 LIVE-IN PARTNER = 2 PARTNER, NOT LIVING WITH RESPONDENT = 3 EX-SPOUSE/EX-PARTNER = 4 FRIEND/ACQUAINTANCE = 5 SEX WORKER = 6 SEX WORKER CLIENT = 7 STRANGER = 8 OTHER = 96 SPECIFY: _____	HUSBAND/WIFE = 1 LIVE-IN PARTNER = 2 PARTNER, NOT LIVING WITH RESPONDENT = 3 EX-SPOUSE/EX-PARTNER = 4 FRIEND/ACQUAINTANCE = 5 SEX WORKER = 6 SEX WORKER CLIENT = 7 STRANGER = 8 OTHER = 96 SPECIFY: _____
		DON'T KNOW = -8 REFUSED = -9 SKIP IF PARTNERS LIVES IN HOUSEHOLD	DON'T KNOW = -8 REFUSED = -9 SKIP IF PARTNERS LIVES IN HOUSEHOLD	DON'T KNOW = -8 REFUSED = -9 SKIP IF PARTNERS LIVES IN HOUSEHOLD
607	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
608	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 = -99	AGE IN YEARS DON'T KNOW = -8 REFUSED = -99
609	The <u>last</u> 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

NO.	QUESTIONS	CODING CATEGORIES		SKIPS/FILTERS
610	Did you enter into a sexual relationship with (INITIALS) because (INITIALS) provided you with or you expected that (INITIALS) would provide you gifts, help you to pay for things, or help you in other ways?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 NO, DK, REFUSED → 613 SKIP IF SEX WORKER OR CLIENT	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 NO, DK, REFUSED → 613 SKIP IF SEX WORKER OR CLIENT	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 NO, DK, REFUSED → 613 SKIP IF SEX WORKER OR CLIENT
611	In the <u>last 12 months</u> , 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 → 613 SKIP IF SEX WORKER OR CLIENT	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 NO, DK, REFUSED → 613 SKIP IF SEX WORKER OR CLIENT	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 NO, DK, REFUSED → 613 SKIP IF SEX WORKER OR CLIENT
612	In the <u>last 12 months</u> , 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		
613	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
614	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
615	What is the HIV status of (INITIALS)? READ RESPONSES ALOUD	I THINK (INITIALS) IS POSITIVE = 1 (INITIALS) TOLD ME HE/SHE IS POSITIVE = 2 (INITIALS) IS POSITIVE, TESTED TOGETHER = 3 I THINK (INITIALS) IS NEGATIVE = 4 (INITIALS) TOLD ME HE/SHE IS NEGATIVE = 5 (INITIALS) IS NEGATIVE, TESTED TOGETHER = 6 DON'T KNOW STATUS = 7 REFUSED = -9	I THINK (INITIALS) IS POSITIVE = 1 (INITIALS) TOLD ME HE/SHE IS POSITIVE = 2 (INITIALS) IS POSITIVE, TESTED TOGETHER = 3 I THINK (INITIALS) IS NEGATIVE = 4 (INITIALS) TOLD ME HE/SHE IS NEGATIVE = 5 (INITIALS) IS NEGATIVE, TESTED TOGETHER = 6 DON'T KNOW STATUS = 7 REFUSED = -9	I THINK (INITIALS) IS POSITIVE = 1 (INITIALS) TOLD ME HE/SHE IS POSITIVE = 2 (INITIALS) IS POSITIVE, TESTED TOGETHER = 3 I THINK (INITIALS) IS NEGATIVE = 4 (INITIALS) TOLD ME HE/SHE IS NEGATIVE = 5 (INITIALS) IS NEGATIVE, TESTED TOGETHER = 6 DON'T KNOW STATUS = 7 REFUSED = -9

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
616	DOES THE RESPONDENT HAVE ANOTHER PARTNER IN THE LAST 12 MONTHS?	YES = 1 NO = 2 YES → 603 I WILL NOW ASK ABOUT YOUR SECOND TO LAST PARTNER.	YES = 1 NO = 2 YES → 603 I WILL NOW ASK ABOUT YOUR THIRD TO LAST PARTNER.
Interviewer says: “Now I am going to ask you some additional questions about your sexual activities. Again, I am asking that you answer these questions honestly. Let me assure you again that your answers are completely confidential and will not be shared with anyone.”			
617	Have you ever <u>sold</u> sex for money?	YES =1 NO =2 DON'T KNOW =-8 REFUSED= -9	
618	In the last 12 months, have you <u>sold</u> sex for money?	YES =1 NO =2 DON'T KNOW =-8 REFUSED= -9	
619	The last time you sold sex for money, was a condom used?	YES =1 NO =2 DON'T KNOW =-8 REFUSED= -9	
620	Have you <u>ever</u> paid money for sex?	YES =1 NO =2 DON'T KNOW =-8 REFUSED= -9	
621	In the last 12 months, have you paid money for sex?	YES =1 NO =2 DON'T KNOW =-8 REFUSED= -9	
622	The last time you paid money for sex, was a condom used?	YES =1 NO =2 DON'T KNOW =-8 REFUSED= -9	
MODULE 7: HIV TESTING			
Interviewer says: “I would now like to ask you some questions about HIV testing.”			
701	Have you <u>ever</u> tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 703 DK, REFUSED → 709 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 SPOUSE/PARTNER/FAMILY = G AFRAID SPOUSE/PARTNER/FAMILY WILL KNOW RESULTS = H DON'T WANT TO KNOW I HAVE HIV = I CANNOT GET TREATMENT FOR HIV = J TEST KITS NOT AVAILABLE = K RELIGIOUS REASONS = L OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	ALL → END OF MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
703	What month and year was your last HIV test?	MONTHS _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
704	Where was the <u>last</u> test done?	VOLUNTARY COUNSELING AND 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	
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	SKIP TO NEXT MODULE IF NOT POSITIVE 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 SPOUSE/SEX PARTNER = B DOCTOR = C FRIEND = D FAMILY MEMBER = E OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	SKIP TO NEXT QUESTION IF NO ONE. SKIP IF HIV NEGATIVE
Interviewer says: "Now I would like to ask you questions about your experiences with health care providers."			SKIP TO NEXT MODULE IF NOT HIV POSITIVE.
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	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
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."			SKIP TO NEXT MODULE IF NOT HIV POSITIVE
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 ADAPT HEALTHCARE PROVIDER TERMS TO LOCAL CONTEXT.
802	What is the <u>main</u> reason why you have never received HIV medical care from a doctor, clinical officer, or nurse?	FACILITY IS TOO FAR AWAY = 1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE = 2 COST OF CARE = 3 COST OF TRANSPORT = 4 I DO NOT NEED IT/I FEEL HEALTHY/NOT SICK = 5 I FEAR PEOPLE WILL KNOW THAT I HAVE HIV IF I GO TO A CLINIC = 6 RELIGIOUS REASONS = 7 I'M TAKING TRADITIONAL MEDICINE = 8 DO NOT TRUST THE STAFF/QUALITY OF CARE = 9 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP TO 808
803	What month and year did you <u>first</u> see a doctor, clinical officer or nurse for HIV medical care? PROBE TO VERIFY DATE.	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
804	What month and year did you <u>last</u> see a doctor, clinical officer or nurse for HIV medical care?	MONTH _____ 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 <u>main</u> reason for not seeing a doctor, clinical officer or nurse for HIV medical care for more than 6 months?	THE FACILITY IS TOO FAR AWAY = 1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE = 2 COST OF CARE = 3 COST OF TRANSPORT = 4 I DO NOT NEED IT/I FEEL HEALTHY/NOT SICK = 5 I FEAR PEOPLE WILL KNOW THAT I HAVE HIV IF I GO TO A CLINIC = 6 I'M TAKING TRADITIONAL MEDICINE = 7 RELIGIOUS REASONS = 8 NO APPOINTMENT SCHEDULED/DID NOT MISS MOST RECENT APPOINTMENT = 9 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ADAPT TIME BASED ON COUNTRY LOST-TO-FOLLOW-UP FOR PRE-ART HIV CARE.
806	Have you ever had a CD4 count test? The CD4 count tells you how sick you are with HIV and if you need to take ARVs or other HIV medications.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 808 NO, DK, REFUSED & NEVER IN HIV CARE → END OF MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
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 <u>ever</u> 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 DO NOT HAVE PERMISSION OF SPOUSE / PARENT / GUARDIAN = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL → NEXT MODULE ADAPT RESPONSES BASED ON COUNTRY CONTEXT.
810	What month and year did you <u>first</u> 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 <u>currently</u> taking ARVs, that is, antiretroviral medications? By currently, I mean that you may have missed some doses but you are still taking ARVs.	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	YES → 813 DK, REFUSED → NEXT MODULE
812	Can you tell me the <u>main</u> reason why you are <u>not</u> currently taking ARVs?	I HAVE TROUBLE TAKING A TABLET EVERYDAY = 1 I HAD SIDE EFFECTS = 2 FACILITY TOO FAR AWAY FOR ME TO GET MEDICINE REGULARLY = 3 COST OF MEDICATIONS = 4 COST OF TRANSPORT = 5 I FEEL HEALTHY/NOT SICK =6 FACILITY WAS OUT OF STOCK = 7 RELIGIOUS REASONS = 8 TAKING TRADITIONAL MEDICATIONS = 9 OTHER=96 SPECIFY: _____ DON' T KNOW = -8 REFUSED = -9	ALL → NEXT MODULE ADAPT RESPONSES BASED ON COUNTRY CONTEXT.
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	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
MODULE 9: TUBERCULOSIS AND OTHER HEALTH ISSUES			
Interviewer says: "Now we will ask you about tuberculosis or TB."			SKIP INSTRUCTION IF IN HIV CARE.
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 ADAPT TERMS FOR HEALTHCARE PROVIDER TO COUNTRY CONTEXT.
903	Were you <u>ever</u> 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	NO, DK, REFUSED → END OF MODULE
905	The last time you were treated for TB, did you complete at least 6 months of treatment?	YES = 1 NO, MEDICINE WAS STOPPED IN LESS THAN 6 MONTHS = 2 NO, BUT I AM STILL ON TREATMENT = 3 DON'T KNOW = -8 REFUSED = -9	
MODULE 10: GENDER NORMS			
Interviewer says: "Now I would like to ask you question on attitudes and decision-making in your home."			
1001	Who usually makes decisions about health care for yourself: you, your (spouse/partner), you and your (spouse/partner) together, or someone else?	I DO = 1 SPOUSE/PARTNER = 2 WE BOTH DO = 3 SOMEONE ELSE = 4 DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT MARRIED/ LIVING TOGETHER
1002	Who generally decides about how the money you receive is spent: you, your (spouse/partner), you and your (spouse/partner) together, or someone else?	I DO = 1 SPOUSE/PARTNER = 2 WE BOTH DO = 3 SOMEONE ELSE = 4 DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT MARRIED/ LIVING TOGETHER
OPTIONAL MODULE 11: HIV/AIDS KNOWLEDGE AND ATTITUDES			
Interviewer says: "Now I will ask you questions on your knowledge of HIV."			SUBSET = HALF OF SELECTED ADULTS
1101	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
1102	Can a person get HIV from mosquito bites?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
1103	Can a person reduce their risk of getting HIV by using a condom every time they have sex?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
1104	Can a person get HIV by sharing food with someone who has HIV?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
1105	Can a healthy-looking person have HIV?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
1106	Would you buy fresh vegetables from a shop keeper or vendor if you knew the person had HIV?	YES = 1 NO = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
1107	Do you think children living with HIV should be allowed to attend school with children who do not have HIV?	YES = 1 NO = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
1108	Do you think people hesitate to take an HIV test because they are afraid of how other people will react if the test result is positive for HIV?	YES = 1 NO = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
1109	Do people talk badly about people who are living with HIV, or who are thought to be living with HIV?	YES = 1 NO = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
1110	Do people living with HIV, or thought to be living with HIV, lose the respect of other people?	YES = 1 NO = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
1111	Do you fear that you could get HIV if you come into contact with the saliva of a person living with HIV?	YES = 1 NO = 2 ALREADY HAS HIV = 3 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
1112	Do you agree or disagree with the following statement: I would be ashamed if someone in my family had HIV.	AGREE = 1 DISAGREE = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
MODULE 12: INJECTION DRUG USE			
INSTR	The next few questions will be on your use of non-prescription drugs. Remember, all the answers you provide will be kept confidential.		
1201	Some people inject drugs with a needle and syringe for pleasure. Have you ever injected drugs for pleasure?	YES = 1 NO = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
1202	Have you injected drugs with a needle and syringe in the last 30 days?	YES = 1 NO = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
1203	When you have injected drugs during the last 30 days, have you shared the syringe or needle with other people?	YES = 1 NO = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
MODULE 13: VIOLENCE			
	<p>Interviewer says: “You have been selected to be asked questions on other important aspects of a person’s life. I know that some of these questions are very personal. However, your answers are important for helping to understand the condition of men and women in [Cote d’Ivoire]. 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.</p> <p>By sex, I mean vaginal, anal, oral sex or the insertion of an object into your vagina or anus. Vaginal sex is when a penis enters a vagina. Anal sex is when a penis enters an anus (butt). Oral sex is when a partner puts his/her mouth on his/her partner’s penis or vagina.”</p>		SELECT ONLY 1 WOMAN PER HOUSEHOLD.
1301	<p>How many times has anyone ever touched you in a sexual way without your permission, but did not try and force you to have sex?</p> <p>Touching in a sexual way without permission includes fondling, pinching, grabbing, or touching you on or around your sexual body parts.</p> <p>CODE ‘0’ IF NONE.</p>	<p>NUMBER OF TIMES _____</p> <p>DON’T KNOW = -8</p> <p>REFUSED = -9</p>	NONE, DK, REFUSED → 1303
1302	<p>How old were you the <u>first</u> time someone has touched you without your permission?</p>	<p>AGE IN YEARS _____</p> <p>DON’T KNOW = -8</p> <p>REFUSED = -9</p>	
1303	<p>How many times in your life has anyone <u>tried</u> to make you have sex against your will but did not succeed? This includes someone using harassment, threats, tricks, or physical force.</p> <p>CODE ‘0’ IF NONE.</p>	<p>NUMBER OF TIMES _____</p> <p>DON’T KNOW = -8</p> <p>REFUSED = -9</p>	NONE, DK, REFUSED → 1305
1304	<p>How old were you the <u>first</u> time someone tried to make you have sex against your will but did not succeed?</p>	<p>AGE IN YEARS _____</p> <p>DON’T KNOW = -8</p> <p>REFUSED = -9</p>	
1305	<p>How many times in your life have you been <u>physically forced</u> to have sex?</p> <p>CODE ‘00’ IF NONE.</p>	<p>NUMBER OF TIMES _____</p> <p>DON’T KNOW = -8</p> <p>REFUSED = -9</p>	NONE, DK, REFUSED → 1309
1306	<p>How old were you the first time someone physically forced you to have sex?</p>	<p>AGE IN YEARS _____</p> <p>DON’T KNOW = -8</p> <p>REFUSED = -9</p>	
1307	<p>In the last 12 months, did someone physically force you to have sex?</p>	<p>YES = 1</p> <p>NO = 2</p> <p>DON’T KNOW = -8</p> <p>REFUSED = -9</p>	NO, DK, REFUSED → 1309
1308	<p>In the last 12 months, did a partner physically force you to have sex?</p> <p>By partner, I mean a live-in partner whether or not you were married at the time.</p>	<p>YES = 1</p> <p>NO, DID NOT FORCE = 2</p> <p>NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS = 3</p> <p>DON’T KNOW = -8</p> <p>REFUSED = -9</p>	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
1309	<p>How many times in your life has someone <u>pressured</u> you to have sex through harassment, threats and tricks and did succeed?</p> <p>CODE '00' IF NONE.</p> <p>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.</p>	<p>NUMBER OF TIMES _____</p> <p>DON'T KNOW = -8</p> <p>REFUSED = -9</p>	NONE, DK, REFUSED → 1314
1310	<p>How old were you the <u>first time</u> someone pressured you to have sex and did succeed?</p>	<p>AGE IN YEARS _____</p> <p>DON'T KNOW = -8</p> <p>REFUSED = -9</p>	
1311	<p>In the last 12 months, did someone pressure you to have sex and did succeed?</p>	<p>YES = 1</p> <p>NO = 2</p> <p>DON'T KNOW = -8</p> <p>REFUSED = -9</p>	NO, DK, REFUSED → 1314
1312	<p>In the last 12 months, did a partner pressure you to have sex and did succeed?</p> <p>By partner, I mean a live-in partner whether or not you were married at the time.</p>	<p>YES = 1</p> <p>NO, DID NOT PRESSURE AND SUCCEED = 2</p> <p>NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS = 3</p> <p>DON'T KNOW = -8</p> <p>REFUSED = -9</p>	
1313	<p>After any of these unwanted sexual experiences, did you try to seek professional help or services from any of the following?</p> <p>SELECT ALL THAT APPLY.</p>	<p>I DID NOT TRY TO SEEK HELP = A</p> <p>HEALTHCARE PROFESSIONAL = B</p> <p>POLICE OR OTHER SECURITY PERSONNEL = C</p> <p>SOCIAL WORKER, COUNSELOR OR NON-GOVERNMENTAL ORGANIZATION = D</p> <p>RELIGIOUS LEADER = E</p> <p>OTHER = X</p> <p>SPECIFY: _____</p> <p>DON'T KNOW = Y</p> <p>REFUSED = Z</p>	<p>DID NOT TRY TO SEEK HELP → 1314</p> <p>ELSE → 1315</p> <p>SKIP IF NEVER EXPERIENCED</p>
1314	<p>What was the main reason that you did not try to seek professional help or services?</p>	<p>DID NOT KNOW SERVICES WERE AVAILABLE = 1</p> <p>SERVICES NOT AVAILABLE = 2</p> <p>AFRAID OF GETTING IN TROUBLE = 3</p> <p>ASHAMED FOR SELF/FAMILY = 4</p> <p>COULD NOT AFFORD SERVICES = 5</p> <p>DID NOT THINK IT WAS A PROBLEM = 6</p> <p>FELT IT WAS MY FAULT = 7</p> <p>AFRAID OF BEING ABANDONED = 8</p> <p>DID NOT NEED/WANT SERVICES = 9</p> <p>AFRAID OF MAKING SITUATION WORSE = 10</p> <p>OTHER = 96</p> <p>SPECIFY: _____</p> <p>DON'T KNOW = -8</p> <p>REFUSED = -9</p>	SKIP IF NEVER EXPERIENCED

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
1315	<p>Has anyone ever done any of these things to you:</p> <ul style="list-style-type: none"> - Punched, kicked, whipped, or beat you with an object with the intention of sexually assaulting you? - Slapped you, threw something at you that could hurt you, pushed you or shoved you because they wanted to sexually assault you? - Choked smothered, tried to drown you, or burned you intentionally because they wanted to sexually assault you? - Used or threatened you with a knife, gun or other weapon because they wanted to sexually assault you?? 	<p>YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9</p>	<p>NO, DK, REFUSED → NEXT MODULE</p>
1316	<p>How old were you the first time one of these things happened to you?</p>	<p>AGE IN YEARS _____ DON'T KNOW = -8 REFUSED = -9</p>	
1317	<p>In the last 12 months, how many times did someone:</p> <ul style="list-style-type: none"> - Punched, kicked, whipped, or beat you with an object because they wanted to sexually assault you? - Slapped you, threw something at you that could hurt you, pushed you or shoved you because they wanted to sexually assault you? - Choked smothered, tried to drown you, or burned you intentionally because they wanted to sexually assault you? - Used or threatened you with a knife, gun or other weapon with the intention of sexually assaulting you? 	<p>NOT IN LAST 12 MONTHS = 1 ONCE = 2 FEW = 3 MANY = 4 DON'T KNOW = -8 REFUSED = -9</p>	<p>NOT IN THE LAST 12 MONTHS → 1319</p>
1318	<p>In the last 12 months, did a partner do any of these things to you?</p> <p>By partner, I mean a live-in partner whether or not you were married at the time.</p>	<p>YES = 1 NO, PARTNER DID = 2 NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS = 3 DON'T KNOW = -8 REFUSED = -9</p>	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS/FILTERS
SERVICES FOR PHYSICAL VIOLENCE			
1319	<p>Thinking about all these experiences that we just discussed, whether someone has done the following:</p> <ul style="list-style-type: none"> - Punched, kicked whipped or beat you with an object because they wanted to sexually assault you? - Slapped you, threw something at you that could hurt you, pushed you or shoved you because they wanted to sexually assault you? - Choked, smothered, tried to drown you or burned you intentionally because they wanted to sexually assault you? - Used or threatened you with a knife, gun or other weapon because they wanted to sexually assault you? <p>Did you try to seek professional help or services for any of these incidents from any of the following?</p> <p>SELECT ALL THAT APPLY.</p>	<p>I DID NOT TRY TO SEEK HELP = A HEALTHCARE PROFESSIONAL = B POLICE OR OTHER SECURITY PERSONNEL = C SOCIAL WORKER, COUNSELOR OR NON-GOVERNMENTAL ORGANIZATION = D RELIGIOUS LEADER = E OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z</p>	<p>DID NOT TRY TO SEEK HELP → 1320 ELSE → 1321</p>
1320	<p>What was the main reason that you did not try to seek professional help or services?</p>	<p>DID NOT KNOW SERVICES WERE AVAILABLE = 1 SERVICES NOT AVAILABLE = 2 AFRAID OF GETTING IN TROUBLE = 3 ASHAMED FOR SELF/FAMILY = 4 COULD NOT AFFORD SERVICES = 5 DID NOT THINK IT WAS A PROBLEM = 6 FELT IT WAS MY FAULT = 7 AFRAID OF BEING ABANDONED = 8 DID NOT NEED/WANT SERVICES = 9 AFRAID OF MAKING SITUATION WORSE = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9</p>	
1321	<p>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.</p> <p>PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS.</p>		<p>SKIP IF NEVER EXPERIENCED PHYSICAL OR SEXUAL VIOLENCE.</p>
	<p>Interviewer says: "You mentioned earlier that you have sold sex for money. Thank you for sharing your personal experiences with me. If you want to talk further about these experiences, I can refer you to a place that can provide you with help."</p> <p>FILL OUT REFERRAL FORM FOR CHILDREN IDENTIFIED AS TRAFFICKED MINORS. FILL OUT SUMMARY OF REFERRED TRAFFICKED MINORS. PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS, IF NOT ALREADY GIVEN.</p>		<p>SKIP IF >18 YEARS OLD SKIP IF NEVER SOLD SEX</p>

APPENDIX G SURVEY CONSENT FORMS

Consent for Household Interview 18-64

[DO NOT READ BELOW]

Study title: Cote d'Ivoire Population-based HIV Impact Assessment (CIPHIA)

Interviewer reads:

Title of Survey: Cote d'Ivoire Population-Based HIV Impact Assessment

Hello. My name is _____. I would like to invite you to take part in this research study about HIV in Cote d'Ivoire. The Ministry of Health and Public Hygiene (MoHPPH) and the Institut National de la Statistique (INS) are leading this survey in collaboration with the United States Centers for Disease Control and Prevention and ICAP at Columbia University.

What is the purpose of the survey?

This survey will help us know how many people in Cote d'Ivoire have HIV and need health services. It will also tell us about people's risk for getting HIV. We plan to ask about 11,000 households throughout the country to join this survey. If you join, your taking part will help the MoHPPH make health services better in the country.

What do you have to do if you agree to take part?

There are three parts to this survey– a household interview, individual interviews and blood testing. We would like to ask you some questions about the people who live here and some of the things you have. The household interview will take up to 30 minutes.

After the household interview, we may invite you and others living in your household to take part in individual interviews and then offer testing for HIV. We will ask each person to give permission to take part before joining the survey. Household members who do not take part in the survey will be provided home based testing and counselling at their request.

What are the potential risks?

You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question. You may stop the interview at any time.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

There may be no direct benefit to you but the information you provide to us will be used to improve the health of Ivoirians. Your responses will help the Ministry of Health and Public Hygiene to develop more effective programs to fight HIV.

What are the alternatives to taking part?

You can decide not to take part in this survey, your taking part in this household interview is entirely voluntary. Your decision to take part or not take part will not affect your access to health care.

What about confidentiality?

All information you give us will be kept strictly confidential, even from your family. The consent forms with your name will be kept separate from the answers you give in this interview. Your name will not appear when we share survey results. Your answers to the questions will be identified only by a number.

[INTERVIEWER: INDICATE INFORMATION BELOW 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 National Ethics Committee for Research in Cote d'Ivoire (CNER) 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]

The information we collect from you will not be released outside of the groups listed above unless there is an issue of safety. Your permission to allow us to use and share your information with the groups above will expire three years after the end of the survey.

Who should you contact if you have questions?

If you want to leave the survey, or have any questions about the survey, you should contact any of the Investigators listed below:

[INDICATE ADDRESS OF POC- DO NOT READ ALOUD]

Dr Abo Kouamé

Programme National de Lutte contre le VIH/Sida (PNLS), Cote d'Ivoire

Adresse: Cocody 2-Plateaux Angré, Boulevard Latrille, 01 BP 5420 Abidjan 01. Tel: +225 22 42 07 17 ; 22 41 52 38/32

Email: kwagny@gmail.com; pnlsoci@yahoo.fr

Kouassi Lucien

Institut National de la Statistique (INS), Côte d'Ivoire

Adresse: Cité administrative, Tour C 2e étage, Abidjan Plateau, BP V55 Abidjan 01. Tel: +225 20 21 05 38

Email: kkouassi_lucien@yahoo.fr; statistiques@avisoci

Dr KOblavi-Deme Stephania

ICAP en Côte d'Ivoire

Adresse: BP 561 Cidex 3 Abidjan, Côte d'Ivoire Tel: +225 22 40 95 20/05

Email: sk2855@cumc.columbia.edu

If you decide to leave the study, no more information will be collected from you. However, we will not be able to take back the information that has already been collected and shared.

If you have any questions about your rights as a person in this survey or feel that you have been harmed by taking part, you can contact

Dr. Louis Penali

Comité National d'Ethique et de Recherche de Côte d'Ivoire (CNER-CI)

Adresse: Insitutit Pasteur Cocody Tel: +225 22 00 58 29; 58 45 69 25

Email: cner_ci@gmail.com

Are there any costs?

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

Do you want to ask me anything about the survey?**Consent Statement**

Any questions that I had have been answered satisfactorily. I agree to take part in the household interview. I have been offered a copy of this consent form.

Do you agree to do the household interview? 'YES' means that you agree to do the interview. 'NO' means that you will NOT do the interview.

____ Yes ____ No

Head of household signature or mark _____

Date: __/__/__

Printed name of head of household _____

Household ID number _____

[For illiterate participants]

Signature of witness _____

Date: __/__/__

Printed name of witness _____

Signature of person obtaining consent _____
 __/__/__

Date:

Printed name of person obtaining consent _____

Survey staff ID number _____

Consent for Interview Adults ages 18-64 and emancipated minors 15-17 [DO NOT READ BELOW]

Study title: Cote d'Ivoire Population-based HIV Impact Assessment (CIPHIA)

Interviewer reads:

[IF PARTICIPANT HAS BEEN THROUGH HOUSEHOLD CONSENT]

Hello. My name is_____.

What do you have to do if you agree to take part?

If you join us for this survey, we will ask you questions about your age, your marriage and sexual behavior, any behavior that puts you at greater risk of HIV infection, your knowledge about HIV, if you ever had an HIV test, whether you know your HIV status and if you have any experience with HIV prevention and treatment services. The interview will take about 40 minutes.

After the interview, we will offer you an HIV test. We will give you a separate opportunity to agree to the blood testing. You can agree to the interview, but not agree to the blood testing. The testing and counseling session will also take about 40 minutes.

Lastly, it is possible that you may be eligible to take part in future studies related to the health of Ivorians. At the end of this form, I will ask for permission to contact you in the next two years if such an opportunity occurs.

What are the potential risks?

The risks to taking part in the interview are small. You may feel uncomfortable about some of the questions I will ask. You can refuse to answer any question. As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

There may be no direct benefit to you but your taking part in this survey could help us learn more about HIV in Cote d'Ivoire. It can also help us learn about how well HIV prevention and treatment programs are working.

What are alternatives to taking part?

You can decide not to take part in this interview. Your decision to take part or not take part will not affect your access to healthcare.

What about confidentiality?

The interview will take place in a private area and your family members will not be present during the interview. All the information you give us will be kept strictly confidential, even from your family and will not be shown outside of the survey team. The consent forms with your name will be kept separate from the answers you give in this interview. Your name will not appear when we share survey results. Your answers to the questions will be identified only by a number.

Do you want to ask me anything about the survey?

→ GO TO CONSENT STATEMENT

[IF PARTICIPANT HAS NOT BEEN THROUGH HOUSEHOLD CONSENT]

Title of Survey: Cote d'Ivoire Population-Based HIV Impact Assessment

Hello. My name is_____. We are doing a research study/survey throughout Cote d'Ivoire to learn more about HIV in the country. The Ministry of Health and Public Hygiene (MoHPH) is leading this survey and is conducting it with the United States Centers for Disease Control and Prevention (CDC) and ICAP at Columbia University and the Institut National de la Statistique (INS).

Why are we doing this survey?

HIV is the virus that causes AIDS. AIDS is a very serious illness. This survey will help us know how many people in Cote d'Ivoire have HIV and need health services. We plan to ask about 26,000 men, women, and children from about 11,000 households throughout Cote d'Ivoire to take part in this survey. If you join, your taking part will help the Ministry of Health and Public Hygiene (MoHPH) 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.

What do you have to do if you agree to take part?

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 an HIV test. We will give you a separate opportunity to agree to the blood testing. You can agree to the interview, but not agree to the blood testing. The testing and counseling session will also take about 40 minutes.

Lastly, it is possible that you may be eligible to take part in future studies related to the health of Ivorians. At the end of this form, I will ask for permission to contact you in the next two years, if such an opportunity occurs.

What are the potential risks?

The risks to taking part in the interview are small. You may feel uncomfortable about some of the questions I will ask. You can refuse to answer any question.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

There may be no direct benefit to you but your taking part in this survey could help us learn more about HIV in Cote d'Ivoire. It can also help us learn about how well HIV prevention and treatment programs are working.

What are alternatives to taking part?

You can decide not to take part in this interview. Your decision to take part or not take part will not affect your healthcare.

What about confidentiality?

The interview will take place in a private area and your family members will not be present during the interview. All the information you give us will be kept strictly confidential, even from your family and will not be shown outside of the survey team. The consent forms with your name will be kept separate from the answers you give in this interview. Your name will not appear when we share survey results. Your answers to the questions will be identified only by a number.

(INTERVIEWER INDICATE INFORMATION BELOW ON CONSENT FORM, 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 National Ethics Committee for Research in Cote d'Ivoire (CNER) 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]

The information we collect from you will not be released outside of the groups listed above unless there is an issue of safety. Your permission to allow us to use and share your information with the groups above will expire three years after the end of the survey.

Who should you contact if you have questions?

If you want to leave the survey, or have any questions about the survey, you should contact any of the Investigators listed below:

(INTERVIEWER INDICATE ADDRESSES ON CONSENT FORM, DO NOT READ ALOUD)

Dr Abo Kouamé

Programme National de Lutte contre le VIH/Sida (PNLS), Cote d'Ivoire

Adresse: Cocody 2-Plateaux Angré, Boulevard Latrille, 01 BP 5420 Abidjan 01. Tel: +225 22 42 07 17 ; 22 41 52 38/32

Email: kwagny@gmail.com; pnlsoci@yahoo.fr

Kouassi Lucien

Institut National de la Statistique (INS), Côte d'Ivoire

Adresse: Cité administrative, Tour C 2e étage, Abidjan Plateau, BP V55 Abidjan 01. Tel: +225 20 21 05 38

Email: kkouassi_lucien@yahoo.fr; statistiques@avisoci

Dr Koblavi-Deme Stephania

ICAP en Côte d'Ivoire

Adresse: BP 561 Cidex 3 Abidjan, Côte d'Ivoire Tel: +225 22 40 95 20/05

Email: sk2855@cumc.columbia.edu

If you decide to leave the study, no more information will be collected from you. However, we will not be able to take back the information that has already been collected and shared.

If you have any questions about your rights as a person in this survey or feel that you have been harmed by taking part, you can contact:

[INDICATE ADDRESS BELOW, DO NOT READ ALOUD]

Dr. Louis Penali

Comité National d'Éthique et de Recherche de Côte d'Ivoire (CNER-CI)

Adresse: Insitut Pasteur Cocody Tel: +225 22 00 58 29; 58 45 69 25

Email: cner_ci@gmail.com

Are there any costs?

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

Do you want to ask me anything about the survey?

Consent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form.

1. Do you agree to do the interview? 'YES' means that you agree to do the interview. 'NO' means that you will NOT do the interview.

_____ Yes _____ No

2. FUTURE RESEARCH: It is possible that you may be eligible to take part in future studies related to health in Cote d'Ivoire. We are asking for your permission to contact you in the next two years if such an opportunity occurs. If we contact you, we will give you details about the new study and ask you to sign a separate consent form at that time. You may decide at that time that you do not want to take part in that study.

If you do not wish to be contacted about future studies, it does not affect your involvement in this study. Do you agree to be contacted in the future? 'YES' means that you agree to be contacted in the future if a study opportunity arises. 'NO' means that you will NOT be contacted about future studies.

_____ YES _____ NO

Participant signature or mark _____ Date: __/__/__

Printed name of participant _____

Participant ID number _____

[For illiterate participants]

Signature of witness _____ Date: __/__/__

Printed name of witness _____

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

Printed name of person obtaining consent _____

Survey staff ID number _____

[DO NOT READ BELOW]

Consent for Blood Draw: Adults ages 18-64 years and Emancipated minors ages 15-17

Study title: Cote D'Ivoire Population-based HIV Impact Assessment

Interviewer reads:

[Interviewer introduces Laboratory Technician or Nurse if not drawing the blood]

My colleague is _____, who is a nurse 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 participants an opportunity to learn about their HIV status. HIV can cause very serious illness if left untreated. We are also asking people if we can use their blood later in the laboratory for future testing.

What would happen to you if you agree to take part in the blood testing?

If you agree to the HIV testing and blood draw, a trained nurse will take a small amount or about one tablespoon (about 14 mL) of blood from your arm. If it is not possible to take blood from your arm, then we will try to take a few drops of blood from your finger. We will provide counseling and give you the results today. The testing and counseling session will take about 40 minutes.

If you test positive for HIV,

- We will measure the amount of CD4 cells in your blood and give you the result today. CD4 cells are the part of the immune system that fight HIV infections and other diseases.
- We will give you a referral form to take to the nearest Ministry of Health and Public Hygiene-approved health facility you select and information on today's test results so that you can consult with a doctor or nurse to learn more about your HIV test, CD4 count, and overall health.
- We will also send your blood to a laboratory to measure your viral load. Viral load is the amount of HIV in the blood. Your viral load test results will be ready in about eight to twelve weeks. When the results are ready, we will send the results to your health facility of choice. If you provide us with your contact information, we will contact you to let you know the results are ready, and encourage you to go to your health facility to discuss your viral load results with a doctor or nurse.
- We will also do other additional tests related to HIV. 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.

We will also test the CD4 in some people without HIV.

What will happen to your leftover blood?

We would also like your permission to store your leftover blood for future research tests. These tests may be about HIV or other health issues important to the health of Ivorians, such as nutrition or immunization. This sample will be stored indefinitely but your name will only be on the sample for three years. During this three year period we will attempt to tell you about any test results 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 blood samples after survey-related testing has been completed.

What are the potential risks?

The risks in drawing blood are very small. The needle may hurt. Other risks may include bleeding and rarely, infection where the needle enters the skin. Experienced staff will do the test under safe and clean conditions in order to protect you against any risk.

You may learn that you are infected with HIV. Learning that you have HIV may cause some emotional discomfort. We will provide counseling on how to cope with learning that you have HIV and tell you where you may go for care and treatment.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk

What are the potential benefits?

The main benefit is the chance to learn more about your health today. If you test HIV negative you will learn about what you can do to stay negative. Some people who take part will test positive for HIV and will learn where to go for life-saving treatment. If you already know that you are HIV positive and are on treatment, the CD4 and viral load tests can help your doctor or nurse judge how well the treatment is working. Your taking part in this blood testing could help us learn more about HIV in Cote D'Ivoire and how well HIV prevention and treatment programs are working.

What are alternatives to taking part?

You can decide to not take part in the blood testing. Or you can decide to take part in the blood testing, but not agree to allow your leftover blood to be stored for future studies. You can choose to allow your blood storage now or can change your mind over the next three years if you no longer want it stored.

Your decision to take part or not take part in the blood testing will not affect your access to healthcare in any way.

What about confidentiality?

Your blood test results will be kept strictly confidential. The consent forms with your name will be kept separate from your health information. Your name will not appear when we share survey results. The information we collect from you will be identified by a number and not by your name. Only people working on the survey will have access to the data during the survey.

(INTERVIEWER INDICATE INFORMATION BELOW ON CONSENT FORM, 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 National Ethics Committee for Research in Cote D'Ivoire (CNER) 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 pe in this survey
- Study staff and study monitors

[READ FROM HERE]

The information we collect from you will not be released outside of the survey groups listed above unless there is an issue of safety. Your permission to allow us to use and share your name and contact information with the groups above will end three years after the end of the survey.

Who should you contact if you have questions?

If you want to leave the survey, or have any questions about the survey, you should contact any of the Principal Investigators listed below:

(INTERVIEWER INDICATE ADDRESSES BELOW, DO NOT READ ALOUD)

Dr Abo Kouamé

Programme National de Lutte contre le VIH/Sida (PNLS), Cote d'Ivoire

Adresse: Cocody 2-Plateaux Angré, Boulevard Latrille, 01 BP 5420 Abidjan 01. Tel: +225 22 42 07 17 ; 22 41 52 38/32

Email: kwagny@gmail.com; pnlsoci@yahoo.fr

Kouassi Lucien

Institut National de la Statistique (INS), Côte d'Ivoire

Adresse: Cité administrative, Tour C 2e étage, Abidjan Plateau, BP V55 Abidjan 01. Tel: +225 20 21 05 38

Email: kkouassi_lucien@yahoo.fr; statistiques@aviso.ci

Dr Koblavi-Deme Stephania

ICAP en Côte d'Ivoire

Adresse: BP 561 Cidex 3 Abidjan, Côte d'Ivoire Tel: +225 22 40 95 20/05

Email: sk2855@cumc.columbia.edu

If you decide to leave the study, no more information will be collected from you. However, we will not be able to take back the information that has already been collected and shared.

If you have any questions about your rights as a person in this survey or feel that you have been harmed by taking part, you can contact

(INTERVIEWER INDICATE ADDRESSES BELOW, DO NOT READ ALOUD)

Dr. Louis Penali

Comité National d'Ethique et de Recherche de Côte d'Ivoire (CNER-CI)

Adresse: Insitutit Pasteur Cocody Tel: +225 22 00 58 29; 58 45 69 25

Email: cner_ci@gmail.com

Are there any costs?

There is no cost to you for receiving the blood tests today except for your time. You should also know that you will not be paid to receive the blood tests.

Do you want to ask me anything about:

- Taking your blood for HIV testing?
- Testing in the laboratory?
- Storage of blood for future research testing?

Consent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form.

1. Do you agree to give blood for HIV 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 ____ No

(if "Yes" proceed to the next question)

2. 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 ____ No

Participant signature or mark _____

Date: __/__/__

Printed name of participant _____

Participant ID number _____

[For illiterate participants]

Signature of witness _____

Date: __/__/__

Printed name of witness _____

Signature of person obtaining consent _____

Date: __/__/__

Printed name of person obtaining consent _____

Survey staff ID number _____

Consent from Parent or Guardian for blood draw for children ages 0-9 years

[DO NOT READ BELOW]

Title of Survey: [Cote d'Ivoire Population-Based HIV Impact Assessment

[IF PARENT/GUARDIAN HAS BEEN THROUGH CONSENT PROCESS FOR INTERVIEW/BLOOD DRAW]

Now I would like to ask you to let your sons/daughters take part in the research study/survey. Your child's taking part will help the Ministry of Health & Public Hygiene (MoHPH) make HIV services for children and families better.

What will happen to your child if you agree to allow your child to take part?

If you agree, the following will happen, as described in your own consent:

- **[IF CHILD IS <2 YEARS OLD]** A trained nurse will take a few drops (about 1 mL) from your child's finger or heel for an HIV test here in your home.
- **[IF CHILD IS 2-9 YEARS OLD]** A trained nurse will take about a teaspoon of blood (about 6 mL) from your child's arm or a few drops of blood from your child's finger or heel to perform an HIV test here in your home.
- If your child tests positive for HIV,
 - 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 you will receive the results today. We will also test the CD4 level of some children without HIV
 - His/her blood will be sent to a laboratory to measure his/her viral load
 - The viral load results will be returned to your preferred health facility in 8-12 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, viral load results.
 - We may also do other additional tests related to HIV. If we have test results that might guide your child's care or treatment and you provide us with your contact information, 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. 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. During this three year period we will attempt to tell you about any test results that are important for your child's health. If you do not agree to future research tests to your child's blood samples, we will destroy your child's blood samples after survey-related testing has been completed.

[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 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. It also means that the mother may be infected. We would then send your child's blood to a lab for a special test to confirm 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 8-10 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. It is very important that you go to the facility for your child's results, as there is free treatment available.

What are the potential risks?

The needle stick may be uncomfortable for your child. Other risks may include dizziness, bleeding, bruising and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You and your child may learn that your child is infected with HIV. Learning about your child's HIV infection may cause some emotional discomfort. We will provide counseling on how to cope with learning that your child has HIV and tell you where you may go for your child's care and treatment.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. If your child has HIV, you will learn where to take your child for 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 taking part in this survey could help us learn more about children, HIV in Cote d'Ivoire and how well HIV prevention and treatment programs are working.

What are alternatives to taking part?

Your child may stop taking part at any time. This will not affect your child's healthcare in any way.

What about confidentiality?

The blood testing of your child will take place in private. Your child's test results will be kept strictly confidential. Your child's name and the consent forms will be kept separate from his/her health information. Your name and your child's name will not appear when we share survey results. The information we collect from your child will be identified by a number and not by your name or your child's name.

Do you want to ask me anything about your child's taking part in the survey?

GO TO CONSENT STATEMENT

[IF PARENT/GUARDIAN HAS NOT BEEN THROUGH CONSENT PROCESS FOR INTERVIEW/BLOOD DRAW]

Interviewer reads:

Hello. My name is _____. I would like to invite your sons/daughters to take part in this research study/survey about HIV in Cote d'Ivoire. The Ministry of Health & Public Hygiene (MoHPH) and the Institut National de la Statistique (INS) are leading this survey in collaboration with the United States Centers for Disease Control and Prevention and ICAP at Columbia University.

Why are we doing this survey?

This research study/survey will help us learn more about the health of children in Cote d'Ivoire. 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 MoHPH make HIV services better.

What will happen to your child if you agree to allow your child to take part?

[FOR CHILDREN <2 YEAR OLD]

If your child is less than 2 years, we will take a few drops (about 1 mL) from your child's finger or heel for the HIV test.

[FOR CHILDREN 2-9 YEARS OLD]

If you agree to allow your child to take part in the survey, a trained nurse will take about 6 mL or one teaspoon 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 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 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. It also means that the mother may be infected. We would then send your child's blood to a lab for a special test to confirm 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 8 to 10 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. It is very important that you go to the facility for your child's results, as there is free treatment available.

[ALL CHILDREN]

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.

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 8-12 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.

What will happen to your child's leftover blood?

We would like to ask your permission to store your child's leftover blood for future research tests. These tests may be about health issues important in Cote d'Ivoire, such as nutrition or immunization. This sample will be stored indefinitely but your child's name will be on the sample for only 3 years. During this three year period we will attempt to tell you about any test results that are important for your child's health. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to future research tests to your child's blood samples, we will destroy your child's blood samples after survey-related testing has been completed.

What are the potential risks?

The needle stick may be uncomfortable for your child. Other risks may include dizziness, bleeding, bruising, and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You and your child may learn that your child is infected with HIV. Learning about your child's HIV infection may cause some emotional discomfort. We will provide counseling on how to cope with learning that your child has HIV and tell you where you may go for your child's care and treatment.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. Some children who 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. Care and treatment provided by the Ministry of Health and Hygiene is free. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child's taking part in this research could help us learn more about children and HIV in Cote d'Ivoire.

What are alternatives to taking part?

You can decide to allow or not allow your child to take part in this survey. Or you can decide to allow your child to get his or her blood tested for HIV, but not agree to have his or her blood stored for future testing. You can choose to allow your blood storage now or can change your mind over the next three years if you no longer want it stored. Your decision to allow your child to take part or not take part in this survey will not affect your child's access to healthcare in any way.

What about confidentiality?

The blood testing of your child will take place in private. Your child's test results will be kept strictly confidential. Your child's name and the consent forms will be kept separate from his/her health information. Your name and your child's name will not appear when we share survey results. The information we collect from your child will be identified by a number and not by your name or your child's name.

(INTERVIEWER INDICATE INFORMATION BELOW ON CONSENT FORM, 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 Ethics Committee for Research in Cote d'Ivoire (CNER) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your child's rights as a person in this survey
- Study staff and study monitors

[READ ALOUD]

The information we collect from your child will not be released outside of the survey groups listed above unless there is an issue of safety. Your permission to allow us to use and share your child's name and contact information with the groups above will end three years after the end of the survey.

Who should you contact if you have questions?

If you want to leave the survey, or have any questions about the survey, you should contact any of the Investigators listed below:

(INTERVIEWER INDICATE ADDRESSES ON CONSENT FORM, DO NOT READ ALOUD)

Dr Abo Kouamé

Programme National de Lutte contre le VIH/Sida (PNLS), Cote d'Ivoire
 Adresse: Cocody 2-Plateaux Angré, Boulevard Latrille, 01 BP 5420 Abidjan 01. Tel: +225 22 42 07 17 ; 22 41 52 38/32
 Email: kwagny@gmail.com; pnlsoci@yahoo.fr

Kouassi Lucien

Institut National de la Statistique (INS), Côte d'Ivoire
 Adresse: Cité administrative, Tour C 2e étage, Abidjan Plateau, BP V55 Abidjan 01. Tel: +225 20 21 05 38
 Email: kkouassi_lucien@yahoo.fr; statistiques@avisoci

Dr Koblavi-Deme Stephania

ICAP en Côte d'Ivoire
 Adresse: BP 561 Cidex 3 Abidjan, Côte d'Ivoire Tel: +225 22 40 95 20/05
 Email: sk2855@cumc.columbia.edu

[READ ALOUD]

If you decide for your child to leave the study, no more information will be collected. However, we will not be able to take back the information that has already been collected and shared.

If you have any questions about your child's rights as a person in this survey or feel that you have been harmed by taking part, you can contact :

[INDICATE ADDRESS BELOW, DO NOT READ ALOUD]

Dr. Louis Penali

Comité National d'Ethique et de Recherche de Côte d'Ivoire (CNER-CI)

Adresse: Insitut Pasteur Cocody Tel: +225 22 00 58 29; 58 45 69 25

Email: cner_ci@gmail.com

Are there any costs?

There is no cost to you for your child being in the survey. You and your child would not be paid for your child to be in the survey.

Do you want to ask me anything about your child's participation in the survey?

Consent Statement

Any questions I had have been answered satisfactorily. I have been offered a copy of this consent form.

1. Do you agree that your child give blood for HIV testing and related testing? 'YES' means that you give your permission to have the nurse collect a sample of your child's blood for HIV testing and related testing. 'NO' means that your child will NOT give blood for HIV testing and related testing.

____ Yes ____ No

(if IF NO THEN STOP")

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 ____ No

Parent/guardian signature or mark _____ Date: __/__/__

Printed name of parent/guardian _____

Parent/guardian ID number _____ (If applicable. If not applicable check here __)

[For illiterate participants]

Signature of witness _____

Date: __/__/__

Printed name of witness _____

Signature of person obtaining consent _____

Date: __/__/__

Printed name of person obtaining consent _____

Survey staff ID number _____

Child's name (print) _____

Child's participant ID number _____

Permission from parent/guardian for interview/blood draw for adolescents ages 10-17

[DO NOT READ BELOW]

Study title: Cote d'Ivoire Population-Based HIV Impact Assessment

[IF PARENT/GUARDIAN HAS BEEN THROUGH CONSENT PROCESS FOR BLOOD DRAW]

Now I would like to ask you to give us permission to invite your son/daughter to take part in the research study/ survey. Your child's taking part will help the Ministry of Health & Mental Hygiene (MoHPPH) make health services for children and young people better in Cote d'Ivoire.

What would happen to your child if you agree to allow your child to take part?

If you and your child agree, the following will happen:

Interview Procedures

[IF CHILD IS 15-17 YEARS OLD] We will invite your child to do an interview. We will ask your child about any behaviors that may increase his/her chance of getting HIV. The interview will take about 40 minutes. Your children's answers will not be shared with you.

Blood Procedures

If you and your child agree, the following will happen, as described in your own consent:

- To do the HIV test in your home, a trained nurse will take about 1 teaspoon (about 6mL) of blood from your child's arm if your child is 10-14 or about 1 tablespoon (about 14 mL) of blood from your child's arm if your child is 15-17 to perform the tests for HIV. 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 offer him/her a blood test for HIV.
- **[For children 10-15 years old]** We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so
- **[For children 16-17 years old]** We will provide counseling about the results and discuss with your child how to share the results with you if they decide to discuss the results with you.
- If your child tests positive for HIV,
 - We will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fight HIV infections and other diseases..
 - His/her blood will be sent to a laboratory to measure his/her viral load
 - **[IF CHILD IS 10-15 YEARS OLD]** Your child's viral load results will be returned to your preferred health facility in about 8-12 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 may 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.
 - **[IF CHILD IS 16-17 YEARS OLD]** Your child's viral load results will be returned to their preferred health facility in about 8-12 weeks. We will give your child a referral form so that he/she can consult with a doctor or nurse regarding his/her HIV test, CD4 count, and viral load results. We may 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 your child to tell them how they can contact their doctor or nurse to get these results.
- We will also test the CD4 level of some people without HIV.

- We will ask for your permission to store your child's leftover blood for future research tests. These tests may be for HIV or other health issues which are important to the health of Ivorians, 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. During this three year period, we will attempt to tell you about any test results that are important for your child's health. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to future research tests to your child's blood samples, we will destroy your child's blood samples after survey-related testing has been completed.
- **[IF CHILD IS 15-17 YEARS OLD]** It is also possible that your child may be eligible to take part in future studies related to health in Cote d'Ivoire. We will also ask your child for permission to contact them in the next two years if such an opportunity occurs.

[IF CHILD IS 15-17 YEARS OLD] You can agree for your child to complete the interview, but not agree to the blood testing. Or agree for interview and blood testing but not for future storage of blood.

What are the potential risks?

The needle may be uncomfortable for your child. Other risks may include dizziness, bleeding, bruising, and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You and your child may learn that your child is infected with HIV. Learning about your child's HIV infection may cause some emotional discomfort. We will provide counseling on how to cope with learning that your child has HIV, and tell you where you may go for care and treatment for your child.

Lastly, as with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

[IF CHILD IS 15-17 YEARS OLD] Your child may feel uncomfortable about some of the questions I will ask. Your child can refuse to answer any question.

What are the potential benefits?

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. If your child has HIV, you and your child will learn where to go for treatment which is provided by the Ministry of Health and Hygiene 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 taking part in this survey could help us learn more about children's health in Cote d'Ivoire.

What are alternatives to taking part?

[IF CHILD IS 10-14 YEARS OLD]

You can decide to not allow your eligible children ages 10-14 to take part in the blood testing. Your decision to allow your children to take part or not to take part in this survey will not affect your children's health care in any way.

[IF CHILD IS 15-17 YEARS OLD]

You can decide not to have the study team ask your eligible children to take part in the interview or blood testing. Or you can allow your eligible children to take part in the interview, but not the blood testing. Or you can allow your eligible children to take part in the interview and blood testing, but not agree to allow your children's leftover blood to be stored for future studies. You can choose to allow your blood storage now or can change your mind over the next three years if you no longer want it stored. Your decision to allow your children to take part or not take part in this survey will not affect your children's access to healthcare in any way.

What about confidentiality?

The blood testing and/or interview of your child will take place in private. Your child's test results will be kept strictly confidential. Your child's name and the permission and assent forms will be kept separate from his/her health information. Your name and your child's name will not appear when we share survey results. When we share results, the information we collect from your child will be identified by a number and not by your name or your child's name.

Do you want to ask me anything about your child's taking part in the survey?

→ GO TO PERMISSION STATEMENT

[IF PARENT/GUARDIAN HAS NOT BEEN THROUGH CONSENT PROCESS FOR INTERVIEW/BLOOD DRAW]

Title of Survey: Cote d'Ivoire Population-Based HIV Impact Assessment

Interviewer reads:

Hello. My name is_____. We are doing a research study/survey throughout Cote d'IvoireCote d'Ivoire to learn more about HIV in the country. The Ministry of Health and Public Hygiene (MoHPPH) is leading this survey and is conducting it with the United States Centers for Disease Control and Prevention (CDC) and ICAP at Columbia University and the Institut National de la Statistique (INS).

Now I would like to ask you to give us permission to invite your son/daughter to take part in the research study/ survey. Your child's taking part will help the Ministry of Health & Mental Hygiene (MoHPPH) make health services for children and young people better in Cote d'Ivoire.

Why are we doing this survey?

HIV is the virus that causes AIDS. AIDS is a very serious illness. This survey will help us know how many people in Cote d'Ivoire have HIV and need health services. This survey will help us learn more about HIV, AIDS and the health of children in Cote d'Ivoire. We expect about 26,000 men, women, and children from 11,000 households throughout Cote d'Ivoire to join this survey. If your child joins this survey, his/her taking part will help the Ministry of Health and Public Hygiene make HIV services better in the country.

What would happen to your child if you agree to allow your child to take part?

Interview Procedures

If you and your child agree, the following will happen:

[IF CHILD IS 15-17 YEARS OLD] We will invite your child to do an interview. We will ask your child about any behaviors that may increase his/her chance of getting HIV. The interview will take about 40 minutes. Your children's answers will not be shared with you.

Blood Procedures

- To do the HIV test in your home, if you and your child agree,, a trained nurse will take about 1 teaspoon (about 6mL) from your child's arm if your child is 10-14 or about 1 tablespoon (about 14 mL) of blood from your child's arm if your child is 15-17 to perform the tests for HIV 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 offer him/her a blood test for HIV.
- **[FOR CHILDREN 10-15 YEARS OLD]** We will discuss the results with you, and your child if you decide to discuss the results with him/her
- **[FOR CHILDREN 16-17 YEARS OLD]** We will provide counseling about the results and discuss with your child how to share the results with you if they decide to discuss the results with you.

- If your child tests positive for HIV,
 - We will also test the amount of CD4 cells in his/her blood and give you the results today for your child ages 10-15 and give the results for your child ages 16-17 to them.
 - His/her blood will be sent to a laboratory to measure his/her viral load
 - **[IF CHILD IS 10-15 YEARS OLD]** Your child's viral load results will be returned to your preferred health facility in about 8-12 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 may 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.
 - **[IF CHILD IS 16-17 YEARS OLD]** Your child's viral load results will be returned to their preferred health facility in about 8-12 weeks. We will give your child a referral form so that he/she can consult with a doctor or nurse regarding his/her HIV test, CD4 count, and viral load results. We may 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 your child to tell them how they can contact their doctor or nurse to get these results.
- We will also test the CD4 level of some people without HIV.
- We will ask for your permission to store your child's leftover blood for future research tests. These tests may be for HIV or other health issues which are important to the health of Ivorians, 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. During this three year period, we will attempt to tell you about any test results that are important for your child's health if your child is 10-15. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to future research tests to your child's blood samples, we will destroy your child's blood samples after survey-related testing has been completed.
- **[IF CHILD IS 15-17 YEARS OLD]** It is also possible that your child may be eligible to take part in future studies related to health in Cote d'Ivoire. We will also ask your child for permission to contact them in the next two years if such an opportunity occurs.
- **[IF CHILD IS 15-17 YEARS OLD]** You can agree for your child to complete the interview, but not agree to the blood testing. Or agree for interview and blood testing but not for future storage of blood.

What are the potential risks?

The needle may be uncomfortable for your child. Other risks may include dizziness, bleeding, bruising and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You and your child may learn that your child is infected with HIV. Learning about your child's HIV infection may cause some emotional discomfort. We will provide counseling on how to cope with learning that your child has HIV, and tell you where you may go for care and treatment for your child.

Lastly, as with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

[IF CHILD IS 15-17 YEARS OLD] Your child may feel uncomfortable about some of the questions I will ask. Your child can refuse to answer any question.

What are the potential benefits?

The main benefit for your child to be in the survey is the chance to learn more about his/her health today.

If your child tests HIV-positive you and your child will learn where to go for life-saving treatment, which is provided by the Ministry of Health and Hygiene 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's health in Cote d'Ivoire.

What are alternatives to taking part?

[IF CHILD IS 10-14 YEARS OLD]

You can decide to not allow your eligible children ages 10-14 to take part in the blood testing. Your decision to allow your children to take part or not take part in this survey will not affect your children's health care in any way.

[IF CHILD IS 15-17 YEARS OLD]

You can decide not to have the study team ask your eligible children to take part in the interview or blood testing. Or you can allow your eligible children to take part in the interview, but not the blood testing. Or you can allow your eligible children to take part in the interview and blood testing, but not agree to allow your children's leftover blood to be stored for future studies. You can choose to allow your blood storage now or can change your mind over the next three years if you no longer want it stored. Your decision to allow your children to take part or not take part in this survey will not affect your children's health care in any way.

What about confidentiality?

The blood testing and/or interview of your child will take place in private. Your child's test results will be kept strictly confidential. Your child's name and the permission and assent forms will be kept separate from his/her health information. Your name and your child's name will not appear when we share survey results. When we share results, the information we collect from your child will be identified by a number and not by your name or your child's name.

(INTERVIEWER INDICATE INFORMATION BELOW ON CONSENT FORM, 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 Ethics Committee for Research in Cote d'Ivoire (CNER) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your child's rights as a person in this survey
- Study staff and study monitors

[READ ALOUD]

The information we collect from your child will not be released outside of the survey groups listed above unless there is an issue of safety. Your permission to allow us to use and share your child's name and contact information with the groups above will end three years after the end of the survey.

Who should you contact if you have questions?

If you want to leave the survey, have any questions about the survey, you should contact any of the Investigators below:

(INTERVIEWER INDICATE ADDRESSES ON CONSENT FORM, DO NOT READ ALOUD)

Dr Abo Kouamé

Programme National de Lutte contre le VIH/Sida (PNLS), Cote d'Ivoire

Adresse: Cocody 2-Plateaux Angré, Boulevard Latrille, 01 BP 5420 Abidjan 01. Tel: +225 22 42 07 17 ; 22 41 52 38/32

Email: kwagny@gmail.com; pnlsoci@yahoo.fr

KOUASSI Lucien

Institut National de la Statistique (INS), Côte d'Ivoire

Adresse: Cité administrative, Tour C 2e étage, Abidjan Plateau, BP V55 Abidjan 01. Tel: +225 20 21 05 38

Email: kkouassi_lucien@yahoo.fr; statistiques@aviso.ci

Dr KOBLAVI-DEME Stephania

ICAP en Côte d'Ivoire

Adresse: BP 561 Cidex 3 Abidjan, Côte d'Ivoire Tel: +225 22 40 95 20/05

Email: sk2855@cumc.columbia.edu

[READ ALOUD]

If you decide to leave the study, no more information will be collected from you. However, we will not be able to take back the information that has already been collected and shared.

If you have any questions about your child's rights as a person in this survey or feel that you have been harmed by taking part, you can contact :

[INDICATE ADDRESS BELOW, DO NOT READ ALOUD]

Dr. Louis PENALI

Comité National d'Ethique et de Recherche de Côte d'Ivoire (CNER-CI)

Adresse: Insitut Pasteur Cocody Tel: +225 22 00 58 29; 58 45 69 25

Email: cner_ci@gmail.com

Are there any costs?

There is no cost to you for your child being in the survey. You and your child would not be paid to be in the survey.

Do you want to ask me anything about your child's participation in the survey?

PERMISSION STATEMENT

Any questions I had have been answered satisfactorily. I have been offered a copy of this permission form.

1. **[IF CHILD IS 15-17]** Do you agree for us to ask your child to do the interview? 'YES' means that you give your permission to have the survey staff ask your child to do the interview. 'NO' means that you will NOT give permission for us to ask your child to be interviewed.

____ Yes ____ No

2. Do you agree for us to ask your child to give blood for HIV testing, and related testing? 'YES' means that you give your permission for us to ask your child to have the nurse collect a sample of your child's blood for HIV testing and related testing. 'NO' means that we will NOT ask your child to give blood for HIV testing, and related testing.

____ Yes ____ No

(if "Yes" proceed to the next question)

3. 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 ____ No

4. **[IF CHILD IS 15-17 YEARS OLD] FUTURE RESEARCH:** It is possible that your child may be eligible to take part in future studies related to health in Cote d'Ivoire. We are asking for your permission to contact your child in the next two years if such an opportunity occurs. If we contact your child, we will give him/her details about the new study and ask them to sign a separate consent/assent form at that time. Your child may decide at that time that they do not want to take part in that study.

If you do not wish for your child to be contacted about future studies, it does not affect your child's involvement in this study. Do you agree for your child to be contacted in the future? 'YES' means that you agree for your child to be contacted in the future if a study opportunity arises. 'NO' means that your child will NOT be contacted about future studies.

_____YES _____NO

Parent/guardian signature or mark _____ Date: __/__/__

Printed name of parent/guardian _____

Parent/guardian ID number _____ (If applicable. If not applicable check here __)

[For illiterate participants]

Signature of witness _____ Date: __/__/__

Printed name of witness _____

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

Printed name of person obtaining permission _____

Survey staff ID number _____

Child's name (print) _____

Child's participant ID number _____

Assent for Interview Adolescents ages 15-17**[DO NOT READ BELOW]****Study title: Cote d'Ivoire Population-based HIV Impact Assessment****Interviewer reads:**

Hello. My name is _____. We are doing a research study/survey throughout Cote d'Ivoire to learn more about HIV in the country. A survey is a way to learn new information about something by interviewing and testing many people. We have talked to your parents/guardian and they said it was okay to invite you take part in a research study.

Title of Survey: Cote d'Ivoire Population-Based HIV Impact Assessment**Why are we doing this survey?**

This survey will help us learn more about the health of young people in Cote d'Ivoire. 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. If you join, your taking part will help the Ministry of Health and Public Hygiene (MoHPH) 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.

What would happen if you joined this survey?

If you agree to join, here is what would happen:

- We will ask you questions about your age, 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 ask you if it is okay to take some of your blood to test for HIV. You do not have to agree to the blood testing now. We will give you a separate opportunity to agree to the blood testing. You can agree to the interview, but not agree to the blood testing.
- Lastly, it is possible that you may be eligible to take part in future studies related to the health of Ivorians. At the end of this form, I will ask for permission to contact you in the next two years if such an opportunity occurs.

Could bad things happen to you if you joined the survey?

The risks of 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. If I ask you any questions you don't want to answer, just let me know and I will go to the next question. You can stop the interview at any time.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

Could this survey help you?

Being in this survey may not help you. But you may help us figure out ways to help other children and learn more about HIV in Cote d'Ivoire. Taking part in this survey is important.

What else should you know about this survey?

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 access to healthcare in any way and nobody will get upset with you.

Will you share my answers in the interview with other people?

All the information you share with us during the interview will be kept confidential. We will not tell your family about any of your responses. The consent form with your name 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 agencies will be able to look at your interview records to help oversee the conduct of this survey:

- Survey staff and monitors
- Staff members from groups that protect your rights as a person taking part in a survey to make sure that we are protecting your rights

Who should you contact if you have questions?

If you want to leave the survey, have any questions about the survey, you should contact any of the Investigators listed below:

(INTERVIEWER INDICATE ADDRESSES ON ASSENT FORM, DO NOT READ ALOUD)

Dr Abo Kouamé

Programme National de Lutte contre le VIH/Sida (PNLS), Cote d'Ivoire
Adresse: Cocody 2-Plateaux Angré, Boulevard Latrille, 01 BP 5420 Abidjan 01. Tel: +225 22 42 07 17 ; 22 41 52 38/32
Email: kwagny@gmail.com; pnlsoci@yahoo.fr

Kouassi Lucien

Institut National de la Statistique (INS), Côte d'Ivoire
Adresse: Cité administrative, Tour C 2e étage, Abidjan Plateau, BP V55 Abidjan 01. Tel: +225 20 21 05 38
Email: kkouassi_lucien@yahoo.fr; statistiques@avisoci

Dr Koblavi-Deme Stephania

ICAP en Côte d'Ivoire
Adresse: BP 561 Cidex 3 Abidjan, Côte d'Ivoire Tel: +225 22 40 95 20/05
Email: sk2855@cumc.columbia.edu

If you decide to leave the study, no more information will be collected from you. However, we will not be able to take back the information that has already been collected and shared.

If you have any questions about your rights as a person in this survey or feel that you have been harmed by taking part, you can contact:

[INDICATE ADDRESS OF POC]

Dr. Louis Penali

Comité National d'Éthique et de Recherche de Côte d'Ivoire (CNER-CI)
Adresse: Insititut Pasteur Cocody Tel: +225 22 00 58 29; 58 45 69 25
Email: cner_ci@gmail.com

Are there any costs to taking part in the interview?

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

Do you want to ask me anything about the survey?

Assent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form.

1. Do you agree to do the interview? 'YES' means that you agree to do the interview. 'NO' means that you will NOT do the interview.

_____ Yes _____ No

2. FUTURE RESEARCH: It is possible that you may be eligible to take part in future studies related to health in Cote d'Ivoire. 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/assent form at that time. You may decide at that time that you do not want to take part in that study.

If you do not wish to be contacted about future studies, it does not affect your involvement in this study. Do you agree to be contacted in the future? 'YES' means that you agree to be contacted in the future if a study opportunity arises. 'NO' means that you will NOT be contacted about future studies.

_____ YES _____ NO

Participant signature or mark _____ Date: __/__/__

Printed name of participant _____

Participant ID number _____

[IF NOT EMANCIPATED MINOR] Printed name of parent/guardian _____

[For illiterate participants]

Signature of witness _____ Date: __/__/__

Printed name of witness _____

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

Printed name of person obtaining consent _____

Survey staff ID number _____

[DO NOT READ BELOW]

Assent to Blood Draw Children 10-14

Study title: Cote d'Ivoire Population-based HIV Impact Assessment

Hello. My name is _____. I would like to invite you to take part in a research study. Research studies help us learn new things. We have talked to your parents/guardian and they said it was okay to invite you take part in a research study.

Why are we doing this research?

As a part of this survey, we are giving people a chance to learn if they have HIV. HIV is an infection that can make someone very sick if treatment is not given. We plan to ask thousands of children like you to join this research.

Research is a way to learn new information about something by interviewing and testing many people. We would like to invite you to join this survey. Your parent/guardian said it was okay for us to ask you to join the survey.

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:

- A trained nurse will use a needle to take about a teaspoon of your blood (about 6mL) 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 your parents 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 children without HIV. We will do this test here at your home.
- If you test positive for HIV, we will send your blood to a laboratory to measure the amount of HIV in your blood.
- We 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 in Cote d'Ivoire. This sample will be stored a long period of time, but your name will be on it for only 3 years. We will try to tell 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 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. Your parents may learn that you have HIV. Learning that you have HIV may cause you and your parents to feel worried or upset. We will talk to your parents/guardian and tell your parents where to get help. We will do everything we can to keep your information private.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

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 your parent/guardian where to get help or treatment. The treatment for HIV is free. 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 Cote d'Ivoire.

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' to the blood testing and future testing. Or you can say 'yes' to the blood testing, but 'No' to future testing. You can also say 'Yes' and change your mind later. If you decide not to take part, it will not affect your access to healthcare in any way and nobody will get upset with you. 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 your parent/guardian. We would give your results to your parent/guardian and they would decide on the best time to tell you the result. If your parent wants us to tell you about your test results, we would 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

Who should you contact if you have questions?

If you have any questions about the survey or blood test, or no longer want to take part in the survey, you can contact any of the Investigators listed below:

[INDICATE ADDRESS OF POC- DO NOT READ ALOUD]

Dr Abo Kouamé

Programme National de Lutte contre le VIH/Sida (PNLS), Cote d'Ivoire
 Adresse: Cocody 2-Plateaux Angré, Boulevard Latrille, 01 BP 5420 Abidjan 01. Tel: +225 22 42 07 17 ; 22 41 52 38/32
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Kouassi Lucien

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 Email: kkouassi_lucien@yahoo.fr; statistiques@aviso.ci

Dr. Koblavi-Deme Stephania

ICAP en Côte d'Ivoire
 Adresse: BP 561 Cidex 3 Abidjan, Côte d'Ivoire Tel: +225 22 40 95 20/05
 Email: sk2855@cumc.columbia.edu

If you decide to leave the study, no more information will be collected from you. However, we will not be able to take back the information that has already been collected and shared.

If you have any questions about your rights as a person in this survey or feel that you have been harmed by taking part, you can contact

[INDICATE ADDRESS OF POC- DO NOT READ ALOUD]

Dr. Louis Penali

Comité National d'Éthique et de Recherche de Côte d'Ivoire (CNER-CI)
 Adresse: Insitut Pasteur Cocody Tel: +225 22 00 58 29; 58 45 69 25
 Email: cner_ci@gmail.com

Will you or your parent/guardian have to pay to receive blood testing?

There is no cost to you or your parent/guardian for receiving blood testing today except for your time. You should also know that you and your parent/guardian will not be paid for receiving blood testing.

Do you want to ask me anything?

If you want to get an HIV test, and give your blood for the survey after we talk, please write your name below. We will write our name too. This shows we talked about the survey and what you decide about taking part.

1. Do you agree to give blood for 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 ____ No

(if "Yes" proceed to the next question)

2. Do you agree to give your blood to be stored for future research? '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 ____ No

Child signature or mark _____

Date: __/__/__

Printed name of child _____

Child's participant ID number _____

Printed name of parent/guardian _____

[For illiterate parent/guardian/participant]

Signature of witness _____

Date: __/__/__

Printed name of witness _____

Signature of person obtaining consent/assent _____

Date: __/__/__

Printed name of person obtaining consent/assent _____

Survey staff ID number _____

Assent for Blood Draw Adolescents 15-17 [DO NOT READ BELOW]**Study title: Cote d'Ivoire Population-based HIV Impact Assessment****[Interviewer introduces Laboratory Technician or Nurse if not drawing the blood]**

My colleague is _____, who is a nurse trained in drawing blood. He/she will also be providing you with information about testing options in this survey.

As a part of this research study/survey, we are giving those that take part an opportunity to learn about their HIV status. We are also asking people if we can keep some of their blood in the laboratory for future testing.

This form might have some words in it that you may not understand. Please ask me to explain anything that you do not understand. You can ask me questions any time.

What would happen if you joined the blood testing part of this survey?

If you decide to join the blood testing part of the survey, here is what would happen:

- We will use a needle to take a small amount or about 1 tablespoon of blood from your arm for HIV testing. If it is not possible to take blood from your arm, then we will try to take a few drops of blood from your finger. The testing and counseling session will take about 40 minutes.
- **[IF CHILD IS 15 YEARS OLD]** We will do the test and talk to your parents/guardian about the results.
- If you test positive for HIV,
 - We will measure the amount of CD4 cells in your blood which measures how well your body can fight HIV infections and other diseases and give the results to your parent/guardian.
 - We will send your blood to a laboratory to measure the amount of HIV in your blood. Your viral load results will be returned to a health facility in about 8-12 weeks.
 - We will give your parents/guardians a referral form and information so that you can consult a nurse or doctor to learn more about your tests results and your health.
 - We may 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 them how they can contact their doctor or nurse to get these results.
- We will also test the CD4 level of some people without HIV.
- **[IF CHILD IS 16-17 YEARS OLD]** We will do the test and give you your results for HIV and provide counseling to you and discuss with you how to share these results with your parent/guardian if you decide to
- If you test positive for HIV,
 - We will measure the amount of CD4 cells in your blood which measures how well your body can fight HIV infections and other diseases and give you the result today.
 - We will send your blood to a laboratory to measure the amount of HIV in your blood. Your viral load results will be returned to a health facility in about 8-12 weeks.
 - We will give you a referral form so that you can consult with a doctor or nurse regarding your tests results.
 - We may 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 them how they can contact their doctor or nurse to get these results.
- We will also test the CD4 level of some people without HIV.
- We will ask for your permission to store your leftover blood for future research tests. These tests may be for HIV or other health issues which are important to the health of Ivorians, such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your name will be on the sample for only three years. During this three year period, we will attempt to tell you about any test results that are important for your health. Your leftover blood will not be sold or used for commercial reasons. If you do not agree to future research tests to your blood samples, we will destroy your blood samples after survey-related testing has been completed.

Could bad things happen if you take the blood tests?

The needle may hurt. Other risks may include dizziness, bleeding, bruising, and rarely, infection where the needle enters the skin. This will go away after a while. We will do our best to make it hurt as little as possible. Experienced nurses will do the test under safe and clean conditions to protect you from any risks. You can say 'No' to what we ask you to do for the survey at any time and we will stop.

[IF AGE 15] In addition, you may learn that you are infected with HIV. Learning that you have HIV may cause some emotional discomfort. If your parent/guardian agrees, we will provide counseling on how to cope with learning that you have HIV and tell your parent/guardian where you may go for care and treatment

[IF AGE 16-17] In addition, you may learn that you are infected with HIV. Learning that you have HIV may cause some emotional discomfort. If you find out that you are HIV positive we will provide you with counseling if you agree and tell you where you may go for care and treatment.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

Could the blood testing help you?

Taking the blood test may help you learn if you have HIV. If you test HIV-negative, you will learn about what you can do to stay HIV-negative.

- **[IF CHILD IS 15 YEARS OLD]** After the blood test, we would give your tests results to your parent/guardian and they would decide on the best time to tell you the results. If you have HIV, we will tell your parent/guardian where they can take you for medical care and treatment.
- **[IF CHILD IS 16-17 YEARS OLD]** After the blood test, we would give you your tests results and provide counseling to you and discuss with you how to share these results with your parent/guardian if you decide to. If you have HIV, we will tell you where you can go for medical care and treatment.

Treatment for HIV is free. 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. We hope to learn about HIV healthcare needs in this survey.

What else should you know about the blood testing part of 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' to the blood testing and future testing. Or you can say 'yes' to the blood testing, but 'No' to future testing. You can also say 'Yes' and change your mind later. If you want to stop, please tell us. Your decision to take part or not take part in the blood testing will not affect your access to healthcare in any way.

What about confidentiality?

We will not tell other people that you took a blood test today. We will not share information about you to anyone who does not work on the survey. Any information we share about you will have a number on it instead of your name.

The following individuals and agencies will be able to look at your blood testing records:

- Survey staff and monitors
- Staff members from groups that protect your rights as a person taking part in a survey to ensure that we are protecting your rights

Who should you contact if you have questions?

If you have any questions about the survey or blood test, or no longer want to take part in the survey, you can contact any of the Investigators listed below:

(INTERVIEWER INDICATE ADDRESSES ON CONSENT FORM, DO NOT READ ALOUD)

Dr Abo Kouamé

Programme National de Lutte contre le VIH/Sida (PNLS), Côte d'Ivoire
 Adresse: Cocody 2-Plateaux Angré, Boulevard Latrille, 01 BP 5420 Abidjan 01. Tel: +225 22 42 07 17 ; 22 41 52 38/32
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If you decide to leave the study, no more information will be collected from you. However, we will not be able to take back the information that has already been collected and shared.

If you have any questions about your rights as a person in this survey feel that you have been harmed by taking part, you can contact:

[INDICATE ADDRESS DO NOT READ ALOUD]

Dr. Louis Penali

Comité National d'Ethique et de Recherche de Côte d'Ivoire (CNER-CI)
 Adresse: Insitut Pasteur Cocody Tel: +225 22 00 58 29; 58 45 69 25
 Email: cner_ci@gmail.com

Will you or your parent/guardian have to pay to receive blood testing?

There is no cost to you or your parent/guardian for receiving blood testing today except for your time. You should also know that you and your parent/guardian will not be paid for receiving blood testing.

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?

Consent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form.

1. Do you agree to give blood for HIV 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 _____ No

(if "Yes" proceed to the next question)

2. 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 _____ No

Participant signature or mark _____

Date: __/__/__

Printed name of participant _____

Participant ID number _____

[For illiterate participants]

Signature of witness _____

Date: __/__/__

Printed name of witness _____

Signature of person obtaining consent _____

Date: __/__/__

Printed name of person obtaining consent _____

Survey staff ID number _____

Consent to Share Contact Information for Active Linkage to Care of CIPHIA Participants 16-64 Study title:

Cote D'Ivoire Population-based HIV Impact Assessment (CIPHIA)

Purpose of consent

You have been diagnosed with HIV today. We have provided a referral form to you today to go to a health clinic and seek HIV treatment, care and support. We would like to support you in accessing the health care that you need. If you agree, we will provide your contact information and HIV test results to health workers or counselors from a trained social service organization. This counselor will contact you to talk to you about HIV and help you go for HIV care. Anyone who is provided with your details will be a trained counselor for people living with HIV, and will be trained in maintaining confidentiality.

What do you have to do if you agree to take part?

If you agree for your information to be shared and to be contacted, we will provide your name, phone number (if you provided it to us) and your address to those counselors to provide you with support. The counselor can contact you by SMS, phone or in person.

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 counsellor will assist you in accessing the health care that you need.

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 counselor organization. They will also do their utmost to maintain your confidentiality. However, we cannot guarantee complete confidentiality.

Who should you contact if you have questions?

If you change your mind or have any questions you should contact any of the Investigators listed below:

[INDICATE ADDRESS OF POC- DO NOT READ ALOUD]

Dr Abo Kouamé

Programme National de Lutte contre le VIH/Sida (PNLS), Cote d'Ivoire
Adresse: Cocody 2-Plateaux Angré, Boulevard Latrille, 01 BP 5420 Abidjan 01. Tel: +225 22 42 07 17 ; 22 41 52 38/32
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Email: sk2855@cumc.columbia.edu

If you decide to leave the study, no more information will be collected from you. However, we will not be able to take back the information that has already been collected and shared.

If you have any questions about your rights as a person in this survey or feel that you have been harmed by taking part, you can contact

[INDICATE ADDRESS OF POC- DO NOT READ ALOUD]

Dr. Louis Penali

Comité National d’Ethique et de Recherche de Côte d’Ivoire (CNER-CI)

Adresse: Insitut Pasteur Cocody Tel: +225 22 00 58 29; 58 45 69 25

Email: cner_ci@gmail.com

Do you want to ask me anything about the survey?

Consent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form.

1. Do you agree to allow us to share your contact information with Ministry of Health& Public Hygiene or a partner that MoHPH works with, who may contact you to assist and support you in seeking HIV care? ‘YES’ means that you agree for your information to be shared. ‘NO’ means that you do not agree for your information to be shared.

____ Yes ____ No

2. 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 CIPHIA Participants, parents of minors 0-15years**[DO NOT READ BELOW]****Study title: Cote D'Ivoire Population-based HIV Impact Assessment****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 will provide your contact information and your child's HIV results to health workers or counselors from a trained social service organization. This counselor will 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 will provide your name, phone number (if you provided it to us) and your address to those counselors to provide you with support. The counselor can contact you by SMS, phone or in person.

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 counselor will assist you in accessing the health care needed by your child.

What about confidentiality?

Your child's HIV test results and your child's 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 child's confidentiality. However, we cannot guarantee complete confidentiality.

Who should you contact if you have questions?

If you change your mind or have any questions or feel that your child has been harmed by taking part, you should contact the Investigator listed below:

[INDICATE ADDRESS OF POC DO NOT READ ALOUD]

Dr Abo Kouamé

Programme National de Lutte contre le VIH/Sida (PNLS), Cote d'Ivoire
 Adresse: Cocody 2-Plateaux Angré, Boulevard Latrille, 01 BP 5420 Abidjan 01. Tel: +225 22 42 07 17 ; 22 41 52 38/32
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Dr. Koblavi-Deme Stephania

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 Email: sk2855@cumc.columbia.edu

If you decide your child should leave the study, no more information will be collected from you. However, we will not be able to take back the information that has already been collected and shared.

If you have any questions about your child's rights as a person in this survey, you can contact:

[INDICATE ADDRESS OF POC DO NOT READ ALOUD]

Dr. Louis PENALI

Comité National d'Éthique et de Recherche de Côte d'Ivoire (CNER-CI)

Adresse: Institut Pasteur Cocody Tel: +225 225 22 00 58 29; 58 45 69 25

Email: cner_ci@gmail.com

Do you want to ask me anything about the survey?

Consent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form.

1. Do you agree to allow us to share your contact information with the MoHPH or a partner that MoHPH works with, who may contact you to assist and support you and your child in seeking HIV care? 'YES' means that you agree for your information to be shared. 'NO' means that you do not agree for your information to be shared.

____ Yes ____ No

2. If yes, do you agree to be contacted by?

SMS ____ Yes ____ No

Phone call ____ Yes ____ No

In person ____ Yes ____ No

Parent/guardian signature or mark _____ Date: __/__/__

Printed name of parent/guardian _____

Participant ID number _____

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

Printed name of person obtaining consent _____

Survey staff ID number _____





Côte d'Ivoire Population-based HIV Impact Assessment CIPHIA 2017-2018

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