

NAMIBIA POPULATION-BASED HIV IMPACT ASSESSMENT **NAMPHIA 2017**

FINAL REPORT
NOVEMBER 2019



Namibia Population-based HIV Impact Assessment (NAMPHIA) 2017

NAMPHIA 2017 COLLABORATING INSTITUTIONS

Ministry of Health and Social Services (MoHSS)

U.S. Centers for Disease Control and Prevention (CDC), Atlanta

U.S. Centers for Disease Control and Prevention (CDC), Namibia

ICAP at Columbia University, New York

University of California, San Francisco, Institute for Global Health Sciences

Westat

Namibia Statistics Agency

Namibia Institute of Pathology

DONOR SUPPORT AND DISCLAIMER

This project is supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through CDC under the terms of cooperative agreement #U2GGH001226. The findings and conclusions are those of the authors and do not necessarily represent the official position of the funding agencies.

SUGGESTED CITATION

Ministry of Health and Social Services (MoHSS), Namibia. Namibia Population-based HIV Impact Assessment (NAMPHIA) 2017: Final Report. Windhoek: MoHSS, Namibia; November, 2019.

ACCESS THIS REPORT ONLINE

The PHIA Project: <http://phia.icap.columbia.edu>

<http://www.mhss.gov.na/nampia>

CONTACT INFORMATION

Directorate of Special Programs,

Ministry of Health and Social Services

Florence Nightingale Street,

Windhoek, Namibia

Telephone: +264 61 203 2832

CONTENTS

LIST OF TABLES AND FIGURES	6
GLOSSARY OF TERMS	9
LIST OF ABBREVIATIONS.....	11
PREFACE	13
FOREWORD	15
SUMMARY OF KEY FINDINGS.....	17
CHAPTER 1 INTRODUCTION	21
1.1 Background	21
1.2 Overview of NAMPHIA 2017.....	21
1.3 Specific Objectives	21
CHAPTER 2 SURVEY DESIGN, METHODS, AND RESPONSE RATES	23
2.2 Eligibility Criteria, Recruitment, and Consent Procedures	24
2.3 Survey Implementation	25
2.4 Field-Based Biomarker Testing	27
2.5 Laboratory-Based Biomarker Testing	30
2.6 Data Processing and Analysis.....	34
2.7 Response Rates	35
2.8 References	39
CHAPTER 3 SURVEY HOUSEHOLD CHARACTERISTICS	40
3.1 Key Findings	40
3.2 Background	40
3.3 Household Composition	40
3.4 Prevalence of HIV-Affected Households.....	42
CHAPTER 4 SURVEY RESPONDENT CHARACTERISTICS	45
4.1 Key Findings	45
4.2 Background	45
4.3 Demographic Characteristics of the Adult Population	45
4.4 Demographic Characteristics of the Young Adolescent Population.....	46
4.5 Demographic Characteristics of the Paediatric Population.....	47
CHAPTER 5 HIV INCIDENCE	49
5.1 Key Findings	49
5.2 Background	49
5.3 HIV Incidence Among Adults	50
5.4 Gaps and Unmet Needs	51
5.5 References	51
CHAPTER 6 HIV PREVALENCE	52
6.1 Key Findings	52
6.2 Background	52
6.3 Adult HIV Prevalence by Demographic Characteristics	52
6.4 Adult HIV Prevalence by Age and Sex.....	55
6.5 Adult HIV Prevalence by Region	56

6.6	Gaps and Unmet Needs	57
CHAPTER 7 HIV TESTING		58
7.1	Key Findings	58
7.2	Background	58
7.3	Self-Reported HIV Testing Among Adults	58
7.4	Gaps and Unmet Needs	63
CHAPTER 8 HIV DIAGNOSIS AND TREATMENT		64
8.1	Key Findings	64
8.2	Background	64
8.3	Self-Reported Diagnosis and Treatment Status Among HIV-Positive Adults	64
8.4	Concordance of Self-Reported Treatment Status versus Presence of ARVs	69
8.5	Gaps and Unmet Needs	70
8.6	References	70
CHAPTER 9 VIRAL LOAD SUPPRESSION		71
9.1	Key Findings	71
9.2	Background	71
9.3	Viral Load Suppression by Age and Sex	71
9.4	Adult Viral Load Suppression by Demographic Characteristics	73
9.5	Adult Viral Load Suppression by Region	75
9.6	Gaps and Unmet Needs	76
CHAPTER 10 90-90-90 TARGETS		77
10.1	Key Findings	77
10.2	Background	77
10.3	Status of the UNAIDS 90-90-90 Targets	78
10.4	Gaps and Unmet Needs	81
10.5	References	81
CHAPTER 11 CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV		82
11.1	Key Findings	82
11.2	Background	82
11.3	CD4 Counts and Immunosuppression	82
11.4	Late HIV Diagnosis	85
11.5	Retention on Antiretroviral Therapy	86
11.6	Transmitted Resistance to Antiretroviral Therapy	88
11.7	HIV Subtype	89
11.8	Gaps and Unmet Needs	89
11.9	References	89
CHAPTER 12 PREVENTION OF MOTHER-TO-CHILD TRANSMISSION		90
12.1	Key Findings	90
12.2	Background	90
12.3	Antenatal Care Attendance	91
12.4	Breastfeeding	92
12.5	Awareness of Mother's HIV Status	92
12.6	Antiretroviral Therapy Among HIV-Positive Pregnant Women	93
12.7	Mother-to-Child Transmission	94
12.8	Gaps and Unmet Needs	95
12.9	References	95
CHAPTER 13 YOUNG PEOPLE		96
13.1	Key Findings	96

13.2	Background	96
13.3	Sexual Debut Before Age 15	96
13.4	HIV Incidence and Prevalence	97
13.5	Self-Reported HIV Testing, Treatment, and Viral Load Suppression	98
13.6	Status of the 90-90-90 Targets	98
13.7	Gaps and Unmet Needs	99
13.8	References	99
CHAPTER 14 INFANTS AND CHILDREN		100
14.1	Key Findings	100
14.2	Background	100
14.3	HIV Prevalence	100
14.4	Status of the 90-90-90 Targets	101
14.5	Gaps and Unmet Needs	102
CHAPTER 15 HIV RISK FACTORS		103
15.1	Key Findings	103
15.2	Background	103
15.3	HIV Prevalence by Sexual Behaviour	103
15.4	Condom Use at Last Sex with a Non-Marital, Non-Cohabiting Partner	104
15.5	Male Circumcision	108
15.6	Gaps and Unmet Needs	111
CHAPTER 16 INTIMATE PARTNER VIOLENCE AGAINST WOMEN		112
16.1	Key Findings	112
16.2	Background	112
16.3	Prevalence of Recent Intimate Partner Violence	112
16.4	Prevalence of Lifetime and Recent Physically Forced Sex and Pressured Sex	114
16.5	Gaps and Unmet Needs	117
16.6	References	117
CHAPTER 17 HIV KNOWLEDGE AND DISCRIMINATORY ATTITUDES AMONG YOUNG ADOLESCENTS		118
17.1	Key Findings	119
17.2	Background	119
17.3	Discriminatory Attitudes Towards People Living with HIV	119
17.4	Knowledge About HIV Prevention	120
17.5	Gaps and Unmet Needs	124
17.6	References	124
CHAPTER 18 TUBERCULOSIS		125
18.1	Key Findings	125
18.2	Background	125
18.3	Tuberculosis Diagnosis and Treatment	125
18.4	Gaps and Unmet Needs	126
18.5	References	126
DISCUSSIONS AND CONCLUSION		127
APPENDIX A SAMPLE DESIGN AND IMPLEMENTATION		129
APPENDIX B HIV TESTING METHODOLOGY		134
APPENDIX C ESTIMATES OF SAMPLING ERRORS		147
APPENDIX D SURVEY PERSONNEL		156
APPENDIX E HOUSEHOLD QUESTIONNAIRE		161
APPENDIX F ADULT QUESTIONNAIRE		181
APPENDIX G YOUNG ADOLESCENT QUESTIONNAIRE		211

LIST OF TABLES AND FIGURES

CHAPTER 2 SURVEY DESIGN, METHODS, AND RESPONSE RATES	23
Table 2.1.A	Distribution of sampled enumeration areas and households by region24
Figure 2.4.A	Household-based HIV testing algorithm, NAMPHIA 2017 in those aged 18 months and older, NAMPHIA 2017.....29
Figure 2.5.A	HIV-1 recent infection testing algorithm (LAg/VL algorithm), ages 18 months and older, NAMPHIA 2017.....32
Figure 2.5.B	HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), ages 18 months and older, NAMPHIA 2017.....33
Table 2.7.A	Results of the household interviews35
Table 2.7.B	Results of the household interviews by region36
Table 2.7.C	Results of the individual interviews and blood draws36
Table 2.7.D	Results of the individual interviews and blood draws by region37
CHAPTER 3 SURVEY HOUSEHOLD CHARACTERISTICS	40
Table 3.3.A	Household composition.....40
Table 3.3.B	Population pyramid41
Figure 3.3.A	Population pyramid, NAMPHIA 201741
Figure 3.3.B	Household population by age, sex, and residence, NAMPHIA 2017.....42
Table 3.4.B	HIV-affected households by number of HIV-positive members42
Figure 3.4.A	Prevalence of HIV-affected households, NAMPHIA 201743
Figure 3.4.B	HIV-affected households by number of HIV-positive members, NAMPHIA 201743
Figure 3.4.C	Prevalence of households with an HIV-positive head of household, NAMPHIA 201744
CHAPTER 4 SURVEY RESPONDENT CHARACTERISTICS	45
Table 4.3.A	Demographic characteristics of the adult population.....45
Table 4.4.A	Demographic characteristics of the young adolescent population47
Table 4.5.A	Demographic characteristics of the paediatric population.....47
CHAPTER 5 HIV INCIDENCE	49
Table 5.3.A	Annual HIV incidence using limiting antigen (LAg)/viral load (VL) algorithm50
Table 5.3.B	Annual HIV incidence using limiting antigen (LAg)/viral load (VL)/antiretroviral (ARV) detection algorithm.....50
CHAPTER 6 HIV PREVALENCE	52
Table 6.3.B	HIV prevalence by demographic characteristics: Adults aged 15-64 years54
Figure 6.3.A	HIV prevalence by wealth quintile, NAMPHIA 201755
Table 6.4.A	HIV prevalence by age55
Figure 6.4.A	HIV prevalence by age and sex, NAMPHIA 2017.....56
Figure 6.5.A	HIV prevalence by region (bar graph), NAMPHIA 201756
Figure 6.5.B	HIV prevalence by region (map), NAMPHIA 201757
CHAPTER 7 HIV TESTING	58
Table 7.3.A	Self-reported HIV testing: Men59
Table 7.3.B	Self-reported HIV testing: Women60
Table 7.3.C	Self-reported HIV testing: Total.....61
Figure 7.3.A	Self-reported HIV testing in the last 12 months, by sex and age, NAMPHIA 201762

CHAPTER 8 HIV DIAGNOSIS AND TREATMENT.....	64
Table 8.3.A Self-reported HIV diagnosis and treatment status: Men	65
Table 8.3.B Self-reported HIV diagnosis and treatment status: Women.....	66
Table 8.3.C Self-reported HIV diagnosis and treatment status: Total	67
Figure 8.3.A Self-reported HIV diagnosis and antiretroviral therapy (ART) status, by sex, NAMPHIA 2017	68
Table 8.4.A Concordance of self-reported treatment status versus presence of ARVs: Men	69
Table 8.4.B Concordance of self-reported treatment status versus presence of ARVs: Women.....	69
CHAPTER 9 VIRAL LOAD SUPPRESSION	71
Table 9.3.B Viral load suppression by age: 10-15-year age groups	72
Figure 9.3.A Viral load (VL) suppression (VLS) (VL <1,000 copies/mL) by age and sex, NAMPHIA 2017	72
Table 9.4.B Demographic characteristics of people living with HIV by viral load	74
Figure 9.5.A Viral load suppression (VLS) (VL <1000 copies/mL) among HIV-positive adults aged 15-64 years, by zone, NAMPHIA 2017	75
Figure 9.5.B Viral load suppression (VLS), (VL<1000 copies/mL) among HIV-positive adults aged 15-64 years, by Region (map), NAMPHIA 2017	76
CHAPTER 10 90-90-90 TARGETS.....	77
Table 10.3.A Adult 90-90-90: Self-reported antiretroviral therapy (ART) use and laboratory antiretroviral (ARV) data, conditional percentages	79
Table 10.3.C Adult 90-90-90: Self-reported antiretroviral therapy (ART) use and laboratory antiretroviral (ARV) data, overall percentages.....	80
Figure 10.3.A Adult 90-90-90: Adjusted for laboratory antiretroviral data, by sex, NAMPHIA 2017	81
CHAPTER 11 CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV.....	82
Figure 11.3.A CD4 count distribution among HIV-positive adults, by ART status, NAMPHIA 2017	84
Table 11.4.A Late HIV diagnosis.....	85
Table 11.5.A Retention on antiretroviral therapy (ART): Initiation of ART in the 12 months before the survey	86
Table 11.5.B Retention on antiretroviral therapy (ART): Initiation of ART more than 12 months before the survey	87
Table 11.5.B Retention on antiretroviral therapy (ART): Initiation of ART more than 12 months before the survey	88
Table 11.6.A Resistance to antiretrovirals (ARVs)	89
Table 11.7.A HIV subtype	89
CHAPTER 12 PREVENTION OF MOTHER-TO-CHILD TRANSMISSION	90
Table 12.3.A Antenatal care (ANC)	91
Table 12.5.A Prevention of mother-to-child transmission: Known HIV status	92
Table 12.7.A Mother-to-child transmission of HIV	95
CHAPTER 13 YOUNG PEOPLE	96
Table 13.3.A Sexual debut before 15 years of age	97
Figure 13.6.A Young People 90-90-90: Laboratory ARV-adjusted data, by sex, NAMPHIA 2017	98
CHAPTER 14 INFANTS AND CHILDREN	100
Table 14.4.A Paediatric 90-90-90: Parent-reported antiretroviral therapy (ART) data, conditional percentages	101
Table 14.4.B Paediatric 90-90-90: Parent-reported antiretroviral therapy (ART) data and laboratory antiretroviral (ARV) data, conditional percentages	101
Figure 14.4.A Paediatric 90-90-90: Laboratory ARV-adjusted data, NAMPHIA 2017	102

CHAPTER 15 HIV RISK FACTORS.....	103
Table 15.3.A HIV prevalence by sexual behaviour	104
Table 15.4.A Condom use at last sex with a non-marital, non-cohabitating partner: Men	105
Table 15.4.B Condom use at last sex with a non-marital, non-cohabitating partner: Women	106
Table 15.5.A Male circumcision.....	109
Table 15.5.B Male circumcision: Fully and partially circumcised men.....	110
CHAPTER 16 INTIMATE PARTNER VIOLENCE AGAINST WOMEN	112
Table 16.3.C Sexual violence among adult women: pressured sex	116
CHAPTER 17 HIV KNOWLEDGE AND DISCRIMINATORY ATTITUDES AMONG YOUNG ADOLESCENTS	118
Table 17.3.A Discriminatory attitudes towards people living with HIV	120
Table 17.3.B Young adolescents: Knowledge about HIV prevention: Total.....	121
Table 17.3.C Young adolescents: Knowledge about HIV prevention: Boys	122
Table 17.3.D Young adolescents: Knowledge about HIV prevention: Girls.....	123
CHAPTER 18 TUBERCULOSIS	125
Table 18.3.A TB clinic attendance and services among HIV-positive adults	125

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 diagnosed with 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, caused by HIV, characterized by severe damage to the immune system, that leaves the body vulnerable to life-threatening conditions, such as infections and cancers.

Adolescents: In this report, individuals aged 10-14 years of age are referred to as young adolescents; individuals aged 15-19 years are referred to as older adolescents. Note: older adolescents are often categorized as part of the adult population for reporting purposes.

Adults: Unless otherwise noted, in this survey, adults are defined as the population of individuals aged 15-64 years.

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

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

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

Children: Unless otherwise noted, in this survey, children are defined as the population of individuals aged 0-14 years.

De Facto Household Resident: A person who slept in the household the night prior to the survey. Only de facto residents were included in the analysis of this report.

Elite Controllers: A small subset of people living with HIV whose immune systems are able to maintain viral load suppression for years without treatment.

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

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

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 individuals 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 living persons in a population who are living with HIV at a specific point in time.

HIV Recency: The determination whether an HIV infection likely occurred within a given period of time—one year in the case of NAMPHIA—as determined by a laboratory-based algorithm.

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

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

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

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

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

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

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

Young Adults: Unless otherwise noted, this report defines young adults as individuals aged 20-24 years.

Young People: In this report, young people are defined as the population aged 15-24 years, including both older adolescents and young adults.

LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARV	Antiretroviral
CDC	U.S. Centers for Disease Control and Prevention
CD4	CD4+ T-cell
CI	Confidence Interval
DBS	Dried Blood Spot
EA	Enumeration Area
EIA	Enzyme Immunoassay
EID	Early Infant Diagnosis
HBTC	Home-Based Testing and Counselling
HIV	Human Immunodeficiency Virus
IPV	Intimate Partner Violence
IQR	Interquartile Range
LAG	Limiting Antigen
LDMS	Laboratory Data Management System
MDRI	Mean Duration of Recent Infection
MoHSS	Ministry of Health and Social Services
MOS	Measure of Size
MTCT	Mother-to-Child Transmission
NAMPHIA	Namibia Population-based HIV Impact Assessment
NIP	Namibia Institute of Pathology
NNRTI	Non-Nucleoside Reverse Transcriptase Inhibitor
NRTI	Nucleoside Reverse Transcriptase Inhibitor
NSA	Namibia Statistics Agency
ODK	Open Data Kit
PCR	Polymerase Chain Reaction
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PFR	Proportion False Recent
PHIA	Population-based HIV Impact Assessment
PI	Protease Inhibitors
PMTCT	Prevention of Mother-to-Child Transmission
POC	Point of Care
PTID	Participant Identifier
QA	Quality Assurance
RNA	Ribonucleic acid

RR	Response Rate
SMS	Short Message Service
SOP	Standard Operating Procedure
T	Time cut-off
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
VL	Viral Load
VLS	Viral Load Suppression
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organization

PREFACE

Namibia is proud to be the 8th country to complete a Population-based HIV Impact Assessment (PHIA) survey. Alongside the other countries that have participated in PHIA, we now have national-level data to better understand HIV incidence, prevalence, and viral load (VL) suppression (VLS) in adults and children throughout Namibia.

Until the release of these data, we relied on using information collected through the HIV Sentinel Survey of pregnant women performed every two years, and the Demographic and Health Survey (DHS) performed every four years. Because the sentinel survey was only representative of pregnant females, it only showed the situation for a limited age range of one sex. The DHS, while representing both men and women and inclusive of a wider age range, was not designed to collect the information needed to fully understand the impact of HIV in Namibia.

Therefore, the Namibia Population-based HIV Impact Assessment (NAMPHIA) is ground-breaking for us because it provides detailed information about the incidence at the national level and HIV prevalence and VLS at national and regional levels. The survey is also unique because it is the first time that population-based information about prevention, care, and treatment of HIV in infants and children has been collected on a national scale. This information is critical to help us better serve the needs of the future generations of Namibia and improve outcomes for people living with HIV.

NAMPHIA's findings provide us with data that we could previously only model. We now have a better understanding of where Namibia has made a significant impact on addressing the epidemic. We can use this information to assess what is working in specific geographic areas or among certain populations towards attaining epidemic control. However, these data also show where we have not been successful and we must analyse what has been missing in these regions and populations, and what we can change to ensure epidemic control is achieved in every region, sector, age, and sex. The vast size of Namibia, combined with the low population density, provides unique challenges in healthcare program management. By using the detailed NAMPHIA survey data, we will be able to better target resources to where they are most needed. As Namibia moves towards epidemic control and begins to plan for the next phase of program management – sustained care and treatment – we will be able to provide the right services, to the right target groups, and in the right places.

Data are only useful if analysed, understood, disseminated, and used for assessment and planning. This detailed report is important for planners and policy makers to utilise in the development of strategies for taking our country forward towards a sustained, locally-led, and successful response to the HIV epidemic. It is also important that service providers, including frontline doctors and nurses, are aware of and understand the information contained in this report. This report helps us to better understand what is happening in each region, and we need to use these data to improve services at every clinic in the country. Finally, this information is of interest to the public. We hope the media will help us to convey the story contained in this report to provide the public with a better understanding of how far the country has come in controlling the epidemic and how we are planning to work together to take the response towards epidemic control and management.

On behalf of the Ministry, I extend our gratitude for the generous support of the United States President's Emergency Plan for AIDS Relief (PEPFAR) for funding the survey, and to all of the partners who ensured the implementation of this survey. We also thank all individuals who took part in this survey and the enumerators who travelled the length and breadth of this country to collect these much-needed data.


Bonetus Nangombe
Executive Director



FOREWORD

The HIV/AIDS epidemic has affected many countries around the world. By the mid-1990's Namibia had become known as one of the countries most affected by the virus. At one point, nearly one in four people were being infected with HIV, and people in Namibia were dying, on a daily basis.

However, as a country, and with international and local support, Namibia has taken control of this devastating challenge and changed the trajectory to one of success and epidemic control. In order to get empirical data on the status of the epidemic in the country, the Namibia Population-based HIV Impact Assessment (NAMPHIA) was carried out in 2017. The survey showed that by 2017, Namibia had achieved 86:96:91 of the UNAIDS 90:90:90 targets for epidemic control. With the release of the survey's preliminary data to a national and global audience in 2018, Namibia became known across the world for a new reason: the incredible strides this country has made to control the epidemic.

In just five years, 2012-2017, Namibia had halved the number of new infections and the number of people dying from HIV. These are remarkable achievements that we can be proud of as a country. As a ministry, we are encouraged that our interventions are saving the lives of many Namibians. Lives are no longer being lost, children are able to grow up with both parents, and new generations of children in Namibia are born HIV-free, even in cases where their mothers are HIV positive.

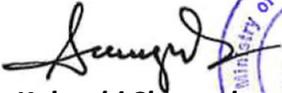
Namibia has achieved these successes through political, national, regional, and local leadership, along with the generous financial and technical support of development cooperation partners and local organizations. From the start, the fight against HIV has been an important priority and has received significant budgetary allocations during each national budget cycle. At national level, a dedicated directorate was established to address HIV, alongside other specially designated diseases such as TB and malaria. This focused management has ensured that a clear course has been set and maintained towards epidemic control. At the regional level, we have established coordinating structures to ensure a multi-sectoral response. At the frontline, we have seen healthcare providers dedicate their careers to ending this epidemic.

The Ministry of Health and Social Services (MoHSS) is proud to be leading the HIV response and we are grateful to all of our national and international partners for the support that has helped us to go beyond the targets we have set.

However, while the overall picture for HIV epidemic control is positive, we recognize there are many challenges remaining. There are significant differences in HIV incidence and treatment outcomes by region, age, and sex that must be eliminated. The gains made are significant, however sustainability may prove to be a challenge; we have not yet achieved a sustainable, internally-financed response to the epidemic.

Addressing HIV will remain a key priority for this Ministry, and one that will continue to receive dedicated focus for as long as it is necessary to ensure a solid care and treatment response for the

current and future generations. We will maintain dedicated service provision to optimize patient services and outcomes for people living with HIV. As a Ministry, and as a country, we look forward to reaching a time when we will have zero cases of new infections. This goal is in sight and we will reach it together.


Dr. Kalumbi Shangula,
Minister



SUMMARY OF KEY FINDINGS

The Namibia Population-based HIV Impact Assessment (NAMPHIA) 2017 was a nationally representative, cross-sectional, population-based survey of households across Namibia. It focused on measuring key biological endpoints to provide direct estimates of HIV infection risk and burden, and on the effectiveness and population-level impact of the HIV-related prevention, care, and treatment interventions implemented in the country. Its primary objectives were to estimate the national-level HIV incidence among adults (defined in this survey as those aged 15-64 years), and the subnational prevalence of viral load (VL) suppression (VLS) (defined as less than 1,000 HIV ribonucleic acid [RNA] copies per millilitre [mL] in plasma) among HIV-positive adults. In addition, NAMPHIA measured national and subnational adult HIV prevalence, CD4 counts, antiretrovirals (ARVs) in blood, transmitted HIV drug resistance, HIV prevalence among children (those aged 0-14 years), and progress toward the 90-90-90 targets defined by the Joint United Nations Programme on HIV/AIDS (UNAIDS). It is the first national survey to conduct these measurements in Namibia. The survey also collected information on TB, as well as behaviours associated with HIV acquisition and transmission. The following are key findings of NAMPHIA:

Survey Response Rates

- There were 12,689 households selected for inclusion in NAMPHIA 2017. Of these, 10,921 were occupied and participants in 9,315 were interviewed at the time of data collection for an (unweighted) response rate (RR) of 85.0%, which was higher in rural (92.4%) than urban (77.0%) areas.
- The unweighted blood draw RR (number of individuals who provided blood out of the number of individuals who were interviewed) for women was 91.9% and 87.9% for men.
- The overall participant RR (household RR X interview RR X blood draw RR) was 71.4% for women and 62.1% for men.

Survey Household and Respondent Characteristics

- Among all households, 50.2% were headed by women and 49.8% were headed by men.
- 23.0% of the households had at least one HIV-positive member (19.4% of urban and 27.6% of rural households).
- 18.3% of households were headed by a person living with HIV (22.3% of the female-headed and 13.8% of the male-headed households).

HIV Incidence

- Annual incidence (ARV adjusted) was 0.36% for adults in 2017—0.59% among women and 0.13% among men.
- Among all age groups, young people (defined as those aged 15-24 years) represented the sharpest contrast in HIV incidence by sex: young women had the highest incidence at 0.99%, while young men had the lowest at 0.03%, which was statistically significantly.
- The adult incidence rate corresponds to approximately 4,700 (95% confidence interval [CI], 2,175-6,762) new cases of HIV annually among adults in 2017.

HIV Prevalence

- HIV prevalence among adults was 12.6% nationally. This corresponds to approximately 176,000 adults living with HIV. HIV prevalence was 15.7% among women and 9.3% among men.
- Regional HIV prevalence varied widely from 7.6% in Kunene to 22.3% in Zambezi.
- HIV prevalence among women peaked in those aged 45-49 years (30.0%) and among men aged 50-54 years (26.4%).

HIV Testing

- Overall, 78.2% of adults have ever been tested for HIV and received their results (85.3% of women and 70.5% of men).
- Older adolescents (aged 15-19 years) have lower rates of ever being tested for HIV and receiving their results. Almost half (49.1%) of the older adolescent girls had ever tested, and 27.6% had tested within the year before the survey, but among older adolescent boys, just 33.4% had ever tested, and only 14.2% in the year preceding the survey.
- Out of those who were HIV-positive, 88.7% of HIV-positive men and 95.6% of HIV-positive women had ever been tested for HIV and received their results.
- Among both women and men, those having more than secondary education reported the highest proportion who had ever tested for HIV and received results (90.5%) compared to those with primary education (72.7%) or no education 68.3%).
- More than one-third (37.4%) of HIV-positive young women aged 15-24 years reported being unaware of their HIV status. More than half (56.9%) of HIV-positive young men aged 15-24 years reported being unaware of their HIV status.

HIV Diagnosis and Treatment

- Among HIV-positive adults, 78.9% reported knowledge of their status.
- Concordance between self-report of taking ARVs and detection of ARVs in the blood was high among adults, with 93.7% of those who reported current antiretroviral therapy (ART) use having detectable ARVs in blood.
- There was a marked discordance between the self-reported awareness of HIV-positive status and the awareness of HIV-positive status determined by the detection of ARVs in the individuals' blood; one-third (33.3%) of those who reported that they were unaware of their HIV-positive status in fact had detectable ARVs in their blood.

Viral Load Suppression

- Among all adults living with HIV in Namibia, the prevalence of VLS was 77.4% (note, this may include some individuals who were not yet aware of their status, and who had VLS in the absence of treatment).
- Prevalence of VLS among adults was 81.7% in women and 69.6% in men.
- The percentage of HIV-positive adults with VLS ranged from 55.2% in Kunene to 86.2% in Ohangwena.

90-90-90 Targets

- **Diagnosed:** Based on self-report and ARV detection data, it is estimated that in Namibia, 86.0% of adults living with HIV knew their HIV status (89.5% of HIV-positive women and 79.6% of HIV-positive men).
- **On treatment:** Based on self-report and ARV detection data, it is estimated that among adults living with HIV who knew their HIV status, 96.4% were receiving ART (97.1% of HIV-positive women and 94.9% of HIV-positive men).

- **Viral load suppression:** Based on self-report and ARV detection data, it is estimated that among people living with HIV and on treatment, 91.3% achieved VLS (92.2% of HIV-positive women and 89.5% of HIV-positive men).
- Overall, 75.6% of all adults living with HIV had VLS on treatment (80.1% of women and 67.6% of men), which exceeds the UNAIDS target of 73%.
- Based on self-report, Namibia has achieved the second and third of the UNAIDS 90-90-90 targets among persons who were aware of their HIV status.
- Women in Namibia have achieved the UNAIDS 90-90-90 targets.

Clinical Perspectives on People Living with HIV

- Among adults living with HIV, the median CD4 count was 422 cells/ μ L among those who had not been previously diagnosed, 400 cells/ μ L among those who had been diagnosed, but had not started ART, and 563 cells/ μ L among those on ART.
- Overall, for every age group over the age of 20 years, there was a consistent pattern for men to have lower CD4 counts than women, measured both as median CD4 counts and as the proportion with fewer than 500 CD4 cells/ μ L, though this pattern was not statistically significant.
- Similarly, men who had not been previously diagnosed had lower median CD4 counts than women who had not been previously diagnosed (355 and 496 cells/ μ L, respectively).
- Late diagnosis of HIV, as defined by having a CD4 count <200 cells/ μ L at diagnosis, was relatively uncommon (16.5%). In general, a higher proportion of men had advanced immunosuppression than women (20.6% and 12.0%, respectively, with <200 CD4 cells/ μ L at diagnosis).
- Retention on ART was high, both among those who had initiated ART in the prior 12 months and those who had been on ART for 12 months or more prior to the survey. This was observed both among those who self-reported they were still on ART (99.0% for <12 months and 98.9% for \geq 12 months on ART) and among those whose blood tested positive for ARVs (99.3% and 99.9%, for <12 months and \geq 12 months on ART, respectively).
- Among 20 samples from participants who were found to have recent HIV infections by NAMPHIA, five had mutations associated with resistance to ARVs. Five successfully amplified samples had mutations associated with non-nucleoside reverse transcriptase inhibitor (NNRTI) resistance. None of the samples had mutations associated with resistance to all three classes of ARVs (nucleoside reverse transcriptase inhibitor [NRTI], NNRTI and protease inhibitors [PI]).

Prevention of Mother-to-Child Transmission

- Attendance at antenatal care (ANC) was high among women of childbearing age (defined as those aged 15-49 years) participating in NAMPHIA: 98.4% of women who had delivered a baby in the prior three years reported attending at least one antenatal clinic visit.
- Breastfeeding was the norm among last-born children in the three years preceding the survey; 97.2% of mothers in NAMPHIA reported ever having breastfed their babies. Among these women, 56.9% had ever breastfed their children, but were not breastfeeding at the time of the survey.
- Knowledge of HIV status was similarly high with 97.4% of women who had given birth in the prior 12 months knowing their status, either through antenatal testing (87.5%) or having been previously diagnosed (9.9%); 1.8% were diagnosed with HIV in their last pregnancy.
- Among HIV-positive women who had delivered in the last 12 months, 95.8% were on ART.
- Among infants born in the 17 months prior to the survey to HIV-positive women, 1.4% were confirmed HIV positive by the virological testing conducted as part of NAMPHIA. No infants whose mothers had been on ART during pregnancy were diagnosed with HIV in NAMPHIA.

Young People

- Among young people (including older adolescents and young adults), 9.9% reported having a sexual debut before the age of 15 years. This was most common in Kavango East (25.2%) and Kavango West (22.5%). Early sexual debut was reported less in older adolescent girls and young women (6.2%) than older adolescent boys and young men (13.7%).
- The overall HIV prevalence among young people was 4.0% and higher in young women (5.4%) than young men (2.5%). Annual incidence was 0.51%, and substantially higher among young women (0.99%) than among young men (0.03%).
- Of the young people identified as HIV positive in NAMPHIA, only 56.4% reported that they had been previously diagnosed—this was higher in young women (62.6%) than young men (43.1%).
- However, based upon ARV-detection data, 72.2% of young people living with HIV were aware of their HIV-positive status at the time of the survey, 98.2% of whom were on ART, and 85.4% of whom had suppressed viral loads.
- Overall, 60.5% of all young people living with HIV in Namibia had achieved VLS on treatment.

Infants and Children

- NAMPHIA identified 74 children living with HIV (in the subset of households sampled by the survey).
- The prevalence of HIV among children in Namibia was estimated to be 1%, ranging from 0.2% among infants aged 0-17 months to 1.9% in young adolescents (those aged 10-14 years).
- The estimated number of infants and children living with HIV in Namibia was 9,000.
- Among infants and children living with HIV, 83.5% had been diagnosed prior to the survey, 100% of these were on ART and among these, 75.4% had VLS.
- Overall, of all the infants and children living with HIV in Namibia, 63.0% had VLS.

HIV Risk Factors

- HIV prevalence in women was 30.7% among those who reported engaging in paid sexual intercourse in the 12 months preceding the survey. Among those women who did not engage in paid sexual intercourse, HIV prevalence was 14.3%.
- A higher percentage of young people aged 15-24 years reported condom use with their last non-marital, non-cohabitating partner (70.7%) as compared to adults aged 25-64 years.
- Condom use at last sexual intercourse among HIV-positive men and women was low (13.4%).
- Condom use among adults who reported having sex with high-risk (non-marital, non-cohabitating) sexual partners was also relatively low (63.7%).
- The prevalence of self-reported medical male circumcision among adult men was 24.5%.

1 INTRODUCTION

1.1 Background

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

The Ministry of Health and Social Services (MoHSS) led NAMPHIA 2017, in collaboration with the Namibia Statistics Agency (NSA), and the Namibia Institute of Pathology (NIP). The U.S. Centers for Disease Control and Prevention (CDC) and ICAP at Columbia University provided technical assistance. The University of California San Francisco implemented the survey in collaboration with local partners.

1.2 Overview of NAMPHIA 2017

NAMPHIA, a household-based national survey, was conducted between June-December 2017 to measure the status of Namibia's national HIV response. The cross-sectional survey assessed the prevalence of key HIV-related health indicators. NAMPHIA offered home-based testing and counselling (HBTC) with return of results and collected information about uptake of HIV care and treatment services. This two-stage cluster survey of 12,689 randomly selected households in Namibia included 21,464 adults (defined as those aged 15-64 years) and 7,887 children (defined as those aged 0-14 years). NAMPHIA characterised HIV incidence, prevalence, VLS, CD4 distribution, and risk behaviours in a household-based, nationally representative sample of the population of Namibia and described uptake of key HIV prevention, care, and treatment services.

With its focus on measuring key biological endpoints in a nationally representative sample of the population, NAMPHIA provided 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 progress toward the achievement of the UNAIDS 90-90-90 targets.

1.3 Specific Objectives

The goals of the survey were to estimate incidence and prevalence of HIV in Namibia, to assess the coverage and impact of HIV services at the population level, and to characterize HIV-related risk behaviours using a nationally representative sample of adults and children.

Primary Objectives

- To estimate national annual HIV incidence among adults.
- To estimate the regional prevalence of VLS among HIV-positive adults.

Secondary Objectives

- To estimate the national prevalence of HIV among children.
- To estimate the national and regional prevalence of HIV among adults.

- To estimate the uptake of HIV-related services (especially prevention of mother-to-child transmission [PMTCT]-related services) and exposure to HIV interventions among people aged 0-64 years.
- To estimate the prevalence of transmitted drug resistance among HIV-positive children and adults.
- To estimate the distribution of CD4 counts among children and adults living with HIV.

2 SURVEY DESIGN, METHODS, AND RESPONSE RATES

NAMPHIA 2017 was a nationally representative, cross-sectional, two-stage, population-based survey of households across Namibia. Its target population corresponded to children (ages 0-14 years) and adults (ages 15-64 years). The survey population excluded institutionalized children and adults.

2.1 Sample Frame and Design

This cross-sectional, household-based survey used a two-stage cluster sampling design. The sampling frame was comprised of all households in the country, based on the 2011 census in Namibia. The sampling frame consisted of 5,489 enumeration areas (EAs), containing 464,839 households and 2,280,716 persons, with an average number of households and persons per EA of approximately 85 and 416, respectively. The first stage selected clusters using a probability proportional to size method. The 461 EAs selected* were stratified by 14 regions: Erongo, Hardap, //Karas, Kavango East, Kavango West, Khomas, Kunene, Ohangwena, Omaheke, Omusati, Oshana, Oshikoto, Otjozondjupa, and Zambezi. 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 30 (Table 2.1.A).

The sample size was calculated to provide a national estimate of HIV incidence among adults with a relative standard error less than or equal to 0.3, as well as regional estimates of VLS prevalence among HIV-positive adults with 95% CIs less than or equal to $\pm 10\%$ bounds around the point estimates. One-half of the households were randomly selected for inclusion of children, which was designed to provide a representative national estimate of paediatric HIV prevalence with a relative standard error less than or equal to 16.2%. The target sample size was 19,068 for adults, and 6,797 for children (children were sampled in every other household). The sample was powered to estimate the national-level HIV incidence rate among adults aged 15-49 years; however, the total sample size for adults included older adults aged 50-64 years. The sample size needed to estimate incidence dictated the overall sample size requirements. Estimates for the proposed sample design were carried out in an iterative process to arrive at an overall sample size and allocation to meet survey objectives. *Appendix A: Sample Design and Implementation* provides a more detailed explanation of the sampling and weighting processes.

* Counts in this table exclude four small PSUs that were not fielded for data collection (Appendix A).

Region	Enumeration Areas			Households		
	Urban	Rural	Total	Urban	Rural	Total
Erongo	15	11	26	405	297	702
Hardap	24	3	27	648	81	729
//Karas	22	15	37	594	405	999
Kavango East	15	16	31	405	432	837
Kavango West	1	19	20	27	513	540
Khomas	56	4	60	1,620	135	1,755
Kunene	11	20	31	297	540	837
Ohangwena	6	36	42	189	999	1,188
Omaheke	14	24	38	378	648	1,026
Omusati	5	38	43	135	1,025	1,160
Oshana	17	14	31	513	405	918
Oshikoto	5	25	30	135	675	810
Otjozondjupa	15	12	27	405	324	729
Zambezi	5	13	18	135	351	486
Total	211	250	461	5,886	6,830	12,716

Unweighted figures

2.2 Eligibility Criteria, Recruitment, and Consent Procedures

In NAMPHIA, the eligible survey population included individuals aged 0-64 years. The consent criteria are determined in each country, and it should be noted that the age categories are different than the adult, adolescent, and children age groupings used for sampling and reporting purposes in this report. The consent criteria included:

- Women and men aged 18-64 years, living in the selected households, and visitors who slept in the household the night before the survey, who were willing and able to provide written consent;
- Adolescents aged 10-17 years, living in the selected households and visitors of the same age 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 permission for their participation; and
- 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 for their participation.

All eligible participants in every other selected household were offered voluntary survey enrolment (more details on sample design are in Appendix A). Only data from de facto residents were weighted and analysed in this report.

No data collection took place prior to obtaining informed consent. Written informed consent/assent was requested from all potential participants. The informed consent/assent read to potential participants contained all of the information required to make an informed decision as to whether or not to participate, including all elements of informed consent as required by U.S. regulations (45 Code of Federal Regulations (CFR) 46.116).

An electronic informed consent form was administered using the Google Nexus tablet (Nexus 7, Google, Inc., Mountain View, California, USA). At each stage of the consent process, consent was indicated by signing or making a mark on the consent form on the tablet and on a printed copy, which was retained by the participant.

A designated head of household provided written consent for household members to participate in the survey, after which individual members were rostered during a household interview. Adults aged 18-64

years and emancipated minors then provided written consent on the tablet for an interview (an emancipated minor is anyone below the age of 18 years who is married or is free from any legally competent representative as defined by law in Namibia; note: the minimum age for consent without parental permission/assent required was 18 years). Prior to initiation of any survey procedures, all potential participants were given a printed copy of the consent form in English, Afrikaans, Rukwangal, Oshiwambo, Damara/Nama, Otjiherero, or Silozi, depending upon their preference. After completing the interview, they provided written consent for participation in the biomarker component of the survey, including HBTC, with return of HIV test results and CD4 counts during the household visit. Receipt of tests results was a requirement for participation in the biomarker component. If an individual did not want to receive his or her HIV test result, this was considered a refusal and the survey was concluded. Adults were also asked for written consent to store their blood samples in a repository to perform additional tests in the future.

Parents provided permission for biomarker testing for minors aged 0-9 years. Younger adolescents aged 10-14 years were asked for assent to the young adolescent interview and biomarker components of the survey after permission was granted by their parent/guardian. Older adolescents aged 15-17 years were asked to similarly assent to the adult interview and biomarker components of the survey after permission was granted by their parents or guardians. 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 was concluded. Procedures with illiterate participants or participants with a sight disability involved the use of an impartial witness, chosen by the potential participant, who also signed or made a mark on the consent form on the tablet and the printed copy. If no witness could be identified, the potential participant or household (if the head of household was sight disabled or illiterate) was deemed ineligible.

2.3 Survey Implementation

Training of Field and Laboratory Staff

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

- Scientific objectives of the survey
- Survey design and methods
- Completion of survey forms
- Data collection
- Staff responsibilities
- Recruitment of participants
- Informed consent procedures, including human participants' protection, privacy, and confidentiality
- Blood collection for infants, children, and adults, including venipuncture and finger/heel stick
- Home-based HIV testing and counselling
- CD4 count measurement using point of care (POC) PIMA analyzer (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere)
- Referral of participants to health and social services
- Management and transportation of blood specimens
- Biosafety
- Communication skills
- Protocol deviations, adverse events, and reporting of events

Laboratory staff were trained in specimen management, including sample processing, labelling, POC early infant diagnosis (EID) and quality assurance (QA). Central laboratory staff were trained in VL measurement, EID, HIV confirmatory testing, and HIV recency testing using the HIV-1 Limiting Antigen (LAg)-Avidity Enzyme Immunoassay (EIA) (Sedia Biosciences Corporation, Portland, Oregon, United States).

Data Collection

Interviews were conducted in or near the household. Those who agreed to participate chose a relatively private location where the remainder of the activities could be conducted with as much privacy as possible. The data collection staff had to agree with the location and ensure that the space was private. In all settings, data were collected in a way that maximised privacy.

Questionnaire Data Collection

Questionnaire and field laboratory data were collected on mobile tablet devices using an application 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 adults (defined for purposes of the survey as those aged 15-64 years) and included modules on demographic characteristics, sexual and reproductive health, marriage, male circumcision, sexual activity, HIV/AIDS knowledge and attitudes, HIV testing and treatment history, and TB (see Appendix F). Participants who reported awareness of their HIV-positive status were asked questions about their HIV care experience. Parents also answered questions about their children's health and participation in HBTC services as a part of the 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 experiencing violence and minors who reported experiencing sexual exploitation were provided with referrals to social services. Female participants were interviewed by female staff, and male participants by male staff, whenever possible.

The Young Adolescent Questionnaire, administered to young adolescents (those aged 10-14 years) contained a subset of questions from the adult questionnaire, including demographic characteristics, sexual activity, HIV-related risk behaviours, exposure to HIV prevention programmes, and knowledge of HIV status (Appendix G).

Survey Staff

Fieldwork was conducted by 30 locally-hired field teams composed of a team leader, two nurses, four interviewers/HBTC providers, and a driver. Field teams included both male and female staff members who spoke the languages used in the areas to which they were deployed. A total of 336 field coordinators, team leaders, nurses, interviewers/HBTC providers, community-mobilization coordinators, and drivers participated in various aspects of field operations and data collection. Survey personnel were selected based on their qualifications and areas of expertise. The HBTC providers were responsible for obtaining consent, administering the interview, and delivering HBTC for adults and children. The nurses conducted phlebotomy and performed CD4 counts using a POC instrument. The field teams were supervised by seven field coordinators and managed by eight field supervisors, who guided and oversaw data collection activities, performed quality checks, and provided technical support (Appendix D). In addition, 42 laboratory technicians processed samples and performed additional procedures for HIV-1 VL, infant virologic HIV testing, and quality control (QC) and QA. National and international monitors

periodically conducted direct observation collection activities in the field and in the laboratories to provide technical support and ensure quality.

Community Sensitization and Mobilization

Community mobilization was conducted prior to data collection to maximize community support and participation in the survey. The mobilization began before fieldwork commenced with a high-level national launch meeting that included key national and regional leaders, mass media, and other stakeholders. Community mobilization teams visited each EA prior to initiation of data collection and partnered with health extension workers to meet gatekeepers in the communities (e.g., chiefs, local government officials, and religious and community leaders). The mobilization teams held community sensitization meetings, disseminated written informational materials such as brochures and posters, and held discussions with selected households and other community residents. National and local media (print, radio and television) were engaged throughout the data collection period. Letters were sent to and meetings held with national groups such as farmers associations, medical aids, community watch groups, and the rotary club.

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 weekly and provided direct supervision as well as verification of results by household revisits. Daily monitoring forms for household and individual outcome tracking were also reviewed by monitors for completeness. Field-based supervisors also supported teams by organizing supplies and transport of blood samples, coordinating community-mobilization efforts, providing technical troubleshooting, and checking the quality of household procedures and data collected.

The national and international monitoring teams observed and assessed the quality of survey procedures, including adherence to protocol and standard operating procedures (SOPs), and identified and responded to challenges with data collection. Regular debriefing sessions were held between field-based supervisors and monitoring teams. Monitoring reports were circulated to collaborating institutions and the NAMPHIA Technical Working Group (a group of NAMPHIA principal investigators and collaborating institutions dedicated to supervision and oversight during and post data collection) to respond to any issues.

Electronic monitoring system

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

2.4 Field-Based Biomarker Testing

Blood Collection

Blood was collected by qualified survey staff from consenting participants: 14 mL of venous blood from adults, 6 mL of venous blood from children aged 2-14 years, and 1 mL of capillary blood from infants and

children aged 0-24 months using finger-stick for infants and children aged 6-24 months and heel-stick for infants aged 6 months and younger.

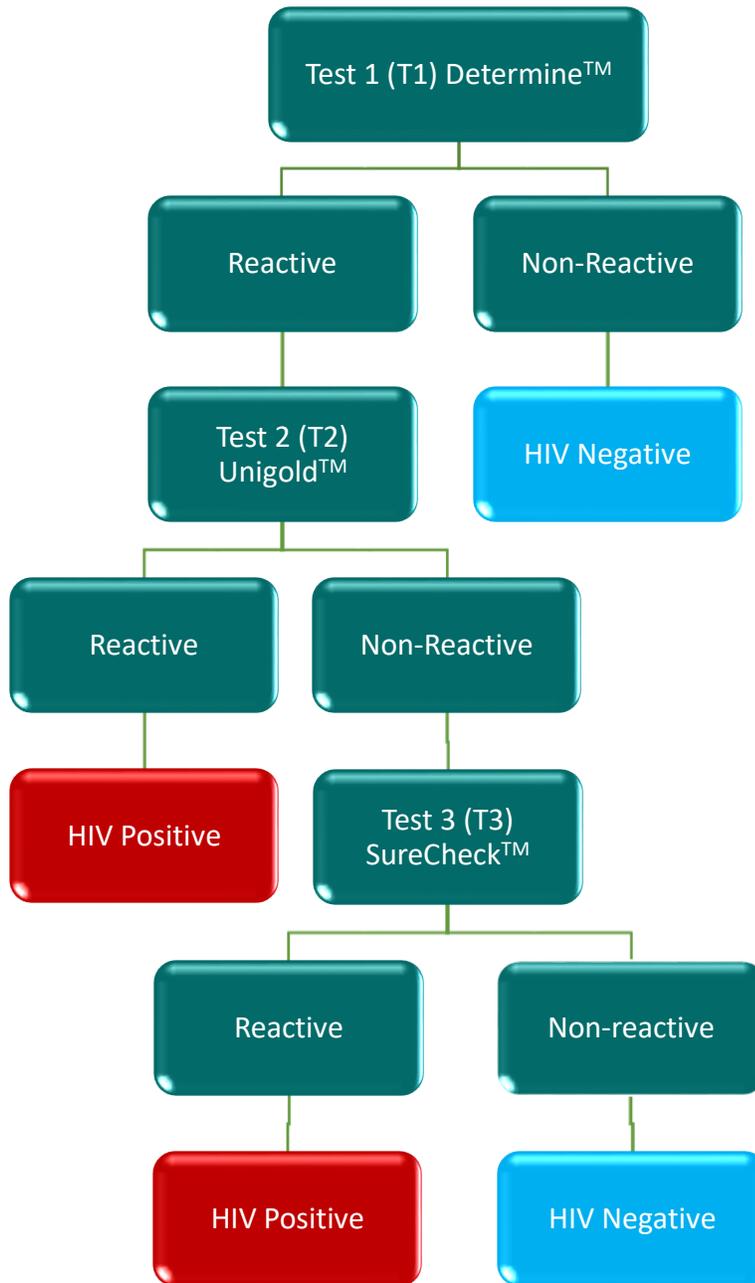
Blood samples were labelled with a unique barcoded participant identification number and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for processing into plasma aliquots and dried blood spots (DBS), and were frozen within 24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

Data from household HIV rapid testing were entered into the pre-programmed Field Biomarker Form on the mobile tablet device using the Participant Identifier (PTID). Data from POC CD4 testing (from all people living with HIV and 2% of the HIV-negative participants) were automatically stored in the POC CD4 machine using the PTID. Survey staff also entered the CD4 result onto the pre-programmed Field Biomarker Form on the mobile tablet device. The two CD4 results (one from the CD4 machine and one entered by interview staff into the tablet) were merged to validate the recorded CD4 results. See Annex B for detailed laboratory methods.

HIV Home-Based Testing and Counselling

In accordance with national guidelines, HIV HBTC was conducted in each household (Figure 2.4.A). As per these guidelines, the survey used a sequential rapid-testing algorithm in the field: Determine™ HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States) as a screening test, Uni-Gold™ (Trinity Biotech, plc. Wicklow, Ireland) as a confirmatory test, and SURE CHECK® HIV 1/2 Assay (Chembio Diagnostic Systems Inc. Medford, New York, United States) as a tie-breaker test for discordant screening and confirmatory tests. Individuals with a nonreactive result on the screening test were reported as HIV negative. Individuals with a reactive screening test underwent confirmatory testing. Those with reactive results on both the screening and confirmatory tests were classified as HIV positive. Individuals with a reactive screening test result, followed by a nonreactive confirmatory test result, had the tie-breaker test performed to determine HIV status. Participants with reactive tie-breaker tests were classified as HIV positive while those with non-reactive were classified as HIV negative.

Figure 2.4.A Household-based HIV testing algorithm, NAMPHIA 2017 in those aged 18 months and older, NAMPHIA 2017



HIV-seropositive participants were referred to HIV care and treatment services at a health facility of their choice. For children and adolescents below the age of 18 years, results were returned to a parent or guardian (with the presence of the older adolescent for those aged 15-17 years).

For children aged younger than 18 months, only the screening test (Determine™ HIV-1/2) was performed in the field. If the test was reactive, HIV total nucleic acid (TNA) polymerase chain reaction

(PCR) testing (HIV TNA PCR) for virologic testing of HIV infection was performed in the central laboratory, as described below (Section 2.5).

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

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

CD4+ T-Cell Count Measurement

All participants who tested HIV positive during HBTC, and a random sample of 2% of those who tested HIV negative, received a CD4 count measurement in the field by qualified survey staff. The measurement was performed using the Pima™ CD4 Analyzer.

2.5 Laboratory-Based Biomarker Testing

Blood specimens were collected by survey staff, labelled with the PTID and logged into ODK on tablet devices along with the questionnaire results. Information on the specimen collected (whole blood) and the specimen collection method (venous, finger-stick, or heel-stick) was included. Information was double-entered into a Laboratory Specimen Tracking Form, which accompanied all specimens to track all transfers between field teams, drivers, and satellite laboratories and were developed as part of laboratory SOPs.

Staff at the receiving satellite laboratory indicated the time of receipt of each specimen and its quality prior to processing plasma or DBS cards. Plasma aliquots and DBS cards were logged into the Laboratory Data Management System (LDMS) located in the respective satellite labs, using the PTID at satellite laboratory. Specimen quality and storage location were noted in LDMS. Laboratory test results were maintained electronically in LDMS. These data were sent to the main survey server by a secured connection, then cleaned and merged with survey data. Once every week, plasma and DBS specimens were shipped electronically through LDMS and physically on cold chain using ultra-cold freezer packs to the central laboratory. All sample transportation events were logged on a specimen transport form, which accompanied the specimens until they were received at the central laboratory and stored.

Satellite and Central Laboratories

During NAMPHIA, 13 satellite laboratories were established in existing health facility laboratories and two mobile labs were utilized in areas without existing or accessible health facilities. One central reference laboratory was chosen for more specialized tests. At each satellite laboratory, trained technicians performed HIV confirmatory testing, POC EID, testing for QA, and processing of whole blood specimens into plasma aliquots and DBS cards for temporary storage at -20°C, testing for QA and HIV confirmatory testing. For QA of the HIV rapid testing conducted in the field, the first 50 samples tested by each field tester and a random sample of 5% of specimens that tested HIV negative during HBTC were retested in the laboratory using the national HIV rapid-testing algorithm. All specimens that tested HIV positive during HBTC, and those that had confirmed positive rapid test results during QA, underwent confirmatory testing using the Geenius HIV 1/2 Supplemental Assay (Bio-Rad, Hercules, California,

United States). A positive Geenius result defined HIV-positive status. All infants below the age of 18 months who had a reactive Determine test during HBTC had their samples tested for POC EID using the GeneXpert® instrument (Cepheid, Inc., Sunnyvale, California, United States). Central laboratory procedures included HIV VL testing; HIV TNA PCR for infant virologic testing; and for confirmation of status of those who reported awareness of their HIV-positive status, but tested negative in HBTC; HIV recency testing; and long-term storage of samples at -80°C.

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

Viral Load Testing

The HIV-1 VL (HIV RNA copies per mL) of confirmed HIV-positive participants was measured on the Roche COBAS® AmpliPrep instrument and COBAS® TaqMan® 96 analyzer using the COBAS® AmpliPrep/COBAS® TaqMan® HIV-1 Test, version 2.0 (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). HIV-1 VL using DBS specimens from children and adults with insufficient volume of plasma was measured on the Roche COBAS® AmpliPrep instrument and COBAS® TaqMan® 96 analyzer using the COBAS® AmpliPrep/COBAS® TaqMan® free virus elution (FVE) protocol (Roche Molecular Diagnostics, Branchburg, New Jersey, United States).

Viral load results were returned within 8-10 weeks to the health facility chosen by each HIV-positive participant. Participants were provided with a referral form during HBTC for subsequent retrieval of their results. Survey staff also contacted each participant via Short Message Service (SMS), informing them that their VL results were available at the chosen facility and further advising them to seek care and treatment. Participants were asked to verify their details before the message about results was conveyed in order to ensure confidentiality.

Infant HIV Virologic Testing

For infants aged 18 months and younger who screened positive for HIV during HBTC, HIV total nucleic acid (TNA) PCR (HIV TNA PCR) was conducted at the satellite laboratory using the GeneXpert® instrument system using the Cepheid® Xpert HIV-1 qualitative assay (Cepheid, Inc., Sunnyvale, California, United States). (Note: The limitations of using rapid tests to identify all HIV-exposed infants are described in Appendix B.) Results were returned to the child's parent or guardian at the household within two weeks. Infants who had HIV TNA PCR tested at the satellite laboratory were again tested at the central lab 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).

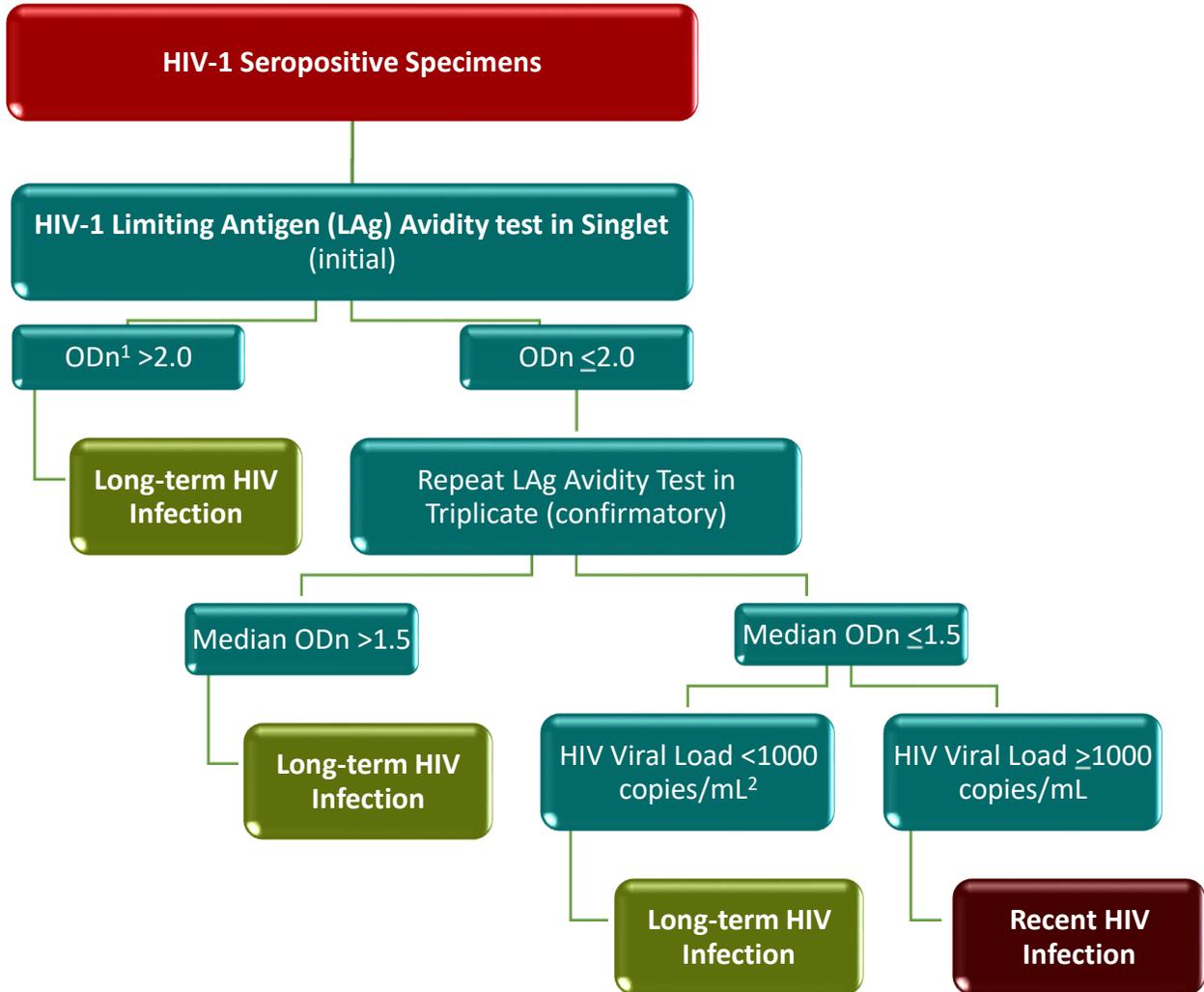
HIV Recency Algorithm

To distinguish recent from long-term HIV infections, in order to estimate incidence, the survey used two different laboratory-based testing algorithms. Each algorithm employed a combination of assays: 1) HIV-1 LAg-Avidity EIA 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 (OD_n) ≤ 1.5 in the LAg avidity assay were classified as potential recent infections, and their VL results were assessed. Specimens with VL $< 1,000$ copies/mL

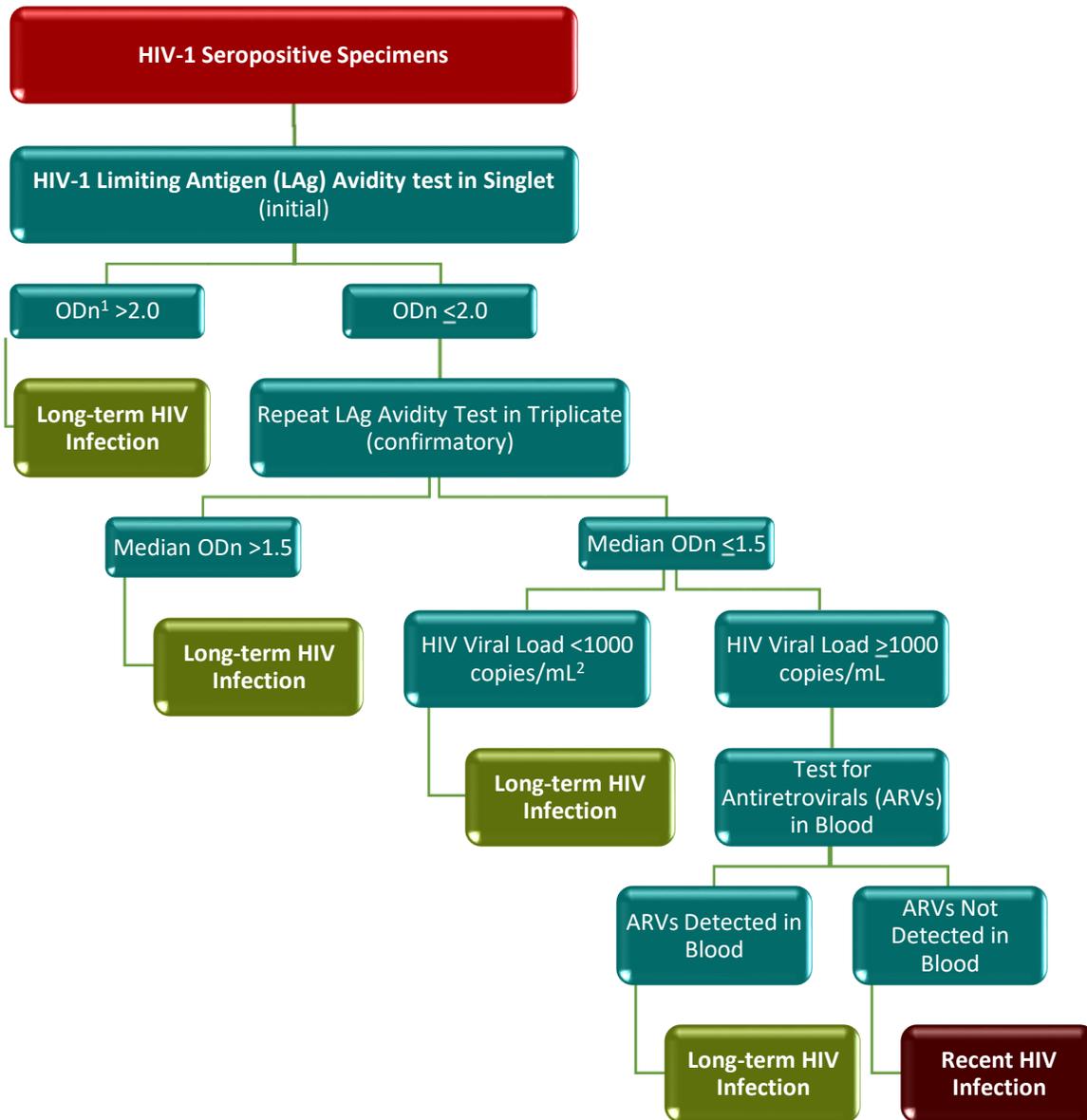
were classified as long-term infections, while those with VL $\geq 1,000$ copies/mL were classified as recent infections (Figure 2.5.A). In the ARV-adjusted algorithm, LAg-recent specimens with VL $\geq 1,000$ copies/mL and with detectable ARVs were classified as long-term infections. Specimens with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

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



¹ODn: normalized optical density; ²mL: millilitre

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



¹ODn: normalized optical density; ²mL: millilitre.

Detection of Antiretroviral Drug Resistance

HIV resistance to ARVs was assessed for all those HIV-positive participants aged 18 months and older classified as having recent HIV infections and a small subset of participants with long-term infections. In addition, all infants below the age of 18 months with confirmed infection were evaluated to determine vertical transmission of ARV-resistant HIV. Mutations in the HIV protease and reverse transcriptase

genes that confer ARV drug resistance (according to the Stanford drug resistance database) were detected simultaneously by use of the CDC's in-house multiplex allele-specific drug resistance assay.

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

Detection of Antiretrovirals

Qualitative screening for detectable concentrations of ARVs was conducted on DBS specimens from all HIV-positive adults and children by means of high-resolution liquid chromatography coupled with tandem mass spectrometry. The method used for ARV detection was a modified version of the methodology described by Koal *et al.*¹ This qualitative assay is highly specific, as it separates the parent compound from the fragments, and highly sensitive, with a limit of detection of 0.02 µg/mL for each drug, and a signal-to-noise ratio of at least 5:1 for all drugs. As detection of all ARVs in use at the time of the survey was cost-prohibitive, three ARVs were selected as markers for the most commonly prescribed first and second line regimens: efavirenz, nevirapine and lopinavir. These ARVs were also selected based on their relatively long half-lives, allowing for a longer period of detection following intake.

Detection of ARVs is considered indicative of participant use of a given drug at the time of blood collection and implies prior diagnosis and entry into HIV care. Results below the limit of detection among individuals who self-reported on ART indicate that there was no recent exposure to the regimen and that adherence to a prescribed regimen is sub-optimal, but cannot be interpreted as "not on ART." In addition, given the limited number of ARVs selected for detection, their absence could not rule out the use of other ART regimes that do not include them.

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

2.6 Data Processing and Analysis

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

All results presented in the report are based on weighted estimates unless otherwise noted. Analysis weights account for sample selection probabilities and were adjusted for nonresponse and noncoverage. Nonresponse adjusted weights were calculated for households, individual interviews, and individual blood draws in a hierarchical form. 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-squared automatic interaction detection algorithm. The cells were defined based on data from the household interview for the adjustment of individual-level weights, and from both the household and individual interviews for the adjustment of blood sample-level weights. Post-stratification adjustments were implemented to compensate for non-coverage in the sampling process. This final adjustment calibrated the nonresponse-adjusted individual and blood weights to make the sum of each set of weights conform to national population totals by sex and five-year age groups.

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

Incidence estimates were based on the number of HIV infections identified as recent with the LAG avidity assay, VL, and ARV detection algorithm, and obtained by 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 cut-off (T) = 1.0 year and percentage false recent (PFR) = 0.00.

2.7 Response Rates

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

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

Household RRs are shown in Table 2.7.A and 2.7. B, and individual interview and blood draw RRs are shown in Tables 2.7.C and 2.7.D. A total of 12,689 households were selected for inclusion in NAMPHIA 2017. Of these, 10,921 were occupied and hence eligible at the time of data collection, and 9,315 were interviewed for an unweighted RR of 85.0%, which was higher in rural (92.4%) than urban (77.0%) areas.

Result	Residence		Total
	Urban	Rural	
Household interviews			
Households selected	5,886	6,803	12,689
Households occupied	5,241	5,680	10,921
Households interviewed	4,048	5,267	9,315
Household response rate ¹ (unweighted)	77.0	92.4	85.0
Household response rate ¹ (weighted)	74.9	92.5	82.3

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

Result	Region													
	Erongo	Hardap	///Karas	Kavango East	Kavango West	Khomas	Kunene	Oshana	Oshana	Oshana	Oshana	Oshikoto	Otjozondjupa	Zambezi
Household interviews														
Households selected	729	999	702	837	540	1,755	810	1,188	1,026	1,160	918	810	729	486
Households occupied	639	820	596	684	452	1,593	640	1,039	882	1,034	802	709	651	380
Households interviewed	474	660	511	612	432	1,100	549	981	750	971	731	662	554	328
Household response rate ¹ (unweighted)	74.2	80.3	85.6	89.3	95.4	68.9	85.1	93.9	84.8	93.2	90.7	93.4	84.9	85.8
Household response rate ¹ (weighted)	74.0	80.9	86.0	89.2	95.3	67.1	82.8	94.0	84.3	92.6	89.7	93.6	86.2	85.0

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

Result	Residence					
	Urban		Rural		Total	
	Male	Female	Male	Female	Male	Female
Eligible children, ages 0-9 years						
Number of eligible individuals	951	979	1,931	1,880	2,882	2,859
Blood draw response rate (unweighted)	76.0	73.2	91.4	91.6	86.3	85.3
Blood draw response rate (weighted)	72.4	69.7	91.0	91.2	82.8	81.8
Eligible young adolescents, ages 10-14 years						
Number of eligible individuals	379	360	748	659	1,127	1,019
Interview response rate (unweighted)	78.6	81.4	92.8	94.4	88.0	89.8
Interview response rate (weighted)	75.5	79.8	92.4	94.5	85.1	87.9
Blood draw response rate (unweighted)	91.3	91.1	99.0	97.9	96.7	95.7
Blood draw response rate (weighted)	89.4	87.5	99.2	97.1	95.0	92.9
Eligible young people, ages 15-24 years						
Number of eligible individuals	1,386	1,596	2,107	2,013	3,493	3,609
Interview response rate (unweighted)	76.7	85.8	85.0	93.1	81.7	89.9
Interview response rate (weighted)	76.5	85.1	84.6	93.3	80.4	88.7
Blood draw response rate (unweighted)	84.6	89.3	92.1	95.7	89.3	93.0
Blood draw response rate (weighted)	84.0	87.4	91.6	95.3	87.6	90.9
Eligible adults, ages 15-49 years						
Number of eligible individuals	3,890	4,595	4,825	5,136	8,715	9,731
Interview response rate (unweighted)	78.4	88.1	85.7	93.8	82.4	91.2
Interview response rate (weighted)	78.4	87.2	85.2	93.8	81.2	89.8
Blood draw response rate (unweighted)	83.2	88.0	91.1	95.4	87.7	92.0
Blood draw response rate (weighted)	81.4	86.6	90.9	95.2	85.3	90.0
Eligible adults, ages 15-64 years						
Number of eligible individuals	4,404	5,251	5,550	6,259	9,954	11,510
Interview response rate (unweighted)	79.0	88.3	86.3	94.1	83.1	91.4
Interview response rate (weighted)	79.1	87.1	85.9	94.0	81.9	90.0
Blood draw response rate (unweighted)	83.3	87.5	91.2	95.3	87.9	91.9
Blood draw response rate (weighted)	81.3	85.9	91.1	95.2	85.4	89.7
Overall response rate (unweighted)	55.9	65.7	66.9	76.2	62.1	71.4

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

Table 2.7.D Results of the individual interviews and blood draws by region										
Number of eligible individuals and response rates for individual interviews ¹ and blood draws ² (unweighted and weighted), by region and sex, NAMPHIA 2017										
Result	Region									
	Erongo		Hardap		//Karas		Kavango East		Kavango West	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Eligible individuals, ages 0-9 years										
Number of eligible children	73	66	156	138	110	133	286	275	278	245
Blood draw response rate (unweighted)	63.0	68.2	67.3	64.5	75.5	74.4	92.3	93.8	93.9	93.5
Blood draw response rate (weighted)	64.2	64.9	66.9	65.1	72.6	74.9	91.0	93.5	93.9	93.6
Eligible young adolescents, ages 10-14 years										
Number of eligible individuals	33	26	50	65	43	36	147	105	114	93
Interview response rate (unweighted)	69.7	73.1	62.0	75.4	88.4	83.3	92.5	88.6	90.4	95.7
Interview response rate (weighted)	64.8	70.2	64.6	72.5	82.6	86.2	91.2	89.4	90.2	96.0
Blood draw response rate (unweighted)	78.3	100.0	83.9	93.9	94.7	93.3	99.3	100.0	98.1	100.0
Blood draw response rate (weighted)	73.0	100.0	81.8	95.2	95.2	91.4	98.7	100.0	98.2	100.0
Eligible adults, ages 15-64 years										
Number of eligible individuals	543	425	722	712	552	560	739	1,028	502	697
Interview response rate (unweighted)	83.1	85.4	84.2	88.8	82.2	91.4	80.5	90.6	81.5	92.4
Interview response rate (weighted)	83.1	83.8	82.5	87.9	82.6	91.3	79.9	89.9	82.0	92.7
Blood draw response rate (unweighted)	78.5	83.2	86.5	87.0	83.3	88.1	87.2	95.3	94.6	96.6
Blood draw response rate (weighted)	76.5	80.9	86.0	85.9	82.4	88.5	86.2	94.3	94.8	96.5
Overall response rate (unweighted)	48.4	52.7	58.5	62.1	58.6	69.0	62.7	77.0	73.5	85.1
Region										
Result	Khomas		Kunene		Ohangwena		Omaheke		Omusati	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Eligible individuals, ages 0-9 years										
Number of eligible children	208	198	180	195	426	416	192	166	332	395
Blood draw response rate (unweighted)	67.3	59.6	85.0	86.2	95.1	95.0	85.9	84.9	93.7	93.4
Blood draw response rate (weighted)	62.3	56.9	88.2	88.0	95.0	95.2	85.8	82.6	93.0	92.9
Eligible young adolescents, ages 10-14 years										
Number of eligible individuals	73	78	55	51	171	150	34	45	158	144
Interview response rate (unweighted)	69.9	75.6	83.6	88.2	96.5	95.3	94.1	93.3	94.9	95.8
Interview response rate (weighted)	70.3	76.2	88.5	91.9	95.5	95.5	96.5	94.6	94.8	95.7
Blood draw response rate (unweighted)	92.2	72.9	91.3	97.8	100.0	97.2	87.5	97.6	98.7	98.6
Blood draw response rate (weighted)	91.8	72.3	94.7	98.6	100.0	97.1	85.3	97.6	98.4	98.5
Eligible adults, ages 15-64 years										
Number of eligible individuals	1,207	1,347	523	629	1,037	1,341	790	706	943	1,296
Interview response rate (unweighted)	78.0	84.0	86.6	94.6	81.5	94.9	90.1	92.9	84.5	95.3
Interview response rate (weighted)	78.2	84.2	87.4	94.8	80.6	94.5	89.2	93.2	84.2	95.3
Blood draw response rate (unweighted)	81.7	84.8	86.8	86.6	91.2	96.2	89.6	91.8	91.6	96.6
Blood draw response rate (weighted)	80.2	83.1	86.8	89.2	90.7	96.1	89.5	90.8	92.0	96.3
Overall response rate (unweighted)	43.9	49.0	64.0	69.7	69.8	85.7	68.5	72.3	72.1	85.8

Table 2.7.D Results of the individual interviews and blood draws by region (continued)								
Number of eligible individuals and response rates for individual interviews ¹ and blood draws ² (unweighted and weighted), by region and sex, NAMPHIA 2017								
Result	Region							
	Oshana		Oshikoto		Otjozondjupa		Zambezi	
	Male	Female	Male	Female	Male	Female	Male	Female
Eligible individuals, ages 0-9 years								
Number of eligible children	205	183	176	222	145	124	115	103
Blood draw response rate (unweighted)	83.4	81.4	94.9	91.9	84.1	77.4	81.7	76.7
Blood draw response rate (weighted)	81.9	81.6	95.6	91.2	84.2	79.2	82.7	74.5
Eligible young adolescents, ages 10-14 years								
Number of eligible individuals	74	72	91	65	54	40	30	49
Interview response rate (unweighted)	94.6	90.3	87.9	100.0	83.3	90.0	73.3	85.7
Interview response rate (weighted)	93.3	89.1	88.1	100.0	82.2	90.3	73.9	86.9
Blood draw response rate (unweighted)	95.7	92.3	100.0	98.5	97.8	94.4	100.0	95.2
Blood draw response rate (weighted)	94.8	91.3	100.0	98.7	97.4	95.4	100.0	95.9
Eligible adults, ages 15-64 years								
Number of eligible individuals	739	949	641	803	713	643	303	374
Interview response rate (unweighted)	80.9	93.4	85.3	92.8	87.9	91.4	77.2	89.6
Interview response rate (weighted)	82.0	93.3	84.7	93.0	86.7	91.4	76.9	89.1
Blood draw response rate (unweighted)	87.6	92.2	92.5	95.7	91.9	93.5	84.2	85.4
Blood draw response rate (weighted)	87.1	91.9	91.6	95.8	90.2	93.8	82.7	83.2
Overall response rate (unweighted)	64.3	78.0	73.7	82.9	68.6	72.6	55.8	65.6

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.

The most households selected and interviewed were in the Khomas region (1,755 households selected, 1,100 interviewed) and the least were selected in the Zambezi region (486). The highest RR was in Kavango West at 95.4% and the lowest was in Khomas at 68.9%.

There were 9,954 eligible men and 11,510 eligible women identified in the selected households, more in rural than urban areas. Interviews were completed for 8,271 men, for a RR of 83.1%, and in 10,525 women, for a RR of 91.4%. HIV tests were performed for 7,268 men, for a blood test RR of 87.9%, and 9,671 women, for a blood test RR of 91.9%. The overall RR (that is, household RR x interview RR x blood draw RR) for women was 71.4% and 62.1% for men.

Response rates were higher at all levels in rural areas, with the lowest RRs for both interviews and blood draws seen in urban men (79.0% and 83.3%, respectively).

Regionally, women in Omusati had the highest interview RR (95.3%) and men in Omaheke had the highest RR for interviews (90.1%).

Blood draw RR, (that is the number of individuals who provided blood out of the number of individuals that interviewed) was highest among women residing in Omusati (96.6%), Ohangwena (96.2%), and Kavango West (96.6%). Blood draw RR was highest among men residing in Kavango West (94.6%).

Of note, among children aged 0-9 years (who were not interviewed), blood draw RRs varied from 59.6% among girls residing in the Khomas region to 95.0% among girls residing in Ohangwena. Among boys of the same age group, blood draw RRs varied regionally from 63.0% in Erongo, to 94.9% in Oshikoto, and 95.1% in Ohangwena.

Among young adolescents aged 10-14 years, the highest interview RR was 100.0% among girls residing in Oshikoto and 96.5% among boys residing in Ohangwena. Blood draw RRs ranged from a low of 72.9% among girls in Khomas, and 78.3% in boys in Erongo to a high of 100.0% for girls in Erongo, Kavango East, and Kavango West, and 100.0% as well for boys in Ohangwena, Oshikoto, and Zambezi.

2.8 References

1. Koal T, Burhenne H, Römling R, Svoboda M, Resch K, Kaefer V. Quantification of antiretroviral drugs in dried blood spot samples by means of liquid chromatography/tandem mass spectrometry. *Rapid Commun Mass Spectrom*. 2005;19(21):2995-3001.
2. The American Association for Public Opinion Research (AAPOR). *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*. 9th edition. AAPOR; 2016. http://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf. Accessed January 24, 2019.

3 SURVEY HOUSEHOLD CHARACTERISTICS

3.1 Key Findings

- Among all households, 49.8% were headed by men and 50.2% were headed by women.
- In Namibia, 23.0% of the households had at least one HIV-positive member (19.4% of urban and 27.6% of rural households).
- Among households, 18.3 % were headed by a person living with HIV (22.3% of the female-headed and 13.8% of the male-headed households).

3.2 Background

This chapter describes the characteristics of households surveyed in NAMPHIA 2017. Household composition is described in terms of the sex of the head of household and the size of the household. The age structure of the de facto household population is described by sex as well as urban/rural residence. The chapter also describes the prevalence and composition of households with one or more living HIV-positive members.

3.3 Household Composition

A total of 9,315 households were included in NAMPHIA 2017. Half of households were female-headed (50.2%). This proportion of female-headed households did not vary between urban (49.6%) and rural (51.0%) areas. The median household size was 4.0 members (interquartile range [IQR] 2-6) and the median number of minors (children and adolescents under the age of 18 years) in households was 1.0 (IQR 0-2; Table 3.3.A) in urban areas and 2.0 in rural areas (IQR 0-4).

The distribution of the household population by five-year age bands included in NAMPHIA 2017 is shown in Table 3.3.B. Overall, infants and children (those aged 0-14 years) comprised 36.7% of the household populations, while adults (those aged 15-49 years) constituted 50.7% and older adults aged 50 years and older constituted 12.6% (Figure 3.3.B; Table 3.3.B). Of note, 31.0% of household members in urban areas were children, while 42.8% of members of rural households were children (Table 3.3.C). Among urban household members, 10.4% were older adults aged 50 years and older as compared to 15.0% of rural household members.

Characteristic	Residence					
	Urban		Rural		Total	
	Percent	Number	Percent	Number	Percent	Number
Head of household						
Male	50.4	1,969	49.0	2,679	49.8	4,648
Female	49.6	2,079	51.0	2,588	50.2	4,667
Total	100.0	4,048	100.0	5,267	100.0	9,315
Characteristic	Residence					
	Urban		Rural		Total	
	Median	Q1, Q3	Median	Q1, Q3	Median	Q1, Q3
Size of households	3	(2, 5)	4	(2, 7)	4	(2, 6)
Number of children and adolescents under 18 years of age	1	(0, 2)	2	(0, 4)	1	(0, 3)

Age	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
0-4	7.1	2,949	7.3	3,032	14.4	5,981
5-9	6.1	2,542	6.2	2,529	12.3	5,071
10-14	5.1	2,167	4.9	2,035	10.0	4,202
15-19	4.4	1,818	4.6	1,817	9.1	3,635
20-24	4.6	1,711	5.1	1,813	9.6	3,524
25-29	4.0	1,478	4.8	1,699	8.9	3,177
30-34	3.3	1,165	4.0	1,384	7.3	2,549
35-39	2.9	1,007	3.4	1,195	6.3	2,202
40-44	2.6	936	2.7	1,014	5.4	1,950
45-49	1.9	687	2.2	861	4.2	1,548
50-54	1.4	524	1.7	672	3.0	1,196
55-59	1.1	424	1.6	643	2.7	1,067
60-64	0.7	301	1.1	467	1.9	768
65-69	0.7	299	1.0	428	1.7	727
70-74	0.4	205	0.6	273	1.1	478
75-79	0.4	156	0.6	247	0.9	403
≥80	0.4	194	1.0	422	1.4	616
Total	47.2	18,563	52.8	20,531	100.0	39,094

Age	Urban						Rural					
	Male		Female		Total		Male		Female		Total	
	Percent	Number										
0-4	12.5	949	11.8	1,018	12.1	1,967	17.7	2,000	16.1	2,014	16.8	4,014
5-14	19.6	1,552	18.3	1,596	18.9	3,148	28.1	3,157	24.1	2,968	26.0	6,125
15-49	58.1	3,922	59.1	4,611	58.6	8,533	42.5	4,880	41.9	5,172	42.2	10,052
≥50	9.8	734	10.8	954	10.4	1,688	11.8	1,369	17.9	2,198	15.0	3,567
Total	100.0	7,157	100.0	8,179	100.0	15,336	100.0	11,406	100.0	12,352	100.0	23,758

Figure 3.3.A Population pyramid, NAMPHIA 2017

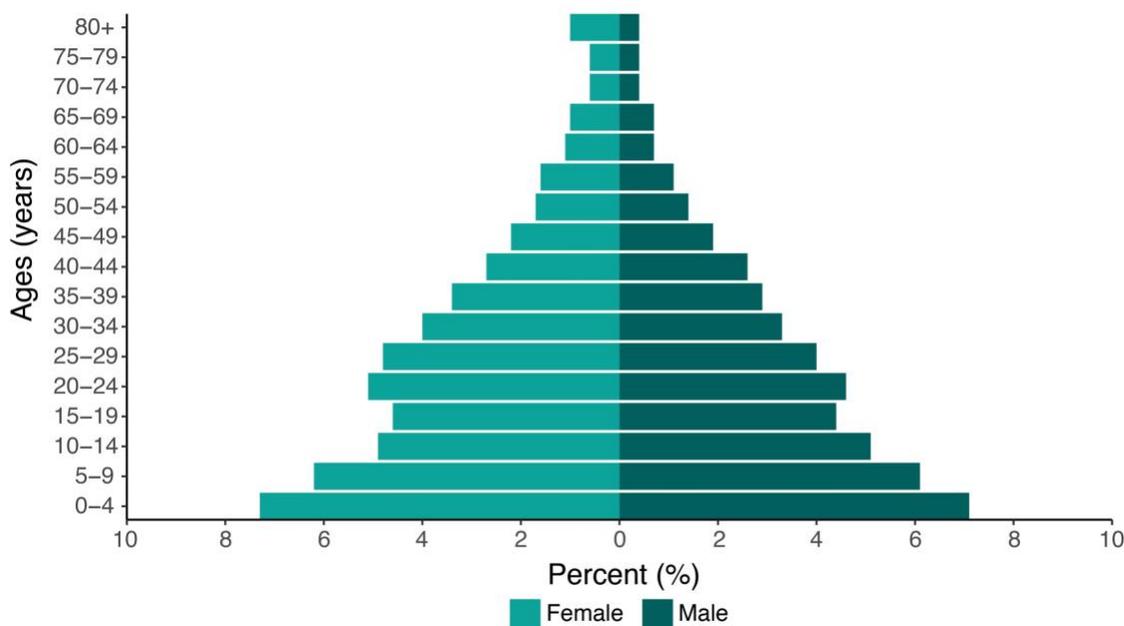
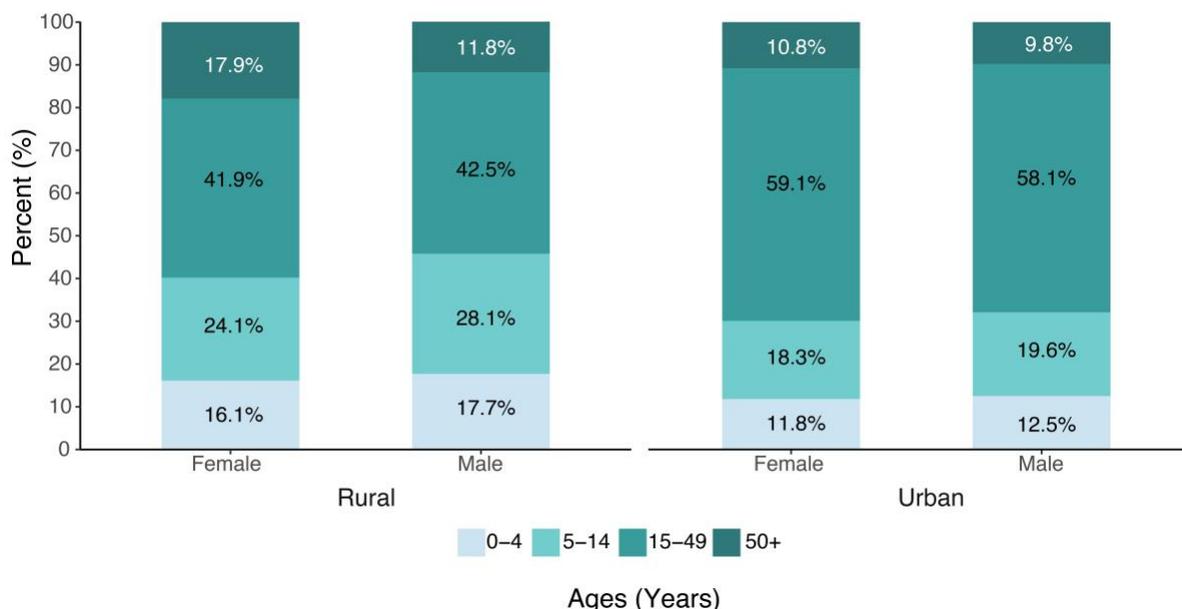


Figure 3.3.B Household population by age, sex, and residence, NAMPHIA 2017



3.4 Prevalence of HIV-Affected Households

Nearly one-quarter (23.0%) of households sampled had at least one living HIV-positive member (19.4% of urban households and 27.6% of rural households) (Table 3.4.A, Figure 3.4.B). Among 2,016 households with at least one living HIV-positive member, the vast majority (79.2%) had one HIV-positive member; nearly one in five (18.0%) had two and a small proportion (2.8%) had two or more (Table 3.4.B, Figure 3.4.B). In 18.3% of households, the head of household was a person living with HIV (Table 3.4.C, Figure 3.4.C); among female-headed households, 22.3% were HIV-positive while among male-headed households, 13.8% were HIV-positive (Table 3.4.C).

Residence	Percent	Number
Urban	19.4	3,462
Rural	27.6	4,799
Total	23.0	8,261

Number of HIV-positive household members	Residence				Total	
	Urban		Rural		Percent	Number
	Percent	Number	Percent	Number		
1	81.2	590	77.4	997	79.2	1,587
2	16.5	124	19.2	241	18.0	365
3	*	14	(3.2)	43	2.5	57
4	*	1	*	3	*	4
5	*	2	*	0	*	2
≥ 6	*	1	*	0	*	1
Total	100.0	732	100.0	1,284	100.0	2,016

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

Table 3.4.C Prevalence of households with an HIV-positive head of household, by sex		
Percentage of households with an HIV-positive head of household, by sex of head of household, NAMPHIA 2017		
Sex of head of household	Percent	Number
Male	13.8	3,101
Female	22.3	3,348
Total	18.3	6,449

Figure 3.4.A Prevalence of HIV-affected households, NAMPHIA 2017

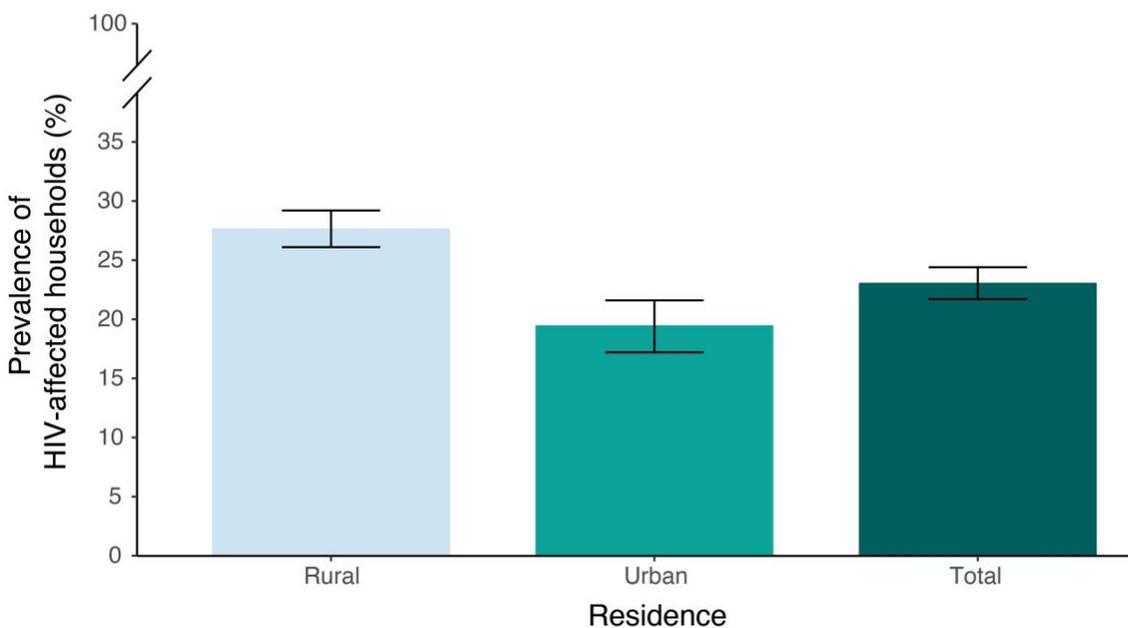


Figure 3.4.B HIV-affected households by number of HIV-positive members, NAMPHIA 2017

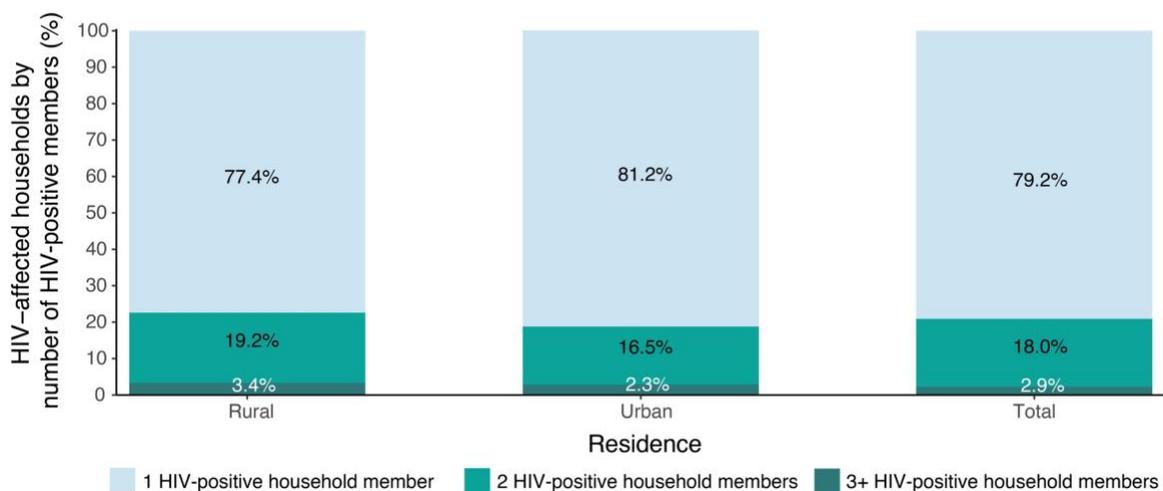
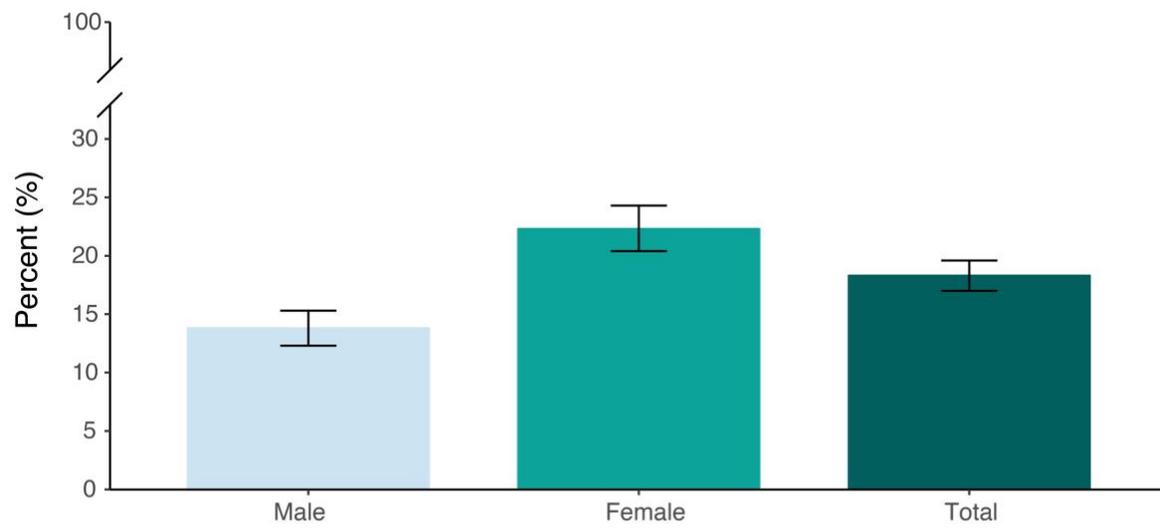


Figure 3.4.C Prevalence of households with an HIV-positive head of household, NAMPHIA 2017



4 SURVEY RESPONDENT CHARACTERISTICS

4.1 Key Findings

- Among adults (defined as those aged 15-64 years), a total of 10,525 women and 8,271 men were interviewed as part of NAMPHIA 2017.
- The majority of women (57.9%) and men (60.8%) had never been married; 18.7% of participants were currently married.
- Among men, 54.6% reported secondary education as their highest level of schooling attended, as compared to 59.4% of women.
- A total of 1,907 young adolescents (those aged 10-14 years) participated in the survey; nearly all (97.4%) were attending primary or secondary school. A total of 5,551 children (younger than the age of 10 years) participated.
- Among children (ages 0-14 years), 56.3% resided in rural areas.

4.2 Background

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

Overall, 26,344 Namibians consented or assented to participate in NAMPHIA; 7,548 were children (those aged 0-14 years), and 18,796 were adults.

4.3 Demographic Characteristics of the Adult Population

Of the 18,796 adults, 10,525 were women, and 8,271 were men. The majority (58.4%) of these respondents lived in urban areas, with the largest proportion of survey respondents (23.8%) living in the Khomas region and the smallest proportion living in the Omaheke (2.6%). Roughly one in five (18.7%) were married, 13.9% were living with a partner, and the majority (59.3%) had never been married. Over half (57.1%) of respondents had attended secondary school and 12.2% had some higher-level education. One-third (34.1%) of adult respondents were young people (ages 15-24 years). By five-year age stratum, the largest proportion of respondents (17.2%) were older adolescents (ages 15-19 years), and the smallest proportion (3.1%) were older adults aged 60-64 years (Table 4.3.A).

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Residence						
Urban	58.2	3,480	58.6	4,636	58.4	8,116
Rural	41.8	4,791	41.4	5,889	41.6	10,680
Region						
Erongo	10.7	451	6.9	363	8.7	814
Hardap	4.0	608	3.5	632	3.8	1,240
//Karas	4.1	454	3.5	512	3.8	966
Kavango East	5.2	595	6.4	931	5.8	1,526

Table 4.3.A Demographic characteristics of the adult population (continued)						
Percent distribution of the adult population aged 15-64 years, by sex and selected demographic characteristics, NAMPHIA 2017						
Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Region (cont.)						
Kavango West	3.0	409	3.5	644	3.2	1,053
Khomas	23.8	941	23.8	1,131	23.8	2,072
Kunene	3.6	453	3.7	595	3.7	1,048
Ohangwena	8.7	845	9.7	1,272	9.2	2,117
Omaheke	2.9	712	2.3	656	2.6	1,368
Omusati	8.1	797	9.6	1,235	8.9	2,032
Oshana	7.8	598	9.2	886	8.5	1,484
Oshikoto	6.7	547	6.9	745	6.8	1,292
Otjozondjupa	7.6	627	6.5	588	7.0	1,215
Zambezi	3.9	234	4.4	335	4.2	569
Marital status						
Never married	60.8	4,791	57.9	5,640	59.3	10,431
Married	18.4	1,488	19.0	2,028	18.7	3,516
Living together	14.6	1,378	13.3	1,628	13.9	3,006
Widowed	0.6	61	3.3	414	2.0	475
Divorced	1.1	85	2.0	190	1.6	275
Separated	4.5	402	4.5	527	4.5	929
Education						
No education	8.1	868	5.9	873	6.9	1,741
Primary	25.3	2,507	22.3	2,832	23.7	5,339
Secondary	54.6	4,217	59.4	5,956	57.1	10,173
More than secondary	12.0	657	12.4	837	12.2	1,494
Wealth quintile						
Lowest	18.2	2,016	19.9	2,835	19.1	4,851
Second	20.5	2,013	18.9	2,308	19.7	4,321
Middle	21.9	1,829	20.2	2,136	21.0	3,965
Fourth	19.8	1,361	20.1	1,831	20.0	3,192
Highest	19.5	1,052	20.9	1,415	20.2	2,467
Age						
15-19	17.8	1,512	16.7	1,591	17.2	3,103
20-24	17.2	1,342	16.6	1,653	16.9	2,995
25-29	15.6	1,170	15.0	1,509	15.3	2,679
30-34	12.6	954	12.4	1,261	12.5	2,215
35-39	10.3	846	10.2	1,117	10.2	1,963
40-44	8.5	775	8.6	939	8.5	1,714
45-49	6.5	584	6.9	800	6.7	1,384
50-54	5.1	450	5.7	626	5.4	1,076
55-59	3.7	368	4.6	590	4.2	958
60-64	2.7	270	3.5	439	3.1	709
Total 15-24	34.9	2,854	33.2	3,244	34.1	6,098
Total 15-49	88.4	7,183	86.2	8,870	87.3	16,053
Total 15-64	100.0	8,271	100.0	10,525	100.0	18,796

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

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

4.4 Demographic Characteristics of the Young Adolescent Population

A total of 1,907 young adolescents, 915 girls and 992 boys, were interviewed as part of NAMPHIA 2017. Of these, 56.4% lived in rural areas, with the highest numbers coming from Khomas (15.8%), Ohangwena (13.3%) and Omusati (13.3%). The vast majority of younger adolescents interviewed were currently attending primary (89.7%) or secondary (7.7%) school, with more girls (9.5%) than boys (5.9%) in secondary school (Table 4.4.A).

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Residence						
Urban	42.7	298	44.4	293	43.6	591
Rural	57.3	694	55.6	622	56.4	1,316
Region						
Erongo	*	23	*	19	(6.1)	42
Hardap	(2.9)	31	(4.3)	49	3.6	80
//Karas	(3.6)	38	(2.9)	30	3.3	68
Kavango East	10.8	136	7.8	93	9.3	229
Kavango West	6.5	103	5.9	89	6.2	192
Khomas	14.0	51	17.6	59	15.8	110
Kunene	(3.3)	46	(3.5)	45	3.4	91
Ohangwena	13.9	165	12.6	143	13.3	308
Omaheke	(1.6)	32	(1.8)	42	1.7	74
Omusati	13.3	150	13.3	138	13.3	288
Oshana	7.0	70	6.8	65	6.9	135
Oshikoto	8.2	80	6.8	65	7.5	145
Otjozondjupa	(5.6)	45	(5.2)	36	5.4	81
Zambezi	*	22	(5.7)	42	4.2	64
Education						
Currently attending primary school	91.3	912	88.0	810	89.7	1,722
Currently attending secondary school	(5.9)	46	9.5	76	7.7	122
Not currently attending school	(2.8)	34	(2.4)	29	2.6	63
Total 10-14	100.0	992	100.0	915	100.0	1,907

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

4.5 Demographic Characteristics of the Paediatric Population

There were 7,458 children in NAMPHIA, 5,551 (71.7%) of whom were young children (below the age of 10 years). The majority (56.3%) of young children and young adolescents who participated in NAMPHIA resided in rural areas. Overall, 53.0% of children were in lowest two wealth quintiles (Table 4.5.A).

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Age						
0-17 months	12.4	460	12.2	474	12.3	934
18-59 months	25.3	1,023	25.4	1,036	25.4	2,059
5-9 years	34.0	1,297	34.1	1,261	34.1	2,558
10-14 years	28.2	992	28.3	915	28.3	1,907
Residence						
Urban	43.4	1,198	44.1	1,225	43.7	2,423
Rural	56.6	2,574	55.9	2,461	56.3	5,035
Region						
Erongo	5.8	93	5.2	83	5.5	176
Hardap	3.5	178	3.4	174	3.4	352
//Karas	3.2	139	3.5	156	3.4	295
Kavango East	8.5	414	7.7	364	8.1	778
Kavango West	6.3	372	5.6	331	5.9	703
Khomas	15.2	246	15.4	242	15.3	488
Kunene	4.3	221	4.6	238	4.4	459
Ohangwena	13.1	580	12.7	554	12.9	1,134
Omaheke	2.5	222	2.3	205	2.4	427
Omusati	11.6	475	13.2	526	12.4	1,001
Oshana	8.0	263	7.7	239	7.9	502
Oshikoto	7.2	250	7.9	280	7.5	530
Otjozondjupa	6.3	186	5.6	153	5.9	339
Zambezi	4.6	133	5.2	141	4.9	274

Table 4.5.A Demographic characteristics of the paediatric population (continued)						
Percent distribution of children aged 0-14 years, by sex and selected demographic characteristics, NAMPHIA 2017						
Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Wealth quintile						
Lowest	30.1	1,401	30.2	1,348	30.2	2,749
Second	23.0	907	22.6	885	22.8	1,792
Middle	17.4	651	18.2	672	17.8	1,323
Fourth	15.9	487	14.1	435	15.0	922
Highest	13.6	326	14.9	346	14.2	672
Total 0-4	37.8	1,483	37.6	1,510	37.7	2,993
Total 0-14	100.0	3,772	100.0	3,686	100.0	7,458

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

5 HIV INCIDENCE

5.1 Key Findings

- Annual incidence (using the LAg+VL+ARVs recent infection algorithm) was 0.36% for adults (those aged 15-64 years) in 2017. By sex, it was 0.59% among women and 0.13% among men.
- Annual incidence was the highest among men aged 35-49 years (0.53%) and among older adolescent girls and young women aged 15-24 years (0.99%).
- Among all age groups, young people (ages 15-24 years) represented the sharpest contrast in HIV incidence: older adolescent girls and young women had the highest at 0.99% while older adolescent boys and young men had the lowest at 0.03%. Using the LAg+VL+ARVs recent infection algorithm, the incidence rates correspond to 4,468 (95% CI, 2,175-6,762) new cases of HIV annually among adults in Namibia in 2017.

5.2 Background

HIV incidence is the measure of new HIV infections in a population over time. It can provide important information on the status of the HIV epidemic and can be used for effective targeted HIV prevention planning in groups that are most vulnerable to recent infection and to measure impact of HIV prevention programs. This chapter presents annual estimates of HIV incidence among adults at the national level. For the purposes of this analysis, HIV incidence is expressed as the cumulative incidence or risk of new infections in a 12-month period. It is important to note that NAMPHIA 2017 was not powered to estimate incidence at the regional level or across different sub-groups.

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

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

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

5.3 HIV Incidence Among Adults

The survey was designed to estimate national-level HIV incidence for the overall adult population. Consequently, point estimates disaggregated by age and sex should be interpreted with caution, and special attention should be given to CIs presented in Table 5.3.A, and 5.3.B.

HIV incidence estimates using LAg avidity and HIV viral load algorithm

Annual HIV incidence among adults in Namibia was 0.42% (0.65% among women and 0.19% among men). This corresponds to an estimated 5,000 new cases of HIV in the year of the survey in Namibia according to the LAg avidity and VL algorithm. Overall, incidence was higher among women than men. However, HIV incidence among young people represented the greatest contrast. Young women aged 15-24 years were disproportionately affected, with an incidence of 1.06% compared to young men with an incidence of 0.03%.

Age	Male		Female		Total	
	Percentage annual incidence ¹	95% CI	Percentage annual incidence ¹	95% CI	Percentage annual incidence ¹	95% CI
15-24	0.03	(0.00 – 0.14)	1.06	(0.36 – 1.75)	0.54	(0.19 – 0.90)
25-34	0.19	(0.00 – 0.56)	0.41	(0.00 – 0.86)	0.30	(0.01 – 0.59)
35-49	0.53	(0.00 – 1.13)	0.56	(0.00 – 1.41)	0.55	(0.03 – 1.06)
15-49	0.21	(0.01 – 0.41)	0.73	(0.33 – 1.12)	0.47	(0.25 – 0.68)
15-64	0.19	(0.01 – 0.37)	0.65	(0.30 – 1.00)	0.42	(0.23 – 0.61)

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

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

Using the LAg avidity assay, VL, and ARV algorithm, estimated incidence was 0.36 (95% CI: 0.18-0.55) among adults (0.13% among men and 0.59% among women). This corresponds to an estimated 4,500 new cases of HIV annually in Namibia, using the LAg avidity, HIV VL, and ARV algorithm (Appendix C). Annual incidence was peaked among men aged 35-49 years (0.53%) and among young women aged 15-24 years (0.99%). HIV incidence for adults aged 15-49 years was estimated at 0.40% (95% CI: 0.19%-0.61%; 0.15% among men and 0.66% among women). NAMPHIA was not designed to compare incidence estimates across demographic sub-groups (Table 5.3.B).

Age	Male		Female		Total	
	Percentage annual incidence ¹	95% CI	Percentage annual incidence ¹	95% CI	Percentage annual incidence ¹	95% CI
15-24	0.03	(0.00 – 0.14)	0.99	(0.30 – 1.68)	0.51	(0.16 – 0.86)
25-34	0.00	(0.00 – 0.62)	0.30	(0.00 – 0.69)	0.15	(0.00 – 0.35)
35-49	0.53	(0.00 – 1.13)	0.56	(0.00 – 1.41)	0.55	(0.03 – 1.06)
15-49	0.15	(0.00 – 0.32)	0.66	(0.27 – 1.05)	0.40	(0.19 – 0.61)
50-64	0.00	(0.00 – 1.31)	0.14	(0.00 – 0.49)	0.08	(0.00 – 0.28)
15-64	0.13	(0.00 – 0.28)	0.59	(0.25 – 0.94)	0.36	(0.18 – 0.55)

¹Relates to Global AIDS Monitoring Indicator 3.1
Weighted figures calculated using btwt0.

5.4 Gaps and Unmet Needs

- About 4,500 new HIV infections occur every year in Namibia among adults. To reach epidemic control, individuals newly diagnosed with HIV should be quickly initiated on ART and further analysis of data is required to understand transmission patterns.
- Among young people, HIV incidence is higher among older adolescent girls and young women aged 15-24 years (0.99%) than older adolescent boys and young men (0.03%). Incidence overall is higher among women than men. This suggests a need for more intensive primary prevention, including pre-exposure prophylaxis (PrEP), tailored to HIV-negative young women to enhance their ability to defend themselves and reduce their heightened risk of HIV acquisition. Also, of paramount importance would be scaling up testing programs that better reach their sexual partners—diagnosing those men who are unaware of their HIV-positive status, and not yet on effective treatment to achieves VLS.
- Men aged 35-49 years (with an annual incidence of 0.53%), in particular, appear to need specific targeted prevention effort. Efforts to increase HIV testing, diagnosis, and treatment among men of all ages could also improve prevention and treatment outcomes for both sexes.
- Approaches such as routine case reporting and case-based surveillance, could provide the data needed to describe the demographic profile of incidence cases to allow for targeted prevention efforts.

5.5 References

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

6 HIV PREVALENCE

6.1 Key Findings

- HIV prevalence among adults (ages 15-64 years) was 12.6% nationally. This corresponds to approximately 176,329 adults living with HIV. Among women, HIV prevalence was 15.7%. Among men, HIV prevalence was 9.3%.
- Regional HIV prevalence varied from 7.6% in Kunene to 22.3% in Zambezi.
- HIV prevalence was highest among women aged 45-49 years (30.0%) and men aged 50-54 years (26.4%).

6.2 Background

This chapter presents representative estimates of the prevalence of HIV infection among adults at the national and regional levels by selected demographic and behavioural characteristics. HIV prevalence testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Namibia's national HIV testing guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. Appendix A describes the sample design, Appendix B describes the NAMPHIA HIV testing methodology, and Appendix C provides estimates of sampling errors for selected indicators.

6.3 Adult HIV Prevalence by Demographic Characteristics

Overall, HIV prevalence among adults aged 15-49 years was 11.5%: 14.8% among women and 8.0% among men (Table 6.3.A). HIV prevalence among women who were pregnant at the time of the survey was estimated at 11.6%, compared to 15.0% among women who were not pregnant at the time of the survey (Table 6.3.A). HIV prevalence increased with decreased wealth; among women in the three lower wealth quintiles, it ranges from 17.0%-21.0%, with those in the lowest wealth quintiles having the highest prevalence) as compared to wealthier women where HIV prevalence ranged from 4.8%-12.0%. The pattern was similar for men of the same age group.

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	7.1	2,536	12.5	3,565	9.9	6,101
Rural	9.3	3,767	18.3	4,599	13.8	8,366
Region						
Erongo	5.4	306	14.1	270	9.0	576
Hardap	6.8	439	11.6	456	9.1	895
//Karas	8.5	321	9.5	374	9.0	695
Kavango East	8.4	457	18.4	756	14.1	1,213
Kavango West	8.8	325	15.7	521	12.6	846
Khomas	6.4	683	9.1	862	7.8	1,545
Kunene	5.7	335	7.5	442	6.7	777
Ohangwena	10.1	682	21.6	1,011	16.2	1,693
Omaheke	6.5	542	8.8	491	7.5	1,033
Omusati	8.9	631	21.2	954	15.6	1,585
Oshana	10.8	460	16.1	709	13.8	1,169
Oshikoto	11.7	441	20.2	592	16.1	1,033

Table 6.3.A HIV prevalence by demographic characteristics: Adults aged 15-49 years (continued)						
Prevalence of HIV among adults ages 15-49 years, by sex and selected demographic characteristics, NAMPHIA 2017						
Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Region (cont.)						
Otjondjupa	6.4	507	8.7	479	7.5	986
Zambezi	12.1	174	28.0	247	20.7	421
Marital status						
Never married	5.7	4,020	12.8	4,818	9.2	8,838
Married	11.0	772	15.0	1,285	13.2	2,057
Living together	13.1	1,078	18.0	1,401	15.6	2,479
Widowed	*	22	48.9	106	48.2	128
Divorced	(5.6)	46	18.4	99	13.2	145
Separated	16.0	309	25.0	387	20.4	696
Education						
No education	11.7	615	17.3	548	14.0	1,163
Primary	12.9	1,948	23.0	2,018	17.6	3,966
Secondary	6.9	3,307	14.3	4,977	10.9	8,284
More than secondary	1.4	420	3.9	606	2.7	1,026
Wealth quintile						
Lowest	11.6	1,628	21.0	2,257	16.6	3,885
Second	8.9	1,619	19.8	1,813	14.2	3,432
Middle	9.5	1,439	17.0	1,742	13.2	3,181
Fourth	7.6	961	12.0	1,390	9.9	2,351
Highest	2.0	656	4.8	962	3.5	1,618
Pregnancy status						
Currently pregnant	NA	NA	11.6	586	NA	NA
Not currently pregnant	NA	NA	15.0	7,510	NA	NA
Total 15-49	8.0	6,303	14.8	8,164	11.5	14,467

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

Among adults aged 15-64 years, HIV prevalence was 12.6%: 9.3% among men and 15.7% among women. Prevalence in urban areas was 10.8% compared to 15.0% in rural areas (Table 6.3.B).

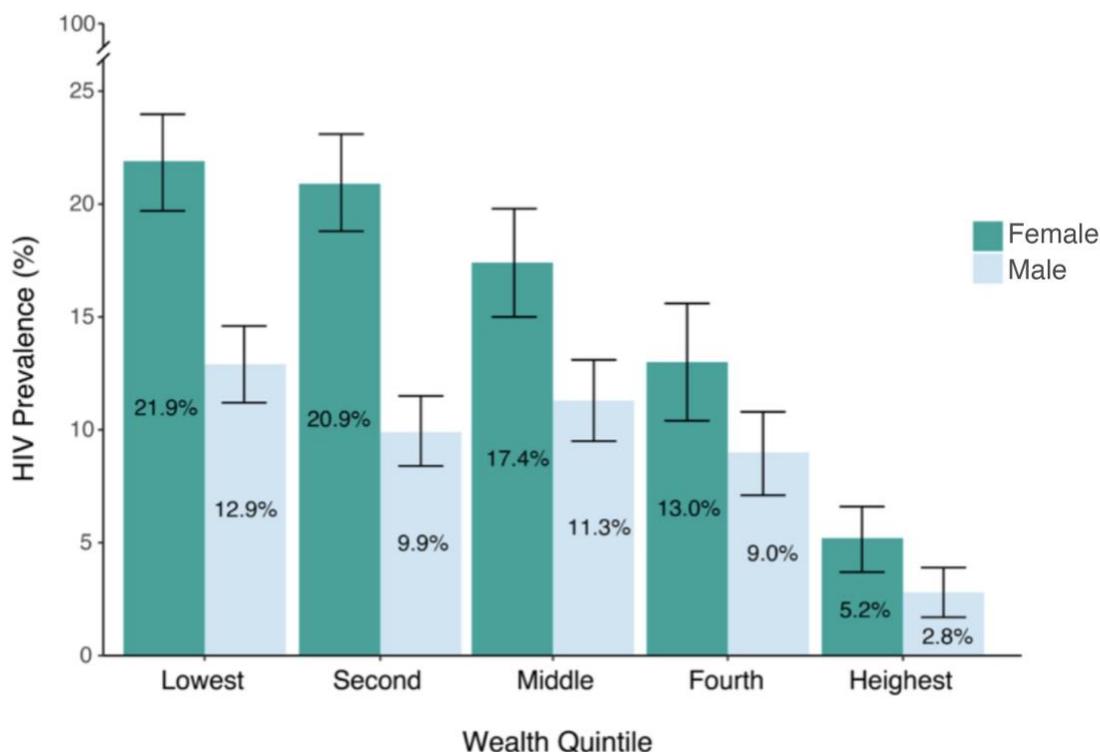
Among adults, HIV prevalence was 19.1% and 15.2% among those with a primary education and those with no education, respectively, compared to 2.9% among those with more than a secondary education. HIV prevalence in women with a primary education was 23.4%, compared to 14.7% and 4.1% among those with a secondary and those with more than a secondary education, respectively. In men with a primary education, HIV prevalence was 14.9% compared to 7.7% and 1.7% among those with a secondary and those with more than a secondary education, respectively (Table 6.3.B). In the tables displayed, education categories refer to the highest level of education attended, whether or not that level was completed.

Among widowed adults, HIV prevalence was 31.3%: 29.8% among women and 39.5% among men. Among those who were never married, married, or living with a partner, HIV prevalence was 10.3%, 13.1%, and 16.0% respectively (Table 6.3.B).

HIV prevalence varied among adults residing in the wealthiest households as compared to adults residing in households with less wealth. HIV prevalence was 17.7% for adults living in households in the lowest wealth quintile, 15.4% for those in the second wealth quintile, 14.3% among those in the middle, 11.1% among those in the fourth wealth quintile, and 4.1% among those living in households in the highest wealth quintile (Table 6.3.B, Figure 6.3.A).

Table 6.3.B HIV prevalence by demographic characteristics: Adults aged 15-64 years						
Prevalence of HIV among adults aged 15-64 years, by sex and selected demographic characteristics, NAMPHIA 2017						
Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	8.2	2,899	13.2	4,057	10.8	6,956
Rural	10.7	4,369	19.0	5,614	15.0	9,983
Region						
Erongo	7.5	354	15.1	302	10.6	656
Hardap	7.4	526	11.4	550	9.3	1,076
//Karas	9.6	378	9.7	451	9.7	829
Kavango East	9.8	519	18.0	887	14.5	1,406
Kavango West	8.2	387	15.3	622	12.1	1,009
Khomas	7.2	769	9.4	959	8.3	1,728
Kunene	6.2	393	8.9	515	7.6	908
Ohangwena	12.4	771	22.4	1,224	17.9	1,995
Omaheke	7.3	638	9.8	602	8.4	1,240
Omusati	10.4	730	22.1	1,193	16.9	1,923
Oshana	13.4	524	17.6	817	15.8	1,341
Oshikoto	12.6	506	21.5	713	17.3	1,219
Otjozondjupa	7.2	576	9.8	550	8.5	1,126
Zambezi	12.9	197	29.8	286	22.3	483
Marital status						
Never married	6.5	4,170	14.0	5,174	10.3	9,344
Married	12.2	1,281	13.9	1,831	13.1	3,112
Living together	13.9	1,270	18.2	1,551	16.0	2,821
Widowed	39.5	58	29.8	386	31.3	444
Divorced	7.4	69	18.1	157	14.2	226
Separated	15.5	357	24.8	483	20.3	840
Education						
No education	13.0	817	17.8	820	15.2	1,637
Primary	14.9	2,356	23.4	2,727	19.1	5,083
Secondary	7.7	3,591	14.7	5,410	11.5	9,001
More than secondary	1.7	482	4.1	690	2.9	1,172
Wealth quintile						
Lowest	12.9	1,893	21.9	2,735	17.7	4,628
Second	9.9	1,844	20.9	2,203	15.4	4,047
Middle	11.3	1,627	17.4	1,981	14.3	3,608
Fourth	9.0	1,120	13.0	1,615	11.1	2,735
Highest	2.8	784	5.2	1,137	4.1	1,921
Pregnancy status						
Currently pregnant	NA	NA	11.8	591	NA	NA
Not currently pregnant	NA	NA	15.9	9,006	NA	NA
Total 15-64	9.3	7,268	15.7	9,671	12.6	16,939

Figure 6.3.A HIV prevalence by wealth quintile, NAMPHIA 2017



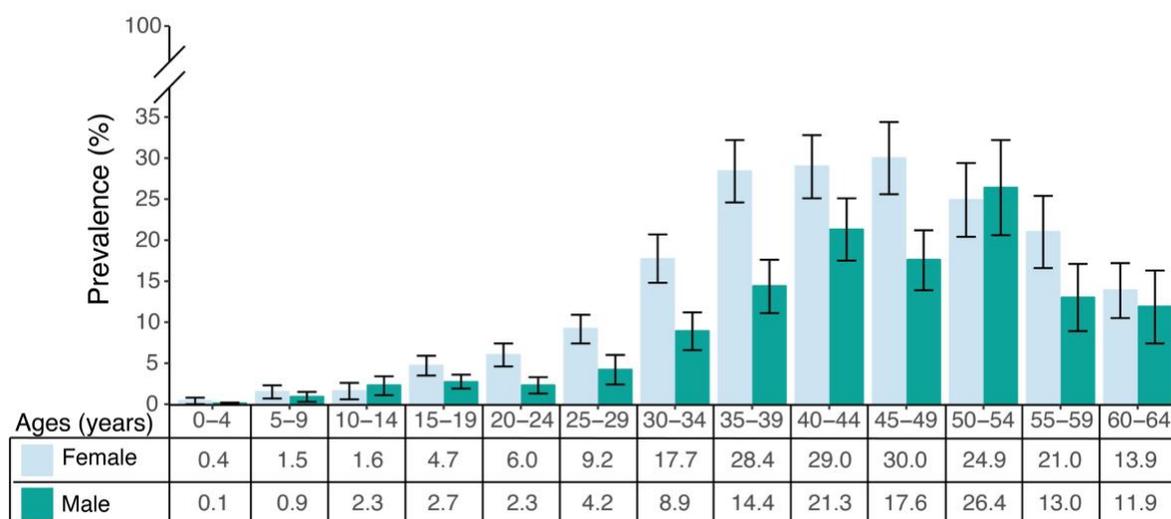
6.4 Adult HIV Prevalence by Age and Sex

Among adults, HIV prevalence ranged from 3.7% among older adolescents aged 15-19 years to 25.6% among those aged 50-54 years. The peak HIV prevalence in women was 30.0%, observed among those aged 45-49 years, and the peak HIV prevalence in men was 26.4%, observed among those aged 50-54 years. Prevalence among young women aged 15-24 years was more than twice that of men (5.4% vs 2.5%) (Table 6.4.A, Figure 6.4.A).

Age	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
0-17 months	0.0	401	0.4	392	0.2	793
18-59 months	0.1	916	0.4	927	0.3	1,843
5-9	0.9	1,170	1.5	1,120	1.2	2,290
10-14	2.3	959	1.6	876	1.9	1,835
Total 0-4	0.1	1,317	0.4	1,319	0.2	2,636
Total 0-14	1.0	3,446	1.1	3,315	1.0	6,761
15-19	2.7	1,390	4.7	1,491	3.7	2,881
20-24	2.3	1,159	6.0	1,525	4.2	2,684
25-29	4.2	976	9.2	1,370	6.7	2,346
30-34	8.9	805	17.7	1,157	13.4	1,962
35-39	14.4	743	28.4	1,023	21.6	1,766
40-44	21.3	689	29.0	864	25.3	1,553
45-49	17.6	541	30.0	734	24.2	1,275
50-54	26.4	388	24.9	568	25.6	956
55-59	13.0	334	21.0	535	17.5	869
60-64	11.9	243	13.9	404	13.0	647

Age	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Total 15-24	2.5	2,549	5.4	3,016	4.0	5,565
Total 15-49	8.0	6,303	14.8	8,164	11.5	14,467
Total 15-64	9.3	7,268	15.7	9,671	12.6	16,939

Figure 6.4.A HIV prevalence by age and sex, NAMPHIA 2017



6.5 Adult HIV Prevalence by Region

The adult prevalence of HIV varied by region. The regions with the highest HIV prevalence among adults were Zambezi (22.3%), Ohangwena (17.9%), Oshikoto (17.3%), Omusati (16.9%), and Oshana (15.8%). The regions with the lowest adult HIV prevalence were Kunene (7.6%), Khomas (8.3%), Omaheke (8.4%), and Otjozondjupa (8.5%) (Table 6.3.B, Figures 6.5.A, 6.5.B).

In Zambezi, Erongo, and Omusati, HIV prevalence among women was more than double HIV prevalence of men (Table 6.3.B).

Figure 6.5.A HIV prevalence by region (bar graph), NAMPHIA 2017

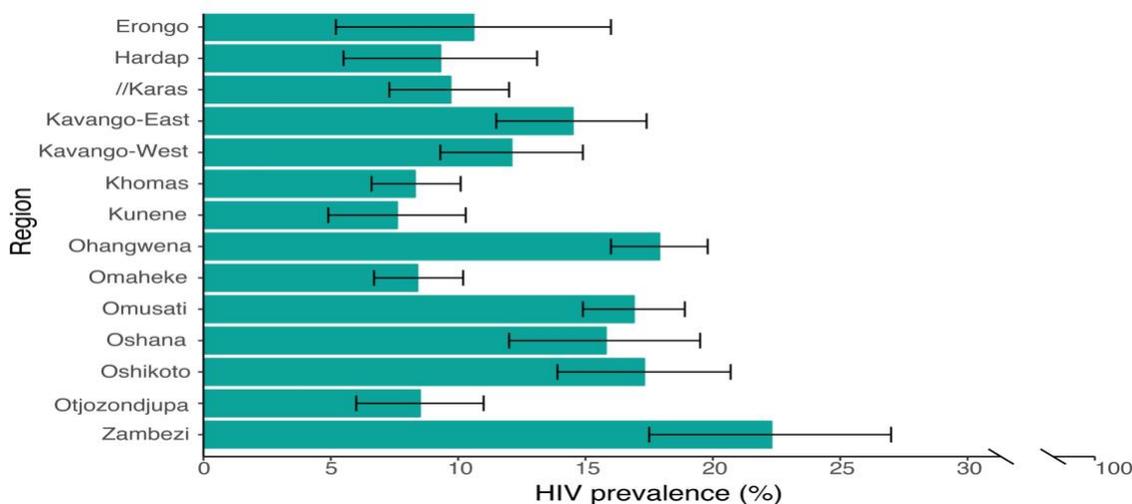
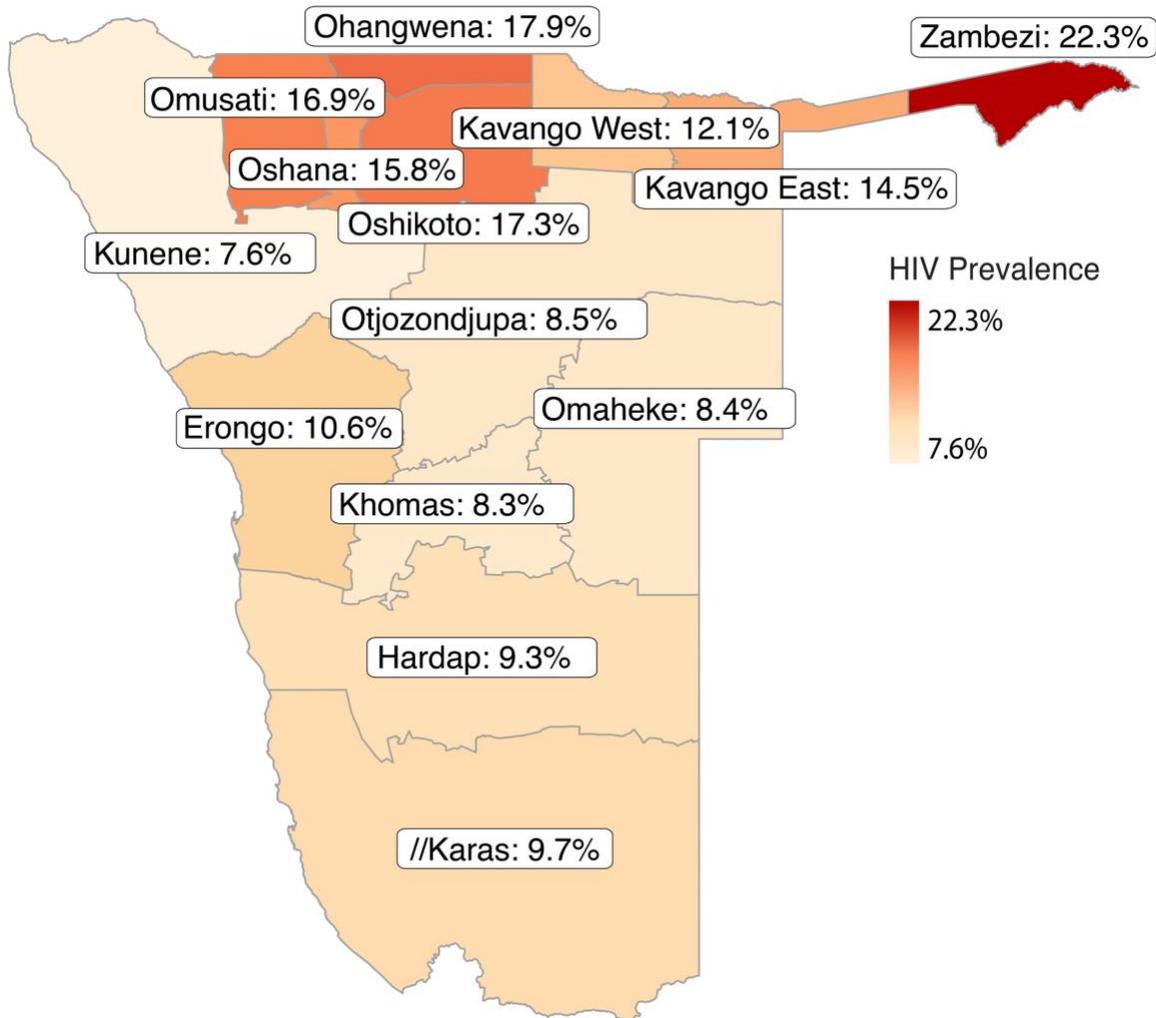


Figure 6.5.B HIV prevalence by region (map), NAMPHIA 2017



6.6 Gaps and Unmet Needs

- The disparity in HIV prevalence between women and men, particularly in those aged 35-39 years (HIV prevalence among men was 14.4% vs 28.4% among women of this age group), and among those living in certain regions such as Zambezi, Erongo and Omusati (where HIV prevalence among adult women is more than double that of men) suggests a tailored approach in these regions and for middle-aged women, as well as the need for preventative services.

7 HIV TESTING

7.1 Key Findings

- Overall, 78.2% of adults have ever been tested for HIV and received their results (85.3% for women and 70.5% for men).
- Older adolescents aged 15-19 years—both girls and boys—have lower rates of ever being tested for HIV and receiving their results.
- Out of those who were HIV-positive, 88.7% of HIV-positive men and 95.6% of HIV-positive women had ever been tested for HIV and received their results.
- Among both women and men, those having received more than secondary education had the highest proportion of individuals who had ever tested for HIV and received results (90.5%) than with those who had attended primary education (72.7%) or had no education (68.3%).
- More than one-third (37.4%) of HIV-positive young women aged 15-24 years reported being unaware of their HIV status. More than half (56.9%) of HIV-positive young men aged 15-24 years reported being unaware of their HIV status.

7.2 Background

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

Data presented in this section pertain to adults, men and women, who self-reported ever receiving an HIV test and receiving the test results. Results on HIV testing in the last 12 months and receiving the test results are also presented to understand frequent or recent testing.

7.3 Self-Reported HIV Testing Among Adults

Younger men are less likely to ever have been tested for HIV and received their results than older men. Only 33.4% of older adolescent boys aged 15-19 years reported ever testing for HIV and receiving results. By the time young men were aged 20-24 years, self-reported testing increased to 63.6%. It is not until men were aged 25-29 years, that they crossed the 70% threshold. Men in the lowest and second wealth quintiles were less likely to have ever received HIV testing. Men who received more than secondary education had the highest rates of ever testing for HIV and receiving their results (86.7%) (Table 7.3.A).

The percentage of men testing for HIV and receiving results in the year preceding the survey ranged from 14.2% among older adolescents to 45.3% among men aged 30-34 years. In general, a lower proportion of men with lower levels of education (24.7% for no education and 25.4% for primary education) and in the two lowest wealth quintiles (27.1% and 29.7%, respectively) had tested for HIV in the last 12 months, compared to men who received more than secondary education (47.7%), and men in the highest wealth quintile (39.5%) (Table 7.3.A).

Older adolescent girls aged 15-19 years, had the lowest rates of ever testing for HIV and receiving their results (49.1%) as compared to women of other ages. However, the prevalence of testing was markedly higher after women attained the age of 20 years. There does not appear to be a difference in having ever tested for HIV among women by wealth quintile. Women who received more than secondary education were most likely to have received HIV testing and their results (93.9%) (Table 7.3.B).

Overall, 78.2% of the adult population reported that they had ever tested for HIV and received their results. More than two-thirds (70.5%) of men and 85.3% of women reported having ever tested for HIV and receiving their test results (Tables 7.3.A, 7.3.B, and 7.3.C).

Among young adults and older adolescents (aged 15-24 years), 23.7% young men and boys had been tested for HIV in the year preceding the survey as compared to 43.7% of young women and girls (Figure 7.3.A).

Table 7.3.A Self-reported HIV testing: Men			
Percentage of men aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and results in the prior 12 months, by result of survey HIV test and selected demographic characteristics, NAMPHIA 2017			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing and received results in prior 12 months ¹	Number
Result of PHIA survey HIV test			
HIV positive	88.7	36.0	740
HIV negative	67.4	31.4	6,468
Not tested	76.8	45.0	990
Residence			
Urban	75.0	37.7	3,455
Rural	64.2	28.4	4,743
Region			
Erongo	84.1	47.1	449
Hardap	61.4	26.1	600
//Karas	65.3	28.3	447
Kavango East	71.9	34.2	590
Kavango West	61.0	34.1	406
Khomas	75.4	38.2	936
Kunene	53.4	22.1	450
Ohangwena	71.1	32.9	834
Omaheke	61.0	24.1	708
Omusati	59.5	26.0	788
Oshana	81.8	37.4	590
Oshikoto	67.3	33.4	541
Otjozondjupa	59.5	26.1	626
Zambezi	72.9	28.2	233
Marital status			
Never married	62.8	32.3	4,745
Married	87.1	35.8	1,475
Living together	78.2	38.3	1,373
Widowed	93.8	32.4	60
Divorced	87.8	37.1	83
Separated	73.3	31.9	401
Education			
No education	59.0	24.7	863
Primary	63.7	25.4	2,482
Secondary	71.8	35.9	4,183
More than secondary	86.7	47.7	651
Wealth quintile			
Lowest	62.4	27.1	2,002
Second	65.3	29.7	1,998
Middle	72.9	34.6	1,814
Fourth	75.7	37.6	1,343
Highest	75.5	39.5	1,041

Table 7.3.A Self-reported HIV testing: Men			
Percentage of men aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and results in the prior 12 months, by result of survey HIV test and selected demographic characteristics, NAMPHIA 2017			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing and received results in prior 12 months ¹	Number
Age			
15-19	33.4	14.2	1,488
20-24	63.6	33.4	1,335
25-29	75.7	41.5	1,164
30-34	84.2	45.3	951
35-39	85.9	38.2	837
40-44	87.4	39.1	770
45-49	84.8	36.6	579
50-54	84.8	34.5	443
55-59	81.1	34.1	364
60-64	74.3	23.8	267
Total 15-24	48.4	23.7	2,823
Total 15-49	69.1	34.1	7,124
Total 15-64	70.5	33.8	8,198

¹Relates to PEPFAR HTS_TST

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

Table 7.3.B Self-reported HIV testing: Women			
Percentage of women aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and results in the prior 12 months, by result of survey HIV test and selected demographic characteristics, NAMPHIA 2017			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing and results in the prior 12 months ¹	Number
Result of PHIA survey HIV test			
HIV positive	95.6	33.6	1,689
HIV negative	83.3	46.5	7,935
Not tested	85.2	49.0	840
Residence			
Urban	86.6	47.0	4,606
Rural	83.5	41.9	5,858
Region			
Erongo	88.3	48.5	363
Hardap	80.2	36.9	629
//Karas	78.7	34.5	509
Kavango East	85.8	47.7	927
Kavango West	84.4	48.6	641
Khomas	87.0	47.4	1,128
Kunene	80.6	37.5	590
Ohangwena	88.6	46.3	1,263
Omaheke	83.4	39.9	648
Omusati	82.6	39.2	1,228
Oshana	87.0	51.6	879
Oshikoto	84.1	46.4	743
Otjozondjupa	83.8	39.8	584
Zambezi	84.9	42.7	332
Marital status			
Never married	80.7	46.3	5,599
Married	92.1	40.2	2,018
Living together	92.6	51.6	1,623
Widowed	87.3	28.2	411
Divorced	84.5	37.3	190
Separated	91.9	42.1	526
Education			
No education	80.3	33.4	860
Primary	82.1	36.6	2,814
Secondary	85.1	47.3	5,932
More than secondary	93.9	53.4	832

Table 7.3.B Self-reported HIV testing: Women (continued)			
Percentage of women aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and results in the prior 12 months, by result of survey HIV test and selected demographic characteristics, NAMPHIA 2017			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing and results in the prior 12 months ¹	Number
Wealth quintile			
Lowest	82.9	41.3	2,823
Second	86.0	43.7	2,288
Middle	86.9	48.0	2,125
Fourth	89.0	51.1	1,824
Highest	81.9	40.4	1,404
Age			
15-19	49.1	27.6	1,565
20-24	89.9	59.8	1,648
25-29	96.4	61.1	1,505
30-34	97.7	57.5	1,259
35-39	96.9	43.4	1,110
40-44	94.7	39.4	937
45-49	93.4	35.2	797
50-54	87.4	31.7	621
55-59	79.6	26.4	586
60-64	74.0	22.9	436
Total 15-24	69.6	43.7	3,213
Total 15-49	85.9	47.6	8,821
Total 15-64	85.3	44.9	10,464

¹Relates to PEPFAR HTS_TST

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

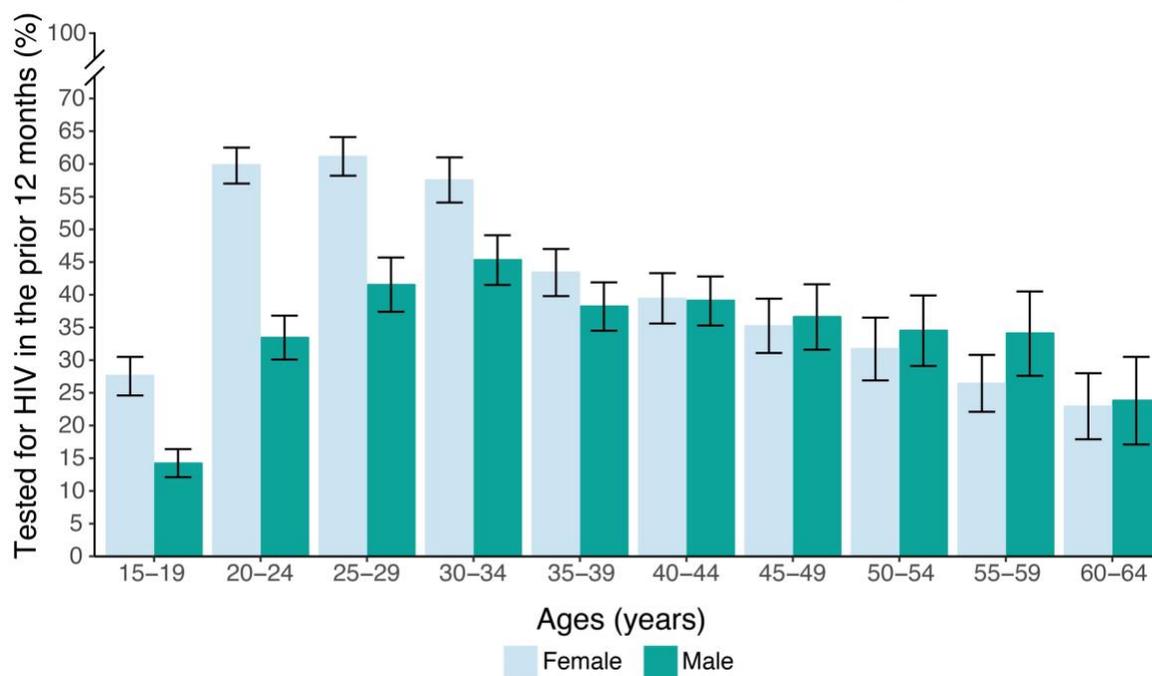
Table 7.3.C Self-reported HIV testing: Total			
Percentage of adults aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and results in the prior 12 months, by result of survey HIV test and selected demographic characteristics, NAMPHIA 2017			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing and results in the prior 12 months ¹	Number
Result of PHIA survey HIV test			
HIV positive	93.3	34.4	2,429
HIV negative	75.6	39.2	14,403
Not tested	80.4	46.7	1,830
Residence			
Urban	81.1	42.5	8,061
Rural	74.2	35.4	10,601
Region			
Erongo	85.8	47.7	812
Hardap	70.6	31.4	1,229
//Karas	71.9	31.3	956
Kavango East	79.8	41.8	1,517
Kavango West	74.1	42.3	1,047
Khomas	81.4	43.0	2,064
Kunene	67.6	30.2	1,040
Ohangwena	80.7	40.2	2,097
Omaheke	71.3	31.4	1,356
Omusati	72.5	33.5	2,016
Oshana	84.7	45.3	1,469
Oshikoto	76.1	40.3	1,284
Otjozondjupa	71.2	32.7	1,210
Zambezi	79.4	36.2	565
Marital status			
Never married	71.8	39.4	10,344
Married	89.8	38.1	3,493
Living together	85.3	44.9	2,996
Widowed	88.2	28.8	471
Divorced	85.6	37.2	273
Separated	82.9	37.2	927

Table 7.3.C Self-reported HIV testing: Total			
Percentage of adults aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and results in the prior 12 months, by result of survey HIV test and selected demographic characteristics, NAMPHIA 2017			
Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing and results in the prior 12 months ¹	Number
Education			
No education	68.3	28.5	1,723
Primary	72.7	30.8	5,296
Secondary	79.0	42.1	10,115
More than secondary	90.5	50.7	1,483
Wealth quintile			
Lowest	73.5	34.8	4,825
Second	75.6	36.6	4,286
Middle	79.9	41.3	3,939
Fourth	82.7	44.7	3,167
Highest	78.9	40.0	2,445
Age			
15-19	41.3	20.9	3,053
20-24	77.0	46.9	2,983
25-29	86.3	51.5	2,669
30-34	91.1	51.6	2,210
35-39	91.6	40.9	1,947
40-44	91.2	39.3	1,707
45-49	89.4	35.9	1,376
50-54	86.2	33.0	1,064
55-59	80.3	29.7	950
60-64	74.1	23.3	703
Total 15-24	59.1	33.9	6,036
Total 15-49	77.7	41.0	15,945
Total 15-64	78.2	39.6	18,662

¹Relates to PEPFAR HTS_TST

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

Figure 7.3.A Self-reported HIV testing in the last 12 months, by sex and age, NAMPHIA 2017



7.4 Gaps and Unmet Needs

- Given that a very high proportion of people living with HIV had ever been tested and received results (88.7% of men and 95.6% of women), HIV testing programs may shift from the general population to using more targeted approaches, including index testing, to focus on people at high risk of HIV infection.

8 HIV DIAGNOSIS AND TREATMENT

8.1 Key Findings

- Among HIV-positive adults, 78.9% reported knowledge of their status.
- During the survey, more than half (56.9%) of HIV-positive older adolescent boys and young men aged 15-24 years reported that they were not aware of their HIV status.
- Similarly, more than one-third (37.4%) of HIV-positive older adolescent girls and young women aged 15-24 years reported that they were unaware of their HIV status.
- Concordance between self-report of taking ARVs and detection of ARVs in the blood was high among adults (those aged 15-64 years), with 93.7% of those who reported current ART use having detectable ARVs in blood.
- There was a marked discordance between the self-reported awareness of HIV-positive status and the awareness of HIV-positive status determined by the detection of ARVs in the individuals' blood; one-third (33.3%) of those who reported that they were unaware of their HIV-positive status had detectable ARVs in their blood.

8.2 Background

Recent studies have proven that treating people living with HIV with higher CD4 counts improves immune recovery, decreases the incidence of non-AIDS events, comorbidities, and mortality, and reduces sexual and vertical transmission. In 2015, WHO recommended a policy of "Treatment for All", regardless of CD4 count.^{1,2} This policy was adopted in Namibia in December 2016. Prior to that, Namibian policy allowed for treatment for only the following: those at WHO clinical stage 1 or 2 with a CD4 count of <500 cells/ μ L; those at WHO clinical stage 3 or 4 (regardless of CD4 count); those with active TB disease, those who were HIV-positive and pregnant and breastfeeding women, those with hepatitis B co-infection, discordant couples, concordant couples currently intending to conceive a child, and all HIV-positive children (those aged 0-14 years).

This chapter is divided into two sections. The first discusses self-reported diagnosis and treatment status among HIV-positive adults. The second focuses on whether there was agreement (concordance versus discordance) between self-reported HIV and treatment status with the 'ARV-adjusted' awareness of HIV and treatment status based upon the laboratory detection of ARVs in the participants' blood.

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

Among HIV-positive adults, 78.9% reported knowing their HIV-positive status before testing positive in NAMPHIA (83.1% among women, 71.1% among men) (Tables 8.3.A, 8.3.B). Three-quarters (75.2%) of HIV-positive respondents reported taking ART; 3.7% reported knowing their HIV status, but not taking ART; and 21.2% reported not knowing their HIV status (Table 8.3.C). Two-thirds (66.7%) of HIV-positive men reported that they knew their status and were on ART compared to 79.8% of the HIV-positive women (Tables 8.3.A, 8.3.B).

Among urban, HIV-positive men, 33.6% reported that they had not known their HIV status prior to the survey, compared to 24.0% among those in rural areas. Similarly, among women, 20.6% of those in

urban areas and 13.5% of those in rural areas reported that they were unaware of their HIV-positive status (Tables 8.3.A, 8.3.B and 8.3.C).

Self-reported awareness of HIV-positive status was highest in the Ohangwena region (90.6%). In contrast, one-third of HIV-positive adults in Omaheke (31.2%), Khomas (30.9%), and Kunene (30.2%) reported that they were unaware of their HIV status. Hardap (11.8%), Omaheke (9.6%), and //Karas (9.1%) have the largest proportion of HIV-positive adults who report knowing their HIV status, but not being on ART (Table 8.3.C).

Among married HIV-positive adults, 81.0% reported knowing their status and receiving ART (77.8% of men and 83.5% of women), while among those who had never married, 75.1% reported knowing their HIV-positive status and taking ART (64.7% of men and 79.8% of women) (Tables 8.3.A, 8.3.B and 8.3.C).

Self-reported awareness of HIV-positive status also varied by wealth. Almost one-third (32.2%) of HIV-positive adults in the highest wealth quintile denied knowing their HIV status, while, counter-intuitively, in the lowest two wealth quintiles, only 16.5% in the lowest and 20.4% in the second quintile reported that they were unaware of their HIV status prior to the survey (Table 8.3.C).

Finally, more than two-fifths (43.6%) of HIV-positive young people (those aged 15-24 years) reported that they were unaware of their HIV status (37.4% of women and 56.9% of men). Self-reported ART use was also low among the three youngest age strata (ages 15-29 years), in which fewer than 60% of HIV-positive participants reported ART use (Tables 8.3.A, 8.3.B and 8.3.C).

Table 8.3.A Self-reported HIV diagnosis and treatment status: Men					
Percent distribution of HIV-positive men aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, NAMPHIA 2017					
Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART ¹		
Residence					
Urban	33.6	5.3	61.1	100.0	273
Rural	24.0	3.5	72.5	100.0	470
Region					
Erongo	(29.7)	(4.5)	(65.8)	(100.0)	28
Hardap	(29.2)	(13.5)	(57.3)	(100.0)	47
//Karas	(37.3)	(12.0)	(50.7)	(100.0)	40
Kavango East	32.8	5.7	61.5	100.0	55
Kavango West	(19.9)	(0.0)	(80.1)	(100.0)	32
Khomas	38.5	7.6	53.9	100.0	67
Kunene	(39.1)	(5.4)	(55.5)	(100.0)	25
Ohangwena	14.9	1.1	84.1	100.0	107
Omaheke	(36.7)	(15.0)	(48.4)	(100.0)	46
Omusati	20.6	0.0	79.4	100.0	85
Oshana	20.9	1.9	77.2	100.0	76
Oshikoto	24.8	4.6	70.6	100.0	64
Otjozondjupa	(39.2)	(1.8)	(59.0)	(100.0)	42
Zambezi	(37.8)	(0.0)	(62.2)	(100.0)	29
Marital status					
Never married	33.5	1.8	64.7	100.0	295
Married	18.3	3.9	77.8	100.0	182
Living together	31.1	8.5	60.5	100.0	181
Widowed	*	*	*	*	24
Divorced	*	*	*	*	7
Separated	36.9	9.4	53.7	100.0	52
Education					
No education	20.4	3.1	76.5	100.0	94
Primary	24.9	2.4	72.7	100.0	320
Secondary	34.5	6.2	59.3	100.0	313
More than secondary	*	*	*	*	14

Table 8.3.A Self-reported HIV diagnosis and treatment status: Men (continued)					
Percent distribution of HIV-positive men aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, NAMPHIA 2017					
Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART ¹		
Wealth quintile					
Lowest	22.7	4.5	72.8	100.0	246
Second	26.4	3.0	70.6	100.0	178
Middle	26.8	5.0	68.2	100.0	192
Fourth	41.0	3.5	55.4	100.0	98
Highest	(35.7)	(9.6)	(54.7)	(100.0)	29
Age					
15-19	(55.4)	(0.0)	(44.6)	(100.0)	39
20-24	(58.6)	(0.0)	(41.4)	(100.0)	27
25-29	(53.7)	(9.7)	(36.6)	(100.0)	44
30-34	37.4	3.5	59.1	100.0	88
35-39	27.9	8.1	64.1	100.0	113
40-44	24.7	2.7	72.6	100.0	150
45-49	16.0	3.1	80.8	100.0	101
50-54	20.0	5.4	74.6	100.0	95
55-59	5.9	3.7	90.4	100.0	53
60-64	(15.8)	(2.8)	(81.5)	(100.0)	33
Total 15-24	56.9	0.0	43.1	100.0	66
Total 15-49	32.8	4.3	62.9	100.0	562
Total 15-64	28.9	4.4	66.7	100.0	743

¹Relates to Global AIDS Monitoring Indicator 1.2: People living with HIV on antiretroviral therapy (ART)

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

Table 8.3.B Self-reported HIV diagnosis and treatment status: Women					
Percent distribution of HIV-positive women aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, NAMPHIA 2017					
Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART ¹		
Residence					
Urban	20.6	3.6	75.8	100.0	602
Rural	13.5	3.0	83.5	100.0	1,076
Region					
Erongo	(26.5)	(1.3)	(72.1)	(100.0)	46
Hardap	27.9	10.7	61.4	100.0	72
//Karas	18.2	6.1	75.7	100.0	51
Kavango East	14.9	3.6	81.5	100.0	162
Kavango West	15.0	2.5	82.5	100.0	100
Khomas	25.3	6.2	68.5	100.0	114
Kunene	(24.1)	(8.6)	(67.3)	(100.0)	42
Ohangwena	6.9	3.4	89.8	100.0	287
Omaheke	26.3	4.7	69.0	100.0	56
Omusati	15.0	2.4	82.7	100.0	270
Oshana	10.4	1.0	88.6	100.0	163
Oshikoto	12.3	1.5	86.2	100.0	164
Otjozondjupa	18.2	0.0	81.8	100.0	60
Zambezi	24.7	3.6	71.8	100.0	91
Marital status					
Never married	17.6	2.5	79.8	100.0	823
Married	14.1	2.4	83.5	100.0	279
Living together	19.1	3.4	77.6	100.0	291
Widowed	10.7	4.8	84.5	100.0	119
Divorced	(16.5)	(2.8)	(80.7)	(100.0)	33
Separated	21.1	9.0	69.9	100.0	118
Education					
No education	21.2	1.7	77.1	100.0	133
Primary	14.0	2.5	83.6	100.0	616
Secondary	19.2	3.7	77.1	100.0	883
More than secondary	(1.8)	(8.4)	(89.8)	(100.0)	40

Table 8.3.B Self-reported HIV diagnosis and treatment status: Women (continued)

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

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART ¹		
Wealth quintile					
Lowest	13.4	2.5	84.1	100.0	596
Second	17.5	2.8	79.7	100.0	457
Middle	13.9	5.4	80.8	100.0	341
Fourth	20.8	3.1	76.1	100.0	214
Highest	30.6	1.9	67.5	100.0	70
Age					
15-19	38.1	1.0	60.9	100.0	70
20-24	36.9	3.4	59.6	100.0	102
25-29	28.1	2.0	70.0	100.0	162
30-34	14.8	5.9	79.3	100.0	229
35-39	14.1	3.8	82.0	100.0	314
40-44	10.3	3.2	86.4	100.0	266
45-49	13.1	2.4	84.5	100.0	225
50-54	15.8	4.2	80.0	100.0	141
55-59	8.8	0.8	90.4	100.0	109
60-64	7.6	1.4	91.0	100.0	60
Total 15-24	37.4	2.4	60.2	100.0	172
Total 15-49	18.0	3.4	78.5	100.0	1,368
Total 15-64	16.9	3.3	79.8	100.0	1,678

¹Relates to Global AIDS Monitoring Indicator 1.2: People living with HIV on antiretroviral therapy (ART).

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

Table 8.3.C Self-reported HIV diagnosis and treatment status: Total

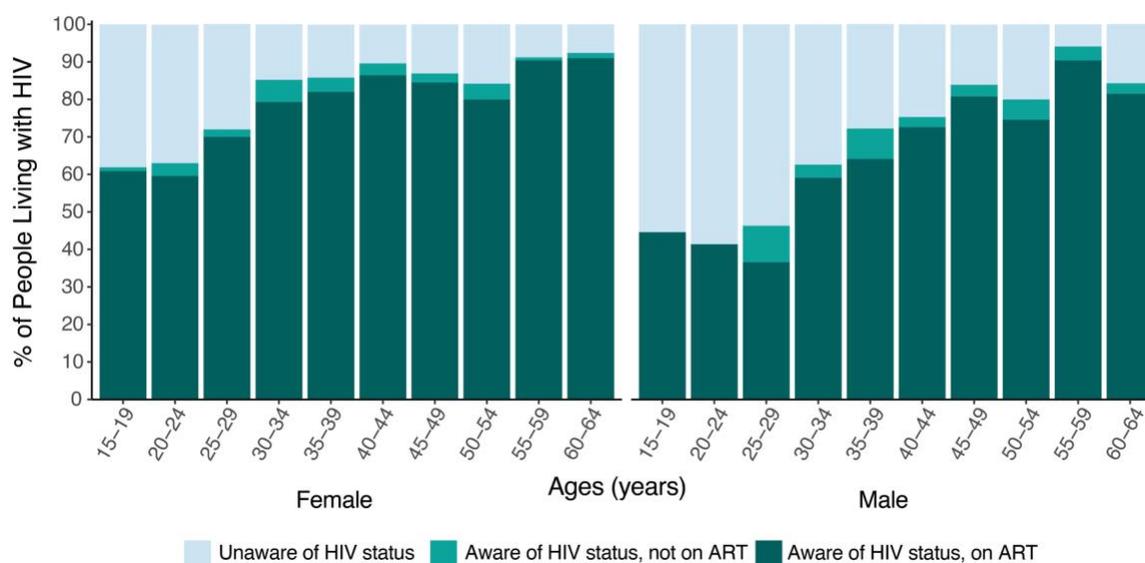
Percent distribution of HIV-positive adults aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, NAMPHIA 2017

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART ¹		
Residence					
Urban	25.4	4.2	70.4	100.0	875
Rural	17.1	3.2	79.7	100.0	1,546
Region					
Erongo	27.8	2.6	69.5	100.0	74
Hardap	28.4	11.8	59.7	100.0	119
//Karas	27.9	9.1	63.0	100.0	91
Kavango East	20.1	4.2	75.7	100.0	217
Kavango West	16.5	1.8	81.8	100.0	132
Khomas	30.9	6.8	62.4	100.0	181
Kunene	30.2	7.3	62.5	100.0	67
Ohangwena	9.4	2.6	88.0	100.0	394
Omaheke	31.2	9.6	59.2	100.0	102
Omusati	16.5	1.7	81.8	100.0	355
Oshana	14.3	1.4	84.3	100.0	239
Oshikoto	16.5	2.6	80.9	100.0	228
Otjozondjupa	27.4	0.8	71.8	100.0	102
Zambezi	28.1	2.6	69.3	100.0	120
Marital status					
Never married	22.5	2.3	75.1	100.0	1,118
Married	16.0	3.0	81.0	100.0	461
Living together	24.3	5.6	70.1	100.0	472
Widowed	9.3	4.2	86.6	100.0	143
Divorced	(22.5)	(2.3)	(75.3)	(100.0)	40
Separated	27.0	9.2	63.9	100.0	170
Education					
No education	20.8	2.4	76.8	100.0	227
Primary	18.3	2.4	79.3	100.0	936

Table 8.3.C Self-reported HIV diagnosis and 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, NAMPHIA 2017					
Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART ¹		
Education (cont.)					
Secondary	23.9	4.5	71.6	100.0	1,196
More than secondary	8.7	8.9	82.3	100.0	54
Wealth quintile					
Lowest	16.5	3.2	80.3	100.0	842
Second	20.4	2.8	76.8	100.0	635
Middle	19.0	5.2	75.8	100.0	533
Fourth	28.5	3.3	68.2	100.0	312
Highest	32.2	4.4	63.3	100.0	99
Age					
15-19	44.5	0.7	54.8	100.0	109
20-24	42.8	2.5	54.7	100.0	129
25-29	36.0	4.4	59.7	100.0	206
30-34	22.1	5.1	72.8	100.0	317
35-39	18.6	5.2	76.2	100.0	427
40-44	16.1	3.0	80.9	100.0	416
45-49	14.1	2.6	83.3	100.0	326
50-54	17.8	4.8	77.5	100.0	236
55-59	7.9	1.7	90.4	100.0	162
60-64	10.8	1.9	87.3	100.0	93
Total 15-24	43.6	1.6	54.7	100.0	238
Total 15-49	23.0	3.7	73.2	100.0	1,930
Total 15-64	21.2	3.7	75.2	100.0	2,421

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

Figure 8.3.A Self-reported HIV diagnosis and antiretroviral therapy (ART) status, by sex, NAMPHIA 2017



8.4 Concordance of Self-Reported Treatment Status versus Presence of ARVs

Self-reported diagnosis and treatment status often did not agree with laboratory detection of ARVs. NAMPHIA tested specimens for the presence of three ARVs in blood (efavirenz, lopinavir, and nevirapine) as markers of first- and second-line regimes prescribed in the country at the time of the survey. Overall, ARVs were detected in 78.2% of HIV-positive adults. Among adults who reported current use of ART, ARVs were detected in 93.7% of adults (93.7% of men and 93.8% of women). Among those who reported that they had received a previous HIV-positive diagnosis but were not taking ART, 14.2% had ARVs detected in their blood (7.2% of men and 19.4% of women). Among those who reported that they had not been previously diagnosed, 33.3% had ARVs detected in their blood (28.6% among men and 37.7% among women) (Tables 8.4.A, 8.4.B and 8.4.C).

Table 8.4.A Concordance of self-reported treatment status versus presence of ARVs: Men				
Percent distribution of HIV-positive men aged 15-64 years by presence of detectable antiretrovirals (ARVs) versus self-reported HIV treatment status, NAMPHIA 2017				
Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	71.4	28.6	100.0	194
Previously diagnosed, not on ART	(92.8)	(7.2)	(100.0)	31
Previously diagnosed, on ART	6.3	93.7	100.0	518
Total 15-24	36.2	63.8	100.0	66
Total 15-49	32.1	67.9	100.0	568
Total 15-64	28.6	71.4	100.0	751

¹ARV detection assay included only efavirenz, nevirapine, and lopinavir.

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

Table 8.4.B Concordance of self-reported treatment status versus presence of ARVs: Women				
Percent distribution of HIV-positive women aged 15-64 years by presence of detectable antiretrovirals (ARVs) versus self-reported HIV treatment status, NAMPHIA 2017				
Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	62.3	37.7	100.0	258
Previously diagnosed, not on ART	80.6	19.4	100.0	57
Previously diagnosed, on ART	6.2	93.8	100.0	1,363
Total 15-24	32.7	67.3	100.0	174
Total 15-49	20.1	79.9	100.0	1,379
Total 15-64	18.1	81.9	100.0	1,690

¹ARV detection assay included only efavirenz, nevirapine, and lopinavir.

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

Table 8.4.C Concordance of self-reported treatment status versus presence of ARVs: Total				
Percent distribution of HIV-positive adults aged 15-64 years by presence of detectable antiretrovirals (ARVs) versus self-reported HIV treatment status, NAMPHIA 2017				
Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	66.7	33.3	100.0	452
Previously diagnosed, not on ART	85.8	14.2	100.0	88
Previously diagnosed, on ART	6.3	93.7	100.0	1,881
Total 15-24	33.8	66.2	100.0	240
Total 15-49	24.2	75.8	100.0	1,947
Total 15-64	21.8	78.2	100.0	2,441

¹ARV detection assay included only efavirenz, nevirapine, and lopinavir.

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

8.5 Gaps and Unmet Needs

- There is regional variation in self-reported awareness of HIV-positive status as well as in self-reported treatment status for those who reported an HIV-positive status, which may suggest a need for region-specific approaches. Specifically, regions with individuals in which less than 70% reported awareness of their HIV-positive status, such as Khomas, Kunene, and Omaheke, require further consideration and potentially new strategies to reach undiagnosed, HIV-positive persons.
- Similarly, regions with less than 90% of diagnosed people living with HIV on ART, such as Hardap, //Karas, and Omaheke, require additional assistance in reaching the national averages for advancing treatment coverage among those diagnosed.
- There are HIV-positive people who reported lack of awareness of their HIV-positive status, but had ARVs detected in their blood samples (37.7% of women and 28.6% of men). This discrepancy leads to an underestimation of the proportion of people who are aware of their HIV status. There may be a need to further examine stigma and other potential reasons why people inaccurately report their HIV or treatment status.

8.6 References

1. World Health Organization. *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: recommendations for a public health approach*. Geneva: World Health Organization; 2016.
2. World Health Organization. *Treat all: policy adoption and implementation status in countries*. Geneva: World Health Organization; 2017.

9 VIRAL LOAD SUPPRESSION

9.1 Key Findings

- Among all adults (aged 15-64 years) living with HIV in Namibia, the prevalence of VLS was 77.4%.
- Prevalence of VLS among adults was 81.7% in women and 69.6% in men.
- The percentage of HIV-positive adults with VLS ranged from 55.2% in Kunene to 86.2% in Ohangwena
- Among all children (those aged 0-14 years) living with HIV, the prevalence of VLS was low: 63.0%, 64.2% in girls and 61.6% in boys.

9.2 Background

Viral load suppression is a key indicator of treatment success in HIV-positive individuals. UNAIDS' 2020 goal for VLS is that 73% of all people living with HIV should have VLS in order to help control the epidemic. For the purposes of NAMPHIA 2017, VLS is defined as VL less than 1,000 HIV RNA copies per mL of plasma. This chapter describes VLS among the population of people living with HIV aged 0-64 years by age, sex, region, and other demographic characteristics. Please note, all VL values reported here are the result of VL testing during NAMPHIA and were not limited to those who report on their HIV-positive status.

9.3 Viral Load Suppression by Age and Sex

Among all adults living with HIV in Namibia, the prevalence of VLS was 77.4%. Disaggregated by sex, VLS in women was 81.7%, while 69.6% in men (Table 9.3.A).

Among all adults living with HIV, prevalence of VLS by 10-year age group tended to increase by age group, with the highest prevalence among older adults aged 55-64 years (90.4%) and the lowest prevalence among young people aged 15-24 years (63.9%). This remained consistent among women; prevalence of VLS in those aged 55-64 years was 92.5%, while it was only 65.4% in young women aged 15-24 years. In men, however, prevalence of VLS varied from a high of 86.3% (ages 55-64 years), to a low of 50.5% (ages 25-34 years), and to 60.7% in young men aged 15-24 years (Table 9.3.B).

Among all children (those aged 0-14 years) living with HIV, the prevalence of VLS was low (63.0%; 64.2% in girls and 61.6% in boys [Table 9.3.B]). Prevalence of VLS was very similar across sexes in the younger ages (up to the age of 24 years), though girls and women had higher VLS in all other ages (within 10-15-year age bands) (Table 9.3.B). The largest contrast in VLS among men and women was among those aged 25-34 years with 76.5% of women having VLS compared to 50.5% of men (Figure 9.3.A).

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

Among HIV-positive individuals aged 0-64 years, percentage with viral load (VL) suppression (VLS) (VL < 1,000 copies/mL), by sex and age, NAMPHIA 2017

Age	Male		Female		Total	
	Percentage with VLS ¹	Number	Percentage with VLS ¹	Number	Percentage with VLS ¹	Number
0-4	*	3	*	5	*	8
5-9	*	12	*	18	(62.3)	30
10-14	*	21	*	15	(72.8)	36
15-19	(71.4)	40	70.4	73	70.8	113
20-24	(47.7)	27	61.4	102	57.7	129
25-29	(47.6)	44	66.5	163	60.7	207

Table 9.3.A Viral load suppression by age: 5-year age groups (continued)
Among HIV-positive individuals aged 0-64 years, percentage with viral load (VL) suppression (VLS) (VL < 1,000 copies/mL), by sex and age, NAMPHIA 2017

Age	Male		Female		Total	
	Percentage with VLS ¹	Number	Percentage with VLS ¹	Number	Percentage with VLS ¹	Number
30-34	52.2	88	82.7	231	72.9	319
35-39	65.5	114	81.7	319	76.5	433
40-44	75.8	153	86.5	268	82.2	421
45-49	81.3	104	85.7	225	84.2	329
50-54	76.6	97	89.9	143	83.7	240
55-59	81.3	53	92.8	109	89.1	162
60-64	(93.7)	33	92.0	60	92.6	93
Total 15-24	60.7	67	65.4	175	63.9	242
Total 15-49	66.3	570	79.6	1,381	75.1	1,951
Total 15-64	69.6	753	81.7	1,693	77.4	2,446

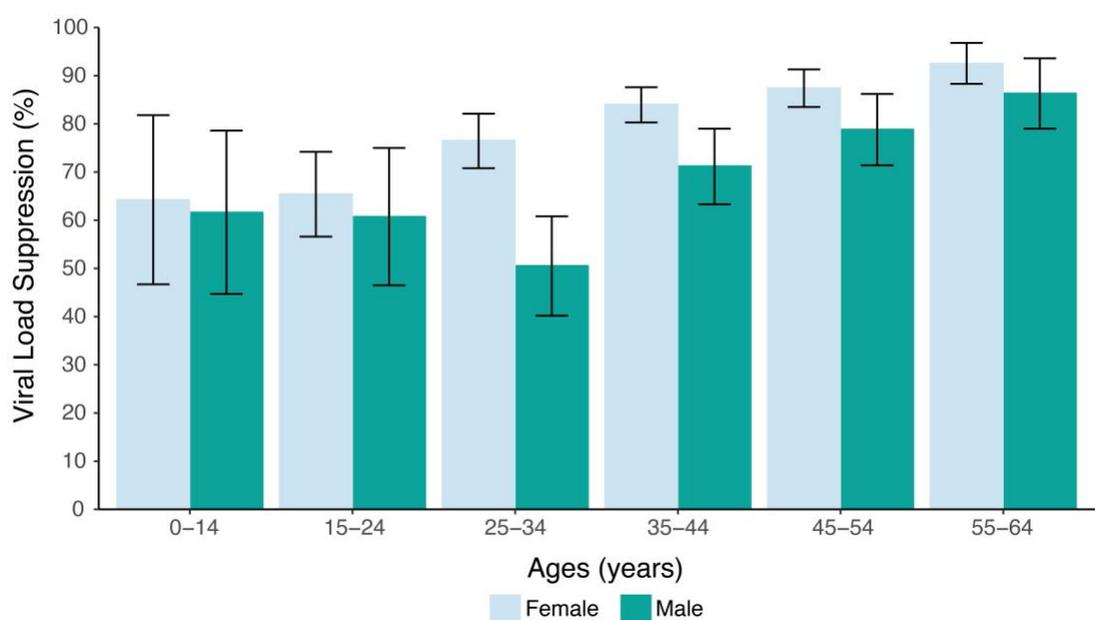
¹Relates to Global AIDS Monitoring Indicator 1.4: People living with HIV who have suppressed viral loads. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. Estimates with an asterisk are based on a very small number (less than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

Table 9.3.B Viral load suppression by age: 10-15-year age groups
Among HIV-positive individuals aged 0-64 years, percentage with viral load (VL) suppression (VLS) (< 1,000 copies/mL), by sex and age, NAMPHIA 2017

Age	Male		Female		Total	
	Percentage with VLS ¹	Number	Percentage with VLS ¹	Number	Percentage with VLS ¹	Number
0-14	(61.6)	36	(64.2)	38	63.0	74
15-24	60.7	67	65.4	175	63.9	242
25-34	50.5	132	76.5	394	68.3	526
35-44	71.2	267	84.0	587	79.3	854
45-54	78.8	201	87.4	368	84.0	569
55-64	86.3	86	92.5	169	90.4	255

¹Relates to Global AIDS Monitoring Indicator 1.4: People living with HIV who have suppressed viral loads. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

Figure 9.3.A Viral load (VL) suppression (VLS) (VL <1,000 copies/mL) by age and sex, NAMPHIA 2017



Note, estimates among children are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

9.4 Adult Viral Load Suppression by Demographic Characteristics

The proportion with VLS was highest among those who reported previous diagnoses and ART use (91.5%) and lowest among those who reported previous diagnoses but no ART use (25.2%). Over one-third (35.6%) of HIV-positive persons who reported that they were not previously diagnosed had VLS. It is likely that quite a few of these individuals were on treatment, but may have been afraid to disclose their status—which suggests stigma may still exist in many parts of the country (Table 9.4.A).

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	27.5	194	43.2	258	35.6	452
Previously diagnosed, not on ART	(29.9)	31	21.8	57	25.2	88
Previously diagnosed, on ART	89.9	518	92.2	1,363	91.5	1,881
Missing	*	10	*	15	(96.9)	25
Residence						
Urban	67.7	277	80.1	608	75.5	885
Rural	71.5	476	83.2	1,085	79.2	1,561
Region						
Erongo	(72.7)	28	(76.6)	46	75.0	74
Hardap	(53.3)	47	65.8	73	60.6	120
//Karas	(55.2)	40	82.3	51	68.6	91
Kavango East	57.5	56	78.3	163	72.3	219
Kavango West	(71.1)	33	82.0	100	78.7	133
Khomas	64.0	67	80.5	114	73.6	181
Kunene	(43.6)	25	(62.6)	43	55.2	68
Ohangwena	79.4	108	89.2	291	86.2	399
Omaheke	(56.0)	47	56.5	59	56.3	106
Omusati	84.1	86	82.6	272	83.0	358
Oshana	74.8	79	91.1	165	84.9	244
Oshikoto	79.0	66	80.1	164	79.7	230
Otjozondjupa	(64.6)	42	79.2	61	72.8	103
Zambezi	(65.7)	29	81.1	91	77.1	120
Marital status						
Never married	68.8	299	80.9	835	77.1	1,134
Married	83.0	185	85.7	280	84.5	465
Living together	61.7	183	79.1	292	71.4	475
Widowed	*	24	90.6	119	88.6	143
Divorced	*	7	(74.1)	33	(68.4)	40
Separated	54.1	52	77.4	118	68.8	170
Education						
No education	73.8	96	81.1	135	77.6	231
Primary	75.1	325	86.2	623	81.8	948
Secondary	63.5	315	78.6	889	73.9	1,204
More than secondary	*	14	(87.1)	40	83.2	54
Wealth quintile						
Lowest	71.4	250	83.4	602	79.4	852
Second	70.6	181	83.1	463	79.0	644
Middle	71.8	193	82.2	343	78.1	536
Fourth	64.8	99	79.7	214	74.0	313
Highest	(62.7)	30	72.4	71	69.3	101
Total 15-24	60.7	67	65.4	175	63.9	242
Total 15-49	66.3	570	79.6	1,381	75.1	1,951
Total 15-64	69.6	753	81.7	1,693	77.4	2,446

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

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

The proportion of HIV-positive participants who achieved VLS differed by marital status. Participants who were divorced had the lowest proportion of VLS at 68.4%. Participants who were widowed had the highest percentage of VLS at 88.6%. Participants who were never married had 77.1% VLS and 84.5% of participants who were married had VLS (Table 9.4.A).

There is no clear trend between increasing education and increasing VLS. Looking at those who did not achieve VLS, among participants without an education, 22.4% did not have a suppressed , while 18.2% of participants who attended primary school did not have a suppressed viral load. However, among those with a secondary education, 26.1% did not have VLS (Table 9.4.B).

With increasing wealth (above the middle wealth quintile), there appeared to be an increase in the percentage of participants who did not achieve VLS. For instance, 21.3% of those in the second wealth quintile did not have VLS while 31.5% in the highest wealth quintile did not have VLS (note: with only 33 individuals in the latter category, these data should be interpreted with caution) (Table 9.4.B).

Characteristic	VLS									
	No VLS: Viral load >1000 copies/mL		Viral load > 200 and < 1000 copies/mL		Viral load > 40 and < 200 copies/mL		Viral load detected but < 40 copies/mL		Target not detected	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Sex										
Male	30.9	239	(5.0)	34	14.2	120	20.2	163	29.5	231
Female	19.0	335	4.5	69	10.9	186	22.0	377	43.5	761
Residence										
Urban	24.5	230	(5.7)	45	11.1	98	21.6	198	36.9	326
Rural	22.2	344	3.7	58	12.9	208	21.2	342	39.9	666
Region										
Erongo	*	19	*	4	*	6	*	18	(39.2)	28
Hardap	(42.1)	49	*	4	*	14	*	22	(22.7)	32
//Karas	(31.4)	27	*	3	*	14	*	10	(37.7)	37
Kavango East	27.8	60	*	11	(14.1)	32	(15.5)	38	36.7	87
Kavango West	(24.3)	33	*	6	*	17	(20.3)	29	36.6	54
Khomas	(26.4)	45	*	8	*	21	(24.2)	47	33.9	63
Kunene	(45.7)	31	*	6	*	2	*	10	*	20
Ohangwena	14.2	56	*	15	15.2	60	23.0	93	44.0	183
Omaheke	47.2	53	*	4	*	10	(22.7)	25	*	19
Omusati	18.9	61	*	15	(11.7)	46	22.0	86	42.4	167
Oshana	(14.6)	34	*	10	(13.5)	35	(17.8)	45	48.4	124
Oshikoto	(20.5)	46	*	5	(12.7)	28	26.9	66	37.8	93
Otjozondjupa	(27.5)	33	*	8	*	2	*	24	(38.8)	39
Zambezi	(26.4)	27	*	4	*	19	(21.2)	27	(33.5)	46
Marital status¹										
Never married	22.9	261	(4.4)	42	11.6	127	21.4	252	39.5	448
Married	15.5	72	*	10	16.3	76	24.2	105	41.6	202
Living together	28.6	126	(7.4)	29	9.7	58	20.0	90	34.3	171
Widowed	*	19	*	4	*	16	(28.1)	39	44.8	65
Divorced	*	12	*	3	*	4	*	5	*	16
Separated	(31.2)	49	*	9	*	17	(21.4)	36	29.7	59
Education¹										
No education	22.4	57	*	10	(14.2)	30	26.5	62	31.8	72
Primary	18.2	173	(2.9)	30	12.7	117	25.4	235	40.7	392
Secondary	26.1	304	5.6	54	11.6	145	18.6	217	37.9	480
More than secondary	*	8	*	4	*	7	*	12	*	23
Wealth quintile										
Lowest	22.4	185	(4.9)	38	11.2	103	22.0	196	39.4	367
Second	21.3	143	*	23	13.2	84	21.6	145	39.9	267
Middle	22.5	133	*	23	12.5	68	23.3	118	37.3	200
Fourth	25.8	80	*	11	(11.7)	38	19.2	64	39.1	126
Highest	(31.5)	33	*	8	*	13	*	17	(30.3)	32

Table 9.4.B Demographic characteristics of people living with HIV by viral load (continued)										
Percent distribution of the HIV-positive population aged 0-64 years by viral load suppression (VLS) status and low-level viremia, NAMPHIA 2017										
Characteristic	VLS									
	No VLS: Viral load >1000 copies/mL		Viral load > 200 and < 1000 copies/mL		Viral load > 40 and < 200 copies/mL		Viral load detected but < 40 copies/mL		Target not detected	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Age										
0-14	(37.0)	31	*	5	*	6	*	11	*	21
15-24	36.1	86	*	22	*	24	(16.1)	38	27.1	71
25-34	31.8	163	*	23	10.8	60	17.3	87	34.3	191
35-44	20.7	167	(3.8)	31	12.8	113	20.7	182	41.7	359
45-54	16.0	97	*	14	13.0	71	28.1	152	40.3	235
55-64	(9.6)	30	*	8	(14.6)	32	27.1	70	45.5	115
Total 15-24	36.1	86	*	22	*	24	(16.1)	38	27.1	71
Total 15-49	24.9	473	5.2	86	12.1	237	20.4	396	37.2	754
Total 15-64	22.6	543	4.6	98	12.3	300	21.8	529	38.5	971
Total 0-64	23.3	574	4.7	103	12.1	306	21.4	540	38.4	992

¹Applies to adults aged 15-64 years.

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

9.5 Adult Viral Load Suppression by Region

The percentage of HIV-positive adults with VLS ranged from 55.2% in Kunene to 86.2% in Ohangwena. Among women, the prevalence of VLS varied by region. Overall, 81.7% of women had VLS, however it ranged from 56.5% in Omaheke to 91.1% in Oshana. Among men, VLS ranged from 43.6% in Kunene to 84.1% in Omusati (Table 9.4.B) Figures 9.5.A and 9.5.B).

Figure 9.5.A Viral load suppression (VLS) (VL <1000 copies/mL) among HIV-positive adults aged 15-64 years, by zone, NAMPHIA 2017

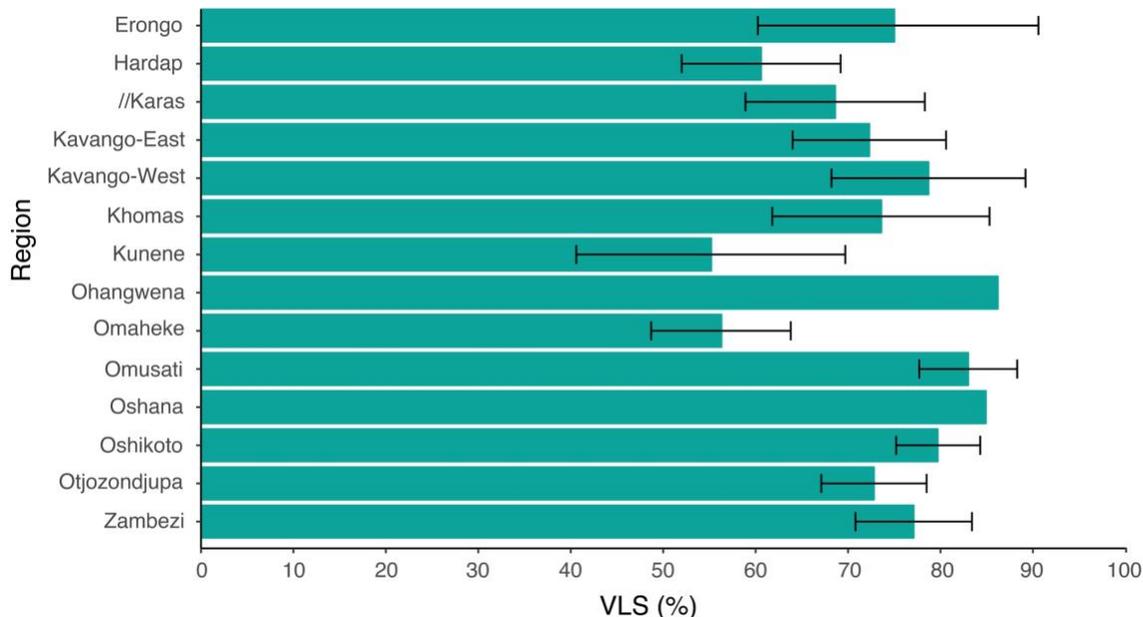
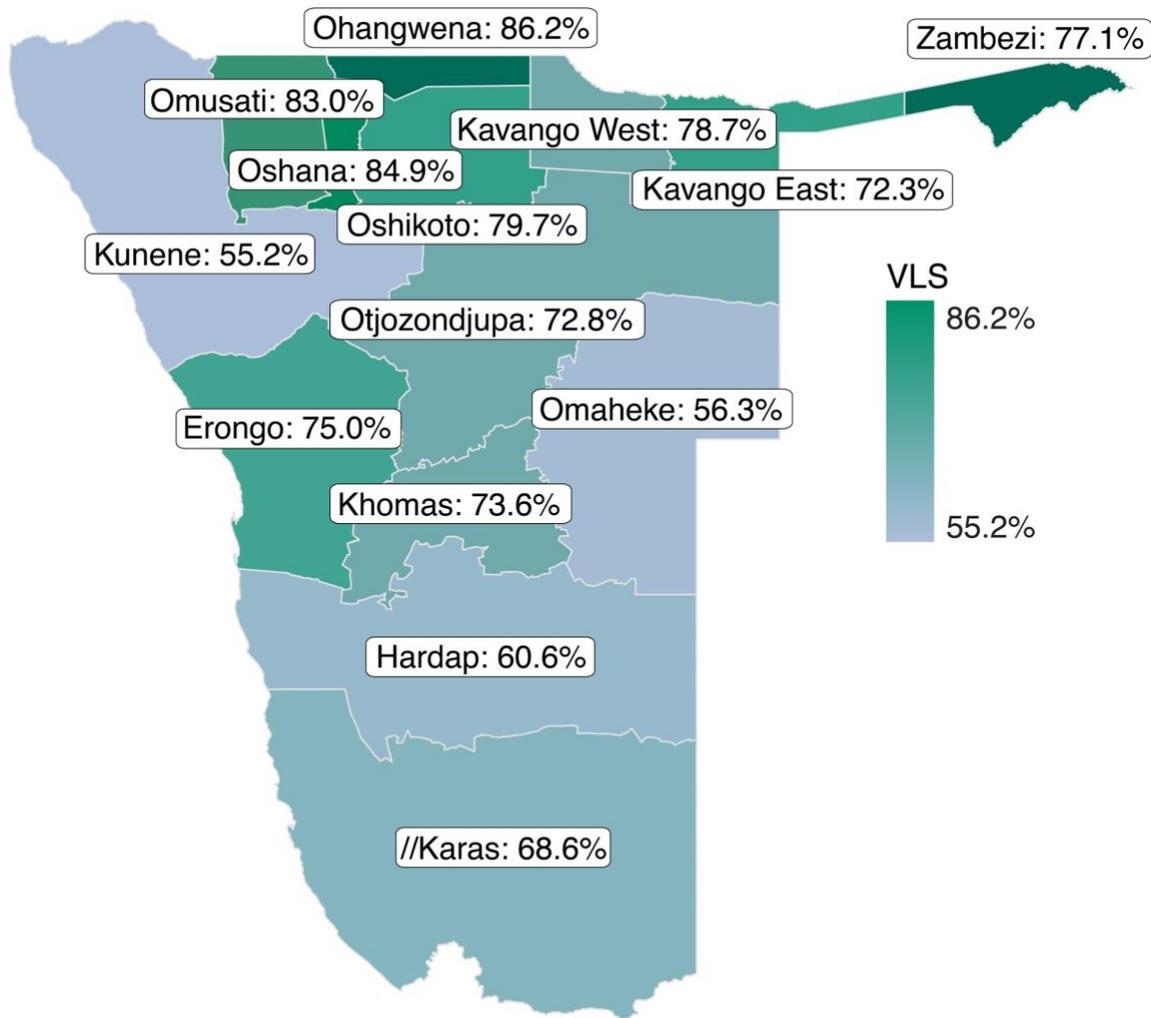


Figure 9.5.B Viral load suppression (VLS), (VL<1000 copies/mL) among HIV-positive adults aged 15-64 years, by Region (map), NAMPHIA 2017



9.6 Gaps and Unmet Needs

- Viral load suppression was lower among children and young people living with HIV, which reflects a need for more diagnosis, linkage to care, and effective treatment in these age groups.
- Geographic achievement of VLS varies widely for both men and women. There is a need to strengthen HIV testing and treatment services in regions with lower VLS.

10 90-90-90 TARGETS

10.1 Key Findings

- **Diagnosed:** Based on self-report and ARV detection data, it is estimated that in Namibia, 86.0% of adults (those aged 15-64 years) living with HIV know their HIV status (89.5% of HIV-positive women and 79.6% of HIV-positive men).
- **On treatment:** Based on self-report and ARV detection data, it is estimated that among adults living with HIV who know their HIV status, 96.4% were receiving ART (97.1% of HIV-positive women and 94.9% of HIV-positive men).
- **Viral load suppression:** Among adults living with HIV and on treatment, it is estimated that 91.3% achieved VLS (92.2% of HIV-positive women and 89.5% of HIV-positive men).
- Overall, it is estimated that 75.6% of all the adults living with HIV in Namibia had VLS (80.1% of women and 67.6% of men), which exceeds the UNAIDS target of 73%.
- Based on self-report and ARV detection data, Namibia has achieved the second and third of the UNAIDS 90-90-90 targets among persons who were aware of their HIV status.
- Women living with HIV in Namibia have achieved the UNAIDS 90-90-90 targets, while men living with HIV have not yet reached them.

10.2 Background

In order to achieve HIV epidemic control, Namibia has adopted the UNAIDS 90-90-90 targets: by 2020, 90% of all people living with HIV will know their HIV status; 90% of all persons diagnosed with HIV will receive sustained ART; and 90% of all persons receiving ART will have VLS.¹

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

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

Second, Table 10.B measures the 90-90-90 indicators using both self-reported and ARV biomarker data. In this table, 'aware' and 'on treatment' have been adjusted so that adults in whom ARVs were detected

are classified as ‘aware’ and ‘on treatment’ even if they did not report it. Individuals are classified as ‘on treatment’ if they reported that they were taking ART or had detectable ARVs in their blood. The prevalence of VLS is reported for all of those classified as on treatment.

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

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

10.3 Status of the UNAIDS 90-90-90 Targets

90-90-90 cascade based on self-reported awareness of HIV status and ARV use, and detectable ARVs: ARV-adjusted[‡] awareness of HIV-positive status: Among adults (those aged 15-64 years) living with HIV, 86.0% (79.6% of men and 89.5% of women) were classified as aware, according to combined self-reported awareness or detectable ARV data (ARV-adjusted awareness). Similar levels of ARV-adjusted awareness were observed for adults aged 35-49 years living with HIV: 89.4% of adults in this age category (83.2% of men and 92.9% of women) reported awareness of their HIV-positive status or had detectable ARV data. However, ARV-adjusted awareness of HIV-positive status was found in only 72.2% of young people (those aged 15-24 years) living with HIV (71.1% of young men and 72.7% of young women). The greatest disparity by sex was seen in adults aged 25-34 years, among whom 60.4% of men and 84.5% of women were aware of their status (Table 10.3.A; Figure 10.3.A).

ARV-adjusted treatment status: Based on either self-reported ARV status and detectable ARVs, 96.4% of those with ARV-adjusted awareness status were classified as being on ART. This was similar across age groups ranging from 94.8% among adults aged 25-34 years to 98.2% among young people (Table 10.3.A; Figure 10.3.A).

Viral load suppression: Among persons on ART (ARV-adjusted treatment status), 91.3% had VLS, ranging from 85.4% among young people to 92.0% among adults aged 35-49 years. Across all age bands, VLS among those on ART was similar among men and women (Table 10.3.A; Figure 10.3.A).

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

Nearly four out of five (78.8%) HIV-positive adults reported having awareness of their HIV status (83.1% of HIV-positive women and 71.1% of HIV-positive men). Based on self-report, Namibia has achieved the second and third of the UNAIDS 90-90-90 targets among persons who were aware of their HIV status;

[‡]ARV-adjusted refers to awareness (in this case) that is defined as a combination of self-report and ARVs detected in a participants’ blood). It is ‘adjusted awareness’ due to the additional information provided by ARV detection.

95.3% self-reported current ART use (96.0% of HIV-positive women and 93.8% of HIV-positive men), and among those who reported current ART use, 91.5% had VLS (92.2% of women and 89.9% of men) (Table 10.3.B).

Overall 90-90-90 cascade based on self-reported data, and adjusted for detectable ARVs (ARV-adjusted awareness of HIV-positive status), and VLS:

Of HIV-positive adults in Namibia, 86.0% were aware of their HIV status: 89.5% of women and 79.6% of men. Among all the adults living with HIV in Namibia, 82.8% had detectable ARVs or reported current ART usage: 86.9% among women and 75.5% among men. Overall, 75.6% of all the adults living with HIV in Namibia had VLS (80.1% of women and 67.6% of men), which exceeds the UNAIDS target of 73%. (Table 10.3.C, Figure 10.3.A).

Table 10.3.A Adult 90-90-90: Self-reported antiretroviral therapy (ART) use and laboratory antiretroviral (ARV) data, conditional percentages							
90-90-90 targets among adults living with HIV aged 15-64 years, by sex and age, NAMPHIA 2017							
Age	Male		Female		Total		
	Percentage who reported HIV-positive status or with detectable ARVs ¹		Percentage who reported HIV-positive status or with detectable ARVs ¹		Percentage who reported HIV-positive status or with detectable ARVs ¹		
	Number	Number	Number	Number	Number	Number	
15-24	71.1	66	72.7	174	72.2	240	
25-34	60.4	132	85.4	394	77.5	526	
35-49	83.2	370	92.9	811	89.4	1,181	
15-49	76.0	568	88.0	1,379	83.9	1,947	
15-64	79.6	751	89.5	1,690	86.0	2,441	
On Treatment Among Those Diagnosed							
Age	Male		Female		Total		
	Percentage who reported current ART usage or with detectable ARVs ²		Percentage who reported current ART usage or with detectable ARVs ²		Percentage who reported current ART usage or with detectable ARVs ²		
	Number	Number	Number	Number	Number	Number	
15-24	(100.0)	44	97.3	135	98.2	179	
25-34	91.5	88	95.8	338	94.8	426	
35-49	95.0	310	97.0	764	96.4	1,074	
15-49	94.9	442	96.7	1,237	96.2	1,679	
15-64	94.9	609	97.1	1,535	96.4	2,144	
Viral Load Suppression (VLS) on Treatment							
Age	Male		Female		Total		
	Percentage with VLS ³		Percentage with VLS ³		Percentage with VLS ³		
	Number	Number	Number	Number	Number	Number	
15-24	(81.0)	44	87.5	131	85.4	175	
25-34	85.7	82	90.4	322	89.3	404	
35-49	91.2	297	92.3	742	92.0	1,039	
15-49	88.9	423	91.2	1,195	90.5	1,618	
15-64	89.5	582	92.2	1,487	91.3	2,069	

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

Table 10.3.B Adult 90-90-90: Self-reported antiretroviral therapy (ART) data, conditional percentages						
90-90-90 targets among adults living with HIV aged 15-64 years, by sex and age, NAMPHIA 2017						
Age	Diagnosed					
	Male		Female		Total	
	Percentage who reported HIV-positive status ¹	Number	Percentage who reported HIV-positive status ¹	Number	Percentage who reported HIV-positive status ¹	Number
15-24	43.1	66	62.6	172	56.4	238
25-34	56.6	132	80.1	391	72.6	523
35-49	76.4	364	87.4	805	83.5	1,169
15-49	67.2	562	82.0	1,368	77.0	1,930
15-64	71.1	743	83.1	1,678	78.8	2,421
On Treatment Among Those Self-Reported as HIV Positive						
Age	Male		Female		Total	
	Percentage self-reported on ART ²	Number	Percentage self-reported on ART ²	Number	Percentage self-reported on ART ²	Number
15-24	(100.0)	27	96.2	114	97.1	141
25-34	89.8	83	94.5	317	93.3	400
35-49	94.0	284	96.3	715	95.5	999
15-49	93.6	394	95.8	1,146	95.1	1,540
15-64	93.8	549	96.0	1,420	95.3	1,969
Viral Load Suppression (VLS) Among Those Self-Reported on ART						
Age	Male		Female		Total	
	Percentage with VLS	Number	Percentage with VLS	Number	Percentage with VLS	Number
15-24	(76.1)	27	89.3	109	86.0	136
25-34	86.2	76	89.9	299	89.0	375
35-49	91.7	268	92.3	690	92.1	958
15-49	89.2	371	91.3	1,098	90.7	1,469
15-64	89.9	518	92.2	1,363	91.5	1,881

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

Table 10.3.C Adult 90-90-90: Self-reported antiretroviral therapy (ART) use and laboratory antiretroviral (ARV) data, overall percentages						
90-90-90 targets among all adults, ages 15-64 years, living with HIV, by sex and age, NAMPHIA 2017						
Age	Diagnosed					
	Male		Female		Total	
	Percentage self-reported HIV positive or with detectable ARVs ¹	Number	Percentage self-reported HIV positive or with detectable ARVs ¹	Number	Percentage self-reported HIV positive or with detectable ARVs ¹	Number
15-24	71.1	66	72.7	174	72.2	240
25-34	60.4	132	85.4	394	77.5	526
35-49	83.2	370	92.9	811	89.4	1,181
15-49	76.0	568	88.0	1,379	83.9	1,947
15-64	79.6	751	89.5	1,690	86.0	2,441
Age	On Treatment					
	Male		Female		Total	
	Percentage who reported current ART usage or had detectable ARVs ²	Number	Percentage who reported current ART usage or had detectable ARVs ²	Number	Percentage who reported current ART usage or had detectable ARVs ²	Number
15-24	71.1	66	70.8	174	70.9	240
25-34	55.3	132	81.8	394	73.4	526
35-49	79.1	370	90.1	811	86.2	1,181
15-49	72.1	568	85.1	1,379	80.7	1,947
15-64	75.5	751	86.9	1,690	82.8	2,441

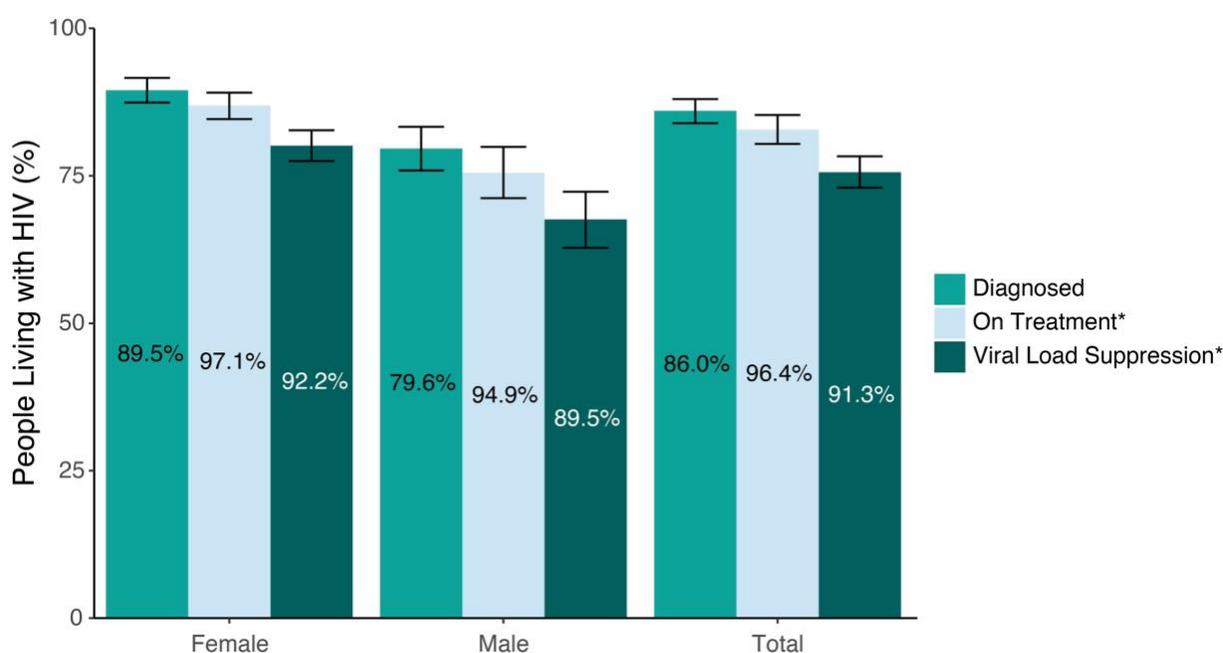
Table 10.3.C Adult 90-90-90: Self-reported antiretroviral therapy (ART) status and laboratory antiretroviral (ARV) data, overall percentages (continued)

90-90-90 targets among people living with HIV ages 15-64 years, by sex and age, NAMPHIA 2017

Age	Viral Load Suppression (VLS) on Treatment					
	Male		Female		Total	
	Percentage with VLS ³	Number	Percentage with VLS ³	Number	Percentage with VLS ³	Number
15-24	57.5	66	61.9	174	60.5	240
25-34	47.4	132	73.9	394	65.5	526
35-49	72.2	370	83.2	811	79.2	1,181
15-49	64.1	568	77.7	1,379	73.1	1,947
15-64	67.6	751	80.1	1,690	75.6	2,441

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

Figure 10.3.A Adult 90-90-90: Adjusted for laboratory antiretroviral data, by sex, NAMPHIA 2017



¹In the antiretroviral (ARV)-adjusted 90-90-90, adults (ages 15-64 years) are classified as 'Aware' or 'Diagnosed' if they reported knowing their HIV-positive status before testing HIV seropositive in NAMPHIA or had detectable ARVs in their blood. Adults 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

- Overall, 14% of people living with HIV in Namibia are unaware of their status, including almost 20% of men. This is a major gap in diagnosis of individuals.
- Strategies to improve testing coverage and awareness of HIV status among adult men aged 15-64 years (measured at 79.6% in NAMPHIA) and young people aged 15-24 years (measured at 72.2%) are needed to enhance Namibia's progress towards HIV epidemic control.

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 August 20, 2018.

11 CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV

11.1 Key Findings

- Among adults living with HIV, the median CD4 count was 422 cells/ μ L among those who had not been previously diagnosed, 400 cells/ μ L among those who had been diagnosed, but had not started ART, and 563 cells/ μ L among those on ART.
- Overall, for every age group over the age of 20 years, men had lower CD4 counts than women, measured both as median CD4 counts and as the proportion with fewer than 500 CD4 cells/ μ L.
- Men who had not been previously diagnosed had lower median CD4 counts than women who had not been previously diagnosed (355 and 496 cells/ μ L, respectively).
- Late diagnosis of HIV, as defined by having a CD4 count <200 cells/ μ L at diagnosis, was relatively uncommon (16.5%). In general, a higher proportion of men presented with advanced infection than women (20.6% and 12.0%, respectively, with <200 CD4 cells/ μ L at diagnosis).
- Retention on ART was high, both among those who had initiated ART in the prior 12 months and those who had been on ART for 12 months or more prior to the survey. This was observed both among those who self-reported they were still on ART (99.0% for <12 months and 98.9% for ≥ 12 months on ART) and among those whose blood tested positive for ARVs (99.3% and 99.9%, for <12 months and ≥ 12 months on ART, respectively).
- Among 20 samples from people identified as having recent HIV infections by NAMPHIA, five had mutations associated with resistance to ARVs. Five successfully amplified samples had mutations associated with NNRTI resistance. None of the samples had mutations associated with resistance to all three classes of ARVs (nucleoside, NNRTI and PI).

11.2 Background

The quality of HIV care is based on key principles of accessibility, efficiency, and safety. As countries implement treatment for all people living with HIV, ensuring a sustainable health system that is both people-centred and effective requires diligent monitoring and responsiveness.¹ Indicators such as CD4 count at diagnosis and retention on ART can provide evidence of programme 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 and secondary drug resistance allows optimization of national ART guidelines, including second- and third-line therapies. NAMPHIA, therefore, provides a unique opportunity to gauge progress in the expansion of HIV clinical services in Namibia, as well as to identify gaps and future challenges.

11.3 CD4 Counts and Immunosuppression

NAMPHIA measured CD4 counts for every HIV-positive participant as a marker of duration of infection and degree of immunosuppression. Among those who had not been previously diagnosed (based on self-report and adjusted by whether ARVs were detected in their blood), the median CD4 count was 422 cells/ μ L, and 60.1% were <500 cells/ μ L. Among those who had been diagnosed but not started on ART, the median was 400 cells/ μ L, and 66.6% were <500 cells/ μ L. Among those diagnosed and on ART, the median was 563 cells/ μ L, and 40.3% were <500 cells/ μ L (Table 11.3.A, Figure 11.3.A). Of those who had

not been previously diagnosed, men had median CD4 counts of 355 cells/ μ L and women of 496 cells/ μ L (Table 11.3.A).

The proportion of people living with HIV with CD4 counts \leq 500 cells/ μ L varied by age and sex. In general, with increasing age, greater proportions of men had \leq 500 CD4 cells/ μ L, especially those aged 30-45 years. Among those aged 35-39 years, 39.4% of women had $<$ 500 CD4 cells/ μ L compared to 74.0% of men. Regions with the highest proportion of people living with HIV with $<$ 500 CD4 cells/ μ L were Hardap (63.7%) and Omaheke (61.2%); the lowest ones Oshana (38.1%) and Ohangwena (38.4%) (Table 11.3.A). While median CD4 counts did not vary remarkably by marital status, there were marked differences between men and women. Of never married men, 61.1% had fewer than 500 cells/ μ L, but 37.2% of never married women did. Among married men, 56.9% had fewer than 500 cells/ μ L, while 32.4% of married women did. Similar male-female differences were seen in those living together and those who were separated. There were comparable large sex differences by educational level. For instance, among those who had finished secondary school, 71.3% of men had \leq 500 CD4 cells/ μ L, while 35.2% of women did (Table 11.3.A).

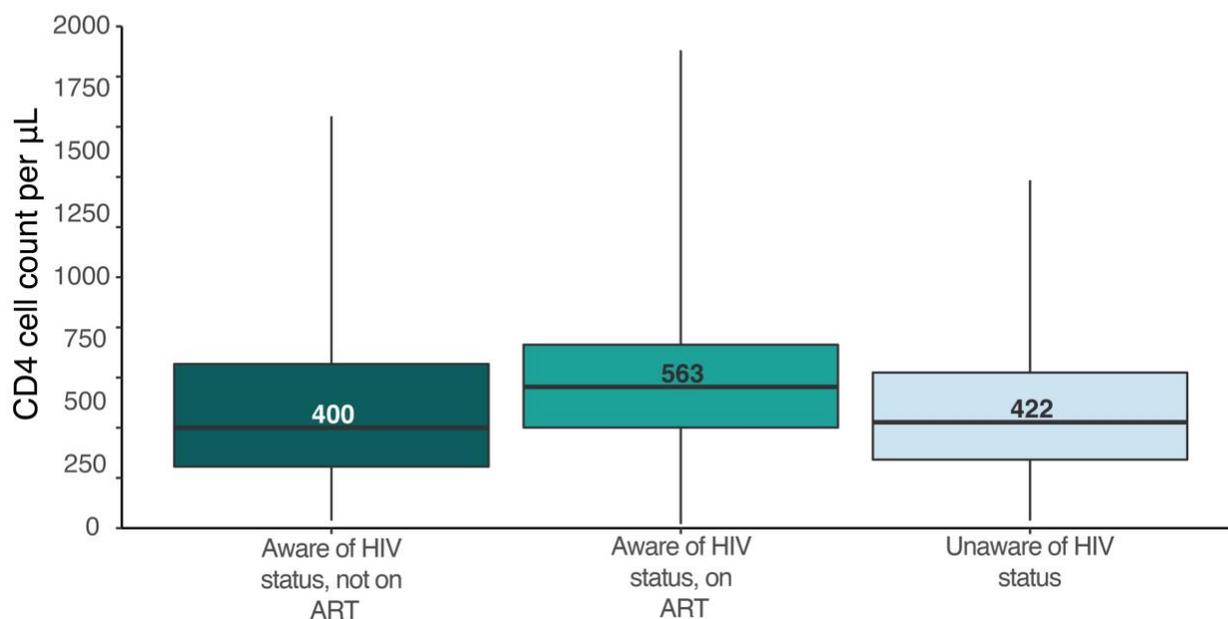
Table 11.3.A Median CD4 count and immunosuppression									
Among HIV-positive adults aged 15-64 years, median (Q1, Q3) CD4 count and percentage with immunosuppression ($<$ 500 cells/ μ L), by sex, self-reported diagnosis and antiretroviral therapy (ART) status, and selected demographic characteristics, NAMPHIA 2017									
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	355 (240, 522)	70.9	194	496 (299, 706)	50.1	258	422 (273, 620)	60.1	452
Previously diagnosed, not on ART	400 (232, 697)	(64.5)	31	368 (264, 622)	68.1	57	400 (245, 654)	66.6	88
Previously diagnosed, on ART	440 (316, 600)	58.8	518	619 (459, 773)	31.8	1,359	563 (401, 731)	40.3	1,877
Missing	*	*	10	*	*	15	581 (404, 821)	(31.8)	25
Residence									
Urban	415 (286, 588)	62.1	277	606 (435, 787)	35.1	606	540 (355, 711)	45.0	883
Rural	412 (278, 578)	62.8	476	593 (425, 749)	36.9	1,083	528 (365, 708)	45.8	1,559
Region									
Erongo	417 (322, 600)	(55.4)	28	534 (392, 668)	(40.0)	46	503 (342, 632)	46.4	74
Hardap	325 (200, 443)	(80.6)	47	488 (266, 663)	51.9	73	413 (244, 606)	63.7	120
//Karas	440 (299, 629)	(57.9)	40	554 (451, 689)	35.8	51	527 (388, 664)	47.0	91
Kavango East	357 (253, 464)	80.4	56	598 (449, 737)	33.3	162	528 (347, 691)	46.9	218
Kavango West	377 (217, 507)	(68.1)	33	555 (394, 766)	41.2	100	498 (355, 681)	49.3	133
Khomas	370 (251, 502)	73.8	67	575 (391, 735)	37.8	114	471 (321, 680)	53.0	181
Kunene	352 (217, 408)	(80.7)	25	579 (335, 710)	(42.5)	43	443 (275, 669)	57.4	68
Ohangwena	447 (286, 646)	54.8	108	642 (458, 807)	31.0	290	587 (394, 762)	38.4	398
Omaheke	391 (264, 542)	(67.8)	47	443 (275, 778)	55.4	59	432 (272, 638)	61.2	106
Omusati	438 (317, 588)	59.5	86	606 (451, 769)	34.9	272	556 (388, 728)	41.5	358
Oshana	477 (292, 576)	52.1	79	674 (471, 886)	29.6	165	563 (424, 770)	38.1	244
Oshikoto	381 (268, 582)	62.6	66	590 (426, 740)	33.9	163	537 (367, 699)	43.8	229
Otjozondjupa	456 (259, 664)	(53.2)	42	638 (448, 783)	30.2	60	591 (373, 754)	40.3	102
Zambezi	501 (339, 631)	(49.1)	29	534 (401, 701)	44.5	91	529 (400, 669)	45.7	120
Marital status									
Never married	405 (269, 590)	61.1	299	603 (433, 773)	37.2	831	542 (371, 725)	44.6	1,130
Married	446 (327, 598)	56.9	185	593 (457, 765)	32.4	280	537 (387, 703)	43.2	465
Living together	395 (248, 579)	66.5	183	604 (408, 754)	35.1	292	508 (321, 692)	48.9	475
Widowed	*	*	24	605 (420, 730)	33.9	119	551 (385, 719)	41.9	143
Divorced	*	*	7	552 (306, 730)	(44.5)	33	534 (309, 677)	(43.6)	40
Separated	403 (279, 513)	72.7	52	567 (400, 670)	38.0	118	496 (338, 655)	50.9	170
Education									
No education	419 (294, 614)	57.2	96	543 (403, 744)	45.1	135	494 (339, 662)	50.8	231
Primary	463 (305, 613)	54.7	325	599 (427, 763)	34.9	620	541 (368, 723)	42.8	945
Secondary	384 (245, 533)	71.3	315	599 (438, 763)	35.2	888	529 (356, 696)	46.4	1,203
More than secondary	*	*	14	667 (424, 922)	(40.4)	40	571 (388, 844)	43.4	54

Table 11.3.A Median CD4 count and immunosuppression
Among HIV-positive adults aged 15-64 years, median (Q1, Q3) CD4 count and percentage with immunosuppression (< 500 cells/μL), by sex, self-reported diagnosis and antiretroviral therapy (ART) status, and selected demographic characteristics, NAMPHIA 2017

Characteristic	Male			Female			Total		
	Median (Q1, Q3)	Percentage <500 cells/μL	Number	Median (Q1, Q3)	Percentage <500 cells/μL	Number	Median (Q1, Q3)	Percentage <500 cells/μL	Number
Wealth quintile									
Lowest	406 (261, 559)	67.3	250	597 (423, 765)	36.0	600	526 (365, 721)	46.5	850
Second	433 (286, 582)	61.4	181	603 (425, 752)	36.8	462	541 (357, 710)	44.7	643
Middle	413 (272, 593)	60.8	193	606 (453, 765)	32.8	343	541 (357, 689)	43.9	536
Fourth	403 (306, 583)	60.8	99	543 (397, 724)	44.5	213	497 (346, 682)	50.8	312
Highest	381 (301, 609)	(57.6)	30	661 (508, 964)	21.7	71	606 (398, 846)	33.3	101
Age									
15-19	623 (436, 822)	(24.2)	40	671 (472, 870)	30.1	72	636 (473, 864)	27.9	112
20-24	339 (233, 657)	(58.0)	27	598 (448, 762)	32.2	102	580 (353, 746)	39.2	129
25-29	460 (298, 529)	(67.2)	44	538 (368, 723)	44.0	162	496 (327, 683)	51.2	206
30-34	382 (243, 552)	68.8	88	592 (430, 710)	37.9	230	516 (346, 682)	47.8	318
35-39	346 (227, 506)	74.0	114	559 (400, 732)	39.4	319	492 (319, 674)	50.6	433
40-44	382 (296, 549)	67.3	153	626 (453, 796)	32.8	268	514 (352, 722)	46.7	421
45-49	372 (256, 541)	69.7	104	623 (445, 764)	31.0	224	543 (363, 707)	44.2	328
50-54	505 (334, 674)	47.1	97	632 (411, 760)	33.2	143	559 (400, 717)	39.7	240
55-59	443 (363, 601)	55.4	53	538 (436, 785)	40.3	109	532 (391, 752)	45.1	162
60-64	417 (281, 657)	(62.0)	33	585 (443, 742)	39.3	60	505 (387, 689)	48.1	93
Total 15-24	572 (292, 745)	39.4	67	630 (454, 810)	31.3	174	598 (414, 788)	33.8	241
Total 15-49	390 (267, 563)	65.8	570	598 (428, 764)	35.9	1,377	531 (346, 707)	46.1	1,947
Total 15-64	413 (283, 587)	62.4	753	597 (429, 764)	36.0	1,689	535 (362, 709)	45.4	2,442

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

Figure 11.3.A CD4 count distribution among HIV-positive adults, by ART status, NAMPHIA 2017



11.4 Late HIV Diagnosis

NAMPHIA examined the proportion of HIV-positive participants who were unaware of their status (as determined by self-report and ARV detection) and had advanced immunosuppression, defined as having either <200 or <350 CD4 cells/ μ L. Overall, 16.5% had CD4 counts <200 cells/ μ L, and 48.2% had CD4 counts <350 cells/ μ L. Proportions for CD4 counts of <200 cells/ μ L and <350 cells/ μ L differed between men and women, with men having 20.6% and 54.9% and women having 12.0% and 41.0%, respectively.

These sex differences appeared most pronounced among people living in urban areas, where 23.7% of men and 10.3% of women had <200 CD4 cells/ μ L at diagnosis. There were differences by age group as well, where 8.6% of young adults aged 20-24 years presented with <200 CD4 cells/ μ L, while this proportion grew to 29.8% among adults aged 35-39 years. Immunosuppression of <350 cells/ μ L was also less common among the youngest age groups.

Table 11.4.A Late HIV diagnosis									
Among adults aged 15-64 years who tested HIV positive in NAMPHIA, but self-reported HIV negative with no detectable ARVs, percentage who had a CD4 cell count < 200 cells/mL and < 350 cells/mL, by sex and selected demographic characteristics, NAMPHIA 2017									
Characteristic	Male			Female			Total		
	Percentage < 200 cells/ μ L ¹	Percentage < 350 cells/ μ L ¹	Number	Percentage < 200 cells/ μ L ¹	Percentage < 350 cells/ μ L ¹	Number	Percentage < 200 cells/ μ L ¹	Percentage < 350 cells/ μ L ¹	Number
Residence									
Urban	23.7	50.5	58	10.3	40.7	73	17.0	45.6	131
Rural	16.6	60.7	84	14.8	41.4	82	15.8	52.0	166
Region									
Erongo	*	*	6	*	*	10	*	*	16
Hardap	*	*	13	*	*	11	*	*	24
//Karas	*	*	7	*	*	4	*	*	11
Kavango East	*	*	12	*	*	11	*	*	23
Kavango West	*	*	6	*	*	9	*	*	15
Khomas	*	*	17	*	*	19	(19.2)	(47.6)	36
Kunene	*	*	7	*	*	8	*	*	15
Ohangwena	*	*	13	*	*	10	*	*	23
Omaheke	*	*	14	*	*	14	(23.8)	(35.4)	28
Omusati	*	*	9	*	*	17	(7.0)	(30.6)	26
Oshana	*	*	10	*	*	8	*	*	18
Oshikoto	*	*	9	*	*	13	*	*	22
Otjozondjupa	*	*	13	*	*	9	*	*	22
Zambezi	*	*	6	*	*	12	*	*	18
Marital status									
Never married	18.8	56.2	73	11.6	33.2	80	15.0	44.1	153
Married	*	*	17	*	*	19	(26.5)	(66.7)	36
Living together	(19.5)	(45.3)	37	16.5	48.0	37	18.3	46.4	74
Widowed	*	*	0	*	*	5	*	*	5
Divorced	*	*	1	*	*	4	*	*	5
Separated	*	*	13	*	*	10	*	*	23
Education									
No education	*	*	15	*	*	17	(21.0)	(55.3)	32
Primary	17.5	43.3	55	14.4	51.7	38	16.4	46.1	93
Secondary	24.4	60.8	68	9.9	38.0	100	16.3	48.2	168
More than secondary	*	*	3	*	*	0	*	*	3
Wealth quintile									
Lowest	(17.0)	(57.2)	41	(20.9)	(42.2)	43	18.9	49.9	84
Second	(22.0)	(52.0)	29	(14.7)	(54.2)	47	18.3	53.1	76
Middle	(18.8)	(61.2)	39	(13.1)	(28.5)	25	16.6	48.4	64
Fourth	(23.6)	(49.3)	27	(7.3)	(54.1)	27	16.7	51.3	54
Highest	*	*	6	*	*	13	*	*	19
Age									
15-19	*	*	7	*	*	11	*	*	18
20-24	*	*	15	(6.0)	(26.9)	28	(8.6)	(40.3)	43
25-29	*	*	19	(4.5)	(44.4)	35	15.7	53.0	54

Table 11.4.A Late HIV diagnosis (continued)

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

Characteristic	Male			Female			Total		
	Percentage < 200 cells/ μ L ¹	Percentage < 350 cells/ μ L ¹	Number	Percentage < 200 cells/ μ L ¹	Percentage < 350 cells/ μ L ¹	Number	Percentage < 200 cells/ μ L ¹	Percentage < 350 cells/ μ L ¹	Number
Age (cont.)									
30-34	(17.4)	(63.5)	25	*	*	21	(17.9)	(57.6)	46
35-39	*	*	24	*	*	16	(29.8)	(62.1)	40
40-44	(15.7)	(39.6)	26	*	*	16	(16.4)	(45.7)	42
45-49	*	*	10	*	*	15	(22.1)	(59.1)	25
50-54	*	*	9	*	*	5	*	*	14
55-59	*	*	6	*	*	6	*	*	12
60-64	*	*	1	*	*	2	*	*	3
Total 15-24	*	*	22	(3.9)	(23.9)	39	5.9	34.7	61
Total 15-49	20.9	58.9	126	12.4	41.7	142	16.7	50.4	268
Total 15-64	20.6	54.9	142	12.0	41.0	155	16.5	48.2	297

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

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

11.5 Retention on Antiretroviral Therapy

Retention on ART was very high (99.0%) among adults (those aged 15-64 years) who reported that they had started ART in the prior 12 months. Of these, 99.1% of men and 98.9% of women reported that they were still receiving ART, and 100% of men and 98.8% of women had detectable ARVs in their blood.

There were no differences in reported retention among different demographic and geographic groups (Table 11.5.A).

Table 11.5.A Retention on antiretroviral therapy (ART): Initiation of ART in the 12 months before the survey

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

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 ARVs²						
Detectable	100.0	82	98.8	138	99.3	220
Not detectable	*	5	*	10	*	15
Residence						
Urban	(100.0)	32	97.6	54	98.7	86
Rural	98.2	55	100.0	94	99.3	149
Region						
Erongo	*	3	*	5	*	8
Hardap	*	7	*	12	*	19
//Karas	*	11	*	4	*	15
Kavango East	*	9	*	14	*	23
Kavango West	*	4	*	8	*	12
Khomas	*	7	*	7	*	14
Kunene	*	5	*	6	*	11
Ohangwena	*	9	(100.0)	25	(100.0)	34
Omaheke	*	3	*	8	*	11
Omusati	*	4	*	24	(100.0)	28
Oshana	*	12	*	12	*	24
Oshikoto	*	5	*	14	*	19
Otjozondjupa	*	3	*	4	*	7
Zambezi	*	5	*	5	*	10
Marital status						
Never married	(100.0)	31	100.0	76	100.0	107
Married	*	16	*	18	(98.6)	34
Living together	(96.7)	27	(96.7)	34	96.7	61
Widowed	*	4	*	8	*	12
Divorced	*	2	*	1	*	3
Separated	*	7	*	11	*	18

Table 11.5.A Retention on antiretroviral therapy (ART): Initiation of ART in the 12 months before the survey (continued)						
Among HIV-positive adults aged 15-64 years who self-reported initiating ART less than 12 months prior to the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, NAMPHIA 2017						
Characteristic	Male		Female		Total	
	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number
Education						
No education	*	14	*	15	(100.0)	29
Primary	(100.0)	31	100.0	53	100.0	84
Secondary	(97.9)	41	98.1	78	98.0	119
More than secondary	*	1	*	2	*	3
Wealth quintile						
Lowest	(100.0)	33	100.0	54	100.0	87
Second	*	15	(95.4)	40	97.4	55
Middle	(96.9)	25	(100.0)	35	98.6	60
Fourth	*	13	*	15	(100.0)	28
Highest	*	1	*	4	*	5
Age						
15-19	*	0	*	9	*	9
20-24	*	3	*	19	*	22
25-29	*	8	(100.0)	26	(100.0)	34
30-34	*	20	(97.8)	26	(98.9)	46
35-39	*	14	*	22	(97.0)	36
40-44	*	17	*	14	(96.8)	31
45-49	*	11	*	14	(100.0)	25
50-54	*	7	*	9	*	16
55-59	*	4	*	6	*	10
60-64	*	3	*	3	*	6
Total 15-24	*	3	(100.0)	28	(100.0)	31
Total 15-49	99.0	73	98.8	130	98.9	203
Total 15-64	99.1	87	98.9	148	99.0	235

¹Relates to Global AIDS Monitoring Indicator 1.3: Retention on antiretroviral therapy at 12 months; ²ARVs: antiretrovirals

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

Among those who reported initiating ART 12 months or more before they were interviewed for NAMPHIA, retention was similarly very high; 98.9% reported that they were still on ART. Every woman who reported they were on ART had detectable ARVs in their blood as did 99.9% of men. Again, there were minimal difference in reported retention among the different geographic and demographic groups (Table 11.5.B)

Table 11.5.B Retention on antiretroviral therapy (ART): Initiation of ART more than 12 months before the survey						
Among HIV-positive adults aged 15-64 years who reported initiating ART 12 months or more prior to the survey, percentage who self-reported still receiving ART, by sex and selected demographic characteristics, NAMPHIA 2017						
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 ARVs²						
Detectable	99.9	364	100.0	1,051	99.9	1,415
Not detectable	(89.6)	34	83.2	74	85.3	108
Residence						
Urban	99.3	138	98.2	386	98.5	524
Rural	99.0	260	99.4	739	99.3	999
Region						
Erongo	*	16	(100.0)	26	(100.0)	42
Hardap	*	17	(90.5)	39	93.7	56
//Karas	*	12	(94.4)	35	(93.6)	47
Kavango East	(94.6)	27	99.3	111	98.3	138
Kavango West	*	21	100.0	73	100.0	94
Khomas	(100.0)	33	96.4	69	97.6	102
Kunene	*	10	(94.8)	25	(92.3)	35
Oshana	100.0	71	98.9	212	99.2	283
Omaheke	*	20	(93.1)	29	(91.9)	49
Omusati	100.0	56	100.0	172	100.0	228

Table 11.5.B Retention on antiretroviral therapy (ART): Initiation of ART more than 12 months before the survey

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

Characteristic	Male		Female		Total	
	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number	Percentage still receiving ART ¹	Number
Oshana	(100.0)	41	100.0	119	100.0	160
Oshikoto	(100.0)	40	100.0	116	100.0	156
Otjozondjupa	*	20	(100.0)	43	100.0	63
Zambezi	*	14	100.0	56	100.0	70
Marital status						
Never married	99.8	138	99.5	538	99.6	676
Married	98.9	121	99.2	203	99.1	324
Living together	97.7	98	98.4	188	98.2	286
Widowed	*	14	99.5	80	99.6	94
Divorced	*	3	*	24	(100.0)	27
Separated	*	23	92.5	79	94.6	102
Education						
No education	(97.0)	49	99.8	76	98.6	125
Primary	99.1	187	99.4	405	99.3	592
Secondary	99.7	152	98.2	604	98.6	756
More than secondary	*	9	(100.0)	34	(100.0)	43
Wealth quintile						
Lowest	98.1	135	99.4	402	99.0	537
Second	98.4	103	98.8	308	98.7	411
Middle	100.0	101	97.3	234	98.2	335
Fourth	(100.0)	45	99.7	141	99.8	186
Highest	*	14	(100.0)	40	100.0	54
Age						
15-19	*	11	(100.0)	28	(100.0)	39
20-24	*	5	(97.4)	43	(97.7)	48
25-29	*	9	98.0	84	98.3	93
30-34	(100.0)	34	98.4	149	98.7	183
35-39	100.0	62	97.7	233	98.3	295
40-44	99.6	86	98.9	205	99.1	291
45-49	96.9	68	100.0	162	99.0	230
50-54	99.5	66	99.3	101	99.4	167
55-59	(100.0)	34	100.0	79	100.0	113
60-64	*	23	(100.0)	41	98.4	64
Total 15-24	*	16	98.5	71	98.8	87
Total 15-49	99.1	275	98.6	904	98.7	1,179
Total 15-64	99.1	398	98.8	1,125	98.9	1,523

¹Relates to Global AIDS Monitoring Indicator 1.3: Retention on antiretroviral therapy at 12 months; ²ARVs: antiretrovirals

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

11.6 Transmitted Resistance to Antiretroviral Therapy

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

Among 20 successfully amplified samples from recently infected, HIV-positive adults, five had evidence of resistance to ARVs. One successfully amplified sample had mutations associated with resistance to nucleoside reverse transcriptase inhibitor (NRTI), and five had mutations associated with NNRTI resistance. There was one successfully amplified sample that had resistance to both NRTI and NNRTI classes of ARVs (Table 11.6.A). None of the samples had mutations associated with resistance to all three classes of ARVs (NRTIs, NNRTIs or PIs).

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

Table 11.6.A Resistance to antiretrovirals (ARVs)
Among persons ages 15-64 years who were recently infected with HIV, percentage with resistance to ARVs, by class of ARV resistance, NAMPHIA 2017

	Percent	Number	DR Mutations Detected ¹
Successfully amplified ²	(90.9)	20	
Any	*	5	K103N, K70KR, M184V, Y181C
Nucleoside reverse transcriptase inhibitors (NRTI)	*	1	K70KR, M184V
Non-nucleoside reverse transcriptase inhibitors (NNRTI)	*	5	K103N, Y181C
Protease inhibitor (PI)	*	0	
NRTI & NNRTI	*	1	K70KR, M184V, Y181C
NRTI, NNRTI & PI	*	0	

¹Based on *Stanford Database for HIV Drug Resistance Mutation*
²Unweighted figures, from a total of 22 cases.
 Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. Estimates with an asterisk are based on a very small number (less than 25) of unweighted cases and have been suppressed.
<https://hivdb.stanford.edu/assets/media/resistance-mutation-handout-oct2018.85a4841b.pdf>

11.7 HIV Subtype

Table 11.7.A shows the distribution of HIV subtypes among HIV-positive adults who underwent HIV genotyping. Of the 140 adults living with HIV who underwent HIV genotyping, 128 (91.4%) presented with subtype C, seven presented with a recombinant subtype, one presented with subtype G, and four had subtype A. No one sampled presented with subtypes B or D (Table 11.7.A).

Table 11.7.A HIV subtype
Percent distribution of HIV-positive persons aged 15-64 years that underwent genotyping, by HIV Subtype, NAMPHIA 2017

	Total	
	Percent	Number
Subtype A	*	4
Subtype B	*	0
Subtype C	91.4	128
Subtype D	*	0
Subtype G	*	1
Recombinant	*	7
Total	100.0	140

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

11.8 Gaps and Unmet Needs

- While the proportion in NAMPHIA of adults who were newly diagnosed and with advanced immunosuppression (CD4 counts <200 cells/μL) was low (16.5%), the proportion diagnosed with <350 CD4 cells/μL (48.2%) suggests that greater emphasis needs to be placed on case finding of people with longer-standing disease, particularly among men and among older adults.

11.9 References

1. World Health Organization. *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: recommendations for a public health approach*. Geneva: World Health Organization; 2016.

12 PREVENTION OF MOTHER-TO-CHILD TRANSMISSION

12.1 Key Findings

- Attendance at ANC was high among women of childbearing age (defined as those aged 15-49 years) participating in NAMPHIA; 98.4% of women who had delivered a baby in the prior three years reported attending at least one ANC visit.
- Breastfeeding was the norm among last-born children in the three years preceding the survey; 97.2% of mothers in NAMPHIA reported ever having breastfed their babies. Among these women, 56.9% had ever breastfed their children, but were not breastfeeding at the time of the survey.
- Knowledge of HIV status was similarly high with 97.4% of women who had given birth in the prior 12 months knowing their status, either through antenatal testing (87.5%) or having been previously diagnosed (9.9%); 1.8% were diagnosed with HIV in their last pregnancy.
- 95.8% of HIV-positive women who had delivered in the last 12 months were on ART; 16.6% began ART during pregnancy.
- Among infants born in the 17 months prior to the survey to HIV-positive women, 1.4% were confirmed HIV positive by the virological testing conducted as part of NAMPHIA. No infants whose mothers had been on ART during pregnancy were found to be infected during NAMPHIA.

12.2 Background

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

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

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

12.3 Antenatal Care Attendance

Overall, among women who had delivered a baby in the past three years, 98.4% had attended at least one ANC visit (Table 12.3.A). There was little difference by geography or demographic characteristics. Prevalence of attendance less than 95% was found in women who reported no education and women living in Kunene and Omaheke.

Table 12.3.A Antenatal care (ANC)		
Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one ANC visit for her most recent birth, by selected demographic characteristics, NAMPHIA 2017		
Characteristic	Percentage who attended at least one ANC visit	Number
Residence		
Urban	98.8	1,071
Rural	97.9	1,523
Region		
Erongo	98.2	88
Hardap	98.8	146
//Karas	98.9	95
Kavango East	96.7	233
Kavango West	96.8	204
Khomas	98.9	254
Kunene	94.2	199
Ohangwena	99.4	333
Omaheke	93.2	181
Omusati	99.6	246
Oshana	99.7	198
Oshikoto	98.8	177
Otjozondjupa	98.0	154
Zambezi	100.0	86
Marital status		
Never married	98.5	1,328
Married	98.9	443
Living together	97.2	604
Widowed	*	13
Divorced	(97.5)	30
Separated	98.9	148
Education		
No education	91.9	222
Primary	97.0	600
Secondary	99.1	1,591
More than secondary	100.0	172
Wealth quintile		
Lowest	97.1	793
Second	97.8	616
Middle	98.8	540
Fourth	99.4	411
Highest	99.3	234
Age		
15-19	96.4	217
20-24	97.8	665
25-29	99.3	648
30-34	98.2	496
35-39	98.9	362
40-44	98.9	163
45-49	(98.3)	43
Total 15-24	97.5	882
Total 15-49	98.4	2,594

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

12.4 Breastfeeding

Breastfeeding was the norm in NAMPHIA. Among women who had delivered at least one child in the three years prior to the survey, 97.2% reported having ever breastfed their child (Table 12.4.A). Among HIV-positive women, 92.7% had ever breastfed in the last three years prior to the survey, while 97.8% of HIV-negative women reported having ever breastfed. Almost a third of women (34.0%) have stopped breastfeeding by 9 months, and by 12 months, over 40% have stopped breastfeeding.

Characteristic	Never breastfed	Ever breastfed, but not currently breastfeeding	Currently breastfeeding	Total	Number
Child's age (months)					
0-1	2.1	21.3	76.6	100.0	180
2-3	4.5	27.8	67.7	100.0	163
4-5	1.5	17.0	81.4	100.0	162
6-8	2.9	31.1	66.0	100.0	268
9-11	2.0	42.5	55.5	100.0	258
12-17	1.3	54.6	44.1	100.0	478
18-23	2.3	76.2	21.5	100.0	390
24-36	4.5	90.3	5.2	100.0	661
Result of mother's PHIA survey HIV test					
HIV positive	7.3	63.6	29.0	100.0	365
HIV negative	2.2	55.4	42.4	100.0	2,065
Not tested	1.5	62.3	36.1	100.0	149
Total	2.8	56.9	40.2	100.0	2,579

12.5 Awareness of Mother's HIV Status

Among the 1,016 women who delivered a baby in the prior 12 months, knowledge of HIV status was common. Overall, 97.4% knew their HIV status during pregnancy; 9.9% knew they were HIV-positive status prior to pregnancy, 1.8% learned they were HIV-positive through antenatal testing, and 85.7% learned they were HIV-negative through antenatal testing (Table 12.5.A).

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status ¹	Number of women who gave birth within the past 12 months
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Residence					
Urban	1.3	89.3	6.7	97.3	421
Rural	2.4	81.2	13.8	97.4	595
Region					
Erongo	(2.7)	(85.7)	(8.8)	(97.3)	37
Hardap	1.3	89.7	5.0	96.0	57
//Karas	(0.0)	(86.3)	(5.5)	(91.8)	33
Kavango East	3.9	79.4	12.6	95.9	85
Kavango West	1.9	78.4	13.9	94.2	66
Khomas	1.7	92.6	4.4	98.8	97
Kunene	2.0	85.3	3.4	90.7	83
Ohangwena	3.7	75.8	19.2	98.7	128
Omaheke	0.0	91.8	3.3	95.1	71
Omusati	1.6	85.5	12.9	100.0	103
Oshana	0.0	91.3	7.8	99.1	90
Oshikoto	0.0	81.1	17.8	99.0	81
Otjozondjupa	0.0	93.7	4.3	98.0	54
Zambezi	(5.4)	(70.2)	(18.0)	(93.5)	31

Table 12.5.A Prevention of mother-to-child transmission: Known HIV status (continued)					
Among women aged 15-49 years who gave birth within the past 12 months, percentage who were tested for HIV during antenatal care (ANC) and received their results or who already knew they were HIV positive, by selected demographic characteristics, NAMPHIA 2017					
Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status ¹	Number of women who gave birth within the past 12 months
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Marital status					
Never married	1.6	87.2	9.3	98.1	551
Married	1.2	85.1	10.0	96.2	168
Living together	1.2	85.9	9.9	97.0	238
Widowed	*	*	*	*	1
Divorced	*	*	*	*	7
Separated	(7.1)	(70.5)	(18.0)	(95.6)	45
Education					
No education	1.3	71.8	18.1	91.2	72
Primary	1.4	76.1	16.4	93.8	227
Secondary	2.2	87.6	8.9	98.7	653
More than secondary	0.0	97.3	0.7	98.0	63
Wealth quintile					
Lowest	2.7	76.3	17.4	96.4	308
Second	1.0	85.6	10.4	96.9	245
Middle	1.2	87.4	9.7	98.4	213
Fourth	3.4	86.3	6.6	96.4	163
Highest	0.0	98.1	1.5	99.6	87
Age					
15-19	0.7	94.3	3.4	98.4	118
20-24	2.0	90.9	5.2	98.1	278
25-29	2.5	85.7	9.0	97.2	252
30-34	2.5	85.9	9.9	98.4	176
35-39	0.0	70.2	26.1	96.2	126
40-44	1.3	71.3	19.4	92.0	58
45-49	*	*	*	*	8
Total 15-24	1.6	91.9	4.6	98.2	396
Total 15-49	1.8	85.7	9.9	97.4	1,016

¹Relates to PEPFAR PMTCT_STAT_NAT / SUBNAT

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

12.6 Antiretroviral Therapy Among HIV-Positive Pregnant Women

At the time of the survey, 134 women of childbearing age, that had given birth in the prior 12 months, were HIV-positive (Table 12.6.A). Overall, 95.8% of them received ARVs; 79.3% had been on ART prior to pregnancy and continued it through pregnancy, and 16.6% began ARVs during pregnancy, labour, or delivery. Among women living in urban areas, 23.5% initiated ART during pregnancy, labour, or delivery compared to 12.1% of women living in rural areas. Further, 20.3% of never-married women initiated ART during pregnancy, labour, or delivery as compared to 6.3% of women who were not married, but living with their partners.

Table 12.6.A Prevention of mother-to-child transmission: HIV-positive pregnant women who received antiretrovirals (ARVs)					
Among HIV-positive women aged 15-49 years who gave birth within the 12 months prior the survey, percentage who received ARVs during pregnancy to reduce the risk of mother-to-child-transmission, by selected demographic characteristics, NAMPHIA 2017					
Characteristic	Percentage who were already on ARVs prior to pregnancy	Percentage who were newly initiated on ARVs during pregnancy or labour and delivery		Total percentage who received ARVs ¹	Number of HIV-positive women who gave birth within the 12 months prior the survey
Residence					
Urban	(71.1)	(23.5)		(94.6)	40
Rural	84.5	12.1		96.6	94

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

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

Characteristic	Percentage who were already on ARVs prior to pregnancy	Percentage who were newly initiated on ARVs during pregnancy or labour and delivery	Total percentage who received ARVs ¹	Number of HIV-positive women who gave birth within the 12 months prior the survey
Region				
Erongo	*	*	*	5
Hardap	*	*	*	6
//Karas	*	*	*	2
Kavango East	*	*	*	15
Kavango West	*	*	*	11
Khomas	*	*	*	7
Kunene	*	*	*	6
Ohangwena	(81.7)	(18.3)	(100.0)	30
Omaheke	*	*	*	2
Omusati	*	*	*	15
Oshana	*	*	*	9
Oshikoto	*	*	*	16
Otjozondjupa	*	*	*	3
Zambezi	*	*	*	7
Marital status				
Never married	75.7	20.3	96.0	71
Married	*	*	*	21
Living together	(89.5)	(6.3)	(95.8)	28
Widowed	*	*	*	0
Divorced	*	*	*	0
Separated	*	*	*	11
Education				
No education	*	*	*	13
Primary	(83.5)	(16.5)	(100.0)	42
Secondary	75.8	18.0	93.8	77
More than secondary	*	*	*	2
Wealth quintile				
Lowest	86.5	11.5	98.0	61
Second	(77.3)	(13.0)	(90.3)	28
Middle	(88.7)	(11.3)	(100.0)	27
Fourth	*	*	*	15
Highest	*	*	*	3
Age				
15-19	*	*	*	6
20-24	*	*	*	20
25-29	(76.4)	(23.6)	(100.0)	33
30-34	(68.3)	(31.7)	(100.0)	29
35-39	(98.5)	(0.0)	(98.5)	34
40-44	*	*	*	12
45-49	*	*	*	0
Total 15-24	(65.6)	(15.8)	(81.4)	26
Total 15-49	79.3	16.6	95.8	134

¹Relates to Global AIDS Monitoring Indicator 2.3: Preventing the mother-to-child transmission of HIV and PMTCT_ARV_NAT / SUBNAT. The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. Estimates with an asterisk are based on a very small number (less than 25) of unweighted cases and have been suppressed.

12.7 Mother-to-Child Transmission

Among HIV-positive women who gave birth 17 months prior to the survey, 100 infants were exposed to HIV (this includes only infants who were tested for HIV during the survey). No infants whose mothers had been on ART during pregnancy were found to be HIV-positive (Table 12.7.A). Additionally, 2.1% of infants born to this population of HIV-positive mothers who had ever been breastfed were found to be HIV-positive.

Table 12.7.A Mother-to-child transmission of HIV		
Among infants born in the 17 months prior the survey to HIV-positive mothers aged 15-49 years, percentage exposed to HIV and percentage confirmed positive for HIV infection, by mother's self-reported antiretroviral (ARV) and breastfeeding status, NAMPHIA 2017		
Characteristic	Percentage of infants confirmed HIV positive ¹	Number of infants born to HIV-positive women ²
Mother's self-reported ARV status		
Mother unaware of HIV status during pregnancy	*	13
Already on ARVs at first antenatal visit	(0.0)	43
Newly initiated on ARVs during pregnancy or labour and delivery	*	9
Did not receive ARVs during pregnancy	*	1
Missing self-reported ARV status during pregnancy	(0.0)	34
Mother's self-reported breastfeeding status		
Ever breastfed the infant	2.1	69
Never breastfed the infant	*	4
Missing breastfeeding status	(0.0)	27
Total 0-11 months	1.0	65
Total 0-17 months	1.4	100

¹Relates to Global AIDS Monitoring Indicator 2.2: Mother-to-child transmission of HIV; ²Includes only infants who were tested for HIV during NAMPHIA—note, only infants with a reactive rapid test received virologic testing.

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

12.8 Gaps and Unmet Needs

- There are slight regional variations in ANC attendance and care that could be improved upon; however, additional data are required to determine the level of ANC retention post the first visit.
- Overall, 16.6% of HIV-positive women initiated ART during their last pregnancy, which suggests that there should be greater efforts to diagnose HIV-positive women and place them on treatment before they become pregnant.

12.9 References

1. De Cock KM, Fowler MG, Mercier E, et al. Prevention of mother-to-child HIV transmission in resource-poor countries: translating research into policy and practice. *JAMA*, 2000, 283:1175–1182. doi:10.1001/jama.283.9.1175.
2. World Health Organization. *Towards the elimination of mother-to-child transmission of HIV: report of a WHO technical consultation*. Geneva: World Health Organization; 2011. http://apps.who.int/iris/bitstream/handle/10665/44638/9789241501910_eng.pdf;jsessionid=CD35DAE3C3D00349A9B149BCFF9262C4?sequence=1. Accessed December 17, 2018.

13 YOUNG PEOPLE

13.1 Key Findings

- Among young people (older adolescents and young adults aged 15-24 years), 9.9% had their sexual debut before the age of 15 years; this was most pronounced in Kavango East and Kavango West. Early sexual debut was more common in young men (13.7%) than young women (6.2%) and was especially high among those with no education (22.0%).
- The overall HIV prevalence in young people was 4.0% and higher in young women (5.4%) than young men (2.5%). Annual HIV incidence was 0.51%, and substantially higher among young women (0.99%) than among young men (0.03%).
- Of the young people who were found to be HIV positive in NAMPHIA, only 56.4% reported that they had been previously diagnosed—this was higher in young women (62.6%) than young men (43.1%).
- However, based upon ARV-detection data, 72.2% of young people living with HIV were aware of their HIV-positive status at the time of the survey, 98.2% of whom were on ART, and 85.4% of whom had suppressed viral loads.
- Overall, 60.5% of young people living with HIV in Namibia had achieved VLS on treatment.

13.2 Background

One-third of the population of sub-Saharan Africa is aged 10-24 years, a phenomenon often referred to as the youth bulge.¹ Young people (older adolescents and young adults, aged 15-24 years), are more likely to engage in risky sexual behaviours than older adults and have less frequent contact with the healthcare system. Control of HIV in this demographic group is critical for long-term epidemic control, but is also particularly challenging as risk-taking is particularly high in this age group, and interactions with the healthcare system are often rare.

This chapter focuses on HIV prevalence, incidence, and risk factors in young men and women aged 15-24 years (Note: in this report, the terms young men and young women include older adolescents unless the age bracket of 20-24 years is specified). Data are presented on the prevalence of reported sexual debut before the age of 15 years among young men and women, by marital status, region, and sociodemographic characteristics. Incidence, prevalence, and the 90-90-90 cascade are also described for young people.

13.3 Sexual Debut Before Age 15

Overall, 9.9% of young people reported their sexual debut* before the age of 15 years; this proportion was 13.7% among young men and 6.2% among young women (13.3.A). Early sexual debut was reported by 10.3% of participants living in rural areas and 9.6% of those in urban areas. There were differences between the proportions of young men and young women in urban and rural areas with sexual debut before the age of 15 years; it was higher in young men in urban areas (15.4%) compared to those in rural (11.9%), but higher in young women in rural areas (8.5%) than in urban areas (4.5%) (Table 13.3.A).

The highest prevalence of early sexual debut was observed in Kavango East (25.2%) and Kavango West (22.5%). The lowest was in Omusati (5.3%) and Ohangwena (5.4%). Twenty-two percent (22.0%) of those with no education reported early sexual debut, but only 5.6% of those with more than secondary education reported it (Table 13.3.A).

Characteristic	Male		Female		Total	
	Percentage who had sex before age 15	Number	Percentage who had sex before age 15	Number	Percentage who had sex before age 15	Number
Residence						
Urban	15.4	1,009	4.5	1,316	9.6	2,325
Rural	11.9	1,703	8.5	1,781	10.3	3,484
Region						
Erongo	11.4	102	1.5	78	7.3	180
Hardap	8.6	159	5.9	169	7.3	328
//Karas	12.1	99	4.6	119	8.3	218
Kavango East	36.3	233	15.4	293	25.2	526
Kavango West	27.6	163	17.7	212	22.5	375
Khomas	13.6	237	3.5	328	8.0	565
Kunene	18.5	132	14.9	148	16.8	280
Ohangwena	6.2	370	4.6	409	5.4	779
Omaheke	25.7	175	10.9	179	18.6	354
Omusati	6.5	365	4.1	387	5.3	752
Oshana	13.6	194	3.7	275	8.0	469
Oshikoto	8.8	214	4.5	229	6.8	443
Otjozondjupa	15.6	200	7.8	160	12.1	360
Zambezi	13.2	69	8.6	111	10.6	180
Marital status						
Never married	13.7	2,507	5.3	2,612	9.6	5,119
Married	*	9	16.2	62	17.5	71
Living together	12.0	130	12.2	343	12.2	473
Widowed	*	0	*	1	*	1
Divorced	*	1	*	4	*	5
Separated	16.8	53	15.9	64	16.3	117
Education						
No education	20.0	151	25.8	104	22.0	255
Primary	12.5	824	11.7	692	12.2	1,516
Secondary	13.9	1,610	4.9	2,120	9.1	3,730
More than secondary	12.3	124	0.8	180	5.6	304
Wealth quintile						
Lowest	13.6	722	10.7	870	12.1	1,592
Second	12.0	703	6.3	687	9.3	1,390
Middle	16.8	586	5.4	687	11.0	1,273
Fourth	12.6	410	5.7	491	9.1	901
Highest	13.3	291	2.8	362	7.5	653
Age						
15-19	13.1	1,452	6.5	1,554	9.7	3,006
20-24	14.3	1,260	6.0	1,543	10.1	2,803
Total 15-24	13.7	2,712	6.2	3,097	9.9	5,809

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 with an asterisk are based on a very small number (less than 25) of unweighted cases and have been suppressed.

13.4 HIV Incidence and Prevalence

HIV prevalence of young people was 4.0%. HIV prevalence was higher among young women (5.4%) than among young men (2.5%) (Table 6.4.A). Annual HIV incidence among young people was 0.51%; annual incidence was 0.03% among men and 0.99% among women (Table 5.3.B). The incidence in young women is more than 30-times higher than in young men.

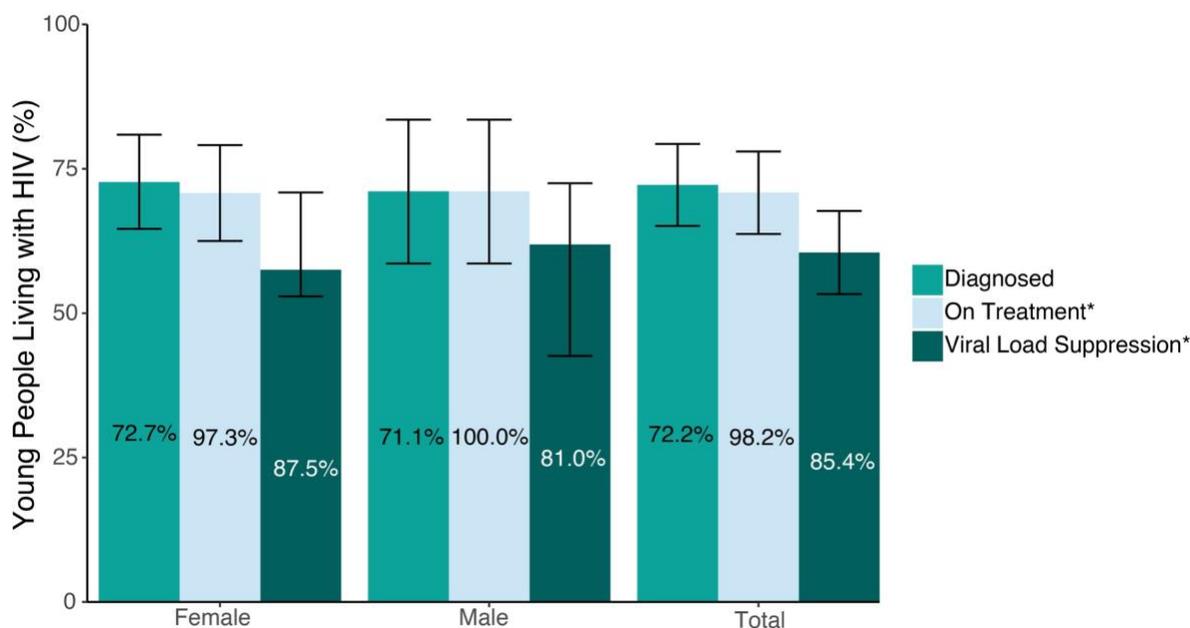
13.5 Self-Reported HIV Testing, Treatment, and Viral Load Suppression

HIV testing among young people was low; only 59.1% young men and young women had ever been tested (69.6% of the young women and 48.4% of the young men). Even fewer had been tested in the past 12 months (33.9% overall, 43.7% among young women and 23.7% among young men) (Tables 7.3.A, 7.3.B, 7.3.C). Of those who reported their HIV-positive status, 43.6% were previously unaware (based on self-report) of their HIV status (56.9% among young men and 37.4% among young women) (Tables 8.3.A, 8.3.B, 8.3.C). More young women than young men were aware of their HIV status. Out of those who self-reported being aware of their HIV-positive status, 60.2% of young women and 43.1% of young men self-reported being on ART (Table 8.3.A, 8.3.B). Among young people living with HIV in Namibia in 2016, the prevalence of VLS was 60.7% among young men, 65.4% among young women and 63.9% overall (note, these estimates were not limited to those who reported their HIV-positive status) (Table 9.4.A).

13.6 Status of the 90-90-90 Targets

Of the 240 young people found to be HIV positive, 72.2% had been previously diagnosed or had detectable ARVs in their blood. Of these, 98.2% were on ART (either based on self-report or detection of ARVs in the blood) and 85.4% achieved VLS (Tables 10.3.A, Figure 13.6.A). The proportion of young men vs. young women in each piece of the 90-90-90 cascade was fairly comparable in Namibia. Among young men, 71.1% had self-reported being previously diagnosed with HIV or had detectable ARVs in the blood as compared to 72.7% of young women; among this group, 100% young men and 97.3% young women were on ART and of those on ART, 81.0% of young men and 87.5% of young women had suppressed viral loads (Table 10.3.A). Overall, 60.5% of HIV-positive young people had VLS on treatment (Table 10.3.C).

Figure 13.6.A Young People 90-90-90: Laboratory ARV-adjusted data, by sex, NAMPHIA 2017



In the antiretroviral (ARV)-adjusted 90-90-90, young people (ages 15-24 years) are classified as 'Aware' or 'Diagnosed' if they reported knowing their HIV-positive status before testing HIV seropositive in NAMPHIA or had detectable ARVs in their blood. Young people are classified as 'On Treatment' if they reported that they were on treatment or if they had detectable ARVs in their blood.

² Estimates in parentheses are based on a small number (25-49) of unweighted cases and should be interpreted with caution.

*Inset numbers are conditional proportions.

13.7 Gaps and Unmet Needs

- The early age of sexual debut, which is particularly high in some regions (25.2% in Kavango East, 22.5% in Kavango West, 18.6% in Omaheke, 16.8% in Kunene) may require additional educational programming to increase knowledge and awareness of the risk factors associated with early sexual debut in these areas.
- Two in five older adolescents and young adults do not know their status; This proportion needs to decrease—diagnosis is the largest challenge in the treatment cascade in this age group as only 72.2% of HIV-positive young men and women had previously been diagnosed or had detectable ARVs in their blood.
- The proportion of those on ART who had VLS (85.4%) was below the UNAIDS target and could be improved.
- The incidence in young women was more than 30-times higher than in young men, indicating a need for broader coverage of interventions to prevent new infection, such as the Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe Women Partnership (known as DREAMS).

13.8 References

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

14 INFANTS AND CHILDREN

14.1 Key Findings

- NAMPHIA identified 74 infants and children living with HIV (in the subset of households sampled by the survey).
- The prevalence of HIV infection among infants and children in Namibia was estimated to be 1%. Prevalence ranged from 0.2% among infants (aged 0-17 months) to 1.9% in young adolescents (those aged 10-14 years).
- The estimated number of infants and children living with HIV in Namibia was 9,000.
- Among infants and children living with HIV, 83.5% had been diagnosed prior to the survey, 100% of these were on ART and 75.4% had VLS.
- Overall 63.0% of infants and children had VLS.

14.2 Background

Estimates of prevalence of HIV in infants and children, estimates of infants and children living with HIV, and estimates of VLS among infants and children are most commonly derived indirectly from clinic-based data or epidemiologic models. Population-based surveys can provide direct estimates among children, which are critical for meeting the needs for paediatric HIV prevention, care and treatment services, evaluating PMTCT programmes, and addressing other needs of children aged 10-14 years. A limitation of NAMPHIA in detecting HIV among infants and children below the age of 15 years was that the child-flagged households were a subset of the entire sample (see survey methodology in chapter 2).

This chapter presents results on the UNAIDS 90-90-90 cascade in children, using both parent/guardian-reported data (on awareness of child's HIV status and ARV use) and data on detectable ARVs. Analyses for the 90-90-90 tables for children are similar to those described for adults in chapter 10.

Awareness of HIV infection was defined as having a parent or guardian report that a participating infant or child was diagnosed with HIV or if there were ARVs detected in the child's blood. Infants and children who had a suppressed viral load but whose parents reported them as not diagnosed with HIV or not on ARVs were not included in the numerator for the third 90 (viral suppression among those whose parents or guardians are aware of their HIV-positive status and on ARVs). Finally, because HIV-exposed infants may be seropositive until sometime in the first year, the term "HIV-infected" is used instead of HIV-positive in this chapter to differentiate infants with passively transfused maternal antibody from those who are living with HIV.

14.3 HIV Prevalence

Seventy-four (74) children aged 0-14 years were identified as HIV-positive in NAMPHIA; 65 (87%) of these reported by their parents or guardians to have been diagnosed with HIV, and 9 (13%) were diagnosed during the survey. The estimated prevalence of infection in this age group was 1.0%. The prevalence was higher by age, from 0.2% in infants aged 0-17 months, to 0.3% in children aged 18-59 months, 1.2% in children aged 5-9 years, and 1.9% in early adolescents aged 10-14 years (Table 6.4.A).

14.4 Status of the 90-90-90 Targets

90-90-90 cascade based on guardian-reported HIV status and ART use in children:

Among the 74 identified children living with HIV, 75.5% were reported as HIV positive by their parents; 100.0% of those reported HIV-positive were reported as receiving ARVs by their parent/guardian, and 76.5% had VLS (Table 14.4.A).

Age	Diagnosed		On Treatment		Viral Load Suppression (VLS)	
	Total		Among children reported to be HIV positive by parent		Among children reported to be on ART by parent	
	Percentage reported to be HIV positive by parent	Number	Percentage reported to be on ART by parent	Number	Percentage with VLS	Number
0-17 months	*	2	*	0	*	0
18-59 months	*	6	*	1	*	1
0-4 years	*	8	*	1	*	1
5-9 years	(83.6)	27	*	22	*	22
10-14 years	(82.0)	30	*	24	*	24
0-14 years	75.5	65	(100.0)	47	(76.5)	47

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

90-90-90 cascade based on guardian-reported HIV status and ART use and/or detectable ARVs children:

ARV-adjusted awareness of HIV-positive status: Based on parent/guardian-report and presence of detectable ARVs in blood samples, 83.5% of HIV-positive children had a known HIV-positive status (Table 14.4.B).

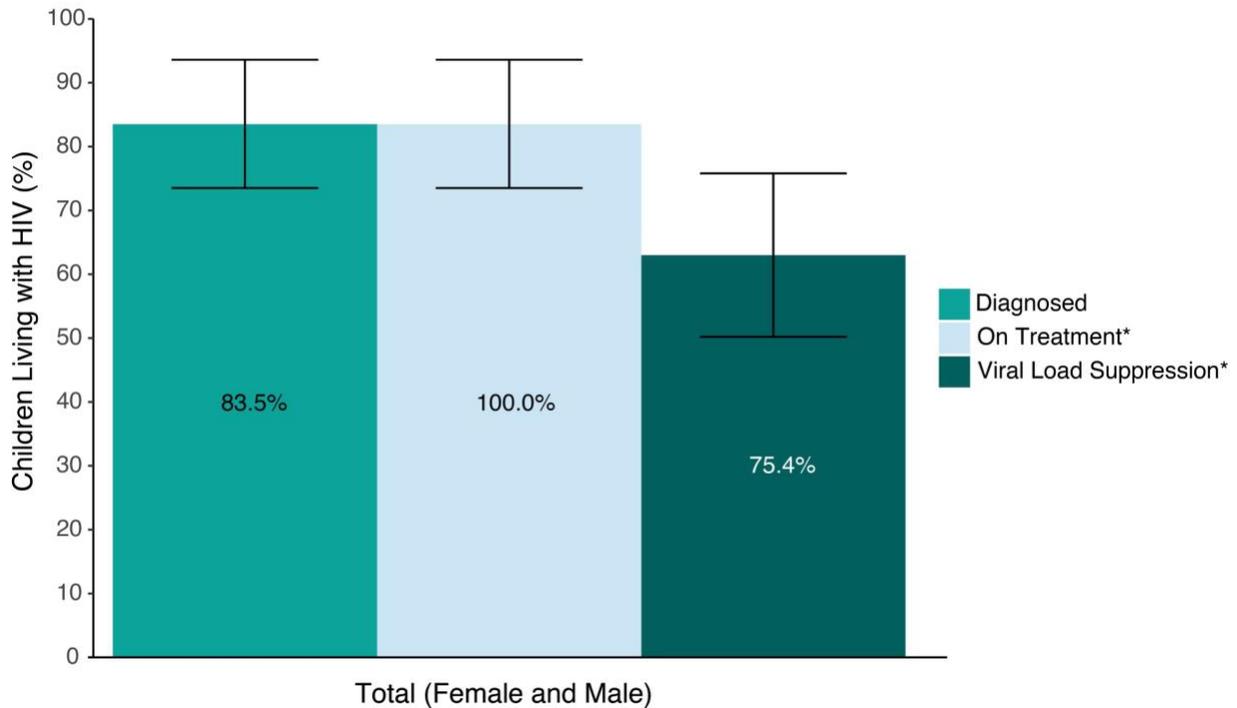
ARV-adjusted treatment status: Based on parent/guardian-report and presence of detectable ARVs in blood samples, 100.0% of HIV-positive children were classified as on ART (Table 14.4.B).

VLS: Among children on ART (ARV-adjusted treatment status), 75.4% had VLS (Table 14.4.B, Figure 14.5.A).

Age	Diagnosed		On Treatment		Viral Load Suppression (VLS)	
	Total		Among children reported to be HIV positive by parent AND/OR with detectable ARVs		Among children reported to be on ART by parent AND/OR with detectable ARVs	
	Percentage reported to be HIV positive by parent AND/OR with detectable ARVs	Number	Percentage reported to be on ART by parent AND/OR with detectable ARVs	Number	Percentage with VLS	Number
0-17 months	*	2	*	1	*	1
18-59 months	*	6	*	2	*	2
0-4 years	*	8	*	3	*	3
5-9 years	(84.8)	30	(100.0)	25	(73.5)	25
10-14 years	(90.7)	36	(100.0)	32	(80.2)	32
0-14 years	83.5	74	100.0	60	75.4	60

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

Figure 14.4.A Paediatric 90-90-90: Laboratory ARV-adjusted data, NAMPHIA 2017



In the antiretroviral (ARV)-adjusted 90-90-90, children (ages 0-14 years) are classified as 'Aware' or 'Diagnosed' if their parent or guardian reported knowing their HIV-positive status before testing HIV seropositive in NAMPHIA or if the child had detectable ARVs in their blood. Participants are classified as 'On Treatment' if their parent or guardian reported that they were on treatment or if the child had detectable ARVs in their blood.

*Inset numbers are conditional proportions.

14.5 Gaps and Unmet Needs

- At the time of the survey, one-sixth (16.5%) of infants and children living with HIV in Namibia remained undiagnosed.
- One-fourth (24.6%) of children on ART did not have VLS, suggesting that a combination of treatment using optimal ARV regimens, retention, adherence, and treatment monitoring interventions are needed to ensure that paediatric treatment is effective at suppressing VL and preventing the development of either acquired or primary drug resistant HIV.

* Sexual debut is the age at first intercourse

15 HIV RISK FACTORS

15.1 Key Findings

- HIV prevalence in women who reported engaging in paid sexual intercourse in the 12 months preceding the survey was 30.7%. Among those women who did not engage in paid sexual intercourse, HIV prevalence was 14.3%.
- A high percentage of young people (those aged 15-24 years) reported condom use with their last, non-marital partner (70.7%).
- Condom use at last sexual intercourse among HIV-positive men and women was low (13.4%).
- Condom use among adults who reported having sex with high risk (non-marital, non-cohabitating) sexual partners was also relatively low (63.7%).
- Among men aged 15-64 years, prevalence of self-reported medical male circumcision (defined below) was 24.5%.

15.2 Background

This chapter describes the prevalence of sexual behaviours that increase or decrease the risk of HIV infection. NAMPHIA 2017 asked questions about early sexual debut, recent engagement in multiple sexual partnerships, condom use at last sexual intercourse, recent engagement in paid sexual intercourse, and condom use at last sexual intercourse with a non-marital, non-cohabitating partner.

Since 2007, WHO and UNAIDS have recommended voluntary medical male circumcision (VMMC) as a cost-effective strategy to reduce female-to-male sexual transmission of HIV. To inform VMMC programs, men aged 15-64 years were asked if they had been medically or traditionally circumcised. In Namibia, targeted VMMC was launched in 2009 for men aged 15-49 years. Starting in 2015, there were additional resources put into specific high HIV prevalence regions (Zambezi, Oshikoto, Oshana, Ohangwena, and Khomas), which are reflected in the results.

15.3 HIV Prevalence by Sexual Behaviour

Individuals who reported sexual debut before the age of 15 years had a lower HIV prevalence (11.8%) compared to those with sexual debut at the age of 25 years and older (19.0%). Among people who reported early sexual debut, 7.9% of men and 19.4% of women were HIV positive. Among adults (those aged 15-64 years), with two or more sexual partners in the past 12 months, 8.8% were HIV-positive. Among adults who self-reported one sexual partner in the past 12 months, 12.5% were HIV-positive; 10.1% of men and 14.5% of women. HIV prevalence was 18.9% among those who reported no sexual intercourse in the last 12 months. HIV prevalence was nearly twice as high in women than in men with two or more sexual partners in the prior 12 months (13.6% and 7.5%, respectively; Table 15.3.A). Of those participants who used condoms at last sexual intercourse in the 12 months preceding the survey, 9.7% of men and 17.2% of women were HIV positive, as compared to 9.5% of men and 12.2% of women who reported they did not use a condom at last sexual intercourse (Table 15.3.A).

HIV prevalence was more than twice as high among women who reported paid sexual intercourse (this includes persons who either paid or received money for sexual intercourse) in the previous 12 months (30.7%) as among those who did not (14.3%) (Table 15.3.A). Among men, the HIV prevalence among those who reported paid sexual intercourse in the last 12 months was 13.7% as compared to 9.3% of men who reported no paid sexual intercourse.

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Age at first sexual intercourse						
<15	7.9	793	19.4	601	11.8	1,394
15-19	8.7	3,342	16.9	5,018	13.2	8,360
20-24	11.0	1,135	12.5	1,691	11.8	2,826
≥25	18.3	434	19.7	458	19.0	892
Number of sexual partners in the prior 12 months						
0	11.9	886	23.5	1,515	18.9	2,401
1	10.1	3,591	14.5	5,707	12.5	9,298
≥2	7.5	1,102	13.6	381	8.8	1,483
Condom use at last sexual intercourse in the prior 12 months						
Used condom	9.7	1,943	17.2	2,352	13.4	4,295
Did not use condom	9.5	2,298	12.2	3,560	11.0	5,858
No sexual intercourse in the past 12 months	11.9	886	23.5	1,515	18.9	2,401
Paid sexual intercourse in the prior 12 months						
Yes ¹	13.7	79	(30.7)	25	18.8	104
Used condom at last paid sexual intercourse	11.5	55	*	20	16.8	75
Did not use condom at last paid sexual intercourse	*	21	*	5	(35.3)	26
No ²	9.3	4,623	14.3	6,087	11.8	10,710
Total 15-24	2.5	2,549	5.4	3,016	4.0	5,565
Total 15-49	8.0	6,303	14.8	8,164	11.5	14,467
Total 15-64	9.3	7,268	15.7	9,671	12.6	16,939

¹Includes persons who paid or received money for sexual intercourse

²No paid sexual intercourse or no sexual intercourse in the prior 12 months

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

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

Among adults who have reported having had sexual intercourse in the 12 months preceding the survey, 56.8% (59.5% for men and 54.1% for women) reported having sexual intercourse with a non-marital, non-cohabiting partner during that time. Condom use among adults who have had sex with a non-marital, non-cohabiting partner was 63.7% (68.8% for men, 58.7% for women). Based upon education level, the proportion who reported condom use the last time they had sex with a non-marital, non-cohabiting partner in the past year ranged from 45.6% among those with no education to 72.2% among those who have attended more than secondary education.

Among men who reported having had sexual intercourse in the 12 months preceding the survey, condom use with a non-marital, non-cohabiting partner at last sex in urban areas was 71.3%, compared to 64.4% in rural areas. Condom use among men ranged from 53.6% among those with no education to 76.3% among those who have attended more than secondary education. Among all men, those aged 15-34 years tended to use a condom the last time they had sex with a non-marital, non-cohabiting partner more frequently than men in older age brackets. The largest differences were

between young men aged 20-24 years (at 78.8%) and older men aged 45-49 years (at 44.3%) (Table 15.4.A, 15.4.B, 15.4.C).

Among women who reported having had sexual intercourse in the 12 months preceding the survey, 54.1% reported having a non-marital, non-cohabitating partner during that time. Of these women, 58.7% reported using a condom during their last sexual intercourse with such a partner. Similar to men (Table 15.4.A), the percentage reporting condom use at last sex with non-marital, non-cohabitating partners among women in this group was higher in urban (61.0%) than in rural areas (54.6%). Condom use among this group of women ranged from 30.7% among those with no education to 68.5% among those who have attended more than secondary education. Also similar to men, younger women (ages 15-34 years) were more likely to report having used a condom the last time they had sex with a non-marital, non-cohabitating partner, compared to women in older age groups (Table 15.4.A, 15.4.B, 15.4.C).

Table 15.4.A Condom use at last sex with a non-marital, non-cohabitating partner: Men				
Among men aged 15-64 years who reported having sex in the previous 12 months, percentage who reported having a non-marital, non-cohabitating partner in the previous 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner, by selected demographic characteristics, NAMPHIA 2017				
Characteristic	Among men who reported having sex in the previous 12 months		Among men who reported having sex with a non-marital, non-cohabitating partner in the previous 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner in the previous 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner ¹	Number
Residence				
Urban	59.5	2,534	71.3	1,265
Rural	59.6	2,848	64.4	1,432
Region				
Erongo	57.4	372	70.6	198
Hardap	45.9	423	55.2	183
//Karas	53.6	296	54.0	131
Kavango East	54.0	393	58.9	168
Kavango West	50.0	263	47.6	101
Khomas	59.4	717	68.1	372
Kunene	62.2	326	61.8	171
Ohangwena	67.9	411	75.9	237
Omaheke	52.7	532	65.1	224
Omusati	72.2	367	75.9	238
Oshana	72.7	369	82.3	230
Oshikoto	63.8	309	69.1	172
Otjozondjupa	49.2	460	68.3	196
Zambezi	63.1	144	66.1	76
Marital status				
Never married	90.3	2,621	73.3	2,059
Married	10.9	1,215	58.3	126
Living together	23.3	1,186	47.3	237
Widowed	*	22	*	18
Divorced	89.9	51	(50.7)	40
Separated	92.6	258	49.4	205
Education				
No education	47.6	517	53.6	195
Primary	53.6	1,477	58.7	660
Secondary	64.8	2,834	72.0	1,584
More than secondary	55.4	544	76.3	258
Wealth quintile				
Lowest	55.1	1,102	59.3	510
Second	62.6	1,255	64.3	664
Middle	66.6	1,276	67.8	705
Fourth	61.3	971	76.0	485
Highest	50.4	778	73.9	333
Age				
15-19	95.2	435	75.3	386

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

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

Characteristic	Among men who reported having sex in the previous 12 months		Among men who reported having sex with a non-marital, non-cohabitating partner in the previous 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner in the previous 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner ¹	Number
Age (cont.)				
20-24	87.9	941	78.8	689
25-29	70.5	899	73.5	540
30-34	57.7	722	64.4	351
35-39	50.2	667	54.4	281
40-44	36.3	574	59.1	196
45-49	34.2	411	44.3	116
50-54	27.0	311	51.1	70
55-59	22.8	246	(50.2)	39
60-64	15.4	176	(47.9)	29
Total 15-24	90.0	1,376	77.7	1,075
Total 15-49	64.6	4,649	69.7	2,559
Total 15-64	59.5	5,382	68.8	2,697

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

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

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

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

Characteristic	Among women who reported having sex in the prior 12 months		Among women who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner ¹	Number
Residence				
Urban	56.1	3,149	61.0	1,659
Rural	50.9	3,469	54.6	1,639
Region				
Erongo	43.9	284	74.0	128
Hardap	39.2	438	43.2	159
//Karas	47.8	332	54.7	146
Kavango East	46.1	527	32.3	229
Kavango West	46.1	403	39.8	173
Khomas	57.6	807	60.3	449
Kunene	54.9	436	52.3	225
Ohangwena	62.3	667	64.1	401
Omaheke	46.9	521	45.3	215
Omusati	63.9	609	58.9	365
Oshana	66.3	517	69.5	325
Oshikoto	57.7	433	65.5	227
Otjozondjupa	48.2	454	50.0	191
Zambezi	41.7	190	60.0	65
Marital status				
Never married	86.7	3,161	63.2	2,642
Married	3.1	1,618	45.5	53
Living together	15.7	1,362	38.1	210
Widowed	71.6	67	(45.7)	42
Divorced	85.7	71	34.8	59
Separated	95.0	288	35.3	251
Education				
No education	34.1	458	30.7	139
Primary	39.6	1,578	49.0	590
Secondary	60.7	3,935	60.0	2,244

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

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

Characteristic	Among women who reported having sex in the prior 12 months		Among women who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner ¹	Number
Education (continued)				
More than secondary	52.2	634	68.5	320
Wealth quintile				
Lowest	49.0	1,578	48.1	724
Second	56.2	1,413	56.6	716
Middle	58.8	1,399	59.9	733
Fourth	59.3	1,250	63.5	689
Highest	47.3	978	62.2	436
Age				
15-19	84.4	620	66.2	494
20-24	75.9	1,258	63.4	880
25-29	62.8	1,169	61.2	673
30-34	48.4	966	50.6	439
35-39	45.2	800	50.3	351
40-44	32.4	624	56.8	188
45-49	30.6	478	47.5	151
50-54	22.3	326	52.6	68
55-59	18.6	244	(37.3)	39
60-64	12.8	133	*	15
Total 15-24	78.7	1,878	64.4	1,374
Total 15-49	57.8	5,915	59.2	3,176
Total 15-64	54.1	6,618	58.7	3,298

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

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

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

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

Characteristic	Among persons who reported having sex in the prior 12 months		Among persons who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner in the previous 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner ¹	Number
Residence				
Urban	57.8	5,683	66.0	2,924
Rural	55.1	6,317	59.6	3,071
Region				
Erongo	52.0	656	71.8	326
Hardap	42.7	861	49.7	342
//Karas	50.9	628	54.4	277
Kavango East	49.9	920	44.9	397
Kavango West	47.8	666	43.1	274
Khomas	58.5	1,524	64.0	821
Kunene	58.3	762	56.8	396
Ohangwena	64.8	1,078	69.3	638
Omaheke	49.9	1,053	55.7	439
Omusati	67.4	976	66.4	603
Oshana	69.3	886	75.5	555
Oshikoto	60.5	742	67.2	399
Otjozondjupa	48.7	914	59.0	387
Zambezi	51.9	334	63.5	141
Marital status				
Never married	88.5	5,782	68.1	4,701

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

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

Characteristic	Among persons who reported having sex in the prior 12 months		Among persons who reported having sex with a non-marital, non-cohabitating partner in the prior 12 months	
	Percentage who reported having sex with a non-marital, non-cohabitating partner in the previous 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner ¹	Number
Marital status (cont.)				
Married	6.8	2,833	55.2	179
Living together	19.6	2,548	43.5	447
Widowed	77.5	89	57.9	60
Divorced	87.4	122	41.7	99
Separated	93.8	546	42.3	456
Education				
No education	42.2	975	45.6	334
Primary	47.1	3,055	54.7	1,250
Secondary	62.6	6,769	65.6	3,828
More than secondary	53.7	1,178	72.2	578
Wealth quintile				
Lowest	51.8	2,680	53.3	1,234
Second	59.5	2,668	60.6	1,380
Middle	62.9	2,675	64.1	1,438
Fourth	60.3	2,221	69.4	1,174
Highest	48.8	1,756	67.8	769
Age				
15-19	89.1	1,055	70.3	880
20-24	81.6	2,199	71.0	1,569
25-29	66.6	2,068	67.3	1,213
30-34	52.9	1,688	57.5	790
35-39	47.8	1,467	52.4	632
40-44	34.4	1,198	57.9	384
45-49	32.4	889	45.8	267
50-54	24.8	637	51.7	138
55-59	21.0	490	44.3	78
60-64	14.4	309	(40.7)	44
Total 15-24	84.0	3,254	70.7	2,449
Total 15-49	61.1	10,564	64.4	5,735
Total 15-64	56.8	12,000	63.7	5,995

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

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

15.5 Male Circumcision

During the survey, male NAMPHIA participants were shown illustrations of non-, partial, and fully circumcised penises and asked to report their circumcision status. Among men, prevalence of self-reported male medical circumcision was 24.5% while the prevalence of non-medical circumcision was 14.0% (Table 15.5.A). Medical circumcision rates ranged geographically, from a low of 12.5% in Omaheke to a high of 38.7% in Zambezi. Medical circumcision rates in Zambezi, Oshana, Ohangwena, and //Karas were more than five times higher than non-medical circumcision rates in each respective region (Table 15.5.A). In the high HIV prevalence regions, where additional resources were put in two years prior to the survey, medical circumcision was at 38.7% in Zambezi, 19.8% in Oshikoto, 34.9% in Oshana, 22.4% in Ohangwena, and 29.6% in Khomas.

Adult men with no education reported higher non-medical circumcision (28.4%) compared to medical circumcision (9.8%). In contrast, adult men with higher levels of education (more than secondary) were more likely to have been medically circumcised (36.7%) than non-medically circumcised (10.4%) (Table 15.5.A).

Medical circumcision rates appeared higher among adults in all age categories except for those ages 50 years or older where non-medical circumcision seemed more prevalent (Table 15.5.A).

Among HIV-positive men, 16.0% were medically circumcised and 11.3% were non-medically circumcised as compared to 24.7% and 14.0%, respectively, of HIV-negative men (Table 15.5.A). To break these categories down further, NAMPHIA found that 15.4% of HIV-positive men were fully medically circumcised as compared to 10.3% of men who were fully non-medically circumcised. The proportion of men who were partially circumcised was, as expected, much lower. Only 1.2% of HIV-positive men were partially circumcised (only partial removal of the foreskin) both medically and non-medically (Table 15.5.B). Overall, fewer than 2% of men reported partial circumcision (both medically and non-medically).

Table 15.5.A Male circumcision						
Percent distribution of men aged 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, NAMPHIA 2017						
Characteristic	Circumcised ¹		Uncircumcised	Unknown	Total	Number
	Medical circumcision	Non-medical circumcision				
Result of PHIA survey HIV test						
HIV positive	16.0	11.3	70.9	1.7	100.0	753
HIV negative	24.7	14.0	59.7	1.5	100.0	6,515
Not tested	28.4	15.3	54.2	2.1	100.0	1,003
Residence						
Urban	28.7	13.4	56.4	1.5	100.0	3,480
Rural	18.8	14.8	64.7	1.7	100.0	4,791
Region						
Erongo	26.6	12.1	60.9	0.4	100.0	451
Hardap	15.1	4.3	79.0	1.6	100.0	608
//Karas	19.1	3.6	76.4	0.9	100.0	454
Kavango East	28.7	27.3	42.8	1.2	100.0	595
Kavango West	17.7	15.2	65.3	1.8	100.0	409
Khomas	29.6	12.4	56.8	1.2	100.0	941
Kunene	15.3	49.6	34.3	0.9	100.0	453
Ohangwena	22.4	2.9	72.5	2.2	100.0	845
Omaheke	12.5	39.0	45.6	2.9	100.0	712
Omusati	20.8	10.3	66.5	2.4	100.0	797
Oshana	34.9	5.3	56.4	3.4	100.0	598
Oshikoto	19.8	4.2	73.0	3.0	100.0	547
Otjozondjupa	14.9	34.2	49.6	1.2	100.0	627
Zambezi	38.7	6.5	54.3	0.5	100.0	234
Marital status						
Never married	26.5	11.5	60.4	1.6	100.0	4,791
Married	22.3	15.3	60.8	1.6	100.0	1,488
Living together	21.7	19.3	58.2	0.8	100.0	1,378
Widowed	14.4	9.0	73.4	3.2	100.0	61
Divorced	10.0	26.4	59.1	4.6	100.0	85
Separated	22.8	20.7	55.9	0.6	100.0	402
Education						
No education	9.8	28.4	59.5	2.3	100.0	868
Primary	16.1	15.3	66.5	2.1	100.0	2,507
Secondary	28.0	12.0	58.7	1.3	100.0	4,217
More than secondary	36.7	10.4	51.6	1.2	100.0	657
Wealth quintile						
Lowest	16.3	15.9	65.9	1.9	100.0	2,016
Second	18.5	13.5	65.8	2.3	100.0	2,013
Middle	23.0	15.9	59.5	1.6	100.0	1,829
Fourth	31.3	15.8	52.0	0.9	100.0	1,361
Highest	33.5	8.8	56.3	1.4	100.0	1,052
Age						
15-19	26.9	12.4	59.2	1.5	100.0	1,512
20-24	31.0	10.0	57.9	1.1	100.0	1,342
25-29	25.0	14.7	58.7	1.5	100.0	1,170
30-34	25.9	12.5	60.6	1.1	100.0	954
35-39	22.6	16.8	59.4	1.1	100.0	846

Table 15.5.A Male circumcision (continued)						
Percent distribution of men aged 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, NAMPHIA 2017						
Characteristic	Circumcised ¹		Uncircumcised	Unknown	Total	Number
	Medical circumcision	Non-medical circumcision				
Age						
40-44	21.6	16.3	59.8	2.3	100.0	775
45-49	20.3	16.2	61.7	1.9	100.0	584
50-54	17.5	17.5	61.9	3.2	100.0	450
55-59	15.2	20.7	61.3	2.8	100.0	368
60-64	12.1	13.7	71.3	2.8	100.0	270
Total 15-24	28.9	11.2	58.6	1.3	100.0	2,854
Total 15-49	25.7	13.5	59.3	1.4	100.0	7,183
Total 15-64	24.5	14.0	59.9	1.6	100.0	8,271

¹Relates to Global AIDS Monitoring Indicator 3.16: Prevalence of male circumcision and PEPFAR VMMC_TOTALCIRC NAT / SUBNAT
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Table 15.5.B Male circumcision: Fully and partially circumcised men								
Percent distribution of men aged 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, NAMPHIA 2017								
Characteristic	Fully Circumcised ¹		Partially circumcised		Uncircumcised	Unknown	Total	Number
	Medical circumcision	Non-medical circumcision	Medical circumcision	Non-medical circumcision				
Result of PHIA survey HIV test								
HIV positive	15.4	10.3	0.6	0.6	70.9	2.2	100.0	753
HIV negative	23.4	13.3	1.3	0.6	59.7	1.7	100.0	6,515
Not tested	27.0	14.0	1.3	1.3	54.2	2.2	100.0	1,003
Residence								
Urban	27.2	12.3	1.4	0.9	56.4	1.8	100.0	3,480
Rural	17.8	14.3	0.9	0.3	64.7	1.9	100.0	4,791
Region								
Erongo	25.3	11.0	1.3	1.1	60.9	0.4	100.0	451
Hardap	13.5	4.3	1.6	0.1	79.0	1.6	100.0	608
//Karas	17.5	3.2	1.4	0.4	76.4	1.1	100.0	454
Kavango East	28.1	27.0	0.5	0.2	42.8	1.4	100.0	595
Kavango West	17.5	15.2	0.2	0.0	65.3	1.8	100.0	409
Khomas	28.2	11.2	1.3	1.2	56.8	1.4	100.0	941
Kunene	14.4	45.8	0.9	2.8	34.3	1.8	100.0	453
Ohangwena	21.4	2.5	1.1	0.4	72.5	2.2	100.0	845
Omaheke	11.6	38.8	1.0	0.1	45.6	3.0	100.0	712
Omusati	20.0	9.5	0.8	0.5	66.5	2.7	100.0	797
Oshana	33.8	5.1	1.1	0.2	56.4	3.4	100.0	598
Oshikoto	17.4	4.2	2.4	0.0	73.0	3.0	100.0	547
Otjozondjupa	13.5	32.7	1.4	1.0	49.6	1.8	100.0	627
Zambezi	37.1	6.1	1.6	0.0	54.3	0.9	100.0	234
Marital status								
Never married	25.2	10.7	1.2	0.7	60.4	1.8	100.0	4,791
Married	20.9	14.5	1.3	0.8	60.8	1.7	100.0	1,488
Living together	20.1	18.7	1.5	0.5	58.2	1.1	100.0	1,378
Widowed	14.4	8.5	0.0	0.0	73.4	3.7	100.0	61
Divorced	10.0	23.4	0.0	1.5	59.1	6.1	100.0	85
Separated	22.4	20.1	0.4	0.6	55.9	0.6	100.0	402
Education								
No education	8.5	26.7	1.0	1.1	59.5	3.2	100.0	868
Primary	15.2	14.4	0.7	0.9	66.5	2.4	100.0	2,507
Secondary	26.5	11.2	1.5	0.7	58.7	1.4	100.0	4,217
More than secondary	35.7	10.3	1.0	0.2	51.6	1.2	100.0	657
Wealth quintile								
Lowest	15.8	15.3	0.5	0.5	65.9	2.0	100.0	2,016
Second	16.8	12.3	1.7	0.9	65.8	2.6	100.0	2,013
Middle	21.8	14.6	1.1	1.1	59.5	1.8	100.0	1,829
Fourth	29.5	15.1	1.5	0.7	52.0	1.2	100.0	1,361
Highest	32.2	8.5	1.2	0.2	56.3	1.5	100.0	1,052
Age								
15-19	25.8	11.4	1.1	0.6	59.2	2.0	100.0	1,512
20-24	29.0	9.8	2.0	0.2	57.9	1.1	100.0	1,342

Table 15.5.B Male circumcision: Fully and partially circumcised men (continued)

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

Characteristic	Fully Circumcised ¹		Partially circumcised		Uncircumcised	Unknown	Total	Number
	Medical circumcision	Non-medical circumcision	Medical circumcision	Non-medical circumcision				
Age (cont.)								
25-29	23.8	13.9	1.3	0.8	58.7	1.5	100.0	1,170
30-34	25.1	11.4	0.8	1.0	60.6	1.1	100.0	954
35-39	21.6	15.9	1.0	0.8	59.4	1.3	100.0	846
40-44	20.2	15.2	0.8	0.8	59.8	3.2	100.0	775
45-49	18.8	14.7	1.5	1.4	61.7	2.0	100.0	584
50-54	15.9	17.5	1.5	0.0	61.9	3.2	100.0	450
55-59	14.6	18.7	0.6	1.5	61.3	3.3	100.0	368
60-64	10.9	13.2	1.2	0.0	71.3	3.3	100.0	270
Total 15-24	27.3	10.6	1.5	0.4	58.6	1.6	100.0	2,854
Total 15-49	24.4	12.7	1.2	0.7	59.3	1.6	100.0	7,183
Total 15-64	23.2	13.2	1.2	0.7	59.9	1.8	100.0	8,271

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

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

15.6 Gaps and Unmet Needs

- The low percentage of reported condom use, both overall and with high risk (non-marital, non-cohabitating) sexual partners, suggests that acceptability, access, and knowledge of condoms are areas that may require increased focus.
- Significant further expansion of the VMMC programme is needed to reach the national target of 80% coverage of overall male circumcision, especially in areas with high HIV prevalence. Among young men aged 15-24 years, 58.6% reported being uncircumcised. This younger sexually active age group, in particular, should be targeted for VMMC.
- Among HIV-negative men, 59.7% reported being uncircumcised; without significant expansion and significant scale up of VMMC coverage, Namibia is unlikely to meet programmatic targets of 80% coverage of male circumcision as per the Country Operational Plan for the Scale up of VMMC in Namibia.

16 INTIMATE PARTNER VIOLENCE AGAINST WOMEN

16.1 Key Findings

- Lifetime prevalence of physically forced sex was similar among HIV-positive (4.4%) and HIV-negative women (4.2%); among those who reported ever having physically forced sex, the proportion who reported it in the last 12 months was also similar among HIV-positive (15.9%) and HIV-negative (14.3%) women.
- Lifetime prevalence of pressured sex was similar among HIV-positive (3.7%) and HIV-negative women (4.5%); among those who reported ever having been pressured to have sex, the proportion who reported it in the last 12 months was also similar among HIV-positive (13.7%) and HIV-negative (12.7%) women.

16.2 Background

NAMPHIA identified 256 women aged 15-64 years who reported ever being physically forced to have sex and 268 women who reported ever being pressured to have sex. Intimate partner violence (IPV) includes physical violence, sexual violence, stalking, and psychological aggression (including coercive tactics) by a current or former intimate partner (i.e., spouse, boyfriend/girlfriend, dating partner, or ongoing sexual partner [Brieding et al, 2015]). Exposure to IPV has been implicated in increased risk of a woman contracting HIV, through mechanisms such as forced sex with an HIV-positive partner, an increase in risky sexual behaviours, and reduced ability to negotiate forms of safe sex (e.g., condom use).² Data from NAMPHIA 2017 fill gaps in information on regional prevalence and demographic characteristics of ever-married or partnered women who experienced IPV, specifically sexual violence. Additional data describe the proportion of women who reported physically forced sex and the proportion that reported pressured sex. Data provided in this chapter on the nature of IPV in the population can assist in the further targeting of sexual violence prevention programmes in Namibia.

This chapter presents data on prevalence of lifetime and recent (in the last 12 months) experiences of sexual violence as experienced from a male intimate partner among ever-married or partnered women aged 15-64 years. Further reporting of sexual violence expands beyond solely IPV to include both lifetime and recent physically forced sex and pressured sex among women aged 15-64 years. Prevalence estimates are disaggregated by HIV status and socio-economic and demographic characteristics. The prevalence of IPV was analysed by HIV status, as well as by demographic characteristics.

As described in the methods chapter, questionnaires on IPV were randomly administered to only one woman per household. Women were asked various questions regarding their experiences of lifetime and recent experiences of IPV, including if a male intimate partner perpetrated this recent occurrence of sexual violence. Women reporting IPV were offered referral to social services.

16.3 Prevalence of Recent Intimate Partner Violence

Prevalence of sexual IPV in the last 12 months was reported in similar proportions among HIV-positive (0.5%) and HIV-negative (0.6%) women. Women living in urban (0.6%) and rural (0.7%) areas reported

similar levels of sexual IPV. The highest proportion reporting IPV was in Erongo (2.3%) and the lowest in Omaheke, Oshikoto, Kavango West, and Zambezi (0.0% each).

Women who were widowed did not report any recent sexual IPV. Women who had attained a secondary level of education experienced a higher level (0.7%) of sexual IPV than those women who had no education (0.1%).

By age, young women aged 20-24 years and women aged 30-34 years reported the highest experiences of sexual IPV (1.1% and 1.2%, respectively). The lowest proportion was in older adolescents aged 15-19 years, and older adults aged 50-54 years and 60-64 years (0.0% each) (Table 16.3.A).

IPV is likely under-reported in the survey; the finding that less than 1.0% of female respondents experienced sexual or physical violence in the last 12 months was low compared to previous data on IPV in Namibia.

Table 16.3.A Prevalence of recent intimate partner violence against women		
Among ever-married or partnered women aged 15-64 years, percentage who experienced physical or sexual violence from a male intimate partner in the prior 12 months, by woman's HIV status and selected demographic characteristics, NAMPHIA 2017		
Characteristic	Sexual violence	Number of ever-married or partnered women
Result of NAMPHIA HIV test		
HIV positive	0.5	612
HIV negative	0.6	2,460
Not tested	0.5	284
Residence		
Urban	0.6	1,396
Rural	0.7	1,960
Region		
Erongo	2.3	148
Hardap	0.9	279
//Karas	0.2	222
Kavango East	0.1	317
Kavango West	0.0	246
Khomas	0.3	304
Kunene	0.3	228
Ohangwena	0.7	253
Omaheke	0.0	318
Omusati	0.6	248
Oshana	1.6	187
Oshikoto	0.0	185
Otjozondjupa	0.7	261
Zambezi	0.0	160
Marital status		
Never married	*	0
Married	0.6	1,449
Living together	0.8	1,173
Widowed	0.0	246
Divorced	0.5	122
Separated	0.5	320
Education		
No education	0.1	403
Primary	0.6	1,079
Secondary	0.7	1,602
More than secondary	0.5	262
Wealth quintile		
Lowest	0.5	986
Second	0.2	738
Middle	1.2	609
Fourth	0.8	522
Highest	0.5	501
Age		
15-19	0.0	65
20-24	1.1	267

Table 16.3.A Prevalence of recent intimate partner violence against women (continued)

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

Characteristic	Sexual violence	Number of ever-married or partnered women
Age (cont.)		
25-29	0.6	421
30-34	1.2	497
35-39	0.3	465
40-44	1.0	468
45-49	0.1	369
50-54	0.0	316
55-59	0.9	268
60-64	0.0	220
Total 15-24	0.9	332
Total 15-49	0.7	2,552
Total 15-64	0.6	3,356

¹Based on the following variables and questionnaire wording: "In the past 12 months, did a partner physically force you to have sex? By partner, I mean a live-in partner, whether or not you were married at the time."

Women who did not answer the question because they were never physically forced to have sex (answer = 0) and/or were not physically forced to have sex in the past 12 months (answer for within 12 months = 0) are included as not having experienced sexual violence from a partner in the past 12 months.

²Relates to Global AIDS Monitoring Indicator 4.3: Prevalence of recent intimate partner violence.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

16.4 Prevalence of Lifetime and Recent Physically Forced Sex and Pressured Sex

Physically forced sex

Women were asked about past experiences of being physically forced to have sex. Women who reported having ever been physically forced to have sex were subsequently asked if they had experienced physically forced sex in previous 12 months. Prevalence of lifetime physically forced sex was reported in similar proportions among HIV-positive (4.4%) and HIV-negative women (4.2%). Among those who ever reported physically forced sex, 15.9% of HIV-positive women and 14.3% of HIV-negative women reported physically forced sex in the 12 months prior the survey.

Women living in urban and rural areas reported similar levels of lifetime physically forced sex (4.6% and 3.1%, respectively). Women living in rural areas reported almost three times as much physically forced sex in the 12 months before the survey as compared to women in urban areas (26.0% compared to 9.3%). Regionally, Erongo reported the highest proportion of women with lifetime physically forced sex (9.5%) while Oshikoto had the lowest level (1.5%).

In reference to marital status, divorced (11.8%) and then separated (7.2%) women reported highest levels of lifetime physically forced sex, while widowed (2.1%) and never married (3.2%) women reported the lowest levels. Lifetime physically forced sex by age group was lowest among women aged 55-59 years (1.2%) and aged 35-39 years (1.8%), with the highest level reported among young women aged 20-24 years (5.5%) (Table 16.3.B).

Table 16.3.B Sexual violence among adult women: physical sex

Percent of women aged 15-64 years who were physically forced to have sex, NAMPHIA 2017

Characteristic	Among women				Among women who were ever physically forced to have sex			
	Ever been physically forced to have sex				Physically forced to have sex in the 12 months before the survey			
	Yes	No	Total	Number	Yes	No	Total	Number
Result of PHIA survey HIV test								
HIV positive	4.4	95.6	100.0	1,128	(15.9)	(84.1)	(100.0)	42
HIV negative	4.2	95.8	100.0	4,733	14.3	85.7	100.0	183
Not tested	2.1	97.9	100.0	546	*	*	*	17

Table 16.3.B Sexual violence among adult women: physical sex (continued)								
Percent of women aged 15-64 years who were physically forced to have sex, NAMPHIA 2017								
Characteristic	Among women				Among women who were ever physically forced to have sex			
	Ever been physically forced to have sex				Physically forced to have sex in the 12 months before the survey			
	Yes	No	Total	Number	Yes	No	Total	Number
Residence								
Urban	4.6	95.4	100.0	2,766	9.3	90.7	100.0	134
Rural	3.1	96.9	100.0	3,641	26.0	74.0	100.0	108
Region								
Erongo	9.5	90.5	100.0	256	*	*	*	21
Hardap	4.5	95.5	100.0	420	*	*	*	20
//Karas	4.9	95.1	100.0	334	*	*	*	15
Kavango East	4.8	95.2	100.0	484	*	*	*	20
Kavango West	3.5	96.5	100.0	353	*	*	*	11
Khomas	4.0	96.0	100.0	690	(10.6)	(89.4)	(100.0)	29
Kunene	4.6	95.4	100.0	369	*	*	*	20
Ohangwena	1.8	98.2	100.0	736	*	*	*	11
Omaheke	7.6	92.4	100.0	459	(0.0)	(100.0)	(100.0)	34
Omusati	2.4	97.6	100.0	714	*	*	*	15
Oshana	2.5	97.5	100.0	518	*	*	*	15
Oshikoto	1.5	98.5	100.0	466	*	*	*	7
Otjozondjupa	6.2	93.8	100.0	377	*	*	*	18
Zambezi	3.2	96.8	100.0	231	*	*	*	6
Marital status								
Never married	3.2	96.8	100.0	3,034	16.1	83.9	100.0	92
Married	4.0	96.0	100.0	1,449	(16.6)	(83.4)	(100.0)	48
Living together	5.8	94.2	100.0	1,173	16.2	83.8	100.0	61
Widowed	2.1	97.9	100.0	246	*	*	*	5
Divorced	11.8	88.2	100.0	122	*	*	*	16
Separated	7.2	92.8	100.0	320	*	*	*	15
Education								
No education	2.1	97.9	100.0	541	*	*	*	14
Primary	3.4	96.6	100.0	1,758	21.4	78.6	100.0	50
Secondary	4.4	95.6	100.0	3,547	11.4	88.6	100.0	154
More than secondary	4.0	96.0	100.0	540	*	*	*	24
Wealth quintile								
Lowest	2.5	97.5	100.0	1,759	(26.6)	(73.4)	(100.0)	42
Second	2.4	97.6	100.0	1,424	(29.1)	(70.9)	(100.0)	39
Middle	4.7	95.3	100.0	1,272	14.7	85.3	100.0	56
Fourth	6.1	93.9	100.0	1,110	11.4	88.6	100.0	59
Highest	4.2	95.8	100.0	842	(5.8)	(94.2)	(100.0)	46
Age								
15-19	3.6	96.4	100.0	674	(12.8)	(87.2)	(100.0)	28
20-24	5.5	94.5	100.0	877	(15.8)	(84.2)	(100.0)	44
25-29	4.5	95.5	100.0	959	(19.4)	(80.6)	(100.0)	45
30-34	4.1	95.9	100.0	862	(18.1)	(81.9)	(100.0)	32
35-39	1.8	98.2	100.0	775	*	*	*	15
40-44	5.1	94.9	100.0	663	(16.2)	(83.8)	(100.0)	31
45-49	4.6	95.4	100.0	541	*	*	*	22
50-54	3.5	96.5	100.0	422	*	*	*	12
55-59	1.2	98.8	100.0	368	*	*	*	5
60-64	2.7	97.3	100.0	266	*	*	*	8
Total 15-24	4.6	95.4	100.0	1,551	14.6	85.4	100.0	72
Total 15-49	4.2	95.8	100.0	5,351	15.4	84.6	100.0	217
Total 15-64	4.0	96.0	100.0	6,407	14.8	85.2	100.0	242

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

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

Pressured sex

Women were also surveyed for experiences of ever having experienced pressure to have sex. Similarly, women who had ever experienced pressured sex in their lifetime were subsequently asked if they had been pressured to have sex in the previous 12 months. Prevalence of lifetime pressured sex was similar

among HIV-positive and HIV-negative women (3.7% vs 4.5%) as well as for the prevalence of recent pressured sex among those who were ever pressured to have sex (13.7% vs 12.7%, respectively).

Women living in urban and rural areas reported similar levels of lifetime pressured sex (4.9% and 3.2%, respectively). Of those in rural areas, 17.9% reported having been pressured to have sex in the 12 months prior the survey compared to 10.0% of those in urban areas. Geographically, women living in the Otjozondjupa and Erongo regions reported the highest levels of lifetime pressured sex (7.9% and 7.1%, respectively) while women living in Ohangwena reported the lowest level (1.6%).

Divorced women experienced the highest level of lifetime pressured sex (11.3%), while widowed women reported the lowest level (1.8%). Lifetime pressured sex by education level ranged from 2.7% among women with no education to 4.7% of women having attended secondary school. By age group, pressured sex was reported least frequently by older women aged 55-59 years (1.1%) and most frequently by women aged 45-49 years (6.7%) (Table 16.3.C).

Table 16.3.C Sexual violence among adult women: pressured sex								
Percent of women aged 15-64 years who were pressured to have sex, NAMPHIA 2017								
Characteristic	Among women				Among women ever pressured to have sex			
	Ever been pressured to have sex		Total	Number	Pressured to have sex in the last 12 months		Total	Number
Yes	No	Yes			No			
Result of PHIA survey HIV test								
HIV positive	3.7	96.3	100.0	1,124	(13.7)	(86.3)	(100.0)	40
HIV negative	4.5	95.5	100.0	4,709	12.7	87.3	100.0	187
Not tested	2.7	97.3	100.0	545	*	*	*	20
Residence								
Urban	4.9	95.1	100.0	2,752	10.0	90.0	100.0	137
Rural	3.2	96.8	100.0	3,626	17.9	82.1	100.0	110
Region								
Erongo	7.1	92.9	100.0	256	*	*	*	19
Hardap	4.6	95.4	100.0	418	*	*	*	22
//Karas	5.0	95.0	100.0	332	*	*	*	15
Kavango East	5.3	94.7	100.0	484	(9.4)	(90.6)	(100.0)	25
Kavango West	3.7	96.3	100.0	353	*	*	*	13
Khomas	4.7	95.3	100.0	682	(9.5)	(90.5)	(100.0)	28
Kunene	6.0	94.0	100.0	369	*	*	*	20
Ohangwena	1.6	98.4	100.0	735	*	*	*	9
Omaheke	6.8	93.2	100.0	456	(10.6)	(89.4)	(100.0)	30
Omusati	2.5	97.5	100.0	709	*	*	*	15
Oshana	2.6	97.4	100.0	518	*	*	*	13
Oshikoto	2.7	97.3	100.0	462	*	*	*	10
Otjozondjupa	7.9	92.1	100.0	374	*	*	*	24
Zambezi	2.1	97.9	100.0	230	*	*	*	4
Marital status								
Never married	3.8	96.2	100.0	3,022	14.3	85.7	100.0	103
Married	4.0	96.0	100.0	1,439	(6.7)	(93.3)	(100.0)	44
Living together	5.5	94.5	100.0	1,167	12.3	87.7	100.0	63
Widowed	1.8	98.2	100.0	246	*	*	*	4
Divorced	11.3	88.7	100.0	122	*	*	*	15
Separated	6.4	93.6	100.0	320	*	*	*	14
Education								
No education	2.7	97.3	100.0	542	*	*	*	14
Primary	3.6	96.4	100.0	1,746	10.2	89.8	100.0	56
Secondary	4.7	95.3	100.0	3,531	13.3	86.7	100.0	156
More than secondary	3.9	96.1	100.0	538	*	*	*	21
Wealth quintile								
Lowest	2.7	97.3	100.0	1,754	(12.9)	(87.1)	(100.0)	46
Second	2.9	97.1	100.0	1,414	(27.4)	(72.6)	(100.0)	43
Middle	4.4	95.6	100.0	1,265	13.6	86.4	100.0	55
Fourth	5.5	94.5	100.0	1,106	10.8	89.2	100.0	56
Highest	5.5	94.5	100.0	839	(6.4)	(93.6)	(100.0)	47

Table 16.3.C Sexual violence among adult women: pressured sex (continued)

Percent of women aged 15-64 years who were pressured to have sex, NAMPHIA 2017

Characteristic	Among women				Among women ever pressured to have sex			
	Ever been pressured to have sex			Number	Pressured to have sex in the last 12 months			Number
	Yes	No	Total		Yes	No	Total	
Age								
15-19	5.2	94.8	100.0	670	(7.6)	(92.4)	(100.0)	32
20-24	5.0	95.0	100.0	874	(10.4)	(89.6)	(100.0)	47
25-29	5.1	94.9	100.0	960	22.9	77.1	100.0	50
30-34	3.9	96.1	100.0	855	(20.5)	(79.5)	(100.0)	33
35-39	2.3	97.7	100.0	768	*	*	*	19
40-44	3.6	96.4	100.0	661	(17.4)	(82.6)	(100.0)	28
45-49	6.7	93.3	100.0	536	*	*	*	18
50-54	2.1	97.9	100.0	422	*	*	*	8
55-59	1.1	98.9	100.0	366	*	*	*	4
60-64	2.8	97.2	100.0	266	*	*	*	8
Total 15-24	5.1	94.9	100.0	1,544	9.0	91.0	100.0	79
Total 15-49	4.6	95.4	100.0	5,324	13.1	86.9	100.0	227
Total 15-64	4.2	95.8	100.0	6,378	12.6	87.4	100.0	247

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

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

16.5 Gaps and Unmet Needs

- Intimate partner violence is likely under-reported in a face-to-face interview, with only 0.6% of women reporting sexual abuse by an intimate partner in the 12 months before the survey. Follow-on studies may wish to use different methods to obtain more accurate estimates of IPV.
- Future studies should also address IPV experienced by men.
- There may be a need for regionally-targeted programmes that can be contextualized to each region, rather than nationwide campaigns.

16.6 References

- Krug EG, Dahlberg LL, Mercy JA, Zwi AB, Lozano R, eds. *Sexual Violence*, in *World Report on Violence and Health*, Geneva: World Health Organization; 2002, p. 147-182.
- 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.
- 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.
- Siemieniuk RA, Krentz HB, Miller P, Woodman K, Ko K, Gill MJ. The clinical implications of high rates of intimate partner violence against HIV-positive women. *J Acquir Immune Defic Syndr*. 2013 Sep 1;64(1):32-8. doi: 10.1097/QAI.0b013e31829bb007.
- Trickett PK, Noll JG, Putnam FW. The impact of sexual abuse on female development: Lessons from a multigenerational, longitudinal research study. *Dev Psychopathol*. 2011 May;23(2):453-76. doi: 10.1017/S0954579411000174.

6. Pérez-Fuentes G, Olfson M, Villegas L, Morcillo C, Wang S, Blanco C. Prevalence and correlates of child sexual abuse: a national study. *Compr Psychiatry*. 2013 Jan;54(1):16-27. doi: 10.1016/j.comppsy.2012.05.010. Epub 2012 Jul 30.

17 HIV KNOWLEDGE AND DISCRIMINATORY ATTITUDES AMONG YOUNG ADOLESCENTS

17.1 Key Findings

- More young adolescents (those aged 10-14 years) in rural areas (64.4%) reported discriminatory attitudes towards people living with HIV than those in urban areas (37.6%).

17.2 Background

Attitudes toward and perceptions of people living with HIV play an important role in the HIV epidemic, especially among young adolescents whose thoughts and attitudes will determine the future of Namibia. Ongoing misconceptions about HIV have resulted in people developing a number of false beliefs, for instance, that HIV/AIDS is associated with depraved and immoral behaviours, that HIV infection results from irresponsibility, and that HIV can be spread casually. Fears arising from these beliefs can lead to marginalization of particular populations, rendering them even more vulnerable to HIV. Furthermore, discrimination against people living with HIV continues to act as a barrier to prevention and treatment, undermining programmatic attempts to help people living with HIV and may even result in the denial of health services.¹

This chapter focuses on potential stigmatization directed against HIV and people living with HIV. The prevalence of discriminatory attitudes among younger adolescents is reported by region, age, and sociodemographic characteristics. Prevalence was assessed by asking participants whether they agree or disagree with common discriminatory statements. These data can help to explain how HIV-related stigma may negatively impact efforts aimed at HIV prevention, HIV testing, and access to HIV treatment and care. This chapter also describes knowledge of HIV prevention among young adolescents. These data were measured by asking participants to agree or disagree with both accurate and inaccurate statements about HIV prevention.

17.3 Discriminatory Attitudes Towards People Living with HIV

The three questions asked to determine discriminatory attitudes were: 1) Would you be willing to share food with someone who has HIV? 2) Would you be friends with someone who has HIV? 3) Would you be comfortable to have a teacher who has HIV?

Among young adolescents who have ever heard of HIV, 51.7% reported discriminatory attitudes towards people living with HIV. Interestingly, there seemed to be substantial variation by residence where those living in rural areas had nearly double (64.4%) the percent of answering “no” to at least one of the discriminatory statements than those living in urban areas (37.6%).

The lowest proportion of young adolescents who reported discriminatory attitudes toward people living with HIV was in Erongo (26.9%), compared to the highest proportion in Oshikoto (78.4%).

Over half, (53.2%) of those currently attending primary school reported discriminatory attitudes in contrast to 34.2% of respondents currently attending secondary school. Similarly, 62.9% of those in the lowest and 63.6% of those in the second wealth quintile reported discriminatory attitudes compared to 36.6% among those in the fourth and 37.1% in the highest wealth quintile. (Table 17.3.A).

Table 17.3.A Discriminatory attitudes towards people living with HIV					
Among young adolescents aged 10-14 years who have heard of HIV, percentage who report discriminatory attitudes towards people living with HIV, by selected demographic characteristics, NAMPHIA 2017					
Characteristic	Would you be willing to share food with someone who has HIV?	Would you be friends with someone who has HIV?	Would you be comfortable to have a teacher who has HIV?	All questions	Number
	Percentage who responded "No"	Percentage who responded "No"	Percentage who responded "No"	Percentage who responded "No" to any of the three questions ¹	
Residence					
Urban	27.2	15.5	27.3	37.6	426
Rural	30.7	27.5	56.5	64.4	836
Region					
Erongo	(24.6)	(16.1)	(22.2)	(26.9)	35
Hardap	32.4	18.6	26.3	36.5	60
//Karas	26.3	9.8	24.2	42.2	53
Kavango East	29.8	24.6	34.9	45.2	129
Kavango West	30.9	27.7	46.1	54.7	110
Khomas	30.2	14.2	22.7	35.1	86
Kunene	(55.0)	(47.6)	(46.8)	(59.2)	42
Ohangwena	26.6	25.0	72.0	74.6	216
Omaheke	(39.2)	(22.4)	(22.7)	(42.6)	44
Omusati	35.6	28.1	55.0	62.6	184
Oshana	22.8	23.7	50.1	62.7	99
Oshikoto	28.5	23.5	71.7	78.4	107
Otjozondjupa	23.7	21.1	26.3	36.1	56
Zambezi	(19.0)	(19.1)	(32.3)	(40.7)	41
Wealth quintile					
Lowest	30.7	28.1	56.1	62.9	393
Second	27.6	25.5	57.5	63.6	307
Middle	32.9	23.0	41.9	52.2	243
Fourth	25.9	17.8	28.2	36.6	168
Highest	27.5	12.4	22.9	37.1	151
Education					
Currently attending primary school	30.2	23.4	43.8	53.2	1,131
Currently attending secondary school	13.2	4.6	29.8	34.2	110
Not currently attending school	*	*	*	*	21
Total 10-14	29.0	21.8	42.7	51.7	1,262

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

17.4 Knowledge About HIV Prevention

NAMPHIA also collected information among younger adolescents on knowledge of HIV prevention, by asking two questions about prevention of sexual transmission of HIV and five questions related to common misconceptions about contracting HIV.

Overall, among younger adolescent girls and boys, 11.6% answered all seven HIV knowledge questions correctly. Among both boys and girls, 70.7% responded correctly that a mother can pass HIV to her

unborn baby, and 74.5% responded correctly that there are medications that can help people living with HIV or AIDS to live longer. Regarding misconceptions, only 58.2% of boys and girls in this age group responded correctly that a healthy-looking person could have HIV or AIDS. Geographically, there was a large variation in correctly answering all questions among respondents; the highest proportion that responded to all seven questions correctly was in Oshikoto (20.4%) and the lowest proportion that responded to all seven questions correctly was in Otjozondjupa (3.8%). The percentage of those answering all questions correctly varied in terms of education, from 8.1% among those not currently attending school, compared to 11.1% among those currently attending primary school, and 16.9% among those currently attending secondary school (Table 17.3.B).

Only 13.4% of younger adolescent boys answered all seven HIV knowledge questions correctly with roughly the same proportions of those in urban (13.5%) and rural (13.3%) areas responding correctly to all seven questions. The highest proportion of correct responses were to questions about maternal HIV transmission (70.4%) and whether there are medications for people living with HIV (71.7%).

Among younger adolescent boys, 62.9% responded correctly that the risk of HIV transmission can be reduced by not having sex and 66.2% responded correctly that HIV transmission risk can be reduced by consistent condom use. A lower proportion of boys in the highest wealth quintile answered all questions correctly (7.8%) compared to those in the lowest wealth quintile (13.8%). Among boys currently attending secondary school 25.5% answered all questions correctly compared to 12.3% of those who were currently attending primary school at the time of the survey (Table 17.3.C).

Only 9.8% of young adolescent girls answered all seven HIV knowledge questions correctly. Almost twice the proportion in rural areas (12.0%) as opposed to urban areas (7.5%) responded correctly to all seven questions. The highest proportion of girls responded correctly to questions about maternal HIV transmission (70.9%) and whether there are medications for those living with HIV (77.3%) (Table 17.3.D).

Among girls in this age group, similar proportions of respondents in the highest wealth quintile answered all questions correctly (11.9%) compared to those in the lowest wealth quintile (10.8%). Among the girls currently attending primary school, 9.7% answered all questions correctly compared to 11.5% of the girls currently attending secondary school (Table 17.3.D).

Table 17.3.B Young adolescents: Knowledge about HIV prevention: Total

Among young adolescents aged 10-14 years who have heard of HIV, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, NAMPHIA 2017

Percentage who correctly answered the questions:

Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass HIV to her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	Can medicines for HIV make people with HIV less likely to spread the virus?	All seven questions	Number ²
Residence									
Urban	67.0	67.4	62.8	79.2	79.3	45.4	37.1	10.3	441
Rural	62.1	59.9	54.2	63.3	70.5	49.0	41.0	12.7	910
Region									
Erongo	(71.9)	(84.1)	(59.7)	(76.2)	(88.4)	(40.2)	(41.0)	(14.4)	36
Hardap	75.4	78.9	60.5	74.6	88.6	43.8	38.0	8.4	63
//Karas	79.5	70.7	72.5	88.4	80.1	41.8	24.6	8.9	56

Table 17.3.B Young adolescents: Knowledge about HIV prevention: Total (continued)									
Among young adolescents aged 10-14 years who have heard of HIV, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, NAMPHIA 2017									
Percentage who correctly answered the questions:									
Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass HIV to her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	Can medicines for HIV make people with HIV less likely to spread the virus?	All seven questions	Number ²
Region (cont.)									
Kavango East	64.5	70.5	62.5	79.5	68.6	38.1	42.7	11.4	138
Kavango West	62.7	61.9	54.2	63.5	67.5	31.2	41.1	7.3	113
Khomas	66.9	65.2	59.9	78.1	81.8	50.9	41.2	9.1	90
Kunene	(43.2)	(46.1)	(32.6)	(60.3)	(52.2)	(30.6)	(23.4)	(4.6)	44
Ohangwena	59.0	56.4	58.5	59.1	65.3	55.3	39.3	13.4	231
Omaheke	(66.7)	(69.5)	(60.6)	(71.8)	(81.2)	(35.7)	(38.4)	(11.8)	46
Omusati	63.1	60.2	58.5	66.9	73.3	56.4	47.1	16.2	205
Oshana	61.6	56.6	57.1	70.4	69.7	55.3	38.0	11.3	108
Oshikoto	65.1	58.4	60.0	68.2	76.6	56.5	41.4	20.4	115
Otjozondjupa	56.8	58.7	52.4	66.1	73.8	26.5	28.3	3.8	60
Zambezi	(62.5)	(53.5)	(45.5)	(66.2)	(69.1)	(40.4)	(26.5)	(4.2)	46
Wealth quintile									
Lowest	60.3	56.2	50.5	60.8	67.3	45.8	39.4	12.3	441
Second	62.8	60.3	57.9	67.3	73.9	51.3	40.0	12.5	326
Middle	66.4	63.8	56.4	68.8	74.6	49.2	37.7	9.4	252
Fourth	71.5	67.0	64.5	78.5	78.0	44.2	42.9	13.4	175
Highest	63.6	72.9	65.1	82.5	81.7	45.7	36.4	10.2	157
Education									
Currently attending primary school	62.4	62.6	56.0	69.3	73.1	46.9	39.2	11.1	1,212
Currently attending secondary school	87.7	74.4	81.8	86.1	92.6	54.7	41.4	16.9	113
Not currently attending school	(28.6)	(36.4)	(33.1)	(47.1)	(36.4)	(21.0)	(23.9)	(8.1)	26
Total 10-14	64.4	63.4	58.2	70.7	74.5	47.3	39.2	11.6	1,351
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.									

Table 17.3.C Young adolescents: Knowledge about HIV prevention: Boys									
Among young adolescent boys aged 10-14 years who have heard of HIV, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, NAMPHIA 2017									
Percentage who correctly answered the questions:									
Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass HIV to her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	Can medicines for HIV make people with HIV less likely to spread the virus?	All seven questions	Number ²
Residence									
Urban	64.2	72.3	63.2	82.0	79.3	59.9	38.9	13.5	211
Rural	62.0	61.5	56.1	61.5	65.8	54.1	40.2	13.3	481
Region									
Erongo	*	*	*	*	*	*	*	*	21
Hardap	*	*	*	*	*	*	*	*	21
//Karas	(80.0)	(81.4)	(67.5)	(88.8)	(78.3)	(62.3)	(33.6)	(14.9)	29
Kavango East	68.0	68.9	67.0	82.1	69.3	45.1	40.5	15.7	78
Kavango West	65.5	61.6	60.3	64.0	63.7	35.0	35.6	6.7	65
Khomas	(56.7)	(64.2)	(50.2)	(79.9)	(82.5)	(67.7)	(40.4)	(7.9)	40
Kunene	*	*	*	*	*	*	*	*	23
Ohangwena	57.3	54.7	56.9	54.2	58.0	60.4	38.9	12.1	121
Omaheke	*	*	*	*	*	*	*	*	19

Table 17.3.C Young adolescents: Knowledge about HIV prevention: Boys (continued)									
Among young adolescent boys aged 10-14 years who have heard of HIV, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, NAMPHIA 2017									
Percentage who correctly answered the questions:									
Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	Can medicines for HIV make people with HIV less likely to spread the virus?	All seven questions	Number ²
Region (cont.)									
Omusati	59.0	67.6	65.2	61.6	69.1	60.8	44.8	13.9	108
Oshana	62.7	58.6	56.0	67.1	70.7	65.9	37.6	14.4	56
Oshikoto	68.5	60.1	65.7	70.5	73.1	62.9	46.4	24.3	65
Otjozondjupa	(57.9)	(63.7)	(52.8)	(63.1)	(67.6)	(10.9)	(32.8)	(0.0)	30
Zambezi	*	*	*	*	*	*	*	*	16
Wealth quintile									
Lowest	62.7	60.3	56.3	58.2	64.6	53.7	39.4	13.8	234
Second	58.7	56.2	56.0	63.0	67.5	56.8	37.6	12.2	165
Middle	63.3	66.5	56.6	70.6	67.3	51.8	32.7	11.0	124
Fourth	76.2	73.3	65.7	83.8	79.9	59.7	52.9	21.9	98
Highest	54.2	80.8	64.2	85.1	84.4	63.0	36.1	7.8	71
Education									
Currently attending primary school	61.0	65.5	57.3	69.1	70.3	55.3	38.7	12.3	635
Currently attending secondary school	(88.6)	(75.9)	(83.3)	(89.9)	(96.1)	(78.4)	(51.4)	(25.5)	44
Not currently attending school	*	*	*	*	*	*	*	*	13
Total 10-14	62.9	66.2	59.2	70.4	71.7	56.6	39.6	13.4	692
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. Estimates with an asterisk are based on a very small number (less than 25) of unweighted cases and have been suppressed.									

Table 17.3.D Young adolescents: Knowledge about HIV prevention: Girls									
Among young adolescent girls aged 10-14 years who have heard of HIV, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, NAMPHIA 2017									
Percentage who correctly answered the questions:									
Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	Can medicines for HIV make people with HIV less likely to spread the virus?	All seven questions	Number ²
Residence									
Urban	69.5	63.2	62.5	76.8	79.3	32.8	35.5	7.5	230
Rural	62.2	58.3	52.1	65.3	75.5	43.5	41.9	12.0	429
Region									
Erongo	*	*	*	*	*	*	*	*	15
Hardap	(73.1)	(73.3)	(54.7)	(67.9)	(88.8)	(34.1)	(29.1)	(8.8)	42
//Karas	(79.0)	(59.7)	(77.7)	(88.1)	(81.8)	(20.8)	(15.4)	(2.6)	27
Kavango East	59.9	72.5	56.7	76.1	67.6	29.2	45.5	5.8	60
Kavango West	(58.8)	(62.2)	(45.9)	(62.9)	(72.5)	(26.1)	(48.6)	(8.1)	48
Khomas	74.6	66.0	67.1	76.8	81.2	38.3	41.8	10.1	50
Kunene	*	*	*	*	*	*	*	*	21
Ohangwena	60.7	58.2	60.2	64.4	73.3	49.8	39.6	14.7	110
Omaheke	(68.5)	(71.2)	(55.1)	(73.8)	(75.8)	(23.4)	(40.6)	(6.8)	27
Omusati	67.5	52.4	51.3	72.5	77.6	51.8	49.6	18.7	97
Oshana	60.5	54.6	58.3	73.7	68.7	44.4	38.4	8.1	52
Oshikoto	60.6	56.3	52.7	65.2	81.2	48.2	34.8	15.4	50
Otjozondjupa	(55.8)	(54.8)	(52.1)	(68.5)	(78.8)	(38.9)	(24.6)	(6.9)	30
Zambezi	(53.5)	(40.6)	(44.3)	(66.6)	(73.0)	(34.1)	(20.1)	(0.0)	30

Table 17.3.D Young adolescents: Knowledge about HIV prevention: Girls (continued)

Among young adolescent girls aged 10-14 years who have heard of HIV, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, NAMPHIA 2017

Percentage who correctly answered the questions:

Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass HIV to her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	Can medicines for HIV make people with HIV less likely to spread the virus?	All seven questions	Number ²
Wealth quintile									
Lowest	57.8	51.9	44.4	63.6	70.1	37.5	39.3	10.8	207
Second	67.1	64.5	59.9	71.7	80.4	45.6	42.4	12.9	161
Middle	69.2	61.2	56.2	67.2	81.4	46.8	42.3	7.9	128
Fourth	65.6	59.2	63.1	71.8	75.6	24.9	30.6	2.8	77
Highest	70.3	67.1	65.7	80.6	79.8	33.1	36.6	11.9	86
Education									
Currently attending primary school	63.7	59.6	54.6	69.6	76.1	38.4	39.6	9.7	577
Currently attending secondary school	87.1	73.4	80.9	83.7	90.5	39.9	35.2	11.5	69
Not currently attending school	*	*	*	*	*	*	*	*	13
Total 10-14	65.8	60.7	57.2	70.9	77.3	38.3	38.7	9.8	659

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

17.5 Gaps and Unmet Needs

- Discriminatory attitudes towards people living with HIV among young adolescents were more common among those residing in rural areas. Targeted programmes designed for rural and urban communities are needed, along with outreach options that include same sex education opportunities and split sex education opportunities.
- Education and community interventions to decrease stigma may improve the lives of people living with HIV in these areas as over half of the adolescent population surveyed (51.7%) had discriminatory attitudes towards people living with HIV.
- Mainstreaming HIV education in schools across the country may also ensure that discriminatory attitudes do not prevail among future generations.

17.6 References

1. Joint United Nations Programme on HIV/AIDS (UNAIDS) (2016). *Global AIDS Monitoring 2017. Indicators for monitoring the 2016 United Nations Political Declaration on HIV and AIDS*. Geneva, Switzerland: UNAIDS; 2017.
https://www.aidsdatahub.org/sites/default/files/publication/UNAIDS_2017_Global_AIDS_Monitoring_2016.pdf. Accessed January 24, 2019.

18 TUBERCULOSIS

18.1 Key Findings

- Among adults who reported being HIV-positive, 43.8% reported ever attending a TB clinic.
- Of those who had visited a TB clinic, slightly more than half (51.2%) had been diagnosed with TB.
- Almost all (96.2%) who had been diagnosed with TB had been treated.

18.2 Background

Persons living with HIV are at risk for developing other infectious diseases, particularly TB. Tuberculosis is one of the leading causes of death for people living with HIV. A UNAIDS model estimates there were 3,900 (95% CI 2,500-5,500) incident TB cases among HIV-positive persons in Namibia in 2017.¹ According to the 2016 National Guidelines for Antiretroviral Therapy, “All people living with HIV should be screened for TB, including asking about TB exposure/contact history at each encounter with a health worker or visit to a health facility,” thus ensuring that persons in need of TB preventative therapy receive it. This chapter describes the TB clinical care cascade for HIV-positive individuals, that is, the proportion of HIV-positive individuals that received care at a TB clinic, the proportion of TB diagnoses among those receiving care, and the proportion that received treatment among those diagnosed with TB. Please note, in Namibia, HIV positive individuals are not required to attend a TB clinic and are instead often screened at an ART clinic for TB symptoms and referred accordingly.

18.3 Tuberculosis Diagnosis and Treatment

NAMPHIA participants who reported that they were HIV-positive were asked a series of questions about TB screening and care. Fewer than half (43.8%) of those who had self-reported being HIV-positive reported that they had ever visited a TB clinic. Approximately the same proportions of men (45.8%) and women (42.8%) living with HIV had ever visited a TB clinic. Of those who had visited one, 51.2% had been diagnosed with TB. More men (62.6%) than women (45.4%) were diagnosed with TB in a TB clinic. Of those who had been diagnosed, almost all (96.2%) had been treated for TB (94.9% of men and 97.2% of women) (Table 18.3.A).

Characteristic	Among HIV-positive adults		Among HIV-positive adults who ever visited a TB clinic		Among HIV-positive adults diagnosed with TB	
	Percentage who ever visited a TB clinic	Number	Percentage diagnosed with TB	Number	Percentage treated for TB	Number
Sex						
Male	45.8	595	62.6	271	94.9	170
Female	42.8	1,509	45.4	640	97.2	301
Total 15-64	43.8	2,104	51.2	911	96.2	471

18.4 Gaps and Unmet Needs

- Additional data are required to understand if HIV-positive individuals are being missed for TB diagnosis and screening.
- Additional data are required to understand the coverage of routine TB screening and tuberculosis preventive therapy per WHO guidelines.

18.5 References

1. World Health Organization. *Global tuberculosis report 2018*. Geneva: World Health Organization; 2018.
2. World Health Organization. *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: recommendations for a public health approach*. Geneva: World Health Organization; 2016.

DISCUSSION AND CONCLUSIONS

Incidence

NAMPHIA 2017 has provided the first-ever population-based estimate of HIV annual incidence among adults in Namibia. The estimated annualized national HIV incidence among adults (those aged 15-64 years) was 0.36% (95% CI: 0.18-0.55); this is markedly lower than the incidence predicted by the SPECTRUM model in 2017 (0.60%).

Incidence in women was 0.59% (95% CI: 0.25-0.94) compared to 0.13% (95% CI: 0.00-0.28) among men. Young people (those aged 15-24 years) represented the most pronounced contrast in HIV incidence; women had the highest incidence at 0.99% (95% CI: 0.30-1.68) while men had the lowest at 0.03% (95% CI: 0.00-0.14). This differential represents a vital opportunity for targeting prevention interventions toward young women in this group at higher risk.

Prevalence

National HIV prevalence in Namibia is high, estimated at 12.6% or roughly 176,000 adults living with HIV. Among women, HIV prevalence was 15.7%; among men, HIV prevalence was 9.3%. The regional HIV prevalence varied widely from 7.6% in Kunene to 22.3% in Zambezi. The considerable variation in prevalence of HIV infection and VLS across regions and population groups highlights the need to focus interventions, and to rigorously evaluate and map their availability, accessibility, quality, and effectiveness in specific geographic areas and demographic groups.

In addition to the prevalence of HIV infection among individuals in a population, an important dimension in understanding the impact of HIV on the country is the prevalence of HIV-affected households. Having one or more HIV-positive members per household has the potential to impact not only the health-status but also the psycho-social and economic well-being of other household members. NAMPHIA estimated that 19.4% of the urban and 27.6% of the rural households in Namibia had at least one living HIV-positive member and that 18.3% of household heads were living with HIV.

90-90-90 Cascade

Namibia's HIV diagnosis, care, and treatment interventions have resulted in substantial progress toward reaching the UNAIDS targets of 90-90-90, with 86.0% of people living with HIV reporting awareness of their HIV status, 96.4% of those diagnosed reporting being on ART, and 91.3% of those on ART having VLS. Namibia is the first country in sub-Saharan Africa that has evidence that it has surpassed the 2020 UNAIDS target of >73% VLS among all people living with HIV. According to NAMPHIA, 77.4% of adults living with HIV have VLS (though that estimate may include a small number of individuals who have low viral loads in the absence of treatment). Using a more rigorous measure, the prevalence of VLS among those known to have been diagnosed and placed on treatment among all adults living with HIV, Namibia *still* achieves the UNAIDS target, with 75.6% achieving VLS *on treatment*. NAMPHIA results on the number of adults living with HIV on ART and having achieved VLS were consistent with national facility-based data.

Women in Namibia have achieved the UNAIDS 90-90-90 targets, which has positive implications for control of both sexual and vertical transmission. Among those diagnosed, ART coverage and VLS are relatively high for both men and women.

However, many HIV-positive men, as well as young people, are not aware of their HIV status (the first “90”). Strategies to increase diagnosis of HIV among men and young people are particularly important to achieve the 90-90-90s and overall VLS coverage goals.

As of 2017, Namibia was making remarkable strides towards epidemic control by 2030 (the ultimate goal of UNAIDS targets). In terms of those fast-track 90:90:90 targets, Namibia has achieved 86:96:91. Even more impressively, among all women living with HIV in the country, the goal of 73% achieving VLS by 2020 has already been surpassed. This is an important finding because we know that women are more likely to be infected with HIV. NAMPHIA data shows that while overall 86% of people know their status, when analysed by age, just 72% of young adults aged 15-24 years know their status. Future programs must ensure better and more effective efforts to reach the young people of Namibia.

We continue to see variances by geography. As we expected, the most affected region continues to be the Zambezi region with 22.3% prevalence. It is good to see that this region has also made tremendous improvements in getting people on treatment. In 2015, in Zambezi only 53% of people living with HIV were on treatment; in 2017 it was 80%. This is incredible progress. Meanwhile, Kunene and Omaheke are examples of regions with much lower HIV prevalence, but where people struggle to be tested, put on treatment, and become achieve VLS. This is an example of why NAMPHIA was so vitally needed. We can now look at the situation by region and decide what we need to do and how.

NAMPHIA survey results provide the data needed to drive the HIV prevention, care, and treatment program forward. Namibia needs commitment from communities, particularly the younger generation and men, to end the HIV epidemic. The data show there is a need to follow the example shown by older generations in communities across Namibia who have tested, received treatment, and successfully stayed on treatment. The data shows where we must offer better prevention, care, and treatment services. Women have already achieved the target of 90:90:90 – men must follow this example and do the same.

Similarly, programmatic successes must also be extended to children living with HIV—all of whom should be diagnosed. There is a critical to provide optimal, and child-friendly ART formulations in order to bring VLS in children up to the third 90 target.

Going forward, Namibia must make sure that all people, young, old, men, women across all regions are able to access HIV testing and treatment services.

Finally, transmission of HIV is often extremely complicated. There are many factors that may result in someone becoming infected with HIV. While the NAMPHIA study focused on the impact of the medical program for HIV prevention and treatment, there are many social and economic factors that must also be assessed and strengthened. The MoHSS calls on all relevant line Ministries to continue to improve the broader socio-economic context in order to end the HIV epidemic in Namibia.

APPENDIX A SAMPLE DESIGN AND IMPLEMENTATION

Appendix A provides a high-level overview of sampling and weighting procedures for NAMPHIA 2017. In-depth details are provided in the NAMPHIA Technical Report, which may be found online on the PHIA Project website.

A.1 Sample Design

Overview

The sample design for NAMPHIA was 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 “primary sampling units” or PSUs) were selected with probabilities proportionate to the number of households in the PSU based on the 2011 Population and Housing Census. The allocation of the sample PSUs to the 14 regions was made in a manner designed to achieve specified precision levels for (a) national estimates of HIV incidence rates, and (b) regional estimates of VLS rates.

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, random samples of dwelling units/households were selected from each PSU at rates designed to yield specified fixed sample sizes within each region to the extent feasible.

Within the sampled households, eligible adults aged 15-64 years were included in the study sample for data collection. Eligible children aged 0-14 years in a randomly-selected one-half of the sampled households were included in the study for data collection.

Population of Inference

The population of inference for NAMPHIA was comprised of individuals who were present in households (i.e., “slept in the household”) on the night prior to the date of interview. This population is referred to as the de facto population. In contrast, those individuals who are usual residents of the household regardless of whether they were present in the household during the previous night comprise the de jure population. All individuals belonging to either the de facto or de jure populations were included on the rosters compiled for sampling purposes; however, only members of the de facto population were designated for data collection.

Precision Specifications and Assumptions

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

- The relative standard error (RSE) of the national estimate of HIV incidence among persons aged 15-49 years should be 30% or less.
- 95% CI bounds of ± 0.10 or less for an estimated VLS rate among HIV+ adults aged 15-49 years in each of the 14 regions of the country.

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

- An overall HIV prevalence rate of 0.14 (14.0%) for adults aged 15-49 years that varies by region. Source: 2013 Namibia Demographic and Health Survey (NDHS).
- An annual national HIV incidence rate for adults aged 15-49 years of $P_a=0.0081$ (0.81%). Source: 2014 UNAIDS estimate.
- A MDRI of 130 days, yielding an annualization rate of $365/130= 2.8077$. Hence, the estimated incidence rate for MDRI = 130 days is $P_m=0.0081/2.8077 = 0.0029$ (0.29%).
- A VLS rate among HIV+ adults aged 15-49 years in each region of $P_{vh}= 0.50$ (50%). This is a conservative assumption because it will overstate the actual variance of the VLS rate.
- A desired 25 occupied sampled households per sampled cluster (PSU) after losses due to non-occupancy.
- An intra-cluster correlation of $\rho=0.05$ for prevalence and VLS rates. The ICC provides an average measure of the homogeneity of responses within the first-stage sampling units.
- An occupancy rate of 92.4% for sampled dwellings. Note that this is not included in the calculation of the overall survey RR, but does determine the initial numbers of dwelling units to be sampled. Source: 2013 NDHS.
- An overall household RR of 96.9% among occupied households. Source: 2013 NDHS.
- The average number of persons aged 15-49 years per household is 2.08. Source: 2013 NDHS.
- The percentage of persons in households who are ages 0-14 years is 38.4%. Source: 2013 NDHS.
- The percentage of persons in households who are aged 50-64 years is 7.5%. Source: 2013 NDHS.
- Among the eligible individuals aged 15-64 years in households completing the household roster, a biomarker RR of 69.6%. Source: conservative assumption based on the 2013 NDHS.
- Among the eligible children aged 0-14 years in the households designated for child data collection, a biomarker RR of 64.6%. This value is the corresponding biomarker RR for adults minus 5%.

Selection of the Primary Sampling Units

The first-stage or PSUs for NAMPHIA are defined to be the EAs created for the 2011 Namibia Population and Housing Census. The 2011 sampling frame consisted of approximately 6,200 EAs containing 497,000 households and over 2.1 million persons.

A stratified sample of 465 EAs was selected from the final EA sampling frame in accordance with the sample allocation described in the NAMPHIA Technical Report. The 14 strata specified for sampling were the 14 regions of Namibia. 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 2011 Population and Housing Census. Within each stratum (region), the EAs in the sampling frame were sorted by PSU type (i.e., urban-rural status), constituency code within PSU type, and finally by PSU code within constituency. This sorting of the EAs prior to sample selection induces an implicit geographic stratification. To select the sample from a particular stratum, the cumulative MOS was determined for each EA in the ordered list of EAs, and the sample selections were designated using a sampling interval equal to the total MOS of the EAs in the stratum divided by the number of EAs to be selected and a random starting point. The resulting sample has the property that the probability of selecting an EA within a particular stratum is proportional to the MOS of the EA in the stratum.

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

Selection of Households

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

The selection of households for NAMPHIA 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 households for child data collection.

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

The selection of households utilized an equal probability design. In order to achieve equal probability samples of households within each of the 14 regions of Namibia, the sampling rates required to select dwelling units/households within an EA will depend on the difference between the MOS used in sampling and the actual number of dwelling units/households found at the time of listing. Thus, application of these within-EA sampling rates can yield more or less than the desired households in EAs where the sampling MOS differs from the actual listing count. The NAMPHIA Technical Report provides an in-depth description of the equal probability sample design, as well as a detailed summary of the results of the household selection.

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

Stratum (Region)	Number of sample PSUs (EAs)	Number of sampled dwelling units/house-holds	Number of dwelling units/households flagged for child data collection	Minimum PSU sample size	Maximum PSU sample size	UEW DEFF for household sample
Karas	26	702	351	27	27	1.08
Erongo	27	729	365	27	27	1.16
Hardap	37	999	499	27	27	1.11
Kavango East	31	837	419	27	27	1.05
Kavango West	20	540	270	27	27	1.03
Khomas	60	1,755	877	27	54	1.73
Kunene	31	837	418	27	27	1.23
Ohangwena	42	1,188	594	27	54	1.14
Omaheke	38	1,026	513	27	27	1.11
Omusati	43	1,160	580	26	27	1.04
Oshana	31	918	460	27	54	1.10
Oshikoto	30	810	405	27	27	1.15
Outjozondjupa	27	729	364	27	27	1.21
Zambezi	18	486	243	27	27	1.10
Total ¹	---	12,716	6,358	27	54	1.55 ²

¹Counts in this table exclude the four small PSUs that were not fielded for data collection; ²The overall DEFF reflects total variation in weights within and across regions. PSU: primary sampling unit, UEW: unequal weighting, DEFF: design effect

Selection of Individuals

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

The Namibia PHIA (NAMPHIA) Technical Report provides a brief description of the process for listing and selecting individuals for participation in NAMPHIA, and also presents detailed summaries of the distributions of eligible individuals and participants in individual interviews and HIV testing by strata and age.

A.2 Weighting

Overview

In general, the purpose of weighting survey data from a complex sample design is to (1) compensate for variable probabilities of selection, (2) account for differential nonresponse rates within relevant subsets of the sample, and (3) adjust for possible under-coverage of certain population groups. Weighting is accomplished by assigning an appropriate sampling weight to each responding sampled unit (e.g., a household or person), and using that weight to calculate weighted estimates from the sample. The critical component of the sampling weight is the base weight which is defined to be the reciprocal of the probability of including a household or person in the sample. The base weights are used to inflate the responses of the sampled units to population levels and are generally unbiased (or consistent) if there is no nonresponse or non-coverage in the sample. When nonresponse or non-coverage 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 NAMPHIA, 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.

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

Methods

The overall weighting approach for NAMPHIA included several steps. Methods and results for each of the steps below are detailed in the Namibia PHIA (NAMPHIA) Technical Report.

- **Initial checks:** Checks of the data files were carried out as part of the survey and data quality control, 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 are established at this point. This step can be implemented immediately after the PSU sample has been selected. All of the subsequent weighting steps described below 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 have their weights adjusted to account for nonresponding eligible households. This adjustment was made based on the EA the households were in, and the resulting weight was the final household weight.
- **Calculation of person-level interview weights:** Once the household weights were determined, they were used to calculate the individual base weights. The individual base weights were then adjusted for nonresponse among the eligible individuals, with a final adjustment for the individual weights to compensate for under-coverage in the sampling process by post-stratifying (i.e., weighting up) to 2016 population projections.
- **Calculation of person-level HIV testing weights:** The individual weights adjusted for nonresponse were in turn the initial weights for the HIV testing data sample, with a further adjustment for nonresponse to HIV testing, and a final post-stratification adjustment to compensate for under-coverage.
- **Application of weighting adjustments to jackknife replicates:** All of the adjustment processes were applied to the full sample and the replicate samples so that the final set of full sample and replicate weights could be used for variance estimation that accounts for the complex sample design and every step of the weighting process.

APPENDIX B HIV TESTING METHODOLOGY

B.1 Specimen Collection and Handling

Blood was collected by qualified survey staff from consenting participants: 14 millilitres (mL) of venous blood from persons aged 15 years and older, 6 mL from persons aged 2-14 years, and 1 mL of capillary blood from children aged 0-2 years using finger-stick for children aged 6-24 months and heel-stick for children aged less than six months.

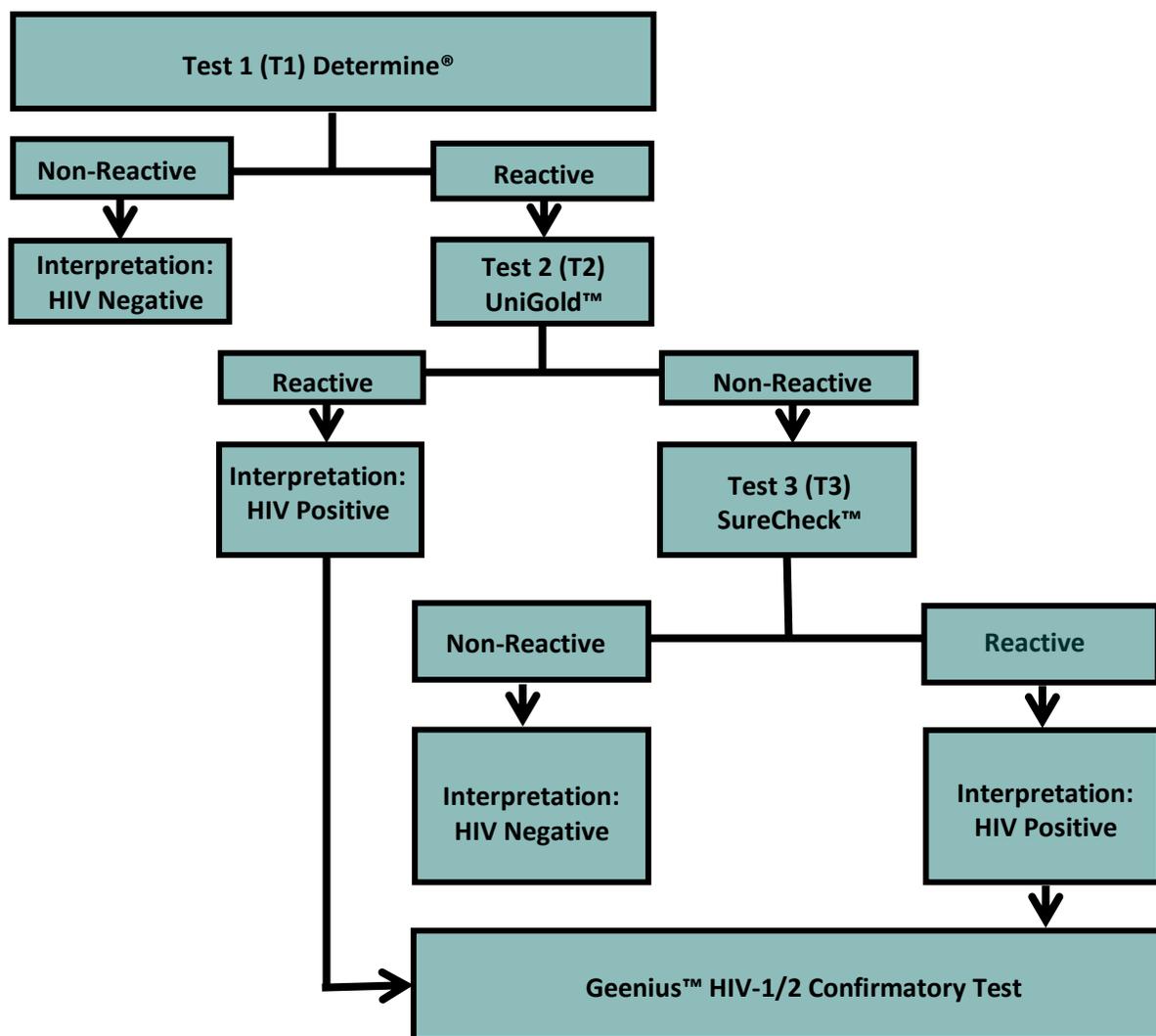
Blood samples were labelled with a unique bar-coded participant identification number and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for registration in a LDMS, retesting as part of a comprehensive QA program, processing into plasma and DBS, and storage at -20°C within 24 hours of blood collection. Approximately weekly, samples were transported to Namibia Institute of Pathology Reference Laboratory (NIPNIP) for additional testing and long-term storage at -80°C.

B.2 Household-Based Procedures

HIV Rapid Testing

HIV rapid testing was conducted in each household in accordance with Namibia's national guidelines (Figure 2.4.A). HIV-positive samples underwent additional testing at a satellite laboratory, as described in Section B.3. For participants who self-reported a HIV-positive status, but tested HIV negative during the survey, additional testing was conducted at NIP as described in Section B.3. For children less than the age of 18 months, only the initial rapid test was performed; if the test was reactive, the sample underwent additional testing at the satellite laboratory and at NIP as described in Section B.3.

Figure 2.4.A Household-based HIV testing algorithm, ages 18 months and older, NAMPHIA 2017



CD4 Testing

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

Counselling, Referral to Care, and Active Linkage to Care

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

facilitate active linkage to HIV care and treatment in Namibia's health care system. For the active linkage to care and the ART program that was started during NAMPHIA, only the newly diagnosed HIV-positive participants as well as those who were aware of their status, but reported not being on treatment, were contacted and linked to care.

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

Quality Assurance and Control

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

A limitation of this survey is the potential limitation of rapid tests to detect HIV antibodies among people in the serological window of infection and in HIV-infected patients on ART. Participants in these two categories are not expected to be a significant source of bias.

However, it is also possible that this study did not identify all HIV-exposed infants who would need further PCR testing to verify HIV status. Although the survey used the methodology commonly practiced at the time, two studies cited by a recent programmatic update from WHO concluded that the use of rapid tests to establish HIV-exposure status may be less reliable in HIV-infected infants, which suggests that maternal HIV status, when available, may be the most reliable way to determine HIV-exposure in infants.^{1,2,3}

B.3 Laboratory-Based Procedures

Thirteen survey satellite laboratories were established in existing health facility laboratories across the country. An additional two mobile satellite labs were also utilized in five locations. One central laboratory was established at NIP in Windhoek, Namibia.

Geenius Testing

All HIV-positive samples, as well as samples with discrepant results, were tested using the Geenius™ HIV 1/2 Supplemental Assay (Bio-Rad, Hercules, California, United States) (Figure B.3.A). Testing was conducted at satellite laboratories in accordance with the manufacturer's protocol.

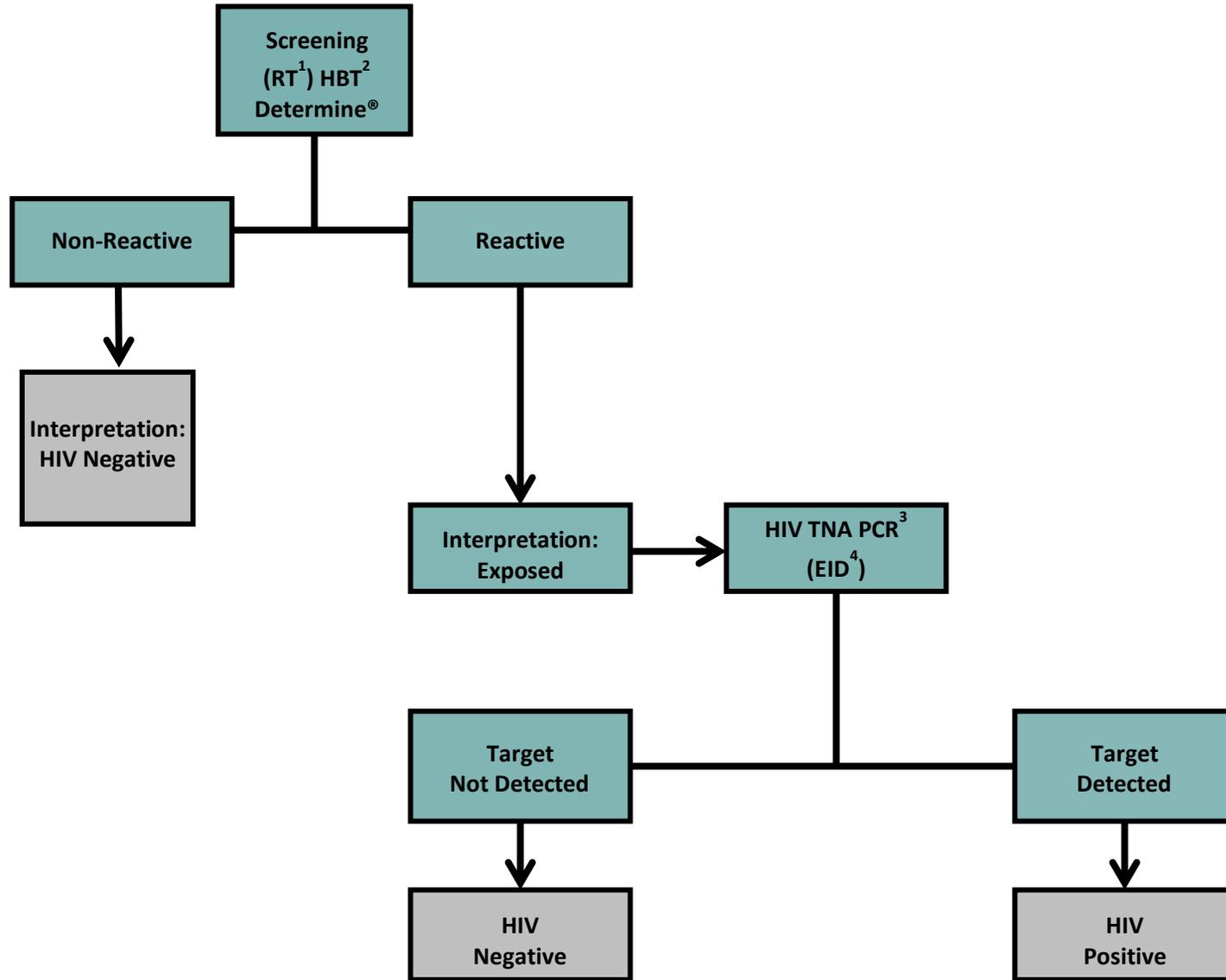
HIV TNA Polymerase Chain Reaction

HIV TNA PCR was conducted for children aged younger than 18 months who had a reactive HIV test result during household-based testing (Figure B.3.A). Additionally, HIV TNA PCR was evaluated for participants who self-reported an HIV-positive status, but tested HIV negative during the survey, as well as for samples that were HIV positive by the rapid testing algorithm but were HIV negative 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 assay (Roche Molecular Systems, Branchburg, New Jersey, United States).

Classification of Final HIV Status

For participants aged 18 months or older, the algorithm for classification of final HIV status included results from HIV rapid testing, Geenius testing, and HIV TNA PCR (Figure B.3.A). For participants of ages less than 18 months, the algorithm for classification of final HIV status included results from HIV rapid testing and HIV TNA PCR (Figure B.3.B). Classification of final HIV status was used to determine estimates for HIV prevalence and to inform estimates for HIV incidence. (Note: WHO currently recommends that virological testing be performed on all infants who are HIV exposed—or when the mother’s status is unknown, at the age of 4-6 weeks and repeated at the age of 9 months, and at the age of 18 months or 3 months after last breastfeeding, in order to make a final determination of HIV status)¹.

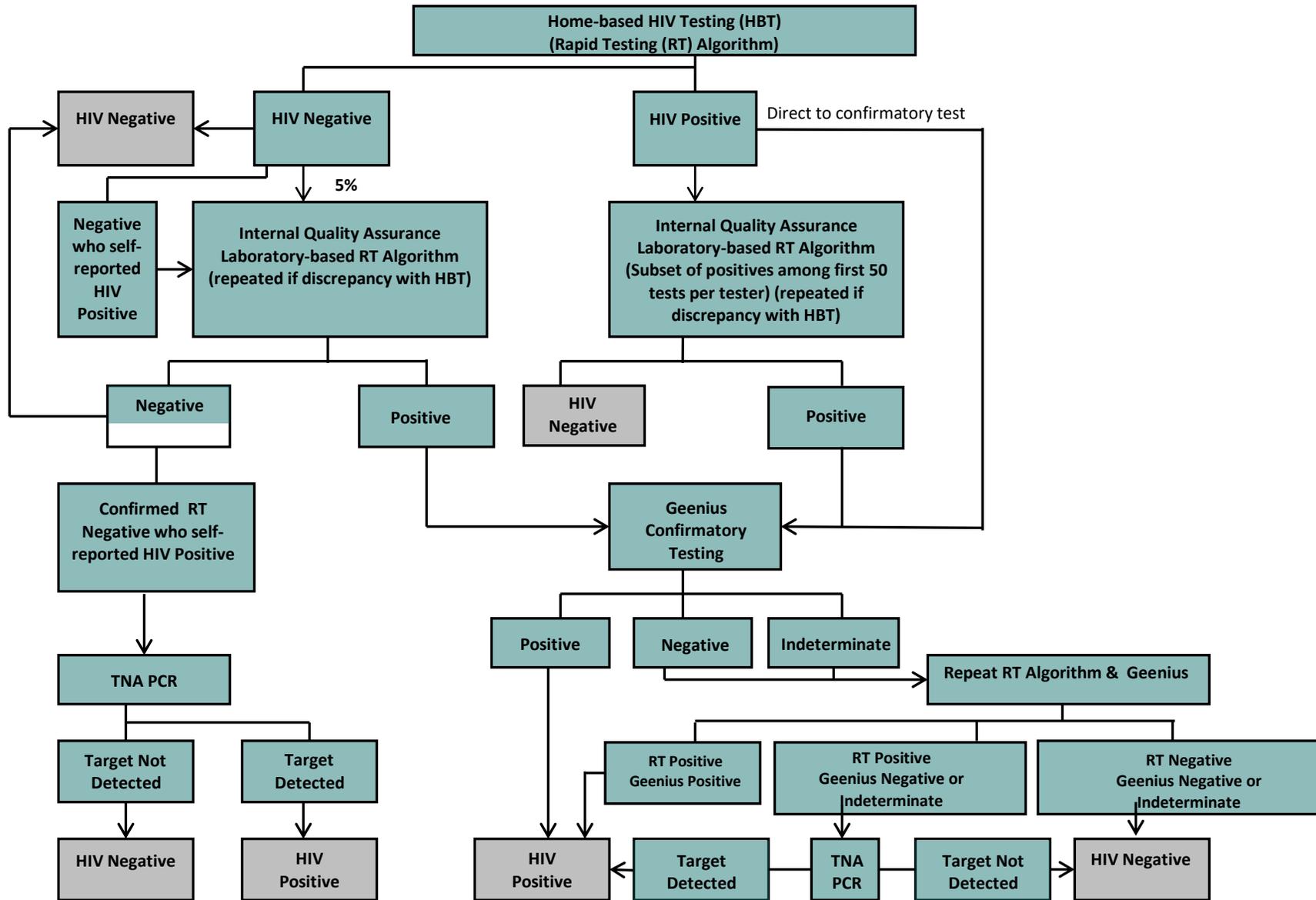
Figure B.3.A Final HIV Status Classification Algorithm (≥18 months), NAMPHIA 2017



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

Note: Grey boxes indicate a final HIV-status determination

Figure B.3.B Final HIV Status Classification Algorithm (≥18 months), NAMPHIA 2017



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

Viral Load Testing

HIV-1 viral load (HIV RNA copies per mL) from confirmed HIV-positive participants was measured on the Roche COBAS® AmpliPrep Instrument and COBAS® TaqMan® 96 analyzer using the Roche COBAS® AmpliPrep/COBAS® TaqMan® 96 analyze HIV-1 Test, version 2.0 (v2.0) (Roche Molecular Systems, Branchburg, New Jersey, United States). The COBAS® AmpliPrep instrument (Roche Molecular Systems) was used to prepare plasma samples and controls whilst the COBAS® TaqMan® 96 analyzer for nucleic acid amplification and detection of HIV-1 RNA (Roche Molecular Systems, Branchburg, New Jersey, United States). The Roche COBAS® AmpliPrep/COBAS® TaqMan® 96 analyzer HIV-1 Test, 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.

Infants younger than 18 months that screened positive for HIV exposure in the field underwent POC EID testing using the Xpert® HIV-1 Qualitative assay performed on the GeneXpert® Instrument Systems (Cepheid, California, United States) at the satellite laboratories with whole blood according to the manufacturer's instructions. Additionally, all samples were tested for QA at the central laboratory on the Roche platform using the qualitative TNA PCR assay.

Viral load results were returned to the health facility chosen by each HIV-positive participant. Participants were provided with a referral form during HBTC for subsequent retrieval of their results. Survey staff also contacted participants, who provided contact information, informed them that their viral load results were available at the chosen facility, and further advised them to seek care and treatment.

HIV Recency Testing

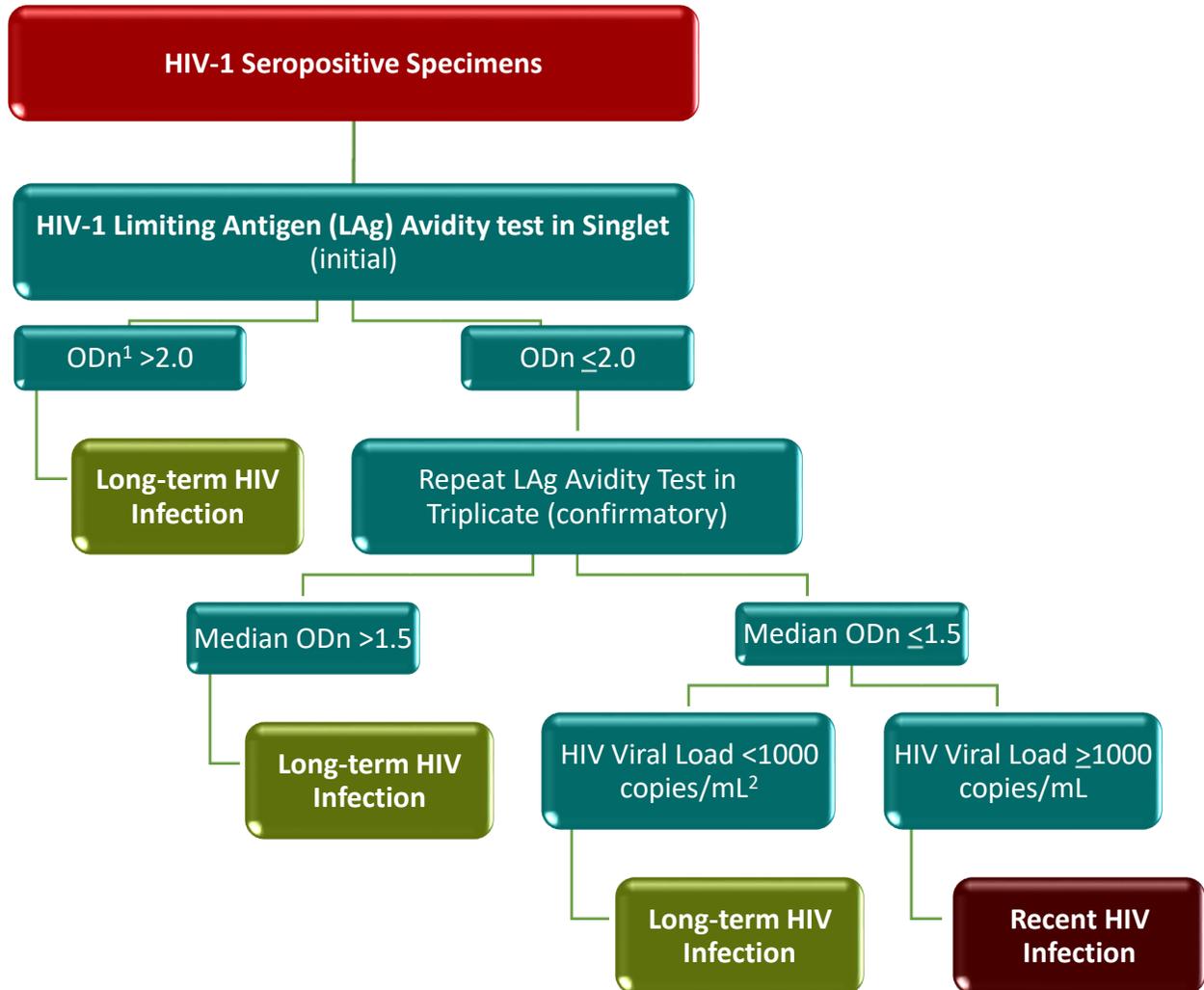
Estimation of HIV incidence was based on the classification of confirmed HIV-positive cases as recent or long-term HIV infections. The survey used two laboratory-based testing algorithms to estimate incidence. The first estimate used an algorithm that employed a combination of the HIV-1 LAg Avidity EIA (Sedia Biosciences Corporation, Portland, Oregon, United States) and viral load results (Figure 2.5 A). Antiretroviral detection results were added to that algorithm for the second estimate (Figure 2.5 B). The HIV recent infection testing algorithms were applied to repository specimens from all confirmed HIV-positive participants aged 18 months and older.

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

Specimens with median $OD_n \leq 1.5$ were classified as potential HIV-recent infections, and their viral load results were assessed. For the first incidence testing algorithm, specimens with HIV RNA $< 1,000$ copies/ml were classified as long-term infections, while those with HIV RNA $\geq 1,000$ copies/ml were classified as recent infections. For the updated incidence algorithm, those classified as recent infections by the first algorithm were reclassified using ARV detection data. Those specimens in which efavirenz,

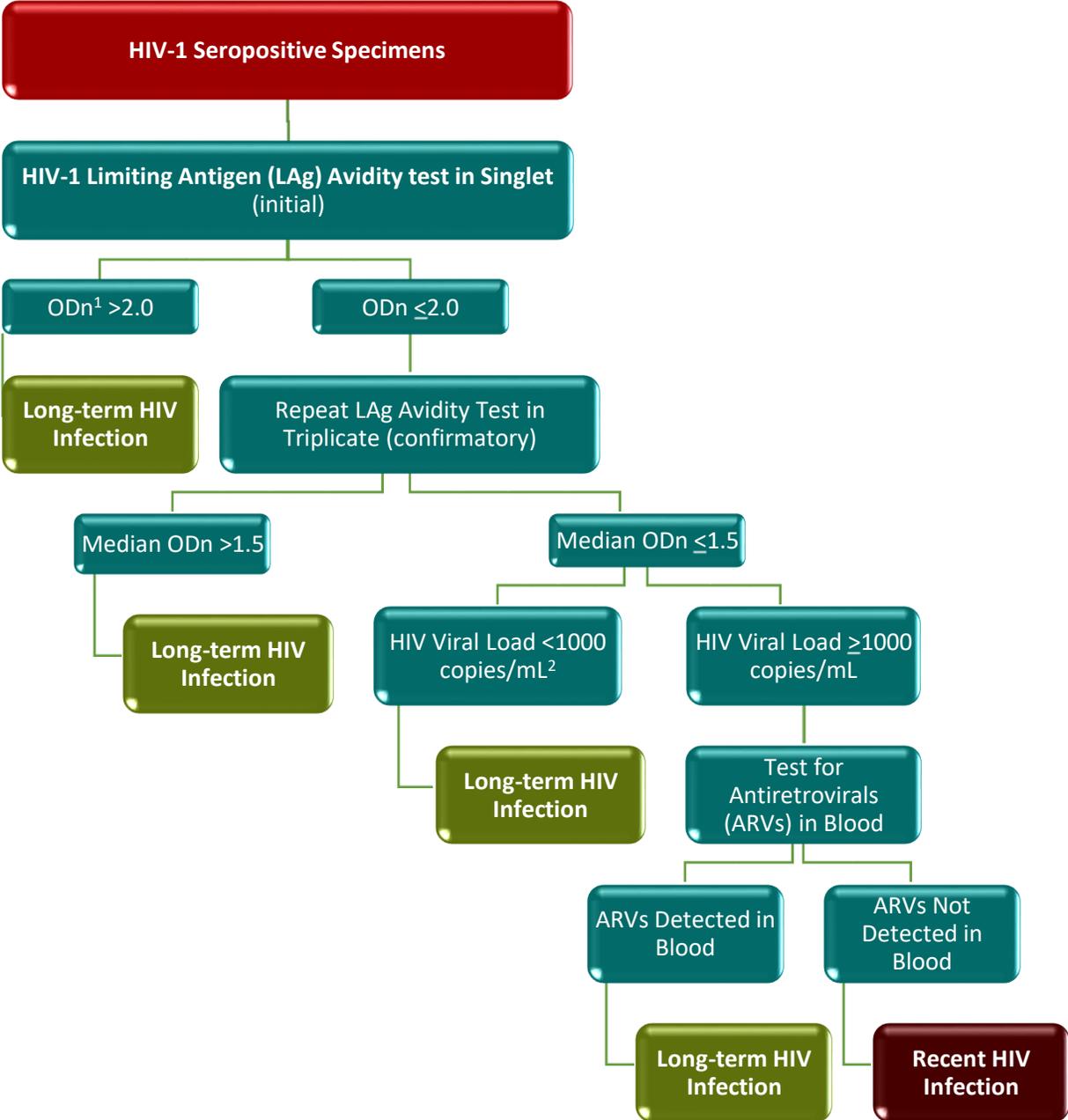
lopinavir, and nevirapine were detected were classified as long-term infections and those in which no ARVs were detected remained classified as recent infections.

Figure 2.5.A HIV-1 Recent Infection Testing Algorithm (LAg/VL algorithm), ages 18 months and older, NAMPHIA 2017



¹ODn: normalized optical density; ²mL: millilitre

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



¹ODn: normalized optical density; ²mL: millilitre.

HIV Incidence Estimation

Incidence estimates were obtained on all confirmed HIV-positive participants aged 18 months and older using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays. Weighted counts for HIV-negative persons (N); HIV-positive persons (P); numbers tested on the LAg assay (Q); and numbers HIV recent (R) are provided for use in incidence calculations or UNAIDS Spectrum models (Tables B.3.A, B.3.B). Incidence estimates were calculated using the following parameters: MDRI = 130 days (95% CI: 118-142 days); PFR = 0.00; T = 1 year. In-depth details are provided in the Namibia PHIA (NAMPHIA) Technical Report, which may be found on the PHIA website.

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

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

Age	Male				Female				Total			
	Number HIV negative ² (N)	Number HIV positive ² (P)	Number tested on LAg assay ² (Q)	Number HIV recent ² (R)	Number HIV negative ² (N)	Number HIV positive ² (P)	Number tested on LAg assay ² (Q)	Number HIV recent ² (R)	Number HIV negative ² (N)	Number HIV positive ² (P)	Number tested on LAg assay ² (Q)	Number HIV recent ² (R)
15-24	2484.56	64.44	64.44	0.25	2854.25	161.75	161.75	10.79	5344.42	220.58	220.58	10.36
25-34	1668.45	112.55	112.55	1.16	2197.59	329.41	329.41	3.25	3887.69	420.31	420.31	4.20
35-49	1627.10	345.90	345.90	3.10	1860.92	760.08	760.08	3.72	3513.72	1080.28	1080.28	6.86
15-49	5796.68	506.32	506.32	4.39	6953.90	1210.10	1210.10	18.05	12801.43	1665.57	1665.57	21.30
50-64	785.12	179.88	179.88	0.00	1192.94	314.06	314.06	0.59	1980.69	491.31	491.31	0.54
15-64	6594.69	673.31	673.31	4.47	8157.42	1513.58	1513.58	18.96	14808.58	2130.42	2130.42	22.24

¹ LAg/VL: limiting antigen/viral load² Weighted number

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

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

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

Age	Male				Female				Total			
	Number HIV negative ² (N)	Number HIV positive ² (P)	Number tested on LAg assay ² (Q)	Number HIV recent ² (R)	Number HIV negative ² (N)	Number HIV positive ² (P)	Number tested on LAg assay ² (Q)	Number HIV recent ² (R)	Number HIV negative ² (N)	Number HIV positive ² (P)	Number tested on LAg assay ² (Q)	Number HIV recent ² (R)
15-24	2484.56	64.44	64.44	0.25	2854.25	161.75	161.75	10.11	5344.42	220.58	220.58	9.71
25-34	1668.45	112.55	112.55	0.00	2197.59	329.41	329.41	2.39	3887.69	420.31	420.31	2.09
35-49	1627.10	345.90	345.90	3.10	1860.92	760.08	760.08	3.72	3513.72	1080.28	1080.28	6.86
15-49	5796.68	506.32	506.32	3.08	6953.90	1210.10	1210.10	16.44	12801.43	1665.57	1665.57	18.39
50-64	785.12	179.88	179.88	0.00	1192.94	314.06	314.06	0.59	1980.69	491.31	491.31	0.54
15-64	6594.69	673.31	673.31	3.14	8157.42	1513.58	1513.58	17.32	14808.58	2130.42	2130.42	19.26

¹ LAg/VL: limiting antigen/viral load² Weighted number

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

Detection of Antiretrovirals

To understand recent exposure to ARVs and hence level of ART coverage, samples from all confirmed HIV-positive participants were evaluated for the presence of selected ARVs, using high-resolution liquid chromatography, coupled with tandem mass spectrometry to detect ARVs from DBS specimens.⁴ Three ARVs, two NNRTIs, efavirenz and nevirapine, and one PI, lopinavir, were used as markers for both first- and second-line regimens, based on Namibia's national treatment guidelines. The ARVs were selected based on their long half-lives, allowing for a longer window period from drug exposure to detection.

To qualitatively detect ARVs, a single DBS was eluted, and chromatographic separation carried out on a Luna 5µm PFP column (110 Å, 50 x 2 mm) (Phenomenex). Each ARV was detected using an API 4000 LC/MS/MS instrument (Applied Biosystems). Internal standards and in-house quality control cut-off samples including negative controls were utilized in each run. This qualitative method used a limit of detection (LOD) of 0.02 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 University of Cape Town in South Africa.

Genotyping for Detection of Antiretroviral Drug Resistance and HIV Subtyping

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

Viral RNA or TNA from plasma or DBS was extracted using the NucliSENS® easyMAG® (bioMérieux) platform. The HIV *pol* gene was amplified by one-step reverse transcription PCR (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)^{5,6,7}.

The customized ReCALL software program was used to edit raw sequences and generate consensus sequences.⁸ 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.⁹ 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 has been established at 1000 copies/ml for plasma and DBS.¹⁰ Sequences were also analysed 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.^{11,12} This BioAfrica viral subtyping tool was designed to use phylogenetic methods in order to identify the HIV-1 subtype of a specific sequence. The sequence was analysed for recombination using boot-scanning methods.

B.4 References

1. World Health Organization. HIV diagnosis and ARV use in HIV-exposed infants: a programmatic update. Geneva, Switzerland: World Health Organization; 2018 (WHO/CDS/HIV/18.17). <https://apps.who.int/iris/bitstream/handle/10665/273155/WHO-CDS-HIV-18.17-eng.pdf?ua=1>. Accessed April 30, 2019.

2. Urick B, Fong Y, Okiira C, Nabukeera-Barungi N, Nansera D, Ochola E, et al. Rapid Serological Tests Ineffectively Screen for HIV Exposure in HIV-Positive Infants. *JAIDS*. 2018;77(3):331-6.
3. Wagner AD, Njuguna IN, Andere RA, Cranmer LM, Okinyi HM, Benki-Nugent S, et al. Infant/child rapid serology tests fail to reliably assess HIV exposure among sick hospitalized infants. *AIDS*. 2017;31(11):F1-F7.
4. Koal T, Burhenne H, Rmling R, Svoboda M, Resch K, Kaefer V. Quantification of antiretroviral drugs in dried blood spot samples by means of liquid chromatography/tandem mass spectrometry. *Rapid Commun Mass Spectrom*. 2005;19(21):2995-3001.
5. Loens K, Bergs K, Ursi D, Goossens H, Ieven M. Evaluation of NucliSens easyMAG for automated nucleic acid extraction from various clinical specimens. *J Clin Microbiol*. 2007 Feb;45(2):421-5. Epub 2006 Dec 13.
6. Perandin F, Pollara PC, Gargiulo F, Bonfanti C, Manca N. Performance evaluation of the automated NucliSens easyMAG nucleic acid extraction platform in comparison with QIAamp Mini kit from clinical specimens. *Diagn Microbiol Infect Dis*. 2009 Jun;64(2):158-65. doi: 10.1016/j.diagmicrobio.2009.02.013.
7. Joint United Nations Programme on HIV/AIDS (UNAIDS). Global report: UNAIDS report on the global AIDS epidemic 2010. Geneva, Switzerland: UNAIDS; 2010. http://www.unaids.org/globalreport/documents/20101123_GlobalReport_full_en.pdf. Accessed February 19, 2019.
8. Woods CK, Brumme CJ, Liu TF, et al. Automating HIV drug resistance genotyping with RECall, a freely accessible sequence analysis tool. *J Clin Microbiol*. 2012 Jun;50(6):1936-42. doi: 10.1128/JCM.06689-11. Epub 2012 Mar 7.
9. Stanford University. HIV Drug Resistance Database. Stanford, California: Stanford University; 2019. <http://hivdb.stanford.edu>. Accessed February 19, 2019.
10. Yang C, McNulty A, Diallo K, et al. Development and application of a broadly sensitive dried-bloodspot-based genotyping assay for global surveillance of HIV-1 drug resistance. *J Clin Microbiol*. 2010;48(9):3158-64. doi: 10.1128/JCM.00564-10.
11. Alcantara LC, Cassol S, Libin P, et al. A standardized framework for accurate, high-throughput genotyping of recombinant and non-recombinant viral sequences. *Nucleic Acids Res*. 2009;37 (Web Server issue):W634-42. doi: 10.1093/nar/gkp455.
12. de Oliveira T, Deforche K, Cassol S, et al. An automated genotyping system for analysis of HIV-1 and other microbial sequences. *Bioinformatics*. 2005 Oct 1;21(19):3797-800. doi: 10.1093/bioinformatics/bti607.

APPENDIX C ESTIMATES OF SAMPLING ERRORS

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

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

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

NAMPHIA utilized a multi-stage stratified sample design, which requires complex calculations to obtain sampling errors. Specifically, a variant of the Jackknife replication method was implemented in SAS to estimate variance for proportions (e.g., HIV prevalence), rates (e.g., annual HIV incidence), and counts (e.g., numbers of people living with HIV). Each replication considers all but one cluster in the calculation of the estimates. Pseudo-independent replications are thus created. In NAMPHIA a Jackknife replicate is created by randomly deleting one cluster from each variance-estimation stratum and retaining all of the clusters in the remaining strata. A total of [#] variance-estimation strata were created by pairing (or occasionally tripling) the sample clusters in the systematic order in which they had been selected. Hence, 229 replications were created. The variance of a sample-based statistic, y , is 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 is also calculated. The design effect is defined as the ratio of the standard error, using the given sample design to the standard error that would result if a simple random sample had been used. A design effect of 1.0 indicates that the sample design is as efficient as a simple random sample, while a value greater than 1.0 indicates the increase in

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

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

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

Sampling errors for selected variables from NAMPHIA 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% CIs.

Table C.1 Sampling errors: Annual HIV incidence by age, NAMPHIA 2017				
Age (years)	Weighted estimate (%)	Design effect	Lower confidence limit (%)	Upper confidence limit (%)
Total				
15-24	0.51	1.22	0.19	0.82
25-34	0.15	0.82	0.00	0.35
35-49	0.55	1.59	0.14	0.96
15-49	0.40	1.25	0.22	0.59
50-64	0.08	0.54	0.00	0.28
15-64	0.36	1.26	0.20	0.53
Male				
15-24	0.03	0.25	0.00	0.14
25-34	0.00	0.00	0.00	0.62
35-49	0.53	1.00	0.00	1.12
15-49	0.15	0.87	0.00	0.32
50-64	0.00	0.00	0.00	1.31
15-64	0.13	0.88	0.00	0.28
Female				
15-24	0.99	1.34	0.39	1.58
25-34	0.30	0.94	0.00	0.69
35-49	0.56	2.27	0.00	1.13
15-49	0.66	1.47	0.34	0.98
50-64	0.14	0.59	0.00	0.49
15-64	0.59	1.47	0.31	0.88

Table C.2 Sampling errors: HIV prevalence by age, NAMPHIA 2017					
Age	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
0-17 months	0.19	793	0.134	0	0.464
18-59 months	0.25	1,843	0.117	0.013	0.495
5-9	1.20	2,290	0.232	0.719	1.676
10-14	1.93	1,835	0.356	1.199	2.666
Total 0-4	0.23	2,636	0.101	0.026	0.441
Total 0-14	1.04	6,761	0.132	0.771	1.313
15-19	3.74	2,881	0.366	2.989	4.498
20-24	4.19	2,684	0.437	3.289	5.088
25-29	6.75	2,346	0.621	5.469	8.027
30-34	13.44	1,962	0.987	11.406	15.473
35-39	21.60	1,766	1.401	18.715	24.484
40-44	25.30	1,553	1.399	22.415	28.176
45-49	24.17	1,275	1.538	20.999	27.336
50-54	25.60	956	1.842	21.807	29.394
55-59	17.53	869	1.545	14.346	20.711
60-64	13.01	647	1.333	10.267	15.756
Total 15-24	3.96	5,565	0.253	3.443	4.484
Total 15-49	11.51	14,467	0.416	10.656	12.37
Total 15-64	12.58	16,939	0.425	11.702	13.452
Male					
0-17 months	0.00	401	0	0	0
18-59 months	0.15	916	0.089	0	0.33
5-9	0.93	1,170	0.287	0.335	1.519
10-14	2.26	959	0.547	1.128	3.382
Total 0-4	0.10	1,317	0.059	0	0.22
Total 0-14	0.99	3,446	0.195	0.587	1.388
15-19	2.74	1,390	0.421	1.868	3.603
20-24	2.31	1,159	0.482	1.322	3.306
25-29	4.24	976	0.87	2.445	6.03
30-34	8.89	805	1.111	6.604	11.181
35-39	14.39	743	1.58	11.137	17.644
40-44	21.32	689	1.849	17.507	25.124
45-49	17.56	541	1.781	13.891	21.225
50-54	26.40	388	2.835	20.56	32.237
55-59	12.97	334	1.991	8.865	17.067
60-64	11.87	243	2.161	7.42	16.322
Total 15-24	2.53	2,549	0.294	1.924	3.133
Total 15-49	8.03	6,303	0.385	7.241	8.825
Total 15-59	9.26	7,268	0.396	8.448	10.08
Female					
0-17 months	0.40	392	0.282	0	0.98
18-59 months	0.36	927	0.215	0	0.803
5-9	1.47	1,120	0.397	0.655	2.291
10-14	1.61	876	0.478	0.622	2.59
Total 0-4	0.37	1,319	0.195	0	0.773
Total 0-14	1.10	3,315	0.2	0.686	1.508
15-19	4.74	1,491	0.584	3.536	5.94
20-24	5.99	1,525	0.664	4.625	7.362
25-29	9.16	1,370	0.864	7.382	10.943
30-34	17.74	1,157	1.415	14.821	20.65
35-39	28.38	1,023	1.842	24.585	32.17
40-44	28.95	864	1.849	25.145	32.761
45-49	29.98	734	2.128	25.596	34.361
50-54	24.94	568	2.181	20.447	29.43
55-59	20.98	535	2.147	16.554	25.399
60-64	13.85	404	1.623	10.51	17.197
Total 15-24	5.36	3,016	0.382	4.576	6.15
Total 15-49	14.82	8,164	0.555	13.68	15.965
Total 15-64	15.65	9,671	0.553	14.512	16.789

Table C.3 Sampling errors: HIV prevalence by residence and region, aged 15-64 years, NAMPHIA 2017					
Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
Total					
Residence					
Urban	10.8	6,956	0.64	9.45	12.10
Rural	15.0	9,983	0.51	13.99	16.09
Region					
Erongo	10.6	656	2.62	5.23	16.01
Hardap	9.3	1,076	1.86	5.47	13.12
Karas	9.7	829	1.13	7.33	11.98
Kavango East	14.5	1,406	1.44	11.53	17.45
Kavango West	12.1	1,009	1.34	9.35	14.89
Khomas	8.3	1,728	0.85	6.58	10.07
Kunene	7.6	908	1.30	4.91	10.25
Ohangwena	17.9	1,995	0.91	16.04	19.77
Omaheke	8.4	1,240	0.85	6.69	10.19
Omusati	16.9	1,923	0.97	14.93	18.95
Oshana	15.8	1,341	1.84	11.98	19.54
Oshikoto	17.3	1,219	1.65	13.87	20.67
Otjozondjupa	8.5	1,126	1.23	5.95	11.00
Zambezi	22.3	483	2.31	17.50	27.01
Male					
Residence					
Urban	8.2	2,899	0.56	7.03	9.33
Rural	10.7	4,369	0.56	9.60	11.89
Region					
Erongo	7.5	354	1.93	3.50	11.45
Hardap	7.4	526	1.69	3.87	10.83
Karas	9.6	378	1.54	6.46	12.79
Kavango East	9.8	519	1.14	7.45	12.16
Kavango West	8.2	387	0.91	6.32	10.07
Khomas	7.2	769	0.79	5.57	8.81
Kunene	6.2	393	1.29	3.54	8.86
Ohangwena	12.4	771	1.00	10.38	14.51
Omaheke	7.3	638	0.82	5.61	8.98
Omusati	10.4	730	1.03	8.30	12.55
Oshana	13.4	524	2.34	8.58	18.24
Oshikoto	12.6	506	1.47	9.53	15.57
Otjozondjupa	7.2	576	1.10	4.96	9.48
Zambezi	12.9	197	1.82	9.16	16.64
Female					
Residence					
Urban	13.2	4,057	0.87	11.39	14.96
Rural	19.0	5,614	0.63	17.73	20.33
Region					
Erongo	15.1	302	3.80	7.26	22.90
Hardap	11.4	550	2.18	6.90	15.87
Karas	9.7	451	1.58	6.43	12.95
Kavango East	18.0	887	2.11	13.63	22.32
Kavango West	15.3	622	2.04	11.10	19.48
Khomas	9.4	959	1.15	7.05	11.77
Kunene	8.9	515	1.72	5.31	12.39
Ohangwena	22.4	1,224	1.12	20.04	24.67
Omaheke	9.8	602	1.15	7.43	12.15
Omusati	22.1	1,193	1.25	19.49	24.62
Oshana	17.6	817	2.05	13.42	21.87
Oshikoto	21.5	713	2.12	17.12	25.85
Otjozondjupa	9.8	550	1.97	5.73	13.86
Zambezi	29.8	286	2.99	23.60	35.91

Table C.4 Sampling errors: Viral load suppression by age, NAMPHIA 2017

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
Total					
0-14	63.0	74	6.20	50.22	75.76
15-24	63.9	242	3.34	57.06	70.82
25-34	68.3	526	2.67	62.75	73.75
35-44	79.3	854	1.98	75.23	83.39
45-54	84.0	569	1.87	80.11	87.82
55-64	90.4	255	1.87	86.53	94.24
Total 15-24	63.9	242	3.34	57.06	70.82
Total 15-49	75.1	1,951	1.43	72.11	78.00
Total 15-64	77.4	2,446	1.24	74.83	79.96
Male					
0-14	61.6	36	8.22	44.71	78.56
15-24	60.7	67	6.94	46.46	75.04
25-34	50.5	132	4.99	40.22	60.77
35-44	71.2	267	3.83	63.26	79.05
45-54	78.8	201	3.59	71.40	86.19
55-64	86.3	86	3.53	79.00	93.56
Total 15-24	60.7	67	6.94	46.46	75.04
Total 15-49	66.3	570	2.44	61.31	71.35
Total 15-64	69.6	753	2.14	65.17	73.99
Female					
0-14	64.2	38	8.53	46.67	81.79
15-24	65.4	175	4.27	56.62	74.20
25-34	76.5	394	2.74	70.81	82.11
35-44	84.0	587	1.75	80.34	87.56
45-54	87.4	368	1.90	83.48	91.31
55-64	92.5	169	2.07	88.27	96.80
Total 15-24	65.4	175	4.27	56.62	74.20
Total 15-49	79.6	1,381	1.48	76.49	82.61
Total 15-64	81.7	1,693	1.25	79.11	84.27

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

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Residence					
Urban	75.5	885	2.22	70.96	80.12
Rural	79.2	1,561	1.20	76.74	81.68
Region					
Erongo	75.0	74	7.35	59.88	90.14
Hardap	60.6	120	4.18	52.03	69.23
Karas	68.6	91	4.72	58.86	78.28
Kavango East	72.3	219	4.04	63.98	80.63
Kavango West	78.7	133	5.12	68.16	89.23
Khomas	73.6	181	5.69	61.84	85.28
Kunene	55.2	68	7.08	40.56	69.75
Ohangwena	86.2	399	2.07	81.90	90.42
Omaheke	56.3	106	3.67	48.74	63.84
Omusati	83.0	358	2.58	77.69	88.33
Oshana	84.9	244	2.88	79.00	90.85
Oshikoto	79.7	230	2.21	75.19	84.30
Otjozondjupa	72.8	103	2.76	67.09	78.46
Zambezi	77.1	120	3.05	70.84	83.41
Male					
Residence					
Urban	67.7	277	3.69	60.09	75.30
Rural	71.5	476	2.18	67.04	76.03
Region					
Erongo	72.7	28	12.4	47.16	98.28
Hardap	53.3	47	7.3	38.21	68.31
Karas	55.2	40	7.1	40.53	69.88
Kavango East	57.5	56	8.9	39.25	75.75
Kavango West	71.1	33	12.0	46.26	95.85
Khomas	64.0	67	6.7	50.22	77.76
Kunene	43.6	25	13.5	15.84	71.31
Ohangwena	79.4	108	3.8	71.62	87.12
Omaheke	56.0	47	6.9	41.73	70.26
Omusati	84.1	86	3.3	77.31	90.95
Oshana	74.8	79	8.3	57.60	91.97
Oshikoto	79.0	66	3.5	71.70	86.23
Otjozondjupa	64.6	42	2.8	58.85	70.26
Zambezi	65.7	29	8.7	47.76	83.59
Female					
Residence					
Urban	80.1	608	2.12	75.69	84.43
Rural	83.2	1,085	1.34	80.48	85.98
Region					
Erongo	76.6	46	5.46	65.37	87.87
Hardap	65.8	73	7.79	49.71	81.79
Karas	82.3	51	4.24	73.60	91.05
Kavango East	78.3	163	3.79	70.51	86.11
Kavango West	82.0	100	3.20	75.43	88.60
Khomas	80.5	114	5.77	68.62	92.40
Kunene	62.6	43	5.08	52.10	73.04
Ohangwena	89.2	291	2.18	84.76	93.73
Omaheke	56.5	59	5.02	46.21	66.89
Omusati	82.6	272	3.34	75.71	89.48
Oshana	91.1	165	2.15	86.64	95.50
Oshikoto	80.1	164	2.49	75.02	85.28
Otjozondjupa	79.2	61	3.98	70.95	87.36
Zambezi	81.1	91	3.35	74.21	88.01

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

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Diagnosed					
15-24	56.4	238	3.99	48.16	64.59
25-34	72.6	523	2.68	67.09	78.15
35-49	83.5	1,169	1.37	80.71	86.34
15-49	77.0	1,930	1.32	74.24	79.68
15-64	78.8	2,421	1.10	76.56	81.10
On Treatment					
15-24	97.1	141	1.31	94.40	99.79
25-34	93.3	400	1.78	89.68	96.99
35-49	95.5	999	1.12	93.24	97.86
15-49	95.1	1,540	0.99	93.08	97.18
15-64	95.3	1,969	0.82	93.64	97.02
Viral Load Suppression					
15-24	86.0	136	3.29	79.20	92.76
25-34	89.0	375	1.83	85.25	92.77
35-49	92.1	958	1.03	89.98	94.21
15-49	90.7	1,469	0.96	88.73	92.70
15-64	91.5	1,881	0.82	89.80	93.17
MALE					
Diagnosed					
15-24	43.1	66	6.79	29.12	57.11
25-34	56.6	132	4.88	46.51	66.61
35-49	76.4	364	2.40	71.48	81.37
15-49	67.2	562	2.06	63.00	71.48
15-64	71.1	743	1.80	67.40	74.82
On Treatment					
15-24	100.0	27	0.00	100.00	100.00
25-34	89.8	83	5.05	79.38	100.00
35-49	94.0	284	2.06	89.71	98.22
15-49	93.6	394	1.82	89.82	97.30
15-64	93.8	549	1.45	90.84	96.81
Viral Load Suppression					
15-24	76.1	27	9.77	55.94	96.18
25-34	86.2	76	4.42	77.15	95.34
35-49	91.7	268	1.97	87.60	95.72
15-49	89.2	371	1.86	85.38	93.06
15-64	89.9	518	1.58	86.66	93.16
Female					
Diagnosed					
15-24	62.6	172	4.19	53.95	71.19
25-34	80.1	391	2.49	74.95	85.20
35-49	87.4	805	1.44	84.45	90.39
15-49	82.0	1,368	1.34	79.20	84.72
15-64	83.1	1,678	1.14	80.70	85.41
On Treatment					
15-24	96.2	114	1.71	92.64	99.67
25-34	94.5	317	1.75	90.89	98.11
35-49	96.3	715	0.87	94.53	98.09
15-49	95.8	1,146	0.87	94.01	97.58
15-64	96.0	1,420	0.73	94.53	97.54
Viral Load Suppression					
15-24	89.3	109	3.07	82.99	95.62
25-34	89.9	299	1.86	86.04	93.70
35-49	92.3	690	1.15	89.92	94.67
15-49	91.3	1,098	1.03	89.20	93.45
15-64	92.2	1,363	0.87	90.41	94.00

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

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

Age (years)	Weighted estimate		Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
	(%)	Unweighted number			
TOTAL					
Diagnosed					
15-24	72.2	240	3.44	65.11	79.29
25-34	77.5	526	2.53	72.25	82.69
35-49	89.4	1,181	1.20	86.97	91.90
15-49	83.9	1,947	1.20	81.45	86.38
15-64	86.0	2,441	1.00	83.91	88.04
On Treatment					
15-24	98.2	179	0.92	96.26	100.00
25-34	94.8	426	1.57	91.52	97.98
35-49	96.4	1,074	1.01	94.27	98.45
15-49	96.2	1,679	0.89	94.34	97.99
15-64	96.4	2,144	0.73	94.84	97.86
Viral Load Suppression					
15-24	85.4	175	2.95	79.32	91.47
25-34	89.3	404	1.79	85.58	92.94
35-49	92.0	1,039	0.96	89.98	93.95
15-49	90.5	1,618	0.90	88.68	92.39
15-64	91.3	2,069	0.76	89.75	92.88
MALE					
Diagnosed					
15-24	71.1	66	6.06	58.58	83.53
25-34	60.4	132	5.00	50.12	70.72
35-49	83.2	370	2.30	78.50	87.97
15-49	76.0	568	2.07	71.74	80.26
15-64	79.6	751	1.79	75.87	83.25
On Treatment					
15-24	100.0	44	0.00	100.00	100.00
25-34	91.5	88	4.72	81.79	100.00
35-49	95.0	310	1.87	91.17	98.85
15-49	94.9	442	1.58	91.63	98.15
15-64	94.9	609	1.30	92.25	97.59
Viral Load Suppression					
15-24	81.0	44	6.90	66.75	95.19
25-34	85.7	82	4.41	76.65	94.80
35-49	91.2	297	1.91	87.31	95.19
15-49	88.9	423	1.77	85.28	92.59
15-64	89.5	582	1.53	86.29	92.61
Female					
Diagnosed					
15-24	72.7	174	3.96	64.57	80.89
25-34	85.4	394	2.21	80.80	89.91
35-49	92.9	811	1.18	90.44	95.29
15-49	88.0	1,379	1.19	85.54	90.46
15-64	89.5	1,690	1.00	87.44	91.57
On Treatment					
15-24	97.3	135	1.34	94.58	100.00
25-34	95.8	338	1.42	92.89	98.74
35-49	97.0	764	0.75	95.48	98.57
15-49	96.7	1,237	0.74	95.21	98.26
15-64	97.1	1,535	0.61	95.79	98.31
Viral Load Suppression					
15-24	87.5	131	2.99	81.30	93.61
25-34	90.4	322	1.75	86.77	93.97
35-49	92.3	742	1.07	90.10	94.52
15-49	91.2	1,195	0.97	89.24	93.22
15-64	92.2	1,487	0.80	90.55	93.86

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

Table C.8 Sampling errors: Number of new infections annually and number of people living with HIV, aged 15-64 years, NAMPHIA 2017 (using LAg+VL+ARVs recent infection algorithm)

	Weighted estimate	Standard error	Lower confidence limit	Upper confidence limit
Number of new infections annually	4,468	0	2,175	6,762
Number of People living with HIV	176,329	5954.358	164,066	188,593

APPENDIX D SURVEY PERSONNEL

Ministry of Health and Social Services (MoHSS)

Ndapewa Hamunime
Anne-Marie Nitschke
Tuli Nakanyala
Francina Tjituka
Ismelda Pietersen
Nicholus Mutenda
Farai Nyakunu
Josephine Endjala
Terthu Shuumbwa
Vicky Festus
Assegid Mengistu
Hilma Nangombe
Tomas Ukola

NAMPHIA Steering Committee

Terthu Shuumbwa
Karen Banda
Tepa Nkumbula
Tafadzwa Dzinamarira
Anne-Marie Nitschke
Mike Grasso
Ndapewa Hamunime
Nicholus Mutenda
Puumue Katjuanjjo
Hilma Shipo-Kodi
Landine Beukes
Sandi Tjaronda
Shawn Fredericks
Ernst Mbangula
Norbert Forster
Bikie Eric Sealwane
Tomas Ukola
Adam Wolkon
Simon Agolory
Boniface Makumbi
King James Joseph
Blanche Pitt
Tharcisse Barihuta

Lela Baughman
Alex Shimuafeni
Maria Muremi
Christine Chisenga
Lorenz Hembapu
Peter Van Wyk
Maria Bock
Isak Neema

UCSF

Alexander Marr
Celeste Rogers
Eryn Murphy
George Rutherford
Jane Drake
Jessica Celentano
Kelly Young
Matthew Greenway
Mike Grasso
Ming Zhou
Richelle Harklerode
Sally Stephens
Shaan Chaturvedi
Tim Kellogg
Andrew Maher
Kyle Pusateri
Erich Schneider

NIP

Boniface Makumbi
Simon Israel
Ndumbu Pentikainen
Ndapandula Ndikwetepo
Isak Neema
Saara Shatumbu
Ligamena Kakoma
Hilda Ndadi
Moreblessing Mashhora
Jason Kafidi
Jennifer Kauapirura
Farikanai Dzimiri

Foibe Eita
Jennifer Erastus
Josef Haipinge
Lionel Hamutenya
Atushe Hamwenye
Martha Hatutale
Aune Haukongo
Salmi Immanuel
Julia Kagogo
Ligamena Kakoma
Margareta Kamati
Elizabeth Kambudu
Bianca Kanovengi
Vazuvara Kejarukua
Abel Mandishona
Moreblessing Mashora
Malizgani Mhango
Nambunga Munepapa
Marjorie Munsu
Olivia Nakwafila
Lea Nangolo
Paulina Naupu
Ally Ndala
Helalia Ndishishi
Ngwedha Ndjene
Alina Nghihalwa
Wycliffe Otieno
Ingencie Phillipus
Saara Shatumbu
Helena Shangula
Panduleni Shivute
Annianias Shigwedha

NIP (continued)

Saima Shipahu
Olivia Shipingana
Abner Tomas
Rollinda Uazeua

NSA

Amandla Shitaleni

Thimotheus Hangul
Frieda Theofelus
Ndapandula Ndikwetepo
Gideon Gideon
Eliud Hamutoko
Mike Hilongwa
Haitenge Nelius
Elizabeth Immanuel
Tuli Amutenya
Otille Mwazi
Hift Simaata
Ronnie Litubezi
Rachel Mambimbo
Henok Immanuel

**San Francisco Department of
Public Health**

Willi McFarland

UCSF Global Programs

Karen Banda-Mureya
Tafadzwa Dzinamarira
Roland Rittmann
Roger Lyners
Vusi Maliwa
King James Joseph
Joyce Tijizu
Lydia Nisbit
Hilma Shipo-Kodi
Priscilla Mudzingwa
Esme Kisting
Maria Witbooi
Kornelia Penda
Olga Mujahere
Christian Naholo
Else Eises
Leticia Naholo
Wayne Du Toit
Illana Nasilowski
Cindy Kauejao
Joas Ashilungu
Diedriek Afrikaaner
Thabile Letoao
Reinhold Shiwedha
ME Johnson
PW Muller
W Katjariua
Lydia Nisbet

Joyce Tijizu

CDC Namibia

Adam Wolkon
Dimitri Prybylski
Simon Agolory
Jane Palmier
Eric Dziuban
Rachel Coomer
Naemi Shoopala
Steve Hong
Anna Jonas
Daniel Frank
Rachel Coomer
Ben Tjaronda
Max Kapose
Quentil Abel
Christopher Lockhart
Eliphaz Hatutale
Negussie Wordofa
James Clay Roscoe
Leigh Ann Miller

CDC Atlanta

Drew Voetsch
Bharat Parekh
Hetal Patel
Kristin Brown
Carin Molchan
Carole Moore
Keisha Jackson
Christopher Murrill
Daniel Williams
Daniel Yavo
Ernest Yufenyuy
Katina Pappas-Deluca
Katrina Sleeman
Linda Fleming
Melissa Cates
Mervi Detorrio
Paul Stupp
Sehin Birhanu
Stephen McCracken
Steven Kinchen
Tonya Ross Walker
Trudy Dobbs
Vedapuri Shanmugam
Laura Porter

ICAP New York

Jessica Justman
David Hoos
Yen Pottinger
Suzue Saito
Chelsea Solmo
Elizabeth Radin
Hannah Chung
Karampreet Sachathep
Kiwon Lee
Kristina Parkins
Melissa Metz
Natazia Fistrovic
Noelle Esquire
Oren Mayer
Sally Findley
Stephen Delgado
Steve Wynn
Theo Smart

**ICAP South Africa Regional
Office**

Belete Tegbaru Erkyhun
Blanche Pitt
Bright Phiri
Charles Wentzel
Herbert Longwe

**ICAP South Africa Regional
Office (cont.)**

Oliver Murangandi
Pule Mphohle
Takura Kupamupindi
Yvonne Mavengere
Tepa Nkumbula (Zambia
Office)

Field Teams

Joel Akudhenga
Gebhard Akuunda
Barthlomeus Amadhila
Lukius Amadhila
Tekla Amagulu
Simon Ameb
Jeremiah Amoomo
Monica Amos
Petrus Ampweya
Saima Amukugu
Frieda Amukushu
Davids Amundjebo
Karolina Amunyela
Johanna Amunyela
Mikka Amupolo
Paulina Amutenya
Martin Amuthenu
Ndapewa Amwata
Bruno Andjengo
Alma Andreas
Neshuku Andreas Spiro
Mona-Lisa Angula
Silvia Angula
Immanuel Ankonga
Deska Aron
Joas Ashilungu
Tshithigona Ashipala
Werner Atshipara
Reinhilde Aupinde
Thomas Awene
Hilma Axakhoes
Monalisa Axakhoes
Fellemon Barkias
Alberto Beukes
Rejoice Billawer
Queeny Brunzel
Sandra Chika
Vital Chika
Monde Mercy Chunga
Kauraisa Cliff
Jacky Cloete
Hilma David

Eiman Dirk
Josefina Endjala
Francisco Enos
Skrywer Ensley
Herman Evenson
Zuana Fernandu
Victoria Festus
Clementine Festus
Hilya Festus
Emma Fortunato
Ndeipanda Frans
Panduleni Gabriel
Amber Galandt
Leillani Gamatham
Caroline Garises
Else Gauhas
Venastus Geiseb
Cecilie Goaseb
Gerhard Goreseb
Joseph Gottlieb
Juanita Gouws
Gerson Gurirab
Albertina Haikali
Maria Haimbili
Evalisa Haimbodi
Lazarus Hainana
Thomas Haingura
Desiree Haman
Ellen Hamukwaya
Kristian Hamunyela
Elistine Hamunyela
Petrus Hamupembe
Epimarkus Hamutenya
Eden Hamutenya
Helena Hanai
Valombweleni Handele
Lucas Handumbo
Vetuesa Handura
Ottilie Hangala
Veronica Hango
Cimoney Haoses
Johannes Haradoeb
Andrew Hatopopi

Salom Haufiku
Mathew Haufiku
Matheus Haule
Tomas Hedimbi
Heinz Hendricks
Magdalena Hindjou
Loraine Hindjou
Juretha Hoa-Khaos
Claudette Hoebes
Emma Huisemas
Vincent Ihinyenga
Martha Iikela
Sarah Iilwenya
Immanuel Iita
Elizabeth Iiyambo
Hilma Iiyambo
Lucia Ikanda
Andreas Imbili
Ngairo Immanuel
Seeth Immanuel
Petrus Immanuel
Teofilus Indongo
Josef Indongo
Justina Indongo
Loide Ipinge
Efraim Itembu
Edward Iyambo
Alfeus Iyambo
Mateus Iyambo
Simon Iyambo
Paulina Iyambo
Uiseb Jackson
Ferdinand Jacobs
Batseba Jamuine
Alvina Jonas
Paulina Junias
Mercy Kachele
Johannes Kafeinge
Cecil Kahipura
Yvondia Kaihiva
Shirley Kajau
Paulina Kalimbo
Sylvia Kalola

Field Teams (cont.)

Mwimbwa Kalonda

Lahja Kaluvi

Johanna Kambo

Daniel Kambonde

John Kamerika

Michael Kanatus

Hans Kandanga

Theresia Kandinade

Abner Kandjii

Johannes Kandjou

Silente Kanguvi

Oscar Kangwiya

Afeus Kanhu

Simon Kanime

Paul Kanumba

Roswitha Kanyumara

Joseph Kapetja

Akim Kapita

Aletha Kaposambo

Stella Karamata

Helena Kasheeta

Kazenamuini Katjiongua/

Nguvauva

Cornelius Katjiteo

Elvis Kauesa

Benedictus Kauma

Aline Kavei

Festus Kawedi

Magdalena Kazapua

Utiapatie Kazondjona

Unanisa Kenamuinjo

Andrew Kgosiemang

Lisetotte Khabes

Estella Kheibes

Rosetha Khobetsi

Dauids Klaas

Hilma Kodi

Leon Kolz

Jafeta Komeya

Justus Kuushomwa

Toivo Kwedhi

Rhonel Libana

Given Libongani

Zambo Limbo

Emily Lizazi

Thomas Lucas

Daniel Lukas

Shapumba Lungameni

Lisa Lupalezwi

Brighton Mabuku

Jimmy Mafulata

Felicitas Maghundu

Murapo Maghundu

Fernando Mallu

Purity Matengu

Ferdinand Mateus

Eliaser Mateus

Rieccarda Mbai

Asnath Mbai-Koujo

Heinrich Mbaire

Kasova Mbanze

Simon Mbuli

Petrus Meituere

Vincent Melanie

Delicia Mendai

Harold Meroro

Samueline Meroro

Jandjee Mizee

Elizabeth Mika

Thomas Mofuka

Engelhardt Motlhaping

Paulina Mpinge

Brondi Mubusisi

Natasha Mubusisi

Hanna Mufeti

Oswald Mughngora

Brian Mujali

Michael Mukanda

Marthina Mukoya

Tuuliki Mumbala

Bartholomeus Munene

Clarence Muniazo

Mannety Munyungano

Blasius Murorua

Rakotoka Muroua

Mulanduleni Mutaleni

Immanuel Mutambo

Edward Mutemwa

Clementine Muyamba

Darrel Muyendekwa

Joao Muyenga

Mwilima Mwala

Johannes Mwalipeni

Nikodemus Mwandingi

Ntwala Mwemba

Aune Mweulinala

Moven Mwilima

Shylock Mwilima

Caleb Mwitumwa

Frans Nakakuwa

Hilma Nakale

Anton Nakale

Isabella Nakanuku

Ndapewa Nakathingo

Wilka Namandje

Teofilus Namando

Albertina Namupala

Frieda Namupembe

Taimi Namwandi

Helena Namwiha

Ananias Nandago

Ruusa Nangolo

Jahana Nangombe

Natalia Nanyalo

Armando Naruseb

Dorina Nashinge

Ndeshihala Nashongo

Hendrik Ndanyalo

Kayoko Ndapewa

Eliaser Negandjo

Festus Nehale

Joseph Nekongo

Fillipus Nelongo

Festus Nepaya

Helena Newaka

Kambueza Ngaihape

Emily Ngana

Petrus Nghana

Field Teams (cont.)

Maria Nghatanga
Secilia Nghidishanje
Liina Nghifinwa
Amon Nghipulwa
Julius Nghishililwa
Tunehupifo Nghishitoto
Luise Nghitanwa
Kaefas Ngula
Sam Nkoshi
Merzia Noabes
Memory Ntesa
Farai Nyakunu
Frieda Nyau
Joseph Nyenga
Brenda Oarum
Alim Omar
Job Onesmus
Gabriel Onesmus
Ivondia Paporo
Namunyekwa Paulus
Simon Paulus
Lavinia Paulus
Cornelius Pienaar
Alwinus Plaatjie
Nikolaus Richard
Schniders Rocco
August Ruitter
Lucas Samende
Julius Samuel
Minsozi Sanimombo
Silas Sebulon
Cleophas Shaama
Sam Shaama
Bonifatius Shafewange
Victory Shalongo
Paulus Shamate
Kaarina Shaningwa
Josefat Shapopi
Mariane Sheehama

Redemptus Sheehama
Lot Sheetheni
Hitler Shetunyenga
Ottilie Shigwedha
Thaddeus Shigwedha
Joseph Shihepo
Josef Shihepo
Prodencia Shihungileni
Salomo Shiimi
Theresia Shikende
Festus Shikomba
Maria Shikomba
Fenni Shikomba
Petrus Shikongo
Jeremia Shikongo
Ignatius Shikongo
Maria Shilimetindi
Reinhilde Shilimo
Julio Shilongo
Etuwete Shilongo
Monica Shilongo
Pinehas Shilumbu
Simon Shimweefeleni
Miryam Shinavene
Monica Shipani
Nakalondo Shipena
Klothilde Shirungu
Ermelinde Shithigona
Natangwe Shitundeni
Eliaser Shivolo/Eliaser
Oiva Shivute
Matha Shiyanga
Villi-Heikkie Shomongwa
Aune Shoongeleni
Luise Shoongeleni
Sakeus Shuuya
Rosaline Sililo
Sydney Sililo
Beatrice Silishebo
Maria Simeon

Benjamin Simon
Tresia Simon
Debora Simon
Janne Siseho
Romanus Sitarara
Andrew Siyemo
Veronica Siyemo
Saara Stefanus
Abre Swartbooi
Harold Swartz
Belters Swenyeho
Gabriel Tenga
Munatjari Tjahikika
Selma Tjangano
Patricia Tjaronda
Manfred Tjatuwapo
Rodulphine Tjeriko
Asser Tjikukutu
Edwin Tjikurame
Sewako Tjipundi
Rahindua Tjipura
Perpetua Tjiueza
Venatius Tjiunda
Agatha Tjivahe
Insecret Tjizeka
Vincent Tjizu
Christophina Tjunda
Gerson Uakurama
Rolynda Ubu-Khaes
Tuamanehi Utjavari
Diina Uugulu
Getrud Uugwanga
Teofilus Uupindi
Simon Uushona
Lionel Veii-Karamata
Helena Wangushu
Nafuka Willibard
Isak Windstaan
Moza Yussuf
O. Zane

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 1 YEARS, RECORD IN MONTHS.		
AFTER LISTING THE NAME AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON ASK QUESTIONS 2A-2C BELOW TO BE SURE THAT THE SCHEDULE IS COMPLETE.		What is the relationship of (NAME) to the head of the household? SEE CODES BELOW	Is (NAME) Male or Female?	Does (NAME) usually live here?	Did (NAME) sleep here last night?	How old is (NAME)?	Is age of (NAME) recorded in MONTHS/ YEARS?
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1		<input type="text"/> <input type="text"/>	M F	Y N	Y N	<input type="text"/> <input type="text"/>	MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/>
2		<input type="text"/> <input type="text"/>	M F	Y N	Y N	<input type="text"/> <input type="text"/>	MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/>
3		<input type="text"/> <input type="text"/>	M F	Y N	Y N	<input type="text"/> <input type="text"/>	MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/>
4		<input type="text"/> <input type="text"/>	M F	Y N	Y N	<input type="text"/> <input type="text"/>	MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/>
5		<input type="text"/> <input type="text"/>	M F	Y N	Y N	<input type="text"/> <input type="text"/>	MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/>
6		<input type="text"/> <input type="text"/>	M F	Y N	Y N	<input type="text"/> <input type="text"/>	MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/>
7		<input type="text"/> <input type="text"/>	M F	Y N	Y N	<input type="text"/> <input type="text"/>	MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/>
8		<input type="text"/> <input type="text"/>	M F	Y N	Y N	<input type="text"/> <input type="text"/>	MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/>
9		<input type="text"/> <input type="text"/>	M F	Y N	Y N	<input type="text"/> <input type="text"/>	MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/>
10		<input type="text"/> <input type="text"/>	M F	Y N	Y N	<input type="text"/> <input type="text"/>	MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/>

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

01 = HEAD

09 = CO-WIFE

02 = WIFE/HUSBAND/PARTNER

10 = OTHER RELATIVE

03 = SON OR DAUGHTER

11 = ADOPTED/

04 = SON-IN-LAW/
DAUGHTER-IN-LAW

FOSTER/STEPCHILD

05 = GRANDCHILD

12 = NOT RELATED

06 = PARENT

-8 = DON'T KNOW

07 = PARENT-IN-LAW

08 = BROTHER/SISTER

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 ←

HOUSEHOLD SCHEDULE (continued)

LINE NO.	IF (NAME) IS 0-17 YEARS			IF (NAME) IS 0-14 YEARS			
	EMANC STATUS	ORPHAN STATUS/PARENT OR GUARDIAN					
	Is (NAME) an emancipated minor? Emancipated minor is a person who is not legally an adult but who, because he or she is married/ previously married, has a baby, is the head of a child-headed household, or otherwise emancipated by an order of the court.	Does (NAME)'s natural mother usually live in this household or was (NAME) 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 (NAME) a guest last night? IF YES: RECORD FATHER'S LINE NUMBER. IF NO: RECORD MALE GUARDIAN'S LINE NUMBER OR '00' IF MALE PARENT OR GUARDIAN NOT PRESENT IN HH.			RECORD LINE NUMBER OF PARENT/ GUARDIAN WHO WILL FILL OUT CHILDREN'S MODULE FOR (NAME)	DO NOT READ: IS (NAME) ELIGIBLE FOR SURVEY?
(1)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1	Y N DK	Y N DK ↓ 12	<input type="text"/>	Y N DK ↓ 14	<input type="text"/>	<input type="text"/>	Y N
2	Y N DK	Y N DK ↓ 12	<input type="text"/>	Y N DK ↓ 14	<input type="text"/>	<input type="text"/>	Y N
3	Y N DK	Y N DK ↓ 12	<input type="text"/>	Y N DK ↓ 14	<input type="text"/>	<input type="text"/>	Y N
4	Y N DK	Y N DK ↓ 12	<input type="text"/>	Y N DK ↓ 14	<input type="text"/>	<input type="text"/>	Y N
5	Y N DK	Y N DK ↓ 12	<input type="text"/>	Y N DK ↓ 14	<input type="text"/>	<input type="text"/>	Y N

6	Y N DK	Y N DK ↓ 12	<input type="text"/>	Y N DK ↓ 14	<input type="text"/>	<input type="text"/>	Y N
7	Y N DK	Y N DK ↓ 12	<input type="text"/>	Y N DK ↓ 14	<input type="text"/>	<input type="text"/>	Y N
8	Y N DK	Y N DK ↓ 12	<input type="text"/>	Y N DK ↓ 14	<input type="text"/>	<input type="text"/>	Y N
9	Y N DK	Y N DK ↓ 12	<input type="text"/>	Y N DK ↓ 14	<input type="text"/>	<input type="text"/>	Y N
10	Y N DK	Y N DK ↓ 12	<input type="text"/>	Y N DK ↓ 14	<input type="text"/>	<input type="text"/>	Y N

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 (OPTIONAL) (continued)

IF (NAME) is 18+		IF (NAME) is 0-17 years					
LINE NO.	SICK PERSON	SICKNESS AND RESIDENCE OF BIOLOGICAL PARENTS				MOTHER DEAD OR SICK	FATHER DEAD OR SICK
	CHECK COLUMNS 7 AND 8, IF UNDER 18 <input type="checkbox"/> 17	CHECK COLUMN 10, IF COLUMN 10 'N' OR 'DK' <input type="checkbox"/> 21		CHECK COLUMN 12, IF COLUMN 12 'N' OR 'DK' <input type="checkbox"/> 23		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.
	IF 18 YEARS OR MORE: Has (NAME) been very sick for at least 3 months during the past 12 months, that is was (NAME) too sick to work or do normal activities?	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 she too sick to work or do normal activities?		IF COLUMN 12 'Y': Has (NAME)'s natural father been very sick for at least 3 months during the past 12 months, that is was he was too sick to work or do normal activities?			
(1)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1	Y N DK	Y N <input type="checkbox"/> DK ↓ 19	Y N DK	Y N <input type="checkbox"/> DK ↓ 21	Y N DK	Y N	Y N
2	Y N DK	Y N <input type="checkbox"/> DK ↓ 19	Y N DK	Y N <input type="checkbox"/> DK ↓ 21	Y N DK	Y N	Y N
3	Y N DK	Y N <input type="checkbox"/> DK ↓ 19	Y N DK	Y N <input type="checkbox"/> DK ↓ 21	Y N DK	Y N	Y N
4	Y N DK	Y N <input type="checkbox"/> DK ↓ 19	Y N DK	Y N <input type="checkbox"/> DK ↓ 21	Y N DK	Y N	Y N
5	Y N DK	Y N <input type="checkbox"/> DK ↓ 19	Y N DK	Y N <input type="checkbox"/> DK ↓ 21	Y N DK	Y N	Y N
6	Y N DK	Y N <input type="checkbox"/> DK ↓ 19	Y N DK	Y N <input type="checkbox"/> DK ↓ 21	Y N DK	Y N	Y N
7	Y N DK	Y N <input type="checkbox"/> DK ↓ 19	Y N DK	Y N <input type="checkbox"/> DK ↓ 21	Y N DK	Y N	Y N
8	Y N DK	Y N <input type="checkbox"/> DK ↓ 19	Y N DK	Y N <input type="checkbox"/> DK ↓ 21	Y N DK	Y N	Y N
9	Y N DK	Y N <input type="checkbox"/> DK ↓ 19	Y N DK	Y N <input type="checkbox"/> DK ↓ 21	Y N DK	Y N	Y N
10	Y N DK	Y N <input type="checkbox"/> DK ↓ 19	Y N DK	Y N <input type="checkbox"/> DK ↓ 21	Y N DK	Y N	Y N

HOUSEHOLD SCHEDULE (continued)

HOUSEHOLD SCHEDULE (continued)						
LINE NO.	SPOUSES AND CO-HABITATING PARTNERS					
	Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank.
(1)	(23a)	(23b)	(23c)	(23d)	(23e)	(23f)
1	<input type="text"/>					
2	<input type="text"/>					
3	<input type="text"/>					
4	<input type="text"/>					
5	<input type="text"/>					
6	<input type="text"/>					
7	<input type="text"/>					
8	<input type="text"/>					
9	<input type="text"/>					
10	<input type="text"/>					

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES		SKIP
-----	----------------------------	-------------------	--	------

SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN (OPTIONAL)

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 (2)	CHILD (3)
NAME	_____	_____	_____
LINE NUMBER (FROM COLUMN 1)	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
AGE (FROM COLUMN 7)	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

➤ **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
-----	---	---	---	---

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES		SKIP
SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN (OPTIONAL) (continued)				
107	In the last 12 months, has your household received any emotional or psychological support for (NAME) , such as companionship, counseling from a trained counselor, or spiritual support, which you received at home and for which you did not have to pay?	YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 109	YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 109	YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 109
108	Did your household receive any of this emotional or psychological support for (NAME) in the past 3 months?	YES.....1 NO.....2 DON'T KNOW.....8	YES.....1 NO.....2 DON'T KNOW.....8	YES.....1 NO.....2 DON'T KNOW.....8
109	In the last 12 months, has your household received any material support for (NAME) , such as clothing, food, or financial support, for which you did not have to pay?	YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 111	YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 111	YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 111
110	Did your household receive any of this material support for (NAME) in the past 3 months?	YES.....1 NO.....2 DON'T KNOW.....8	YES.....1 NO.....2 DON'T KNOW.....8	YES.....1 NO.....2 DON'T KNOW.....8
111	In the last 12 months, has your household received any social support for (NAME) such as help in household work, training for a caregiver, or legal services, for which you did not have to pay?	YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 113	YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 113	YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 113
112	Did your household receive any of this social support for (NAME) in the past 3 months?	YES.....1 NO.....2 DON'T KNOW.....8	YES.....1 NO.....2 DON'T KNOW.....8	YES.....1 NO.....2 DON'T KNOW.....8
113	In the last 12 months, has your household received any support for (NAME) 's schooling, such as allowance, free admission, books, or supplies, for which you did not have to pay?	YES.....1 NO, DID NOT RECEIVE SUPPORT.....2 NO, CHILD DOES NOT ATTEND SCHOOL..3 DON'T KNOW.....8 SKIP IF CHILD<5 YEARS	YES.....1 NO, DID NOT RECEIVE SUPPORT.....2 NO, CHILD DOES NOT ATTEND SCHOOL..3 DON'T KNOW.....8 SKIP IF CHILD<5 YEARS	YES.....1 NO, DID NOT RECEIVE SUPPORT.....2 NO, CHILD DOES NOT ATTEND SCHOOL..3 DON'T KNOW.....8 SKIP IF CHILD<5 YEARS

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

MATRIX END

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

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

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

TICK IF CONTINUATION SHEET REQUIRED.

IF NO OTHER CHILDREN, CONTINUE HOUSEHOLD INTERVIEW.

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
-----	----------------------------	-------------------	------

HOUSEHOLD DEATHS (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, DK → 201
-----	---	---	--------------

115	How many usual household residents died since January 1, [INSERT CURRENT YEAR - 2]?	NUMBER OF DEATHS..... <input style="width: 40px; height: 20px;" type="text"/> <input style="width: 40px; height: 20px;" type="text"/> DON'T KNOW.....8	
-----	---	---	--

ASK 116-119 AS APPROPRIATE FOR EACH PERSON WHO DIED. IF THERE WERE MORE THAN 3 DEATHS USE ADDITIONAL QUESTIONNAIRES.

116	What was the name of the person who died (most recently/before him/her)?	NAME 1 ST DEATH	NAME 2 ND DEATH	NAME 3 RD DEATH
		_____	_____	_____

117	When did (NAME) die? Please give your best guess.	DAY <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> MONTH <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> YEAR <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> DON'T KNOW DAY = -8 REFUSED DAY = -9 DON'T KNOW MONTH = -8 REFUSED MONTH = -9 DON'T KNOW YEAR = -8 REFUSED YEAR = -9	DAY <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> MONTH <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> YEAR <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> DON'T KNOW DAY = -8 REFUSED DAY = -9 DON'T KNOW MONTH = -8 REFUSED MONTH = -9 DON'T KNOW YEAR = -8 REFUSED YEAR = -9	DAY <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> MONTH <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> YEAR <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> DON'T KNOW DAY = -8 REFUSED DAY = -9 DON'T KNOW MONTH = -8 REFUSED MONTH = -9 DON'T KNOW YEAR = -8 REFUSED YEAR = -9
-----	---	---	---	---

118	Was (NAME) male or female?	MALE1 FEMALE.....2 DON'T KNOW8 CURRENT DATE > DATE OF DEATH 1 > JANUARY 1, [INSERT YEAR]	MALE1 FEMALE.....2 DON'T KNOW8 CURRENT DATE > DATE OF DEATH 1 > JANUARY 1, [INSERT YEAR]	MALE1 FEMALE.....2 DON'T KNOW8 CURRENT DATE > DATE OF DEATH 1 > JANUARY 1, [INSERT YEAR]
-----	----------------------------	---	---	---

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.	DAYS <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> MONTHS <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> YEARS <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> DON'T KNOW8	DAYS <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> MONTHS <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> YEARS <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> DON'T KNOW8	DAYS <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> MONTHS <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> YEARS <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> DON'T KNOW8
-----	--	--	--	--

CONTINUE TO NEXT DEATH ACCORDING UP TO THE NUMBER REPORTED FROM 115.

TICK IF CONTINUATION SHEET REQUIRED.

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
-----	----------------------------	-------------------	------

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?	<p>PIPED WATER</p> <p>PIPED INTO DWELLING.....11</p> <p>PIPED TO YARD/PLOT.....12</p> <p>PUBLIC TAP/STANDPIPE.....13</p> <p>TUBE WELL OR BOREHOLE.....21</p> <p>DUG WELL</p> <p>PROTECTED WELL.....31</p> <p>UNPROTECTED WELL.....32</p> <p>WATER FROM SPRING</p> <p>PROTECTED SPRING.....41</p> <p>UNPROTECTED SPRING.....42</p> <p>IRRIGATION CHANNEL</p> <p>RAINWATER.....51</p> <p>TANKER TRUCK.....61</p> <p>CART WITH SMALL TANK.....71</p> <p>SURFACE WATER (RIVER/DAM/LAKE/ POND/STREAM/CANAL).....81</p> <p>BOTTLED WATER.....91</p> <p>IRRIGATION CHANNEL.....95</p> <p>OTHER.....96</p> <p>_____</p> <p>(SPECIFY)</p>	
202	Do you do anything to the water to make it safer to drink?	<p>YES.....1</p> <p>NO.....2</p> <p>DON'T KNOW.....8</p>	NO, DK → 204
203	What do you do to make your water safe for drinking?	<p>BOILING.....1</p> <p>FILTRATION (CERAMIC/SAND/ COMPOSITE/CHARCOAL FILTER).....2</p> <p>SEDIMENTATION (LET IT STAND AND SETTLE).....3</p> <p>DISINFECTION (WATERGUARD/ BLEACH/CHLORINE).....4</p> <p>USE BOTTLED WATER.....5</p> <p>STRAIN THROUGH A CLOTH6</p> <p>OTHER.....96</p> <p>_____</p> <p>(SPECIFY)</p> <p>DON'T KNOW8</p>	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD CHARACTERISTICS			
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 COMPOSTING TOILET31 BUCKET TOILET32 HANGING TOILET/LATRINE 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 HOUSEHOLDS96 DON'T KNOW8	
PREFACE BEFORE QUESTIONS 207-HHX10: 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	
HHX1	Freezer	YES.....1 NO.....2	
HHX1	Computer/Laptop	YES.....1 NO.....2	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD CHARACTERISTICS (continued)			
HHX3	A stove	YES.....1 NO.....2	
HHX4	A microwave	YES.....1 NO.....2	
HHX5	Home internet connectivity	YES.....1 NO.....2	
HHX6	A wardrobe	YES.....1 NO.....2	
HHX7	A sofa	YES.....1 NO.....2	
HHX8	A bed	YES.....1 NO.....2	
HHX9	A table and chairs	YES.....1 NO.....2	
HHX10	Windows with glass	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.....9 OTHER.....96	
		(SPECIFY)	
HHX11	Is the cooking usually done in the house, in a separate building or outdoors?	HOUSE = 1 SEPARATE BUILDING = 2 OUTDOORS = 3 DON'T KNOW = -8	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD CHARACTERISTICS (continued)			
HHX12	Do you have a separate room which is used as a kitchen?	YES.....1 NO.....2 DON'T KNOW.....-8	
213	MAIN MATERIAL OF FLOOR RECORD OBSERVATION.	NATURAL FLOOR EARTH / SAND.....11 DUNG.....12 MUD / CLAY.....13 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 <hr/> (SPECIFY)	
214	MAIN MATERIAL OF THE ROOF RECORD OBSERVATION.	NATURAL ROOFING NO ROOF.....11 THATCH/PALM LEAF/GRASS.....12 DUNG / MUD.....13 SOD.....18 RUDIMENTARY ROOFING RUSTIC MAT.....14 WOOD PLANKS.....15 CARDBOARD.....16 TIN CANS.....22 PALM/BAMBOO.....25 STICKS WITH MUD AND DUNG.....26 PLASTIC/PVC.....27 FINISHED ROOFING CORRUGATED IRON21 WOOD.....23 CALAMINE/CEMENT FIBER.....24 ASBESTOS SHEET.....31 CONCRETE.....32 TILES (CERAMIC/BRICK/ETC.).....33 ROOFING SHINGLES.....34 TIN.....35 SLATE.....36 OTHER.....96 <hr/> (SPECIFY)	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD CHARACTERISTICS (continued)			
215	MAIN MATERIAL OF THE EXTERIOR WALLS RECORD OBSERVATION.	NATURAL WALLS NO WALLS.....11 CANE/PALM/TRUNKS.....12 DIRT.....16 RUDIMENTARY WALLS DUNG/MUD/CLAY.....13 STICKS WITH MUD/CLAY/DUNG.....14 BAMBOO WITH MUD/CLAY/DUNG.....21 STONE WITH MUD.....22 CARTON.....24 REUSED WOOD.....25 PLYWOOD.....26 CARDBOARD.....27 UNCOVERED ADOBE.....29 FINISHED WALLS CEMENT.....31 STONE WITH LIME/CEMENT.....32 BRICKS.....33 CEMENT BLOCKS.....34 WOOD PLANKS/SHINGLES.....35 OTHER.....96 <hr/> (SPECIFY)	
216	How many rooms are used for sleeping? PREFACE BEFORE QUESTIONS 217-HHX14: Does any member of your household own:	NUMBER OF ROOMS:	<input type="text"/> <input type="text"/>
217	A bicycle?	YES.....1 NO.....2	
218	A motorcycle or motor scooter?	YES.....1 NO.....2	
219	A car or truck?	YES.....1 NO.....2	
220	A boat with a motor?	YES.....1 NO.....2	
HHX13	A watch?	YES.....1 NO.....2	
HHX14	An animal drawn cart?	YES.....1 NO.....2	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD CHARACTERISTICS (continued)			
PREFACE BEFORE QUESTIONS 221-225:			
Does any member of your household own:			
221	Cows (Cattle)?	YES.....1 NO.....2	NO → 222
221A	Milk cows?	YES.....1 NO.....2	
221B	Bulls?	YES.....1 NO.....2	
222	Goats/Sheep?	YES.....1 NO.....2	
223	Poultry (e.g., ducks, chickens)?	YES.....1 NO.....2	
224	Dogs?	YES.....1 NO.....2	
225	Other animals (camels, horses, donkeys)?	YES.....1 NO.....2	
HHX15	Does any member of household own any agricultural land?	YES.....1 NO.....2	NO → HHX17
HHX16	How many hectares of agricultural land do members of this household own?	HECTARES....._[] DON'T KNOW-8	
HHX17	Does any member of this household have an active bank account?	YES.....1 NO.....2	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
MALARIA & FOOD SECURITY (OPTIONAL)			
226*	Does your household have any mosquito nets that can be used while sleeping?	YES.....1 NO.....2 DON'T KNOW.....-8 REFUSED.....-9	
227*	In the past 4 weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	YES.....1 NO.....2 DON'T KNOW.....8	NO, DK→229
228*	How often did this happen in the past 4 weeks?	RARELY (1-2 TIMES).....1 SOMETIMES (3-10 TIMES).....2 OFTEN (MORE THAN 10 TIMES).....3 DON'T KNOW.....-8	
229*	In the past 4 weeks, did you or any household member go to sleep at night hungry because there was not enough food?	YES.....1 NO.....2 DON'T KNOW.....8	NO, DK→231
230*	How often did this happen in the past 6 months?	RARELY (1-2 TIMES).....1 SOMETIMES (3-10 TIMES).....2 OFTEN (MORE THAN 10 TIMES).....3	
231*	In the past 4 weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	YES.....1 NO.....2 DON'T KNOW.....-8	NO, DK→301
232*	How often did this happen in the past 4 weeks?	RARELY (1-2 TIMES).....1 SOMETIMES (3-10 TIMES).....2 OFTEN (MORE THAN 10 TIMES).....3 DON'T KNOW.....-8	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
ECONOMIC SUPPORT (OPTIONAL)			
Now I will ask you questions on economic support you have received.			
301	<p>Has your household received any of the following forms of external economic support in the last 12 months?</p> <p>SELECT ALL THAT APPLY. READ THE RESPONSES ALOUD.</p>	<p>NOTHINGA</p> <p>CASH TRANSFER (E.G. PENSIONS, DISABILITY GRANTS, CHILD GRANT, VETERAN'S GRANT).....B</p> <p>ASSISTANCE FOR SCHOOL FEES.....C</p> <p>MATERIAL SUPPORT FOR EDUCATION (E.G. UNIFORMS, SCHOOL BOOKS, EDUCATION, TUITION SUPPORT, BURSARIES).....D</p> <p>INCOME GENERATION SUPPORT IN CASH OR IN KIND (E.G. AGRICULTURAL INPUTS).....E</p> <p>FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION.....F</p> <p>MATERIAL OR FINANCIAL SUPPORT FOR SHELTER.....G</p> <p>SOCIAL PENSION.....H</p> <p>OTHER.....X</p> <p>_____</p> <p>(SPECIFY)</p> <p>DON'T KNOWY</p>	<p>NOTHING, DON'T KNOW→ END OF SECTION</p>
302	<p>Has your household received any of the following forms of external economic support in the last 3 months?</p> <p>SELECT ALL THAT APPLY. READ THE RESPONSES ALOUD.</p>	<p>NOTHINGA</p> <p>CASH TRANSFER (E.G. PENSIONS, DISABILITY GRANTS, CHILD GRANT, VETERAN'S GRANT).....B</p> <p>ASSISTANCE FOR SCHOOL FEES.....C</p> <p>MATERIAL SUPPORT FOR EDUCATION (E.G. UNIFORMS, SCHOOL BOOKS, EDUCATION, TUITION SUPPORT, BURSARIES).....D</p> <p>INCOME GENERATION SUPPORT IN CASH OR IN KIND (E.G. AGRICULTURAL INPUTS).....E</p> <p>FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION.....F</p> <p>MATERIAL OR FINANCIAL SUPPORT FOR SHELTER.....G</p> <p>SOCIAL PENSION.....H</p> <p>OTHER.....X</p> <p>_____</p> <p>(SPECIFY)</p> <p>DON'T KNOWY</p>	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
MOBILITY AND MIGRATION			
Now I will ask you questions about individuals who are part of your household, but may not be living with you right now. By part of your household, we mean individuals listed on the roster.			
400A	Are there any members of your household who are not in the country or region right now because of work?	YES.....1 NO.....2 DON'T KNOW-8	YES → 400B NO, DON'T KNOW → END OF SECTION
400B	What is that individual's relationship to you?	SPOUSEA FATHER.....B MOTHER.....C BROTHER.....D SON.....E SISTER.....F DAUGHTER.....G NEPHEW.....H NIECE.....I OTHER.....X _____ (SPECIFY) DON'T KNOWY	

HOUSEHOLD SCHEDULE – MIGRATION AND MOBILITY

IF (NAME) IS USUAL MEMBER BUT DID NOT SLEEP IN HOUSEHOLD AND IS 18 YEARS OR OLDER

Which region or country is
(NAME) in currently?

- ERONGO = 01
- HARDAP = 02
- KARAS = 03
- KAVANGO EAST = 04
- KAVANGO WEST = 05
- KHOMAS = 06
- KUNENE = 07
- OHANGWENA = 08
- OMAHEKE = 09
- OMUSATI = 10
- OSHANA = 11
- OSHIKOTO = 12
- OUTJOZONDJUPA= 13
- ZAMBEZI = 14
- SOUTH AFRICA=15
- ANGOLA = 16
- MOZAMBIQUE = 17
- BOTSWANA = 18
- ZIMBABWE = 19
- OTHER = 96
- DON'T KNOW = -8
- REFUSED = -9

What is (NAME's) primary job or
activity while away?

- NONE = 0
- MINING = 1
- AGRICULTURE/FARMING = 2
- TRANSPORT = 3
- CONSTRUCTION = 4
- UNIFORMED PERSONNEL = 5
- INFORMAL TRADE = 6
- GARMENT INDUSTRIES = 7
- HOUSEKEEPER= 8
- SEX WORK = 9
- STUDENT = 10
- OTHER = 96
- DON'T KNOW = -8
- REFUSED = -9

When was the
last time
(NAME) slept
the night in
the
household?

**IF < 30 DAYS:
ASK**
When do you
expect
(NAME) to
return?

**IF 401 plus
402 > 30
DAYS:**
Is (NAME) in
another
region or
country?

LINE NUMBER AND
NAME

	(1)	(401)	(402)	(403)	(404)	(405)
<p>— Name</p>		DAYS <input type="checkbox"/> WEEKS <input type="checkbox"/> MONTHS <input type="checkbox"/> <div style="border: 1px solid black; width: 40px; height: 20px; margin-top: 5px;"></div>	DAYS <input type="checkbox"/> WEEKS <input type="checkbox"/> MONTHS <input type="checkbox"/> <div style="border: 1px solid black; width: 40px; height: 20px; margin-top: 5px;"></div>	Y <input type="checkbox"/> N <input type="checkbox"/> DK <input type="checkbox"/> ↓ Next Line	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>
<p>— Name</p>		DAYS <input type="checkbox"/> WEEKS <input type="checkbox"/> MONTHS <input type="checkbox"/> <div style="border: 1px solid black; width: 40px; height: 20px; margin-top: 5px;"></div>	DAYS <input type="checkbox"/> WEEKS <input type="checkbox"/> MONTHS <input type="checkbox"/> <div style="border: 1px solid black; width: 40px; height: 20px; margin-top: 5px;"></div>	Y <input type="checkbox"/> N <input type="checkbox"/> DK <input type="checkbox"/> ↓ Next Line	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>
<p>— Name</p>		DAYS <input type="checkbox"/> WEEKS <input type="checkbox"/> MONTHS <input type="checkbox"/> <div style="border: 1px solid black; width: 40px; height: 20px; margin-top: 5px;"></div>	DAYS <input type="checkbox"/> WEEKS <input type="checkbox"/> MONTHS <input type="checkbox"/> <div style="border: 1px solid black; width: 40px; height: 20px; margin-top: 5px;"></div>	Y <input type="checkbox"/> N <input type="checkbox"/> DK <input type="checkbox"/> ↓ Next Line	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>
<p>— Name</p>		DAYS <input type="checkbox"/> WEEKS <input type="checkbox"/> MONTHS <input type="checkbox"/> <div style="border: 1px solid black; width: 40px; height: 20px; margin-top: 5px;"></div>	DAYS <input type="checkbox"/> WEEKS <input type="checkbox"/> MONTHS <input type="checkbox"/> <div style="border: 1px solid black; width: 40px; height: 20px; margin-top: 5px;"></div>	Y <input type="checkbox"/> N <input type="checkbox"/> DK <input type="checkbox"/> ↓ Next Line	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div>

LINE NO.	HOUSEHOLD MEMBERS WHO LIVE ABROAD (OUTSIDE NAMIBIA)	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	LENGTH OF TIME AWAY	PLACE / COUNTRY	PRIMARY ACTIVITY
----------	---	-----------------------------------	-----	---------------------	-----------------	------------------

Please give me the names of the any other persons (not noted above) who have lived with you (as household members) during the past 3 years who currently live outside the country.

What is the relationship of (NAME) to the head of the household?
SEE CODES BELOW

Is (NAME) Male or Female?

How long has he/she been away? (MONTHS)

Where (What country) does (NAME) live?

What is (NAME's) primary job or activity while away?

(406)	(407)	(408)	(409)	(410)	(411)	(412)
1		<input type="text"/> <input type="text"/>	M F	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
2		<input type="text"/> <input type="text"/>	M F	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
3		<input type="text"/> <input type="text"/>	M F	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
4		<input type="text"/> <input type="text"/>	M F	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

CODES FOR COLUMN 408: RELATIONSHIP TO HOUSEHOLD HEAD

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

09 = CO-WIFE
 10 = OTHER RELATIVE
 11 = ADOPTED/FOSTER/STEPCHILD
 12 = NOT RELATED

-8 = DON'T KNOW

SOUTH AFRICA=15
 ANGOLA = 16
 MOZAMBIQUE = 17
 BOTSWANA = 18
 ZIMBABWE = 19
 OTHER = 96

NONE = 0
 MINING = 01
 AGRICULTURE/FARMING = 02
 TRANSPORT = 03
 CONSTRUCTION = 04
 UNIFORMED PERSONNEL = 05
 INFORMAL TRADE = 06
 GARMENT INDUSTRIES = 07
 HOUSEKEEPER= 08
 SEX WORK = 09
 STUDENT = 10
 OTHER = 96
 DON'T KNOW = --8
 REFUSED = -9

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
-----	----------------------------	-------------------	------

END OF HOUSEHOLD INTERVIEW

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

END TIME

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

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
MODULE 1: RESPONDENT BACKGROUND			
Interviewer says: "Thank you for agreeing to participate in this survey. The first set of questions is about your life in general. Afterwards, we will move on to other topics."			
101	Have you ever attended school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED →112
102	What is the highest level of school you <u>attended</u> : primary, secondary, or higher?	PRIMARY =1 SECONDARY =2 HIGHER = 3 DON'T KNOW = -8 REFUSED = -9	
103	What is the highest grade you <u>completed</u> at that level? (IF ATTENDING FORM 1 OF SECONDARY SCHOOL AND HAS/DID NOT COMPLETE THE SCHOOL YEAR, ENTER "0")	CLASS/FORM/YEAR _____ DON'T KNOW = -8 REFUSED = -9	
THE FOLLOWING QUESTIONS ON SCHOOLING ARE FOR ADOLESCENT/YOUNG ADULTS AGES 15-18 – IF > 18, GO TO 112.			
104	Are you currently enrolled in school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	DK, REFUSED →112 NO-> 110
105	What grade are you in now?	GRADE _____ DON'T KNOW = -8 REFUSED = -9	
106	During the last school week, did you miss any school days for any reason?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 108
107	Why did you miss school?	I HAVE BEEN SICK = 1 I DON'T FEEL SAFE TRAVELING TO SCHOOL = 2 I DON'T FEEL SAFE WHILE IN SCHOOL = 3 I DON'T LIKE SCHOOL = 4 I HAVE TO LOOK AFTER MY FAMILY = 5 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL = 6 SCHOOL IS TOO FAR AWAY = 7 I HAVE TO WORK = 8 I HAVE A CHILD OR I AM PREGNANT (GIRLS ONLY) = 9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) (GIRLS ONLY) = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
108	What grade were you in last year?	GRADE _____ DIDN'T ATTEND SCHOOL LAST YEAR = 96 DON'T KNOW = -8 REFUSED = -9	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 1: RESPONDENT BACKGROUND			
109	Where there any grades at school that you repeated?	YES=1 NO=2 DON'T KNOW = -8 REFUSED = -9	ALL → 112
110	What is the main reason that you do not go to school? [only pick one]	I GOT ALL THE EDUCATION I WANT= 1 I COMPLETED MY EDUCATION=2 I AM TOO OLD=3 I DID NOT DO WELL IN SCHOOL/FAILED TOO MANY TIMES = 4 I HAVE BEEN SICK = 5 I DON'T FEEL SAFE TRAVELING TO SCHOOL = 6 I DON'T FEEL SAFE WHILE IN SCHOOL = 7 I HAVE TO LOOK AFTER MY FAMILY= 8 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL = 9 SCHOOL IS TOO FAR AWAY = 10 I HAVE TO WORK = 11 I HAVE A CHILD = 12 I AM PREGNANT (GIRLS ONLY) = 13 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) (GIRLS ONLY) = 14 NO MONEY FOR SCHOOL UNIFORM = 15 NO MONEY FOR TRAVEL TO SCHOOL= 16 MY BOYFRIEND TOLD ME TO STOP GOING TO SCHOOL=17 I HAD A PROBLEM WITH THE TEACHER OR SCHOOL OFFICIAL = 18 EDUCATION IS MORE IMPORTANT FOR BOYS THAN GIRLS = 19 TEACHERS OFTEN ABSENT OR THE TEACHING QUALITY IS POOR = 20 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
111	When was the last time you regularly attended school? Would you say it was less than a year ago or more than a year ago?	LESS THAN 1 YEAR = 1 1 YEAR OR LONGER = 2 DON'T KNOW = -8 REFUSED = -9	
112	Have you done any work in the last 12 months for which you received salary, cash or goods as payment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → END OF SECTION
113	Have you done any work in the last seven days for which you received salary, 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 → SKIP TO NEXT MODULE
202	How old were you the first time you married or started living with a [man/woman] as if married?	AGE IN YEARS ____ DON'T KNOW = -8 REFUSED = -9	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 2: MARRIAGE			
203	What is your marital status now: are you married, living together with someone as if married, widowed, divorced, or separated?	MARRIED = 1 LIVING TOGETHER = 2 WIDOWED = 3 DIVORCED = 4 SEPARATED = 5 DON'T KNOW = -8 REFUSED = -9	WIDOWED, DIVORCED, SEPARATED, DK, REFUSED → SKIP TO NEXT MODULE
The next several questions are about your current spouse or partner(s).			
204	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 →SKIP TO NEXT MODULE SKIP IF FEMALE
205	The Household Schedule listed [count] household members as your wives/partners. Please review the list below. Are all of the listed household members your wives/partners who live in the household?	YES = 1 NO = 2	YES → 208 SKIP IF FEMALE
206	Is [NAME] your wife/partner?	YES = 1 NO = 2	SKIP IF FEMALE
207	Does [NAME] live in the household?	YES = 1 NO = 2	SKIP IF FEMALE
208	Do you have additional spouse(s)/partner(s) that live with you?	YES = 1 NO = 2	SKIP IF FEMALE NO → 211
209	How many additional spouse(s)/partners(s) live with you?	NUMBER OF SPOUSES OR LIVE-IN PARTNERS ____	SKIP IF FEMALE
210	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
211	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 ALL → SKIP TO NEXT MODULE
212	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	DK, REFUSED →216 IF 212 = 2 AND COUNT OF 205 = 0 →216 SKIP IF MALE
213	The household schedule listed [NAME OF HUSBAND/PARTNER] as your husband/partner who is living here. Is that correct?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES DK, REF → 216 SKIP IF MALE
214	Please select the spouse/partner that lives with you.	NOT LISTED IN HOUSEHOLD = 96 [LIST OF PERSONS ON HH ROSTER]	LISTED → 216 SKIP IF MALE
215	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

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 2: MARRIAGE			
216	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 → SKIP TO NEXT MODULE SKIP IF MALE
217	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."			IF MALE SKIP TO 351
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 → 336
302	How old were you the first time you were pregnant?	AGE IN YEARS ____ DON'T KNOW = -8 REFUSED = -9	
303	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
304	How many live births have you had since January 1, INSERT CURRENT YEAR- 3] ? CODE '00' IF NONE.	NUMBER OF CHILDREN ____ DON'T KNOW = -8 REFUSED = -9	NONE, DK, REFUSED →335 YEAR IS SURVEY YEAR – 3 YEARS ANSWER CANNOT BE > 5
Interviewer says: "Now I would like to ask you some questions about the last pregnancy that resulted in a live birth since [current "			
305	Did your last pregnancy result in birth to twins or more?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REF →307
306	What is the name of the [ORDER OF BIRTH] born child from your last pregnancy that resulted in a live birth? IF THE CHILD WAS NOT NAMED BEFORE DEATH, INPUT BIRTH 1	NAME _____	WILL BE REPEATED FOR EACH MULTIPLE BIRTH
307	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 THE CHILD WAS NOT NAMED BEFORE DEATH, INPUT BIRTH 1.	NAME _____	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 3: REPRODUCTION			
308	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 →310 DK, REFUSED → 319
309	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 → 319
Interviewer says: "I will now be asking you questions on HIV testing. Please remember that your responses will be kept confidential and will not be shared with anyone else."			
310	Have you ever tested for HIV before your pregnancy with [NAME] ?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF 310 = 2, -8, -9 → 313
311	Did you test positive for HIV before your pregnancy with [NAME] ?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 313
312	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 →319 NO, DK, REFUSED → 317 NO →SKIP 308
313	During any of your visits to the antenatal care clinic when you were pregnant with [NAME] , were you <u>offered</u> an HIV test?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO →SKIP 308
314	Were you <u>tested</u> 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 →316 DK, REFUSED →319
315	What is the main reason you were not tested for HIV during antenatal care with [NAME] ?	DID NOT WANT AN HIV TEST DONE / DID NOT WANT TO KNOW MY STATUS = 1 DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY = 2 AFRAID OTHERS WOULD KNOW ABOUT TEST RESULTS = 3 DID NOT NEED TEST/LOW RISK = 4 TEST NOT OFFERED/WAS NOT AVAILABLE = 5 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL →SKIP TO 319

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 3: REPRODUCTION			
316	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 → 319
317	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 → 319
318	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/FAMILY = 9 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
319	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
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
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
323	During labor, were you offered ARVs to protect [NAME] against HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
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 ELECTRONIC AID IF DON'T KNOW.

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 3: REPRODUCTION			
325	Did you continue to take the ARVs after delivery?	YES = 1 NO= 2 DON'T KNOW =8 REFUSED = -9	
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.	YEARS _____ DON'T KNOW = -8 REFUSED = -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
330	Is [NAME] living with you?	YES = 1 NO = 2	NO →332
331	Please select [NAME] that lives with you. SELECT 'NOT LISTED IN HOUSEHOLD' IF CHILD IS NOT LISTED HERE.	[LIST OF CHILDREN IN HOUSEHOLD]	
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 →RETURN TO 327 FOR MULTIPLES

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 3: REPRODUCTION			
I will now ask you about current pregnancies.			
335	Are you pregnant now?	YES = 1 NO = 2 DON'T KNOW/UNSURE = -8 REFUSED = -9	YES→SKIP TO NEXT MODULE
I will now ask you about family planning.			
336	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→SKIP TO 338
337	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	
338	Can you tell me why you are not using a method to prevent pregnancy? Select all that apply	NOT MARRIED/NO PARTNER= A NOT HAVING SEX = B INFREQUENT SEX = C MENOPAUSAL/HYSTERECTOMY = D. (PARTNER) CANNOT GET PREGNANT = E NOT MENSTRATED SINCE LAST BIRTH = F BREASTFEEDING = G UP TO GOD = H RESPONDENT OPPOSES = I. HUSBAND/PARTNER OPPOSES =J RELIGION PROHIBITS = K KNOWS NO METHOD = L KNOWS NO SOURCE = M SIDE LACK OF ACCESS /TOO FAR = O COSTS TOO MUCH = P PREFERRED METHOD NOT AVAILABLE = Q NO METHOD AVAILABLE = R INCONVENIENT TO USE = S INTERFERES WITH BODY'S NORMAL PROCESSES = T WANT A CHILD/ANOTHER CHILD = U OTHER (SPECIFY) =X: _____ NOT SURE/ DON'T KNOW = Y REFUSED = Z	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 4: CHILDREN			
Interviewer says: "I am going to ask you a number of questions about your child/children regarding their health and where they get their health services. We will ask you about these children:			
[LIST OF CHILDREN] [LINE NUMBER] [CHILD'S NAME]"			
THE HOUSEHOLD SCHEDULE NOTED THAT [NAME OF RESPONDENT] WILL FILL OUT THE CHILDREN'S MODULE FOR [NUMBER OF CHILDREN].			
Now I am going to ask you questions for [NAME].			
THE CHILD NAMED [NAME] WAS LISTED WITH LINE NUMBER [INSERT HH LINE NUMBER] IN THE HOUSEHOLD LISTING.			
401	How old was [NAME] at his/her last birthday? KEY '0' IF CHILD IS LESS THAN ONE YEAR OLD AT PRESENT.	YEARS ____	AGE CANNOT BE GREATER THAN 14 YEARS.
402	How old is [NAME] in months?	MONTHS ____	SKIP 401 > 0
402A	You said that [NAME] was [KIDAGEY]. How many months over [KIDAGEY] is [NAME*].	MONTHS ____ DON'T KNOW = -8 REFUSED = -9	
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, CURR NOT IN SCHOOL → 407 NO, TOO YOUNG, DK, REFUSED → 409
405	What is the highest level of school [NAME] has attended: primary or secondary?	NURSERY/KINDERGARTEN = 0 PRIMARY = 1 SECONDARY = 2 DON'T KNOW = -8 REFUSED = -9	DK, REF → 407
406	What grade is [NAME] in now?	GRADE ____ DON'T KNOW = -8 REFUSED = -9	ALL → 409
407	Was [NAME] enrolled in school during the previous school year?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REF → 409
408	What grade was [NAME] during the previous school year?	GRADE ____ 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 → 411 DK, REF → 412 SKIP IF FEMALE CHILD. ELECTRONIC AID IF DON'T KNOW.

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 4: CHILDREN			
410	Who circumcised [NAME]?	DOCTOR, CLINICAL OFFICER, OR NURSE = 1 TRADITIONAL PRACTITIONER / CIRCUMCISER =2 MIDWIFE = 3 FAMILY/FRIEND ==4 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSE TO ANSWER=-9	SKIP IF FEMALE CHILD.
411	Why is [NAME] not circumcised?	DON'T KNOW WHERE TO GET CIRCUMCISED = A HAD TO TRAVEL TOO FAR TO GET CIRCUMCISED = B CHILD WAS AFRAID TO GET CIRCUMCISED = C DO NOT HAVE A REASON TO CIRCUMCISE THE CHILD = D WAITING UNTIL CHILD IS OLDER TO GET HIM CIRCUMCISED = E RELIGIOUS REASONS = F OTHER = G SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
412	Has [NAME] ever been tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 414, REFUSED → 431
413	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 MOTHER IS NEGATIVE = M CHILD IS TOO YOUNG =N OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	ALL-> 431
414	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

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 4: CHILDREN			
415	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 → 431
416	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	
417	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 → 419 DK, REFUSED → 422
418	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 → 422
419	What month and year did [NAME] <u>first</u> see a doctor, clinical officer or nurse for HIV medical care? PROBE TO VERIFY DATE.	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
420	What month and year did [NAME] <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 YEAR = -9	IF <7 MONTHS, DK, REFUSED, MISSING DATE → 422

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 4: CHILDREN			
421	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 MISSED MOST RECENT APPOINTMENT= 9 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
422	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 AND 417 = 1 → 424 NO, DK, REFUSED AND 417 = 2,-8,-9 →431
423	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	SKIP TO 431 IF NEVER IN HIV CARE.
424	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 →426 DK, REFUSED → 430 ELECTRONIC AID IF DON'T KNOW
425	What is the main reason [NAME] has never taken ARVs?	CHILD IS NOT ELIGIBLE FOR TREATMENT=1 HEALTH CARE PROVIDER DID NOT PRESCRIBE = 2 HIV MEDICINES NOT AVAILABLE = 3 DO NOT THINK CHILD NEEDS IT, HE/SHE IS NOT SICK = 4 COST OF MEDICATIONS = 5 COST OF TRANSPORT = 6 RELIGIOUS REASONS = 7 CHILD IS TAKING TRADITIONAL MEDICATIONS = 8 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL →SKIP TO 430
426	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	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 4: CHILDREN			
427	Is [NAME] currently taking ARVs? By currently, I mean that [NAME] may have missed some doses but [NAME] is still taking ARVs.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 429 DK, REFUSED → KID- COTRIMOXAZOLE
428	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 → KID- COTRIMOXAZOLE
429	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	
430	Is [NAME] currently taking Cotrimoxazole? 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 Cotrimoxazole	YES = 1 NO = 2 I DON'T KNOW WHAT IT IS = 3 REFUSED = -9	ELECTRONIC AID IF DON'T KNOW
431	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 → SKIP TO END OF MODULE
432	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	
433	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 → SKIP TO END OF MODULE
434	What month and year did a doctor, clinical officer or nurse diagnose [NAME] with TB? RECORD THE MOST RECENT TIME IF DIAGNOSED WITH TB MORE THAN ONCE.	MONTH ____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR ____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 4: CHILDREN			
435	Was [NAME] ever treated for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → SKIP TO END OF MODULE
436	Is [NAME] currently on treatment for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 438
437	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, [NAME] IS STILL ON TREATMENT = 3 DON'T KNOW = -8 REFUSED = -9	
438	Thank you for the information about [NAME]. DOES THE RESPONDENT HAVE ANOTHER CHILD AGED 0-14 YEARS?	YES = 1 NO = 2	YES → RETURN TO 401
MODULE 5: MALE CIRCUMCISION			
Interviewer says: "I will be asking a few questions about circumcision. Circumcision is the complete removal of the foreskin from the penis. I have a picture to show you what a completely circumcised penis looks like."			SHOW 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 -> 505 NO DK, REF → 502
502	Are you planning to get circumcised?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED= -9	YES->504
503	Why you are not planning to get circumcised	DON'T KNOW WHERE TO GET CIRCUMCISED = A HAD TO TRAVEL TOO FAR TO GET CIRCUMCISED = B AFRAID TO GET CIRCUMCISED = C DO NOT HAVE A REASON TO GET CIRCUMCISED = D RELIGIOUS REASONS = E NO REASON = F OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	ALL SKIP → 509
504	Do you know any places where you can get circumcised	HEALTH CARE FACILITY = 1 HOME OF A HEALTH WORKER/HEALTH PROFESSIONAL = 2 RESPONDENT'S HOME = 3 RITUAL SITE = 4 OTHER HOME/ELSEWHERE = 5 DON'T KNOW = -8 REFUSED = -9	ALL->509
505	How old were you when you were medically circumcised? Please give your best guess. IF LESS THAN ONE YEAR, CODE '00'.	AGE IN YEARS ____ DON'T KNOW = -8 REFUSED= -9	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 5: MALE CIRCUMCISION			
506	<p>Are you completely or partially circumcised?</p> <p>In partial circumcision, a small part of the foreskin is removed from the penis while in complete circumcision, the entire foreskin is removed.</p> <p>If you allow me, I can show you a picture that shows a partially and a completely circumcised penis.</p>	<p>COMPLETELY = 1 PARTIALLY = 2 DON'T KNOW = -8 REFUSED = -9</p>	
507	Who did the circumcision?	<p>DOCTOR, CLINICAL OFFICER, OR NURSE = 1 TRADITIONAL PRACTITIONER / CIRCUMCISER =2 MIDWIFE = 3 FAMILY/FRIEND =4 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED= -9</p>	
508	Where were you circumcised?	<p>HEALTH FACILITY= 1 HOME OF A HEALTH WORKER/ PROFESSIONAL=2 CIRCUMCISION DONE AT HOME = 3 RITUAL SITE =4 OTHER HOME/PLACE=5 DON'T KNOW = -8 REFUSED = -9</p>	
509	Have you ever heard any messages about male circumcision	<p>YES=1 NO=2 DON'T KNOW = -8 REFUSED= -9</p>	NO, DK, REFUSED->511
510	<p>What was the source of the message?</p> <p>MULTIPLE RESPONSES POSSIBLE</p>	<p>RADIO = A TV = B NEWSPAPERS = C PEERS = D BILLBOARDS = E PAMPHLETS = F HEALTH CARE WORKERS = GCOMMUNITY MOBILIZATION WORKER = G OTHER (SPECIFY) = X DON'T KNOW = Y REFUSED = Z</p>	
511	Does male circumcision alone reduce the risk, or chance, of a man getting HIV completely, somewhat or not at all?	<p>PROTECTS COMPLETELY = 1 PROTECTS SOMEWHAT = 2 NOT AT ALL = 3 DON'T KNOW = 8 REFUSED = -9</p>	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
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.			
By sex, I mean vaginal or anal sex. Vaginal sex is when a penis enters a vagina. Anal sex is when a penis enters an anus."			
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	IF 1 → 605
602	How old was the person you first had vaginal or anal sex with? Please give your best guess.	AGE IN YEARS ____ DON'T KNOW = -8 REFUSED = -9	
603	What was the <u>main</u> reason that you had sex for the first time?	IT JUST HAPPENED = 1 MY FRIENDS PRESSURED ME TO HAVE SEX = 2 TO SHOW MY LOVE/TO FEEL LOVED = 3 I WANTED TO HAVE SEX = 4 MY BOYFRIEND/GIRLFRIEND WANTED TO HAVE SEX = 5 FOR MONEY / GIFTS = 6 I WANTED TO HAVE A BABY = 7 OTHER= 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
604	The first time you had sex, was a condom used?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF DON'T KNOW WHAT CONDOM IS
605	People often have sex with different people over their lifetime. In total, with how many different people have you had vaginal or anal sex in your lifetime? Please give your best guess. IF NUMBER OF PARTNERS IS GREATER THAN 100, WRITE ' 100'.	Number of sexual partners in lifetime __ __ __ Don't know = -8 REFUSED = -9	
606	People often have sex with different people over their lifetime. In total, with how many different people have you had vaginal or anal 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 → SKIP TO NEXT MODULE
Interviewer says: "Now I would like to ask you some questions about the partners you have had sex with in the last 12 months. Let me assure you again that your answers are completely confidential and will not be told to anyone. I will first ask you about your most recent partner."			
607	Does the person you had sex with live in this household?	YES = 1 NO = 2	NO → 609
608	Please select the name below from the household membership list. Please identify the person you had sex with.	NOT LISTED IN HOUSEHOLD = 1 [LIST]	LISTED → 610

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 6: SEXUAL ACTIVITY			
609	I would like to ask you for the initials of this person so I can keep track. They do not have to be the actual initials of this person.	INITIALS ____	
610	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: _____ DON'T KNOW = -8 REFUSED = -9	
611	Is (INITIALS) male or female?	MALE = 1 FEMALE = 2 DON'T KNOW = -8 REFUSED = -9	
612	How old is (INITIALS)? Please give your best guess.	AGE IN YEARS _____ DON'T KNOW = -8 REFUSED = -9	
613	The <u>last</u> time you had sex with (INITIALS) was a condom used?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
614	Did you enter into a sexual relationship with (INITIALS) because (INITIALS) provided you with or you expected that (INITIALS) would provide you gifts, help you to pay for things, or help you in other ways?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 616 SKIP IF SEX WORKER OR CLIENT
615	In the <u>last 12 months</u> , what have you received from (INITIALS)? READ RESPONSES ALOUD. 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
616	Do you expect to have sex with (INITIALS) again?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
617	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	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 6: SEXUAL ACTIVITY			
618	To the best of your knowledge, 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 = -8 REFUSED = -9	IF 4, 5, -8, -9 → 620
619	To the best of your knowledge, If (INITIALS) is positive, is he or she on ART	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
620	HAS THE RESPONDENT HAD ANOTHER PARTNER IN THE LAST 12 MONTHS? I will now ask you about the person you have had sex with previous to (INITIALS).	YES = 1 NO = 2	YES → 607
621	Have you received/taken free condoms during the past 12 months?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
622	Have you ever had sex with someone because he/she provided you with, or you expected that he/she would provide you with gifts, help you to pay for thing or help you in other ways such as giving you food or paying for school fees?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK OR REFUSED → 627
623	In the last 12 months, what have you received from (INITIALS)? [SELECT ALL THAT APPLY]	DID NOT RECEIVE ANYTHING = A MONEY = B FOOD = C SCHOOL FEES = D EMPLOYMENT/JOB = E GIFTS/FAVORS = F TRANSPORT/TRAVEL = G SHELTER/RENT = H PROTECTION = I AIRTIME/CELL PHONE = J BEAUTY PRODUCTS = K CLOTHES/SHOES = L DON'T KNOW = Y REFUSED = Z	
624	Have you ever sold sex for money?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 627
625	In the last 12 months, have you sold sex for money?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 627
626	The last time you sold sex for money, was a condom used?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 6: SEXUAL ACTIVITY			
627	Have you ever paid money for sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED →NEXT MODULE
628	In the last 12 months, have you paid money for sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED →NEXT MODULE
629	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 <i>ever</i> heard of HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DK, REFUSED → 703
702	From where have you heard about HIV? PROBE: Anywhere else? RECORD ALL MENTIONED	SCHOOLS/TEACHERS = A PARENTS/GUARDIAN/FAMILY = B FRIENDS = C RELIGIOUS LEADERS = D INTERNET = E MOBILE PHONE = F HEALTH PROVIDERS/DOCTORS/NURSES/ CLINICAL OFFICERS = 7G TELEVISION/FILM = H RADIO = I HEALTH EXTENSION WORKER = J OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
703	Have you <u>ever</u> tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 705 NO → 704 DK, REFUSED →SKIP TO NEXT MODULE CONSTRAINT IF REPORTED TESTING
704	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/ 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->SKIP TO NEXT MODULE

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 7: HIV TESTING			
705	Have you ever tested yourself for HIV in private using a self-test kit? With a self-test kit you can test yourself for HIV at home. There are instructions on how to interpret the results.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 707
706	Did you get a confirmatory test at a health facility?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
707	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	
708	Where was the <u>last</u> test done?	VCT FACILITY = 1 MOBILE VCT = 2 AT HOME = 3 HEALTH CLINIC / FACILITY = 4 HOSPITAL OUTPATIENT CLINIC = 5 TB CLINIC = 6 STI CLINIC = 7 HOSPITAL INPATIENT WARDS = 8 BLOOD DONATING CENTER = 9 ANC CLINIC = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
709	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	NEG, UNCERTAIN /IND, NO RESULT, DK, REF→SKIP TO NEXT MODULE ADD CONSTRAINT FOR WOMEN WHO ANSWERED POSITIVE IN REPRO MODULE
710	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	
711	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, DK OR REFUSED.

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 7: HIV TESTING			
Interviewer says: "Now I would like to ask you questions about your experiences with health care providers."			SKIP TO NEXT MODULE IF HIV NEGATIVE.
712	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	IF 3 → END OF MODULE
713	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 NO, DID NOT ATTEND HEALTH FACILITY IN LAST 12 MONTHS = 4 DON'T KNOW = -8 REFUSED = -9	
MODULE 8: HIV STATUS, CARE AND TREATMENT			
Interviewer says: "Now I'm going to ask you more about your experience with HIV support, care and treatment."			IF NOT HIV POSITIVE → 901
801	After learning you had HIV, have you <u>ever</u> received HIV medical care from a doctor, clinical officer or nurse? Medical care is a service from a nurse or doctor to maintain health, prevent illness, or to treat illness or injury.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES → 803 DK, REFUSED → SKIP TO NEXT MODULE
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 806
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

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 8: HIV STATUS, CARE AND TREATMENT			
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	
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 → SKIP TO END OF MODULE
807	What month and year were you last tested for your CD4 count?	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
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 → SKIP TO END OF MODULE
809	What is the main reason you have never taken ARVs?	NOT ELIGIBLE FOR TREATMENT=1 ELIGIBLE BUT HEALTH CARE PROVIDER DID NOT PRESCRIBE = 2 HIV MEDICINES NOT AVAILABLE = 3 I FEEL HEALTHY/NOT SICK = 3 COST OF MEDICATIONS = 4 COST OF TRANSPORT = 5 RELIGIOUS REASONS = 6 TAKING TRADITIONAL MEDICATIONS = 7 NOT ATTENDING HIV CLINIC = 8 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL → SKIP TO END OF MODULE
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	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 8: HIV STATUS, CARE AND TREATMENT			
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 → SKIP TO END OF 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 → SKIP TO END OF MODULE
813	People sometimes forget to take all of their ARVs every day. In the last 30 days, how many days have you missed taking any of your ARV pills? CODE '00' IF NONE.	NUMBER OF DAYS _____ DON'T KNOW = -8 REFUSED = -9	
MODULE 9: TUBERCULOSIS AND OTHER HEALTH ISSUES			
Interviewer says: "Now I will ask you about Tuberculosis or TB."			SKIP INSTRUCTION IF IN HIV CARE
901	Have you ever visited clinic for TB diagnosis or treatment?	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → SKIP TO 906
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 → SKIP TO END OF MODULE
903	Were you <u>ever</u> treated for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → SKIP TO END OF MODULE
904	Are you currently on treatment for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED →SKIP TO 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	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 10: GENDER NORMS			
Interviewer says: "Now I would like to ask you questions on 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 I DO NOT RECEIVE MONEY = 5 DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT MARRIED/LIVING TOGETHER
1003	Who usually makes decisions about making major household purchases: 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
1004	Do you believe it is right for a man to hit or beat his wife <u>for any reason</u> ?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1005	Do you believe a person should tolerate violence to keep the family together?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1006	Who should decide when to have sex—only the man, only the woman, or the couple together?	MEN ONLY = 1 WOMEN ONLY = 2 TOGETHER = 3 DON'T KNOW = -8 REFUSED = -9	
1007	Do you believe married men need to have sex with women they are not married to, even if they have good relationships with their wives?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1008	Do you believe women who carry condoms have sex with a lot of men?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 11: MOBILITY/MIGRATION			
Interviewer says: "Now I would like to ask you questions about where you have lived."			
1101	How long have you lived in Namibia? ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN MONTHS OR IN YEARS. CODE '00' IN MONTHS IF LESS THAN 1 MONTH.	MONTHS _____ YEARS _____ MY ENTIRE LIFE/BORN HERE= 96 DON'T KNOW = -8 REFUSE=-9	ENTIRE LIFE, DK, REFUSED →1103
1102	What was your main reason for moving to Namibia?	TO JOIN FAMILY= 1 FOR MARRIAGE = 2 TO FIND WORK = 3 TO GO TO SCHOOL = 4 TO ESCAPE INSECURITY/CONFLICT = 5 TO ESCAPE DROUGHT, FLOOD, ETC= 6 TO ESCAPE VIOLENCE IN HOUSEHOLD = 7 OTHER = 96 SPECIFY: _____ DON'T KNOW =-8 REFUSED =-9	
1103	Have you ever lived outside Namibia?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF YES → 1104 IF NO, DK, REFUSED → 1108
1104	How old were you the first time you lived outside Namibia?	AGE IN YEARS ____ ____ DON'T KNOW = -8 REFUSED = -9	
1105	How many times in your life have you ever lived outside of Namibia?	NUMBER OF TIMES _____ DON'T KNOW = -8 REFUSED = -9	
1106	What was the longest period of time you spent living outside Namibia since you were 15 years old?	WEEKS ____ MONTHS ____ YEARS ____ DON'T KNOW = -8 REFUSED = -9	IF 1106 <4 AND 1106UNITS = WEEKS→1114
1107	When was the most recent time you lived outside of Namibia?	MONTH _____ YEAR _____ DON'T KNOW = -8 REFUSED = -9	
1108	In the last 12 months, have you been away from home for more than one month at a time?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED →211

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 11: MOBILITY/MIGRATION			
1109	For what reason were you away from home for longer than one month?	WORK = 1 SCHOOL = 2 FAMILY OBLIGATIONS = 3 MEDICAL CARE = 4 TRAVEL = 5 OTHER = 96 SPECIFY = _____ DON'T KNOW = -8 REFUSED = -9	
1110	In what county/countries did you spend more than one month in during the past year?	SOUTH AFRICA = A ZAMBIA = B ANGOLA = C BOTSWANA = D ZIMBABWE = E MALAWI = F SWAZILAND = G MOZAMBIQUE = 8H OTHER = X SPECIFY = _____ DON'T KNOW = Y REFUSED = Z	
1111	How long have you lived in this residence/ town?	WEEKS _____ MONTHS _____ YEARS _____ MY ENTIRE LIFE/BORN HERE= 96 DON'T KNOW = -8 REFUSED = -9	
1112	Have you ever lived in Namibia outside this region?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO → 1114
1113	In which region/regions did you previously reside?	ERONGO = A HARDAP=B KARAS=C KAVANGO EAST=D KAVANGO WEST=E KHOMAS=F KUNENE=G OHANGWENA=H OMAHEKE=I OMUSATI=J OSHANA=K OSHIKOTO=L OTJOZONDJUPA=M ZAMBEZI=N DON'T KNOW = Y REFUSED = Z	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 11: MOBILITY/MIGRATION			
1114	In what industry do you work?	DID NOT WORK = 0 AGRICULTURE = 1 FISHING = 2 MINING/QUARRYING = 3 MANUFACTURING/PROCESSING = 4 ELECTRICITY = 5 CONSTRUCTION = 6 WHOLESALE & RETAIL, REPAIR OF MOTOR VEHICLES & PERSONAL & HOUSEHOLD GOODS = 7 HOTELS & RESTAURANTS = 8 TRANSPORT, STORAGE, & COMMUNICATION = 9 FINANCIAL INTERMEDIATION = 10 REAL ESTATE, RENTING & BUS. ACTIVITIES = 11 PUBLIC ADMIN, DEFENCE, COMP. SOCIAL SERVICE = 12 EDUCATION = 13 HEALTH & SOCIAL WORK = 14 OTHER COMMUNITY, SOCIAL & PERS. SERVICES = 15 PRIVATE HOUSEHOLD = 16 EXTRA TERRITORIAL ORGANISATIONS BODIES = 17 OTHER = 96 SPECIFY = _____ DON'T KNOW = -8 REFUSED = -9	
1115	When you were away, did you have access to any HIV treatment or care services?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF 709 = 2, 3, 4, -8, -9
MODULE 12: ALCOHOL USE/NON-PRESCRIPTION DRUG USE			
Interviewer says: "The next few questions will be on your use of alcohol. Remember, all the answers you provide will be kept confidential."			
1201	How often do you have a drink containing alcohol? SHOW ALCOHOL AID	NEVER = 0 MONTHLY OR LESS = 1 2-4 TIMES A MONTH = 2 2-3 TIMES A WEEK = 3 4 OR MORE TIMES A WEEK = 4 DON'T KNOW = -8 REFUSED = -9	NEVER, DK, REFUSED → 1204
1202	How many drinks containing alcohol do you have on a typical day? SHOW ALCOHOL AID	NONE = 0 1 OR 2 = 1 3 OR 4 = 2 5 OR 6 = 3 7 TO 9 = 4 10 OR MORE = 5 DON'T KNOW = -8 REFUSED = -9	
1203	How often do you have six or more drinks on one occasion?	NEVER = 0 LESS THAN MONTHLY = 1 MONTHLY = 2 WEEKLY = 3 DAILY OR ALMOST DAILY = 4 DON'T KNOW = -8 REFUSED = -9	

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 112: ALCOHOL USE/NON-PRESCRIPTION DRUG USE			
1204	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 = -8 REFUSED = -9	NO, DK, REFUSED → NEXT MODULE
1205	Have you injected drugs with a needle and syringe in the last 30 days?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → NEXT MODULE
1206	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 = -8 REFUSED = -9	
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 Zimbabwe. 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> <p>I'm going to start by asking you some questions about your experience with physical violence."</p>		SELECT ONLY 1 WOMAN PER HOUSEHOLD
1301	<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>ENTER '0' 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>	NUMBER OF TIMES ____ DON'T KNOW = -8 REFUSED = -9	NONE, DK, REFUSED → 1305
1302	How old were you the <u>first time</u> someone pressured you to have sex and did succeed?	AGE IN YEARS ____ DON'T KNOW = -8 REFUSED = -9	

NO	QUESTIONS	Coding Categories	SKIPS
MODULE 13: VIOLENCE			
1303	What was this person's relationship to you? If it was more than one person, what was your relationship with the person you knew the best?	BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE = 1 EX-BOYFRIEND/GIRLFRIEND/PARTNER/SPOUSE = 2 RELATIVE/FAMILY MEMBER = 3 CLASSMATE/SCHOOLMATE = 4 TEACHER = 5 POLICE/SECURITY OFFICER/MILITARY= 6 EMPLOYER = 7 NEIGHBOR = 8 COMMUNITY/ RELIGIOUS LEADER = 9 FRIEND = 10 STRANGER = 11 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF ONLY HAPPENED ONCE.
1304	In the last 12 months, did someone pressure you to have sex and did succeed?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1305	How many times in your life have you been <u>physically forced</u> to have sex? CODE '00' IF NONE.	NUMBER OF TIMES _____ DON'T KNOW = -8 REFUSED = -9	NONE, DK, REFUSED → END OF MODULE
1306	How old were you the first time someone physically forced you to have sex?	AGE IN YEARS _____ DON'T KNOW = -8 REFUSED = -9	
1307	In the last 12 months, did someone physically force you to have sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 1309
1308	In the last 12 months, did a partner physically force you to have sex? By partner, I mean a live-in partner whether or not you were married at the time.	YES = 1 NO, DID NOT FORCE = 2 NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS = 3 DON'T KNOW = -8 REFUSED = -9	
1309	After any of these unwanted sexual experiences, did you try to seek professional help or services from any of the following? SELECT ALL THAT APPLY.	I DID NOT TRY TO SEEK HELP = A HEALTHCARE PROFESSIONAL = B POLICE OR OTHER SECURITY PERSONNEL = C SOCIAL WORKER, COUNSELOR OR NON-GOVERNMENTAL ORGANIZATION = D RELIGIOUS LEADER = E OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	DID NOT TRY TO SEEK HELP → 1310 ALL EXCEPT DID NOT TRY TO SEEK HELP → END OF MODULE SKIP IF NEVER EXPERIENCED SEXUAL VIOLENCE.

NO	QUESTIONS	Coding Categories	SKIPS
MODULE 13: VIOLENCE			
1310	What was the main reason that you did not try to seek professional help or services?	DID NOT KNOW SERVICES WERE AVAILABLE = 1 SERVICES NOT AVAILABLE = 2 AFRAID OF GETTING IN TROUBLE = 3 ASHAMED FOR SELF/FAMILY = 4 COULD NOT AFFORD SERVICES = 5 DID NOT THINK IT WAS A PROBLEM = 6 FELT IT WAS MY FAULT = 7 AFRAID OF BEING ABANDONED = 8 DID NOT NEED/WANT SERVICES = 9 AFRAID OF MAKING SITUATION WORSE = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF NEVER EXPERIENCED SEXUAL VIOLENCE.
<p>Interviewer says: "Thank you for sharing your personal experiences with me. I know it may have been difficult for you to talk about your experiences with me. If you would like to talk further about these experiences, I can refer you to a place that can provide you with help. "</p> <p>PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS.</p>			
	<i>If answer on question 624 was yes:</i>		SKIP IF >18 YEARS OLD
<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>Interviewer says: "Thank you for taking the time to participate in this survey. Your responses will be very helpful to the Ministry of Health to better understand how to improve health programs in the country."</p> <p>PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS, IF NOT ALREADY GIVEN.</p>			

APPENDIX G YOUNG ADOLESCENT QUESTIONNAIRE

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

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS			
101	IS THE RESPONDENT MALE OR FEMALE?	MALE = 1 FEMALE = 2	
102	How old were you at your last birthday?	AGE IN COMPLETED YEARS ___ ___ DON'T KNOW AGE = -8 REFUSED = -9	
103	Are you enrolled in school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DK, REFUSED → 109
104	During the last school week, did you miss any school days for any reason?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 106
105	Why did you miss school?	I HAVE BEEN SICK = 1 I DON'T FEEL SAFE TRAVELING TO SCHOOL = 2 I DON'T FEEL SAFE WHILE IN SCHOOL = 3 I DON'T LIKE SCHOOL = 4 I HAVE TO LOOK AFTER MY FAMILY = 5 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL = 6 SCHOOL IS TOO FAR AWAY = 7 I HAVE TO WORK = 8 I HAVE A CHILD OR I AM PREGNANT (GIRLS ONLY) = 9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) (GIRLS ONLY) = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
106	What is the highest level of school you attended: primary or secondary?	PRIMARY = 1 SECONDARY = 2 DON'T KNOW = -8 REFUSED = -9	
107	What grade are you in now?	GRADE ___ DON'T KNOW = -8 REFUSED = -9	
108	What grade were you in last year?	GRADE ___ DID NOT ATTEND SCHOOL LAST YEAR = 96 DON'T KNOW = -8 REFUSED = -9	ALL → 204

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS			
109	Why do you NOT go to school?	I HAVE BEEN SICK = 1 I DON'T FEEL SAFE TRAVELING TO SCHOOL = 2 I DON'T FEEL SAFE WHILE IN SCHOOL = 3 I DON'T LIKE SCHOOL = 4 I HAVE TO LOOK AFTER MY FAMILY = 5 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL = 6 SCHOOL IS TOO FAR AWAY = 7 I HAVE TO WORK = 8 I HAVE A CHILD OR I AM PREGNANT (GIRLS ONLY) = 9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) (GIRLS ONLY) = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
110	Have you ever attended school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 201
111	When was the last time you regularly attended school? Would you say it was less than a year ago or more than a year ago?	LESS THAN 1 YEAR = 1 1 YEAR OR LONGER = 2 DON'T KNOW = -8 REFUSED = -9	
112	What is the highest grade that you have completed?	GRADE _____ DON'T KNOW = -8 REFUSED = -9	
MODULE 2: HIV PREVENTION INTERVENTIONS			
201	Have you <i>ever</i> heard of HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DK, REFUSED → 206
202	From where have you heard about HIV? PROBE: Anywhere else? RECORD ALL MENTIONED	SCHOOLS/TEACHERS = A PARENTS/GUARDIAN/FAMILY = B FRIENDS = C RELIGIOUS LEADERS = D INTERNET = E MOBILE PHONE = F HEALTH PROVIDERS/DOCTORS/NURSES/CLINICAL OFFICERS = G TELEVISION/FILM = H RADIO = I COMMUNITY HEALTH WORKERS = J OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
203	Have you <i>ever</i> discussed HIV with your parents or guardian?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 2: HIV PREVENTION INTERVENTIONS			
204	<p>Have you taken part in any of the following HIV prevention programs?</p> <p>SHOW CHILD LOGO FOR EACH PROGRAM</p> <p>READ RESPONSES ALOUD.</p> <p>SELECT ALL THAT APPLY</p>	<p>NONE = A Window of Hope = B My Future is My Choice = C School-based life skills subject = D</p> <p>OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z</p>	<p>"DON'T KNOW", "REFUSED" CANNOT BE SELECTED WITH ANY OTHER CATEGORY.</p> <p>AGE RANGE CAN CHANGE.</p>
205	Do you know what a condom is?	<p>YES = 1 NO = 2 REFUSED = -9</p>	NO, REFUSED → 301
206	Do you know where to get a condom?	<p>YES = 1 NO = 2 REFUSED = -9</p>	NO, REFUSED → 210 DK → 301
207	<p>Where can a person go to get a condom?</p> <p>SELECT ALL THAT APPLY</p>	<p>CLINIC/HOSPITAL = A KIOSK/SHOP = B PHARMACY = C LOCAL FREE DISPENSER = D FRIENDS/PEERS = E BOYFRIEND/GIRLFRIEND = F OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z</p>	
208	If you wanted to, could you yourself get a condom?	<p>YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9</p>	YES, DK, REFUSED → 210
209	<p>Why is it not easy for you to get a condom?</p> <p>SELECT ALL THAT APPLY.</p>	<p>TOO FAR = A COSTS TOO MUCH = B DO NOT WANT OTHERS TO KNOW = C OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z</p>	
210	<p>Have you ever seen a male condom demonstration?</p> <p>By a condom demonstration, I mean someone like a nurse, peer educator, or another trained adult showed you how a male condom is correctly used.</p>	<p>YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9</p>	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 3: SEXUAL BEHAVIOR (13-14 YEAR OLDS ONLY)			
Interviewer says: "The next questions ask about sexual behavior. There is no right or wrong answer. Your responses will not be linked to you in any way or shared with anyone, including your parents."			
NOTE TO THE INTERVIEWER: PLEASE LOOK OUT FOR SIGNS OF DISTRESS IN CHILD WHEN ASKING THE FOLLOWING SEXUAL BEHAVIOR QUESTIONS. IF THE CHILD SEEMS DISTRESSED, ASK CHILD IF HE/SHE WANTS TO STOP THE INTERVIEW.			
301	Do you know what sex is?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF AGE <13 & RESPONSE = NO, DK, REFUSED → 401
302	Have you ever had vaginal, anal or oral sex? Vaginal sex is when a penis enters a vagina. Anal sex is when a penis enters an anus. Oral sex is when a person puts his/her mouth on the penis or vagina of another person. SELECT ALL THAT APPLY.	NEVER HAD SEX = A VAGINAL = B ANAL = C ORAL = D DON'T KNOW = Y REFUSED = Z	NEVER, DK, REFUSED → 307
303	How old were you when you had sex for the first time?	AGE IN YEARS ___ __ DON'T KNOW = -8 REFUSED = -9	
304	The first time you had sex, was a condom used?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF 205 = No
305	The <u>last</u> time you had sex was a condom used?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF 205 = No
306	Have you ever been pregnant?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	GIRLS ONLY.
307	Have you <u>ever</u> talked with a parent or guardian about sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 4: SOCIAL NORMS, INTENTION TO ABSTAIN, SELF-EFFICACY AND ASSERTIVENESS			
Interviewer says: "Now I would like to ask you some questions about the future."			
401	Do you think all, many, some, a few or none of your friends are having sex?	ALL = 1 MOST = 2 SOME = 3 A FEW = 4 NONE = 5 DON'T KNOW/DON'T KNOW WHAT SEX IS = -8 REFUSED = -9	SKIP IF 301 =NO, DK, REFUSED
402	Do you feel pressured by your boyfriend/girlfriend to have sex?	YES = 1 NO = 2 DON'T HAVE BOYFRIEND/GIRLFRIEND=3 DON'T KNOW = -8 REFUSED = -9	SKIP IF 301 =NO, DK, REFUSED

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 4: SOCIAL NORMS, INTENTION TO ABSTAIN, SELF-EFFICACY AND ASSERTIVENESS			
403	Do you feel pressured by your friends to have sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF 301 =NO, DK, REFUSED
404	If you did not want to have sex with someone, could you tell them that you do not want to have sex with them?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF 301 =NO, DK, REFUSED
MODULE 5: HIV KNOWLEDGE			
Interviewer says: "Now I would like to ask you some questions about what you know about some things related to HIV and about HIV transmission and prevention."			SKIP TO NEXT MODULE IF 201 = NO, DK, REF
501	How do people acquire HIV?	SEX = A FROM MOTHER'S BLOOD = B OTHER (SPECIFY) _____ DON'T KNOW = -8 REFUSED = -9	
502	Can a person reduce their chance of getting HIV by not having sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
503	Can a person reduce their chance of getting HIV by using condoms when having sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
504	Can a healthy-looking person have HIV or AIDS?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
505	Can a mother with HIV or AIDS pass HIV to her unborn baby?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
506	Are there medicines that people with HIV or AIDS can take to help them live longer?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
507	Can male circumcision help prevent HIV infection? Circumcision is the removal of the foreskin from a penis. CAN SHOW CIRCUMCISION PAPER JOB AID	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
508	Can medicines for HIV make people with HIV less likely to spread the virus?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
509	Can ARVs rid HIV from an HIV-positive person's body?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 6: HIV TESTING			
Interviewer says: "I would now like to ask you some questions about HIV testing."			SKIP TO NEXT MODULE IF 201 = NO, DK, REF
601	To what extent do you agree with the following statement: Everyone should get tested for HIV Do you strongly agree, agree, disagree, or strongly disagree?	STRONGLY AGREE = 1 AGREE = 2 DISAGREE = 3 STRONGLY DISAGREE = 4 DON'T KNOW = -8 REFUSED = -9	
602	To what extent do you agree with the following statement: Only persons who think they might have HIV should get an HIV test. Do you strongly agree, agree, disagree, or strongly disagree?	STRONGLY AGREE = 1 AGREE = 2 DISAGREE = 3 STRONGLY DISAGREE = 4 DON'T KNOW = -8 REFUSED = -9	
603	Have you ever been tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DK, REFUSED → NEXT MODULE
604	Did you receive the results of any of your HIV tests?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DK, REFUSED → NEXT MODULE
605	What was the result of that HIV test? SOME PARTICIPANTS MAY REPORT BEING TESTED MORE THAN ONCE. IF THEY REPORT GETTING A POSITIVE RESULT AND ANOTHER RESULT (I.E. A PREVIOUS NEGATIVE RESULT), SELECT POSITIVE.	HIV POSITIVE = 1 HIV NEGATIVE = 2 UNCERTAIN/INDETERMINATE = 3 DID NOT RECEIVE THE RESULT = 4 UNKNOWN/DON'T KNOW = -8 REFUSED = -9	IF HIV NEGATIVE, UNKNOWN, REFUSED → NEXT MODULE
606	Are you currently on treatment for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 7: HIV STIGMA			
Interviewer says: "Now I would like to ask you some more question about HIV."			SKIP TO NEXT MODULE IF (201=NO, DK, REFUSED) OR (705 = HIV POSITIVE) OR (ANSWERED= 1 ALREADY HAVE HIV)
701	Would you be willing to share food with someone who has HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
702	Would you be friends with someone who has HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
703	Would you be comfortable to have a teacher who has HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 8: PARENTAL SUPPORT			
801	Do your parents/guardians understand your problems and worries?	ALWAYS = 1 MOST OF THE TIME = 2 SOMETIMES = 3 RARELY = 4 NEVER = 5 DON'T KNOW = -8 REFUSED = -9	
802	Do your parents/guardians really know what you are doing with your free time when you are not at school or work?	ALWAYS = 1 MOST OF THE TIME = 2 SOMETIMES = 3 RARELY = 4 NEVER = 5 DON'T KNOW = -8 REFUSED = -9	
REFERRAL TO SERVICES			
Interviewer says: "Thank you for sharing your personal experiences with me. I know it may have been difficult for you to talk about your experiences with me. If you would like to talk further about these experiences, I can refer you to a place that can provide you with help."			
PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS.			
END			

APPENDIX H SURVEY CONSENT FORMS

Consent for Household Interview [adults 15-64]

[DO NOT READ BELOW]

Study title: Namibia Population-based HIV Impact Assessment (NAMPHIA)

Participation duration: 30 min

Anticipated number of research participants at this site: 26,000

Sponsor/Supporter: PEPFAR Award #1U2GGH001226

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: 061-2032118

Interviewer reads:

What language do you prefer for our discussion today?

- English
- Afrikaans
- Damara>Nama
- Oshiwambo
- Otjiherero
- Rukwangwali
- Silozi

Other Language: Specify _____

Title of Survey: Namibia 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 Namibia. The Ministry of Health & Social Services (MoHSS) is leading this survey and is conducting it with the United States Centers for Disease Control and Prevention, ICAP at Columbia University, the University of California San Francisco (UCSF), Namibia Institute of Pathology (NIP) and Namibia Statistics Agency (NSA).

Purpose of survey

This survey will help us know how many people in Namibia have HIV and need health services. It will also tell us about people's risk for getting HIV. We plan to ask about 19,000 people, ages 15-64 years and 7,000

children, ages 0-14 years from 12, 555 households to join this survey. If you join, your participation will help the MoHSS make health services better in the country.

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

Survey Procedures

There are two parts to this survey – a household interview and individual interview. In the household interview, we would like to ask you some questions about the people who live here and some of the things you have or own. The interview will take up to 30 minutes.

After the household interview, we will invite you and others living in your household to participate in individual interviews. We will also offer an HIV test after the interview. We will ask each person to give permission to participate before joining the survey. You may agree to the interview without agreeing to give your blood. We will ask for your permission to store your blood for future test results.

Right to refuse or withdraw

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

Risks and Benefits

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

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

Confidentiality and Access to Your Health Information

What we talk about will be kept private, even from your family, and will not be shown to anyone outside of the survey team. Your answers to the questions will be identified only by a number and not your name. Your name or any other identifying information will not appear on any survey results that we share with MoHSS, the public or in data analysis. Any identifiable information we collect during the survey will not be released outside of the survey groups listed without your permission.

[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 participant. These include MoHSS Research Committee and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), University of California, San Francisco, Columbia University Medical Center and Westat (a statistical survey research organization)

- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

Your permission to allow us to use and share your identifiable information with the groups above will expire five (5) years after the end of the survey. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact

Nicholus Mutenda

Address: MoHSS Directorate of Special Programs, Bell Harris Building, Florence Nightingale Street, Windhoek, Namibia

Office Phone: +061 203 2436

Email: mutendan@nacop.net

If you have any questions about your rights as a participant in this survey, you can contact:

Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529]

Email: tmbeeli@mhss.gov.na

Do you want to ask me anything about the survey?

Consent Statement

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

1. 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 Individual Interview: Adults, ages 18-64

[DO NOT READ BELOW]

Study title: Namibia Population-based HIV Impact Assessment (NAMPHIA)

Participation duration: 40 min

Anticipated number of research participants at this site: 26,000

Sponsor/Supporter: *PEPFAR Award #1U2GGH001226*

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: [061-2032118](tel:061-2032118)

Interviewer reads:

[IF PARTICIPANT HAS BEEN THROUGH HOUSEHOLD CONSENT]

Hello. My name is _____.

Survey Procedures

We plan to ask about 19,000 people, ages 15-64 years and 7,000 children, ages 0-14 years from 12, 555 households to join this survey. If you join us for this portion of the survey, we will ask you questions about your health, whether you have had any experience with HIV services, and your behavior. The interview will be done in a private location and will take about 40 minutes.

After the interview, we will offer you an HIV test. We will ask you for consent for the blood draw and HIV test after the interview. The testing and counseling session will also take about 40 minutes. You may agree to the interview without agreeing to give your blood. We will also ask for your permission to store your blood for future tests.

If you agree, your contact information will be retained by approved researchers and you may be contacted for a period of up to 5 years and invited to take part in future research, if you still want to. If you do not agree to be contacted for future research, you can still continue to take part in the research today.

Right to refuse or withdraw

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

Confidentiality and access to your health information

We will do everything we can to keep your participation in the survey private. However, we cannot promise complete confidentiality.

You can contact Mr Nicholus Mutenda and Mr Thomas Mbeeli should you have any questions or concerns.

Do you want to ask me anything about the survey?

→ GO TO CONSENT STATEMENT

[IF PARTICIPANT HAS NOT BEEN THROUGH HOUSEHOLD CONSENT]

What language do you prefer for our discussion today?

- English
- Afrikaans
- Damara>Nama
- Oshiwambo
- Otjiherero
- Rukwangwali
- Silozi
- Other Language: Specify _____

Hello. My name is _____. We are doing a research study throughout Namibia to learn more about HIV in the country. The Ministry of Health is leading this survey and is conducting it with the United States Centers for Disease Control and Prevention and ICAP at Columbia University, the University of California San Francisco (UCSF), Namibia Statistics Agency (NSA) and Namibia Institute of Pathology (NIP).

Title of Survey: Namibia Population-Based HIV Impact Assessment

Purpose of the survey

This survey will help us know how many people in Namibia have HIV and need health services. It will also tell us about people’s risk for getting HIV. We plan to ask about 19,000 people, ages 15-64 years and 7,000 children, ages 0-14 years from 12, 555 households to join this survey. If you join, your participation will help the Ministry of Health and Social Services to make health services better in the country.

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

Survey Procedures

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

The interview will be done in a private location and will take about 40 minutes.

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

If you agree, your contact information will be retained by approved researchers and you may be contacted for a period of up to 5 years and invited to take part in future research, if you still want to. If you do not agree to be contacted for future research, you can still continue to take part in the research today.

Right to refuse or withdraw

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

Risks and benefits

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

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

Confidentiality, Privacy and Access to Your Health Information

What we talk about will be kept private, even from your family, and will not be shown to anyone outside of the survey team. Your answers to the questions will be identified only by a number and not your name. Your name or any other identifying information will not appear on any survey results that we share with MoHSS, the public, or publish or present at scientific meetings. The identifiable information we collect during the survey will not be released outside of the survey groups listed without your permission.

The following individuals and/or agencies will be able to look at your research records to help oversee the conduct of this survey:

DO NOT READ ALOUD

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a participant. These include the MoHSS Research Committee and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center, the University of California San Francisco and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

Your permission to allow us to use and share your identifiable information with the groups above will expire five (5) years after the end of the survey. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact:

Nicholus Mutenda

Address: MoHSS Directorate of Special Programs, Bell Harris Building, Florence Nightingale Street, Windhoek, Namibia

Office Phone: +061 203 2436

Email: mutendan@nacop.net

If you have any questions about your rights as a participant in this survey, you can contact:

Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529]

Email: tmbeeli@mhss.gov.na

Do you want to ask me anything about 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 to do the interview? 'YES' means that you agree to do the interview. 'NO' means that you will NOT do the interview.

_____Yes _____No [IF NO THEN STOP]

2. Do you agree to be contacted for future research? 'YES' means that you agree to be contacted for future research. 'NO' means that you won't be contacted 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 [0-9]

Participation duration: 40 min

Anticipated number of research participants at this site: 26,000

Sponsor/Supporter: PEPFAR Award #1U2GGH001226

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: 061-2032118

Study title: Namibia Population-based HIV Impact Assessment (NAMPHIA)

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

Now I would like to ask you to let your child take part in the survey. Your child's participation will help the Ministry of Health & Social Services (MoHSS) make HIV services for children and families better.

Survey Procedures

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

- **[IF CHILD IS 2-9 YEARS OLD]** To do the HIV test in your home, a trained nurse will take about a teaspoon of blood from your child's arm or a few drops of blood from your child's finger
- **[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 the HIV test
- The blood draw will take approximately 5 minutes to complete whilst the testing and counseling will take an approximately 30-35 minutes.
- We will discuss the results with you and your child if you decide to discuss them with him/her
- If your child has HIV, he/she will get a CD4 test and receive the results today
- Their blood will be sent to a laboratory to measure their viral load and the 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 their HIV test, CD4 count and viral load results
- Later in this consent, we will ask your permission to store your child's leftover blood for future research tests

[FOR CHILDREN < 18 MONTHS]

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 their blood, it just confirms that they have been exposed to HIV. We would then send your child's blood to a lab for a special test to confirm if they are infected with HIV. If you provide us with the name of a health facility, we can send the result there in 6-10 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.

Right to refuse and to withdraw

Your child may stop taking part at any time. This will not affect your child's healthcare in any way. If you decide not to allow your child to take part or to withdraw your child at any time or if your child decides not to participate or to withdraw at any time, neither you nor your child will be penalized in any way.

Risks

The risks of taking part in the survey are small. For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. You may learn that your child is infected with HIV. Learning that your child has HIV may cause emotional discomfort. You will receive counseling on how to disclose the result to your child and how to cope. We will do everything we can to keep your child's test results private but we cannot guarantee total confidentiality. You will decide when your child should be told of the test result. We will support whatever decision you make and will provide counseling on how to cope with learning that your child has HIV.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about their 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 they are 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 Namibia and how HIV prevention and treatment programs are working.

Confidentiality, Privacy and Access to Your Child's Health Information

We will do everything we can to keep your child's participation in the survey private. The identifiable information we collect from your child will not be released outside of the study partners we have mentioned during your consent unless there is an issue of safety. You can contact Mr. Nicholus Mutenda and Mr. Thomas Mbeeli should you have any questions or concerns.

Storage of specimens

We would like to ask your permission to store your child's leftover blood for future research tests. These tests may be about health issues important in Namibia, 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 up to three years. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your child's blood samples, we will destroy your child's blood samples after survey-related testing has been completed. If you agree, your contact information will be retained by approved researchers and you may be contacted for a period of up to 5 years so your child can be invited to take part in future research, if you still allow them to. If you do not agree to allow your child to take part in future research, your child can still continue to take part in the research today.

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

→ GO TO CONSENT STATEMENT

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

Interviewer reads:

What language do you prefer for our discussion today?

- English
- Afrikaans
- Damara>Nama
- Oshiwambo
- Otjiherero
- Rukwangwali
- Silozi

Other Language: Specify _____

Hello. My name is _____. I would like to invite your child to take part in this research survey about HIV in Namibia. The Ministry of Health and Social Services 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 University of California San Francisco (UCSF), Namibia Statistics Agency (NSA) and Namibia Institute of Pathology (NIP).

Purpose of the survey

This survey will help us know how many people in Namibia have HIV and need health services. It will also tell us about people's risk for getting HIV. We plan to ask about 19,000 people, ages 15-64 years and 7,000 children, ages 0-14 years from 12, 555 households to join this survey. We would like to invite your child to join the survey too. Your child's participation will help the Ministry of Health make HIV services better.

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

Survey Procedures

[FOR CHILDREN 2-9 YEARS OLD]

If you agree to allow your child to take part in the survey, a trained nurse will take a small amount 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 CHILDREN <2 YEARS 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.

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 their 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 their blood to a laboratory to measure their 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 weeks from now.

We will give you a referral form and information so that you and your child can consult with a doctor or nurse to learn more about their 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.

[FOR CHILDREN < 18 MONTHS]

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 their blood, it just confirms that they have been exposed to HIV. We would then send your child's blood to a lab for a special test to confirm if they are infected with HIV. If you provide us with the name of a health facility, we can send the result there in about 6-10 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.

Right to refuse or withdraw

It is your decision about whether you will allow your child to join the survey. Your child may stop participation at any time. If your child does not take part, it will not affect your child's healthcare in any way. If you decide not to allow your child to take part or to withdraw your child at any time or if your child decides not to participate or to withdraw at any time, neither you nor your child will be penalized in any way.

Risks

The risks to being in the survey and drawing blood are small. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. We will do everything we can to keep your child's information private. However, we cannot promise complete confidentiality.

You may learn that your child is infected with HIV. If you find out that your child is HIV-positive, we will tell you where they may go for care and treatment. Care and treatment provided by the Ministry of Health and Social Services is free. However, learning that your child has HIV may cause some emotional discomfort. You will decide when your child should be told of the test result. We will support whatever decision you make and will provide counseling on how to cope with learning that your child has HIV.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about their health today. Some children who participate will test HIV-positive. If this happens to your child, the benefit is that you will learn their HIV status and will learn where to take your child for free treatment. If you already know that your child is HIV-positive and they are 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 Namibia.

There is no cost to you for your child being in the survey. You and your child will not be paid for your child to be in the survey.

Confidentiality, Privacy and Access to Your Health Information

We will do everything we can to keep your child's participation in the survey private. The blood we collect from your child will be identified by a number and not by your name or your child's name. Your name and your child's name will not appear when we share survey results. Any identifiable information we collect during the survey will not be released outside of the survey groups listed without your permission.

Storage of specimens

We would like to ask your permission to store your child's leftover blood for future research tests. These tests may be about health issues important in Namibia, 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. Your name, your child's name, or any other identifying information will not appear on any survey results that we share with Ministry of Health, the public, or publish or present at scientific meetings. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your child's blood samples, we will destroy your child's blood.

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 which oversee the conduct of this survey to ensure that we are protecting your rights as a person taking part, the staff members include:
 - Namibia MoHSS Research Steering Committee
 - The Centers for Disease Control and Prevention (CDC; Atlanta, USA)
 - Columbia University Medical Center
 - University of California San Francisco
 - Westat (a statistical survey research organization).
- The U.S. Office of Human Research Protections may examine the study records to ensure we are protecting your rights as a person taking part in this survey.
- Selected survey staff and survey monitors.

Your permission to allow us to use and share your child's identifiable information with the groups above will expire 5 years after the end of the survey. If you want your child to leave the study, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact:

Nicholus Mutenda

Address: MoHSS Directorate of Special Programs, Bell Harris Building, Florence Nightingale Street, Windhoek, Namibia

Office Phone: +061 203 2436

Email: mutendan@nacop.net

If you have any questions about your child's rights as a participant in this survey, you can contact:

Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529

Email: tmbeeli@mhss.gov.na

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 agree for my child ___ to take part in this survey. 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 "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 _____

[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 _____

Parental Consent/Permission for Interview and/or Blood Draw for Minors, ages 0-17
[DO NOT READ BELOW]

Study title: Namibia Population-based HIV Impact Assessment

Flesch-Kincaid Level: 8.5

Participation duration: 80 min: 40 min interview and 40 minutes counseling and testing

Anticipated number of research participants at this site: 26,000

Sponsor/Supporter: PEPFAR Award #1U2GGH001226

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: 061-2032118

Interviewer Reads:

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

Now I would like to ask you to give us permission for your child to take part in the survey. This research survey will help us learn more about the health of children in Namibia. We plan to ask about 19,000 people, ages 15-64 years and 7,000 children, ages 0-14 years from 12, 555 households to join this survey. Your consent is all that is required for your 0-9 year old child to take part in the survey. If your child is between the ages of 10-17 years, we will also ask your child to agree to take part in the survey. Your child's taking part will help the Namibia Ministry of Health and Social Services make health services for children and young people better in Namibia.

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

Survey Procedures

Interview Procedures

We will ask your 10-14 year old child to do an interview with us in private to learn what your child knows about HIV and about your child's behaviors that may put him or her at risk for HIV. We will ask your 15-17 year old child to do an interview with us in private that is the same as the interview done by adults who are 18-64 years. Your child's answers will not be shared with you. The interview will take about 40 minutes to complete. Children under 10 years of age will NOT complete an interview.

Blood Procedures

If you and/or your child agree, the following will happen, as described in your own consent:

- The entire testing and counseling session will take about 40 minutes.
- [**<2 YEARS OLD**] To do the HIV test in your home, a trained nurse will take a few drops (about 1 mL) from your child's finger or heel for the HIV test.
- [**>2 YEARS OLD**] To do the HIV test in your home, a trained nurse will take about [6 mL for 2-14 (about one teaspoonful), 14mL for 15-17(about one tablespoonful)] of blood from your child's arm or a few drops of blood from your child's finger.

- [0-15] We will discuss the results with you and your child if you decide to discuss the results with him/her. You will decide when your child should be told of the test result. We will support whatever decision you make and will provide counseling on how to cope with learning that your child has HIV.
- [0-15] 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.
- [16-17] We will return the results of the HIV test to your child unless the child chooses to receive his/her results with you. We will not tell you their results but will encourage them to tell you. If your child tests positive for HIV, we will ask for his/her permission to share his/her contact information with a counselor from the Ministry of Health and Social Services or a community-based partner who will contact your child to talk about HIV and help him/her to go for HIV treatment and care.
- [16-17] We will give your child a referral form so your child can consult with a doctor or nurse regarding his/her HIV test, CD4 count, and viral load results. We will not give the referral form to you, but we will encourage your child to share the information on it with you.
- If your child has HIV, he/she will get a CD4 test and you or he/she will receive the results today
- His/her blood will be sent to a laboratory to measure his/her viral load and the results will be returned to the preferred health facility in 8-12 weeks.
- 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 or your child to inform you of the results or how you and your child's doctor or nurse may get these results.
- We will ask for your permission to store your and/or your child's leftover blood for future research tests.
- [\leq 18 months ONLY] The body makes antibodies to fight HIV. Antibodies from a mother with HIV can enter the baby's blood during pregnancy. The test we perform on your child today will let us know if your child is exposed to HIV. If it is positive, it does not mean your child has the virus in his/her blood, it just confirms that he/she has been exposed to HIV. We 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 within eight weeks for EID positive results and ten weeks for EID negative results. 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. [15-17 ONLY] Additionally we would like to ask your permission for your child to be contacted to take part in possible future research, if your child wants to. If you agree, your child's contact information will be retained by approved researchers and your child may be contacted for a period of up to 5 years and invited to take part in future research, if you and your child still want to. If you do not agree to be contacted for future research your child can still continue to take part in the research today.

Right to refuse and to withdraw

It is your decision about whether you will allow all your eligible children to join the survey. Your child may stop taking part at any time. Your child can refuse to answer any question. If your child does not want to take part, or if he/she decides to stop, it will not affect your child's healthcare in any way. If you refuse to have your child tested today, HIV testing and counselling services can be sought at a local facility. If you decide not to allow your child to take part or to withdraw your child at any time or if your child decides not to participate or to withdraw at any time, neither you nor your child will be penalized in any way. If your child is age 10-17, you may agree to your child completing the interview without agreeing to your child giving blood.

Risks

The risks to your child of taking part in the survey are small. For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. You and/or your child might learn that he/she has HIV. Learning that he/she has HIV may cause them to feel worried. We will talk to you/them and help you with this. We will do everything we can to keep your child's information private. However, we can't promise complete confidentiality.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about his/her health today, including if they have HIV. Your child's taking part in this research could also help us learn more about how to improve the health of children in Namibia.

Confidentiality and Access to Your Child's Health Information

The identifiable information we collect from your child will not be released outside of the study partners we have mentioned without your permission.

You can contact Mr. Nicholus Mutenda at the Ministry of Health and Social Services should you have any questions or concerns.

→ **GO TO PERMISSION STATEMENT**

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

Interviewer reads:

What language do you prefer for our discussion today?

English

Afrikaans

Damara>Nama

Oshiwambo

Otjiherero

Rukwangwali

Silozi

Other Language: Specify _____

Title of Survey: Namibia Population-Based HIV Impact Assessment**Survey Procedures**

This research survey will help us learn more about the health of children in Namibia. We plan to ask about 19,000 people, ages 15-64 years and 7,000 children, ages 0-14 years from 12, 555 households to join this survey. If your child is between the ages of 10 to 17, we will also ask him/her to agree to take part in the survey.

We will ask your 10-14 year old child to do an interview with us in private to learn what your child knows about HIV and about your child's behaviors that may put him or her at risk for HIV. We will ask your 15-17 year old child to do an interview with us in private that is the same as the interview done by adults who are 18-64 years. Your child's answers will not be shared with you. The interview will take about 40 minutes to complete. Children under 10 years of age will NOT complete an interview.

If you and/or your child agree, a trained nurse will take a small amount or about [1 mL for <18 months, 6 mL for 0-14 (about one teaspoonful), 14mL for 15-17(about one tablespoonful)] 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. The blood draw will take about 5 minutes to complete.

[0-15] 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.

[16-17] We will return the results of the HIV test to your child unless the child chooses to receive his/her results with you. We will not tell you their results but will encourage them to tell you.

[ALL] The entire testing and counseling session will take about 40 minutes.

[0-15]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 fight infections 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 weeks from now.

We will give you a referral form and information so that you and your child can consult with a doctor or nurse to learn more about his/her HIV test, CD4 count, viral load and health. You will decide when your child should be told of the test result. We will support whatever decision you make and will provide counseling on how to cope with learning that your child has HIV.

[16-17] If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and give them the result today. CD4 cells are the part of your immune system that fight infections 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 your child provided us with the name of a health facility, we can send your child's viral load results there about 8-12 weeks from now.

We will give your child 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 [0-15]/your child [16-17] to inform you of the results or how you and your child's doctor or nurse may get these results.

Storage of specimens

We would like to ask your permission to store your child's leftover blood for future research tests. These tests may be about HIV or other health issues important for the health of Namibia, 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 up to three years. Only survey staff will be able to link your child's sample to his/her contact information. 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 long-term storage of your child's blood samples, we will destroy your child's blood samples after survey-related testing has been completed.

[15-17 ONLY] Additionally we would like to ask your permission for your child to be contacted to take part in possible future research, if your child wants to. If you agree, your child's contact information will be retained by approved researchers and your child may be contacted for a period of up to 5 years and invited to take part in future research, if you and your child still want to. If you do not agree for your child to be contacted for future research your child can still continue to take part in the research today.

Right to refuse or withdraw

It is your decision about whether you will allow us to invite all your eligible children to join the survey. Your child may stop taking part at any time. If your child does not want to answer some of the questions she/he may skip them and move to the next question. If your child does not take part, or if they decide to stop, it will not affect your child's healthcare in any way and your child will not be penalized in any way. If your child does not wish to participate in the study he/she may still request HIV testing and counselling, pending the availability of supplies. If your child is age 10-17, you may agree to your child completing the interview without agreeing to your child giving blood.

Risks

The risks to your child of taking part in the survey are small. For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. You and/or your child may learn that they have HIV. Learning that they have HIV may cause some emotional discomfort. We will provide counseling to you/them on how to cope with learning that they have HIV. We will do everything we can to keep your child's information private. We cannot guarantee complete confidentiality.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about their health today. If your child tests HIV-positive you and/or your child will learn where to take your child for life-saving treatment, which is provided by the Ministry of Health and Social Services 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 Namibia.

There is no cost to you for your child being in the survey. You and your child will not be paid to be in the survey.

Confidentiality and Access to Your Health Information

We will do everything we can to keep your child's taking part in the survey private. The information we collect from your child will be identified by a number and not by your name or your child's name. Your name, your child's name, or any other identifying information will not appear on any survey results that we share with Ministry of Health, the public, or publish or present at scientific meetings. Any identifiable information we collect during the survey will not be released outside of the survey groups listed without your permission.

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

The following individuals and/or agencies will be able to look at your child's research records to help oversee the conduct of this survey:

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your child's rights as a person taking part in a research study. These include the Namibia Ministry of Health Research and Ethics Committee and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center, University of California San Francisco 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 taking part in this survey
- Study staff and study monitors

[READ ALOUD]

Your permission to allow us to use and share your child's identifiable information with the groups above will expire five (5) years after the end of the study. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact:

Nicholus Mutenda

Address: MoHSS Directorate of Special Programs, Bell Harris Building, Florence Nightingale Street, Windhoek, Namibia

Office Phone: +061 203 2436

Email: mutendan@nacop.net

If you have any questions about your rights as a participant in this survey, you can contact:

Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529]

Email: tmbeeli@mhss.gov.na

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

PERMISSION STATEMENT

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

1. Do you agree for your eligible child to be interviewed or for us to ask your child to be interviewed? 'YES' means that you give your consent/permission to have your child interviewed or for the survey staff to ask your child to be interviewed. 'NO' means that you will NOT give consent/permission to have your child interviewed or for the survey staff to ask your child to be interviewed.

_____ Yes _____ No [IF "NO" THEN STOP]

2. Do you agree for your eligible child to give blood or for us to ask your child to give blood for HIV testing and related testing? 'YES' means that you give your consent/permission to have the nurse collect a blood sample or for us to ask your child to collect a sample of his/her blood for HIV testing and related testing? 'NO' means that we will NOT collect blood nor ask your child to give blood for HIV testing and related testing.

_____ Yes _____ No [IF "NO" THEN SKIP TO PERMISSION STATEMENT 4]

3. Do you agree to have your eligible child's leftover blood sample stored or for us to ask your child to have his/her leftover blood sample stored for future research? 'YES' means that you give consent/permission for us to store your child's leftover blood samples or ask your child to store his/her blood samples for future research. 'NO' means that your child's blood samples will NOT be stored for future research nor will we ask your child to store his/her blood.

_____ Yes _____ No

4. [FOR 15-17 YEARS ONLY] Do you agree for your child to be contacted for future research? 'YES' means that you agree for your child to be contacted for future research. 'NO' means that your child won't be contacted 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 permission _____ Date: ___/___/___

Printed name of person obtaining permission _____

Survey staff ID number _____

Child's name (print) _____

Child's participant ID number _____

Permission from parent/guardian for blood draw for adolescents [10-17 years]
Study title: Namibia Population-based HIV Impact Assessment (NAMPHIA)
Flesch-Kincaid Level: 8.5

Participation duration: 40 min
Anticipated number of research participants at this site: 26,000
Sponsor/Supporter: *PEPFAR Award #1U2GGH001226*

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: [061-2032118](tel:061-2032118)

Interviewer reads:

Now I would like to ask you to give us permission to invite your son/daughter to take part in the survey. Your child's participation will help the Ministry of Health & Social Services (MoHSS) improve health services for children in Namibia.

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

Survey Procedures

[For children ages 10-14 years old]

If both you and your child agree for him/her to join the survey, we will ask your child some questions. The interview will be conducted in a private location with only the child and a survey staff member. The interview will include questions about education, HIV prevention and treatment, social behavior, and his/her experiences in the household. It will take about 20 minutes.

We would like to test your child for HIV. We are doing this for all children in the survey, whether they are sexually active or not. We will test all children regardless of their parent or guardian's HIV status. A survey staff member, who has been trained to draw blood, will take about 6 milliliters of blood (a little less than a tablespoonful) from your child's arm into two tubes and 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 and then perform the HIV test here in your home. We will give you the results and provide counseling about the results on the same day as the test. We will also discuss with you how to share the results with your child if you decide to discuss the results with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.

For all children who test positive for HIV and some randomly selected children without HIV, we will also test the amount of CD4 cells in his/her blood and give you the result on the same day as the test. CD4 cells are the part of your immune system that fights HIV infection and other diseases. We will give you a referral form and information so that your child can consult with a doctor or nurse to learn more about his/her HIV test, CD4 counts, and health.

We will also send his/her blood to a laboratory for other tests. One of these tests will be to measure his/her viral load. Viral load is the amount of HIV in the blood. If you provide us with the name of a health facility, we can send your child's viral load results there in about 8-12 weeks from now. Some of your child's blood may be sent to a laboratory out of the country for some additional tests related to HIV because there are no laboratories in Namibia that can do the tests. If we have test results that might guide your child's care or treatment, we will contact you to tell you how you and your child's doctor or nurse may get these results.

We would like to ask your permission to store your child's leftover blood for future research tests. These tests may be about HIV or other health issues important for the health of people living in Namibia. This sample will be stored for an indefinite amount of time but your child's name will be on the sample for only up to three years. Your child's leftover blood samples will not be sold or used for commercial reasons. If you do not agree to long term storage of your child's blood samples, your child can still take part in the survey. We will destroy your child's blood samples after survey-related testing has been completed. If your child is age 10-17, you may agree to your child completing the interview without agreeing to your child giving blood.

[For children ages 15 years old]

If both you and your child agree for him/her to join the survey, we will ask your child some questions. The interview will be conducted in private with only the child and a survey staff member. The interview questions will be the same as the ones that we ask adults who agree to take part in the survey. The questions will be about what kind of work they do, whether they have had any experience with health services, and their social and sexual behaviors. It will take about 40 minutes.

We would like to test your child for HIV. We are doing this for all children in the survey, whether they are sexually active or not. We will test all children regardless of their parent or guardian's HIV status. A survey staff member, who has been trained to draw blood, will take about 14 milliliters of blood (less than 1 tablespoonful) from your child's arm into two tubes and 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 and then perform the HIV test here in your home. We will give you the results and provide counseling about the results on the same day as the test. We will also discuss with you how to share the results with your child if you decide to discuss the results with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.

For all children who test positive for HIV and some randomly selected children without HIV, we will also test the amount of CD4 cells in his/her blood and give you the result on the same day as the test. CD4 cells are the part of your immune system that fights HIV infection and other diseases. We will give you a referral form and information so that your child can consult with a doctor or nurse to learn more about his/her HIV test, CD4 counts, and health.

We will also send his/her blood to a laboratory for other tests. One of these tests will be to measure his/her viral load. Viral load is the amount of HIV in the blood. If you provide us with the name of a health facility, we can send your child's viral load results there in about 8-12 weeks from now. Some of your child's blood may be sent to a laboratory out of the country for some additional tests related to HIV because there are no laboratories in Namibia that can do the tests. If we have test results that might guide your child's care or treatment, we will contact you to tell you how you and your child's doctor or nurse may get these results.

We would like to ask your permission to store your child's leftover blood for future research tests. These tests may be about HIV or other health issues important for the health of people living in Namibia. This sample will be stored for an indefinite amount of time but your child's name will be on the sample for only up to three years. Your child's leftover blood samples will not be sold or used for commercial reasons. If you do not agree to long term storage of your child's blood samples, your child can still take part in the survey. We will destroy your child's blood samples after survey-related testing has been completed.

[Children 15-17 years old]

Additionally, we would like to ask your permission for your child to be contacted take part in possible future research, if your child wants to. If you agree, your child's contact information will be retained by approved researchers and your child may be contacted for a period of up to 5 years and invited to take part in future research, if you and your still want to. If you do not agree for your child to be contacted for future research your child can still continue to take part in the research today.

[Children 16-17 years old]

If both you and your child agree for him/her to join the survey, we will ask your child some questions. The interview will be conducted in private with only the child and a survey staff member. The interview questions will be the same as the ones that we ask adults who agree to take part in the survey. The questions will be about what kind of work they do, whether they have had any experience with health services, and their social and sexual behaviors. It will take about 40 minutes.

We would like to test your child for HIV. We are doing this for all children in the survey, whether they are sexually active or not. We will test all children regardless of their parent or guardian's HIV status. A survey staff member, who has been trained to draw blood, will take about 14 milliliters of blood (less than 1 tablespoonful) from your child's arm into two tubes and 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 and then perform the HIV test here in your home. We will give the results to your child and provide counseling about the results on the same day as the test. We will also discuss with him/her how to share the results with you if he/she decides to discuss the results with you. The entire testing and counseling session will take about 40 minutes.

For all children who test positive for HIV and some randomly selected children without HIV, we will also test the amount of CD4 cells in his/her blood and give your child the result on the same day as the test. CD4 cells are the part of his/her immune system that fights HIV infection and other diseases. We will give him/her a referral form and information so that he/she can consult with a doctor or nurse to learn more about his/her HIV test, CD4 counts, and health.

We will also send his/her blood to a laboratory for additional tests. One of these tests is to measure his/her viral load. Viral load is the amount of HIV in the blood. If he/she provides us with the name of a health facility, we can send his/her viral load results there in about 8-12 weeks from now. Some of your child's blood will be sent to a laboratory out of the country for some additional tests related to HIV because there are no laboratories in Namibia that can do the tests. If we have test results that might guide your child's care or treatment, we will contact him/her to tell him/her how he/she and a doctor or nurse at the preferred health facility may get these results.

We would like to ask your permission to store your child's leftover blood for future research tests. These tests may be about HIV or other health issues important for the health of people living in Namibia This sample will be stored for an indefinite amount of time but your child's name will be on the sample for

only up to three years. Your child's leftover blood samples will not be sold or used for commercial reasons. If you do not agree to long term storage of your child's blood samples, your child can still take part in the survey. We will destroy your child's blood samples after survey-related testing has been completed.

Conditions of the study: Taking part in the survey is voluntary and you or your child will not be given money or gifts for taking part. Your child can leave the survey at any time for any reason. If you or your child decides to leave the survey, 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.

Costs for being in the survey: There is no cost to you or your child for being in the survey, apart from your time.

Use of survey findings

The overall survey findings, which will not contain any personal information that would identify you or your child, will be shared with the Government of Namibia and Ministry of Health and Social Services. This information will be used to improve health care for the people of Namibia. Finally, the findings will be shared with international partners to assist in the delivery of health services all over the world.

Right to refuse and to withdraw

It is your decision about whether you will allow us to invite your child to join the survey. Your child does not have to be in the survey or give blood. You or your child may stop taking part at any time. If your child is in the age group interviewed and does not want to answer some of the questions he/she may skip them and move to the next question. If your child does not take part, it will not affect your child's healthcare in any way. If you decide not to allow your child to take part or to withdraw your child at any time or your child decides not to participate or to withdraw at any time, neither you nor your child will be penalized in any way.

You may agree for your child's blood to be tested in relation to this survey, but not agree for the blood to be stored for future research tests. Your child's taking part is voluntary. If you or your child decides not to take part, it will not affect your healthcare in any way.

Risks

During the interview, your child may feel uncomfortable answering some of the questions. We do not wish this to happen, and your child does not have to answer questions he/she feels are too personal or that make them feel uncomfortable.

The risks to your child from having his/her blood drawn are very small. They include brief pain from the needle stick, bruising, lightheadedness, bleeding and rarely, infection where the needle enters the skin. The survey staff member who will take his/her blood has received training on how to draw blood. If he/she has any discomfort or any of the symptoms we've mentioned above, please let us know, and especially if there is any bleeding or swelling.

[For children 16-17] Your child may learn that he/she is HIV positive. Learning that he/she has HIV may cause some emotional and/or psychological distress. He/she will receive counseling on how to cope with learning that he/she has HIV. If he/she tests HIV positive, we will help identify where to go and explain the options available for care and treatment. Care and treatment is available at government facilities free of charge.

[For children 10 years-15 years] You may learn that your child is HIV positive. Learning that your child has HIV may cause you some emotional and/or psychological distress. You will decide when and where to give your child the test results. We will provide you with counseling on how to cope with learning that your child has HIV. If your child tests HIV positive, we will help you identify where to go and explain the options available for care and treatment. Care and treatment is available at government facilities free of charge. You will decide when your child should be told of the test result. We will support whatever decision you make and will provide counseling on how to cope with learning that your child has HIV.

Benefits

[For children 10-15] 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 as part of the survey you will learn his/her HIV status. 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-positive status and you will learn where to take your child for HIV services. HIV care and treatment provided by government facilities is free of charge. 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 doctor or nurse judge how well the treatment is working. If your child tests HIV negative, you will learn about what you can do to keep your child HIV negative. Your child's taking part in this research could help us learn more about children and HIV in Namibia. It can also help us learn about how HIV prevention and treatment programs are working in the country. You and your child's taking part is important, even if you already know that your child is HIV negative or positive.

[For children 16-17] The main benefit for your child to be in the survey is the chance for your child to learn more about his/her health today. If your child tests as part of the survey he/she will learn his/her HIV status. Some children who take part will test HIV positive. If this happens to your child, the benefit is that he/she will learn about his/her HIV-positive status and he/she will learn where to go for HIV services. HIV care and treatment provided by government facilities is free of charge. If you or your child already knows that he/she is HIV positive and he/she is on treatment, the CD4 and viral load tests can help his/her doctor or nurse judge how well the treatment is working. If your child tests HIV negative, your child will learn about what he/she can do to keep himself/herself HIV negative. Your child's taking part in this research could help us learn more about children and HIV in Namibia. It can also help us learn about how HIV prevention and treatment programs are working in the country. You and your child's taking part is important, even if you already know that your child is HIV negative or positive.

Confidentiality

We will do everything we can to keep your child's taking part in the survey confidential. The information we collect from you and your child in this computer will be identified by a number and not by your name or your child's name. Your child's name and other personal information will be stored in a confidential manner, accessible only by survey staff. Your name and your child's name will not appear when we share survey results. Only survey staff will have access to the data during the survey. However, in accordance with the Children's Protection and Welfare Act, we are required to report any instances of children in imminent danger to the appropriate authority.

Your child may choose to tell you about the interview but he/she does not have to do this. We will not be sharing with you responses given by your child.

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 which oversee the conduct of this survey to ensure that we are protecting your rights as a person taking part, the staff members include:
 - Namibia MoHSS Research Steering Committee
 - The Centers for Disease Control and Prevention (CDC; Atlanta, USA)
 - Columbia University Medical Center
 - University of California San Francisco
 - Westat (a statistical survey research organization).
- The U.S. Office of Human Research Protections may examine the study records to ensure we are protecting your rights as a person taking part in this survey.
- Selected survey staff and survey monitors.

This survey has received approval from the Namibia MoHSS Research Steering Committee, The Centers for Disease Control and Prevention, and the Institutional Review Boards of Columbia University Medical Center, University of California San Francisco and of Westat.

Any identifiable information we collect during the survey will not be released outside of the survey groups listed without your permission. Your permission to allow us to use and share your identifiable information with the groups above will expire five (5) years after the end of the survey. You can leave the survey at any time for any reason. If you want to leave the survey or if you have any questions about the survey or feel that you have been harmed by taking part, you can contact:

Nicholus Mutenda

Address: MoHSS Directorate of Special Programs, Bell Harris Building, Florence Nightingale Street, Windhoek, Namibia

Office Phone: +061 203 2436

Email: mutendan@nacop.net

If you have any questions about your child’s rights as a participant in this survey, you can contact:

Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529]

Email: tmbeeli@mhss.gov.na

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 consent form.

1. Do you agree for us to ask your child to be interviewed? ‘YES’ means that you give your permission to have the survey staff ask your child to take part in the interview, and to participate if the child agrees. ‘NO’ means that you will NOT give permission for your child to be interviewed.

_____Yes _____No [IF “NO” THEN STOP]

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 to have the trained survey staff to ask your child to collect a sample of your child's blood for HIV and related testing, and to collect the blood and perform the tests if the child agrees. 'NO' means that your child will NOT give blood for HIV testing and related testing.
_____Yes _____No [IF "NO" THEN SKIP TO PERMISSION STATEMENT]

3. Do you agree to have your eligible child's leftover blood sample stored or for us to ask your child to have his/her leftover blood sample stored for future research? 'YES' means that you give permission for us to ask your child to allow us store leftover blood samples for future research, and to store it if the child agrees. 'NO' means that your child's blood samples will NOT be stored for future research.
_____Yes _____No

4. [FOR 15-17 YEARS ONLY] Do you agree for your child to be contacted for your child to participate in future research? 'YES' means that you agree for your child to be contacted for future research. 'NO' means that your child won't be contacted for future research.
_____Yes _____No

Parent/guardian signature or mark _____ Date: __/__/__

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 _____

Child's name (print) _____

Consent for Blood Draw [Ages 18-64]

Participation duration: 40 min

Anticipated number of research participants at this site: 26,000

Sponsor/Supporter: PEPFAR Award #1U2GGH001226

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: [061-2032118](tel:061-2032118)

Study title: Namibia Population-based HIV Impact Assessment (NAMPHIA)

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

My colleague is _____, who is a nurse trained in drawing blood. They 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. We are also asking people if we can use their blood later in the laboratory for future testing.

Blood draw and HIV testing procedures

If you agree to the HIV testing and blood draw, we will take a small amount (14ml) or about 1 tablespoon of blood from your arm. If it is not possible to take blood from your arm, then we will try to take a few drops of blood from your finger. We will give you the results and provide counseling today. The testing and counseling session will take about 40 minutes.

If you test positive for HIV, we will measure the amount of CD4 cells in your blood which measures how well your body can fight HIV infections and other diseases. We will also test the CD4 of some people without HIV. You will get your CD4 result today. We will also send your blood to a laboratory to measure your viral load which measures the amount of HIV in your blood. We will send your viral load result to a health facility in about 8-12 weeks from now. We will give you a referral form and information so that you can consult a nurse or doctor to learn more about your HIV, CD4 and viral load test results and your health.

We will also do other additional tests related to HIV. If we have test results that might help guide your care or treatment, we will contact you to tell you how you and your doctor or nurse may get these results.

Storage of specimens

We would also like your permission to store your leftover blood for future research tests. These tests may be about health issues important in Namibia, such as nutrition or immunization. This will help improve the health of Namibians. This sample will be stored for an indefinite amount of time but your name will be on the sample for three years.

Your leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your blood samples, we will destroy your leftover blood samples after survey-related testing has been completed.

Right to refuse or to withdraw

You do not have to give blood and you are free to change your mind even after you have started the blood draw. If you decide not to take part, it will not affect your healthcare in any way. If you decide not to take part or to withdraw at any time, you will not be penalized in any way.

Risks

The risks in drawing blood are very small. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. If you have any discomfort, bleeding or swelling at the site, please contact the study staff. You may learn that you are infected with HIV. Learning that you have HIV can cause some emotional discomfort. You will receive counselling on how to cope with learning that you are HIV positive. We will also tell you where you can go for care and treatment, which is provided by the Ministry of Health and Social Services for free. We will do everything we can to keep your test results private, but we cannot guarantee total confidentiality.

Benefits

The main benefit for you to be in the survey is the chance to learn more about your health today. If you test HIV-negative, you will learn about what you can do to stay HIV-negative. If you test HIV-positive, you will learn your HIV status and where to go for free treatment. If you already know that you are HIV-positive and you are on HIV treatment, the CD4 and viral load tests can help your nurse or doctor judge how well your treatment is working. Your taking part in this research could help us learn more about HIV in Namibia and how HIV prevention and treatment programs are working.

Confidentiality, Privacy and Access to Your Health Information

The blood we collect from you will be identified by a number and not by your name. This means that besides you, no one else will be able to know your test results except the people working on the survey. Your name or any other identifying information will not appear on any survey results that we share with Ministry of Health and Social Services, the public, or publish or present at scientific meetings. Any identifiable information we collect during the survey will not be released outside of the survey groups listed without your permission.

[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 participant. These include the Ministry of Health and Social Services Research Ethics Committee and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center, University of California San Francisco and Westat (a statistical survey research organization)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

Your permission to allow us to use and share your identifiable information with the groups above will expire five (5) years after the end of the survey. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact:

Nicholus Mutenda

Address: MoHSS Directorate of Special Programs, Bell Harris Building, Florence Nightingale Street, Windhoek, Namibia

Office Phone: +061 203 2436

Email: mutendan@nacop.net

If you have any questions about your rights as a participant in this survey, you can contact:

Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529]

Email: tmbeeli@mhss.gov.na

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 NO THEN STOP]

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 _____

Assent for Individual Interview [Ages 10-14]

[DO NOT READ BELOW]

Study title: Participation duration: 20 min

Anticipated number of research participants at this site: 26,000

Sponsor/Supporter: PEPFAR Award #1U2GGH001226

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: [061-2032118](tel:061-2032118)

Namibia Population-based HIV Impact Assessment (NAMPHIA)

Interviewer reads:

What language do you prefer to use for this discussion?

- English
- Afrikaans
- Damara>Nama
- Oshiwambo
- Otjiherero
- Rukwangwali
- Silozi
- Other Language

Hello. My name is _____. We have talked to your parents/guardian and they said it was okay to invite you to take part in a survey. Surveys help us learn new things.

This form talks about our survey and the choice that you have to take part in it. We want you to ask us any questions that you have. You can ask questions any time.

Why are we doing this survey?

This survey is being conducted by the Ministry of Health and Social Services and its partners. We are doing this survey to help us learn more about the health of children in Namibia. We plan to ask about 7,000 children to join this survey. A survey is a way to learn about something by interviewing and testing many people. We would like to invite you to join this survey.

This form might have some words that you may not have heard before. Please ask us to explain anything that you do not understand. You can ask questions at any time.

What would happen if I join this survey?

If you decide to join the survey, here is what would happen:

- We will ask you questions about your age, what you know about HIV, and some of your behaviors.

- The interview will take place in private here in your house or an area around your house. We will not tell your parents about any of your answers.
- The interview will take about 20 minutes.
- After we ask you the questions, we will also ask you if it is okay to take some of your blood to test for HIV and to store it for future studies.
- You may agree to the interview without agreeing to give your blood.

Could bad things happen if I join this survey?

You may feel uncomfortable answering some of the questions we will ask. You can refuse to answer any question or stop the interview at any time. We will do everything we can to keep your information private.

Could the survey help me?

You will help figure out ways to help children and learn more about health in Namibia.

What else should I know about this survey?

If you don't want to be in the survey, you don't have to be. Nobody will get upset with you if you do not want to join the survey.

It is also OK to say 'yes' and change your mind later. If you want to stop, please tell us.

We will not tell other people that you are in this survey and will not share information about you to anyone who does not work in the survey study. Any information about you will have a number on it instead of your name.

The following individuals and/or agencies will be able to look at your research records:

- Study staff and study monitors
- Staff members from groups that protect your rights to ensure that we are protecting your rights

If you have any questions about the survey or feel that you have been harmed by taking part or no longer want to participate in the survey, you can contact:

[DO NOT READ ALOUD]

Nicholus Mutenda

Address: MoHSS Directorate of Special Programs, Bell Harris Building, Florence Nightingale Street, Windhoek, Namibia

Office Phone: +061 203 2436

Email: mutendan@nacop.net

If you have any questions about your rights as a participant in this survey, you can contact:

Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529]

Email: tmbeeli@mhss.gov.na

You should also know that you would not be paid to be in the study. You can ask questions any time. Ask us any questions you have. Take the time you need to make your choice.

Do you want to ask me anything?

If you want to be asked questions after we talk, please write your name below. We will write our name too. This shows we talked about the survey and that you want to take part.

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

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 Interview for Minors [15-17]

[DO NOT READ BELOW]

Study title: Namibia Population-Based HIV Impact Assessment (NAMPHIA)

Participation duration: 40 min

Anticipated number of research participants at this site: 26,000

Sponsor/Supporter: PEPFAR Award #1U2GGH001226

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: [061-2032118](tel:061-2032118)

Interviewer reads:

What language do you prefer for our discussion today?

- English
- Afrikaans
- Damara>Nama
- Oshiwambo
- Otjiherero
- Rukwangwali
- Silozi
- Other Language: Specify _____

Hello. My name is _____. We are doing a research study throughout Namibia to learn more about HIV in the country. [IF NOT EMANCIPATED] 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: Namibia Population-Based HIV Impact Assessment

Purpose of the survey

This survey is being conducted by the Ministry of Health and Social Services and its partners. This survey will help us learn more about the health of young people in Namibia. It will also tell us about young people's risk for getting HIV. We plan to ask about 19,000 people, ages 15-64 years and 7,000 children, ages 0-14 years from 12, 555 households to join this survey.. A survey is a way to learn new information about something by interviewing and testing many people. If you join, your participation will help the Ministry of Health and Social Services (MoHSS) to make health services better in the country.

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

Survey Procedures

If you agree to join, we will ask you questions about your age, your knowledge about HIV, and your behavior. We will ask you to answer these question without having others present. The interview will be done in a private location and will take about 40 minutes.

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

If you agree, your contact information will be retained by approved researchers and you may be contacted for a period of up to 5 years and invited to take part in future research, if you still want to. If you do not agree to be contacted for future research, you can still continue to take part in the research today.

Right to refuse or withdraw

You do not have to take part in the survey. If you choose to join the survey, you may change your mind at any time and stop participating. If you decide not to take part, it will not affect your healthcare in any way and nobody will get upset with you. If you decide not to take part or to withdraw at any time, you will not be penalized in any way.

Risks and benefits

The risks in being in the survey are small. We will do everything we can to keep your information private. However, we cannot promise complete confidentiality. You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question. If you participate, you will get free testing for HIV in your own home. Taking part in this research will help us learn more about HIV in Namibia.

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

Confidentiality, Privacy and Access to Your Health Information

We will do everything we can to keep your participation in the survey and your answers private. We will not tell your family about any of your responses. Your name and signed consent form will be kept separate from your answers to the questions, which will only be identified by a number. Your name or any other identifying information will not appear on any survey results that we share with Ministry of Health and Social Services, the public, or publish or present at scientific meetings. The identifiable information we collect during the survey will not be shared outside of the survey groups listed without your permission.

The following individuals and/or agencies will be able to look at your research records:

[DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a participant. These include the Ministry of Health and Social Services Research Committee and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center, University of California, San Francisco and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

Your permission to allow us to use and share your identifiable information with the groups above will expire five years after the end of the survey. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact:

Nicholus Mutenda

Address: MoHSS Directorate of Special Programs, Bell Harris Building, Florence Nightingale Street, Windhoek, Namibia

Office Phone: +061 203 2436

Email: mutendan@nacop.net

If you have any questions about your rights as a participant in this survey, you can contact:

Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529]

Email: tmbeeli@mhss.gov.na

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 [IF NO THEN STOP]

2. Do you agree to be contacted for future research? 'YES' means that you agree to be contacted for future research. 'NO' means that you won't be contacted for future research.

_____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 _____

Assent for blood draw [10-14]

[DO NOT READ BELOW]

Study title: Namibia Population-based HIV Impact Assessment (NAMPHIA)

Participation duration: 40 min

Anticipated number of research participants at this site: 26,000

Sponsor/Supporter: PEPFAR Award #1U2GGH001226

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: [061-2032118](tel:061-2032118)

Hello. My name is _____. I will give you information about blood testing in this survey.

As a part of this survey, we are giving people a chance to learn if they have HIV. We are also asking people if we can keep some of their blood for future testing.

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

What would happen if I agree to get blood testing?

If you agree to testing, here is what would happen:

- A trained nurse will use a needle to take about a teaspoon (6ml) of your blood from your arm. If it's not possible to take blood from your arm, then we will try to take a few drops of blood from your finger. Then we will test your blood for HIV here in your home.
- It will take about 40 minutes to do the test and to talk to 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 young people without HIV.

If you test positive for HIV, we will send your blood to a laboratory to measure the amount of HIV in your blood. We will ask you if we can use some of your blood for future testing. These tests may be about HIV or other health issues important in Namibia. This sample will be stored for an indefinite amount of time but your name will be on the sample for three 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 your parents to feel worried or upset. We will talk to you and your parents/guardian and help you with this. We will do everything we can to keep your information private.

Could getting tested for HIV help me?

If you do not have HIV, you can learn about what you can do to stay that way. If you have HIV, we will tell 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 Namibia.

There is no cost to you or your parent/guardian for you being in the survey. You and your parent/guardian will not be paid for you to be in the survey.

What else should I know about this survey?

If you do not want to get a blood test, you do not have to. Nobody will get upset. You can say 'yes' and change your mind later. If you want to stop, please tell us.

We will not tell other people that you are in this survey and will not share information about you to anyone who does not work on the survey. Any information about you will have a number on it instead of your name.

We will not share your results with anyone else besides you and your parent/guardian. We will give your results to your parent/guardian and they would decide on the best time to tell you the result. If your parent wants us to tell you about your test results, we will talk with you about any questions or worries that you might have about the results.

The following individuals and/or agencies will be able to look at your research records:

- Survey staff and survey monitors
- Staff members from groups that protect your rights to ensure that we are protecting your rights

If you have any questions about the survey or feel that taking part has harmed you or no longer want to participate in the survey, you can contact:

[DO NOT READ ALOUD]

Nicholus Mutenda

Address: MoHSS Directorate of Special Programs, Bell Harris Building, Florence Nightingale Street, Windhoek, Namibia

Office Phone: +061 203 2436

Email: mutendan@nacop.net

If you have any questions about your rights as a participant in this survey, you can contact:

Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529]

Email: tmbeeli@mhss.gov.na

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 NO THEN STOP]
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 minors ages 15-17

Participation duration: 40 min

Anticipated number of research participants at this site: 26,000

Sponsor/Supporter: PEPFAR Award #1U2GGH001226

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: [061-2032118](tel:061-2032118)

Consent for blood draw [15-17]

[DO NOT READ BELOW]

Study title: Namibia Population-based HIV Impact Assessment (NAMPHIA)

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

My colleague is _____, who is a nurse trained in drawing blood. They will also be providing you with information about testing options in this survey.

As a part of this survey, we are giving those that take part an opportunity to learn about their HIV status. We are also asking people if we can use their blood later in the laboratory for future testing.

Blood draw and HIV testing procedures

If you agree to the HIV testing and blood draw, we will take a small amount or about 1 tablespoon (14ml) 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.

[IF AGE 15] We will give your parents the results and provide counseling today. You may be present when your parent/guardian receives your results, but only if your parent/guardian has given permission. 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 which measures how well your body can fight HIV infections and other diseases. Your parents will get your CD4 result today. We will also send your blood to a laboratory to measure your viral load which measures the amount of HIV in your blood. We will send your viral load result to a health facility in about 8-12 weeks from now. We will give your parents a referral form and information so that you can consult a nurse or doctor to learn more about your test results and your health. We will also do other additional tests related to HIV. If we have test results that might help guide your care or treatment, we will contact your parents to tell you how your parents and your doctor or nurse may get these results.

[IF AGE 16-17] We will give you the results and provide counseling today. The testing and counseling session will take about 40 minutes. If you give us permission, we can give your results with your parent/guardian present. 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. You will get your CD4 result today. We will also send your blood to a laboratory to measure your viral load which measures the amount of HIV in your blood. We will send your viral load result to a health facility in about 8-12 weeks from now. We will give you parents a referral form and information so that you can consult a nurse or

doctor to learn more about your test results and your health. We will also do other additional tests related to HIV. If we have test results that might help guide your care or treatment, we will contact you to tell you how you and your doctor or nurse may get these results.

Storage of specimens

We would also like your permission to store your leftover blood for future research tests. These tests may be about health issues important in Namibia, such as nutrition or immunization. This will help improve the health of Namibians.

This sample will be stored for an indefinite amount of time but your name will only be on the sample for three years.

Your leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your blood samples, we will destroy your blood samples after survey-related testing has been completed.

Right to refuse or to withdraw

You do not have to give blood and you are free to change your mind even after you have started the blood draw. If you don't want to give blood, please tell us. If you decide not to take part, it will not affect your healthcare in any way. If you decide not to take part or to withdraw at any time, you will not be penalized in any way.

Risks

The risks in drawing blood are very small. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. If you have any discomfort, bleeding or swelling at the site, please contact the study staff.

[IF AGE 15]: Your parents may learn that you are infected with HIV. Learning that you have HIV can cause some emotional distress. Your parents will receive counselling on how to cope with learning that you are HIV positive. We will also tell your parents where you can go for care and treatment, which is provided by the Ministry of Health and Social Services for free. We will do everything we can to keep your test results private, but we cannot guarantee total confidentiality.

[IF AGE 16-17]: You may learn that you are infected with HIV. Learning that you have HIV can cause some emotional distress. You will receive counselling on how to cope with learning that you are HIV positive. We will also tell you where you can go for care and treatment, which is provided by the Ministry of Health and Social Services for free. We will do everything we can to keep your test results private, but we cannot guarantee total confidentiality.

Benefits

The main benefit for you to be in the survey is the chance to learn more about your health today. If you test HIV-negative, you will learn about what you can do to stay HIV-negative. If you test HIV-positive, you will learn your HIV status and where to go for free treatment. If you already know that you are HIV-positive and you are on HIV treatment, the CD4 and viral load tests can help your nurse or doctor judge how well your treatment is working. Your taking part in this research could help us learn more about HIV in Namibia and how HIV prevention and treatment programs are working.

Confidentiality, Privacy and Access to Your Health Information

The blood we collect from you will be identified by a number and not by your name. This means that besides you, no one else will be able to know your test results except the people working on the survey.

[IF AGE 15] We will tell your parents the results of the test. Any identifiable information we collect during the survey will not be released outside of the survey groups listed without your permission.

[IF AGES 16-17] We will not tell your parents the results of the test unless you ask us to. Any identifiable information we collect during the survey will not be released outside of the survey groups listed without your permission.

[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 participant. These include the MoHSS Research Ethics Committee in Namibia and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center, University of California San Francisco and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

Your permission to allow us to use and share identifiable information with the groups above will expire five years after the end of the survey. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact:

Nicholus Mutenda

Address: MoHSS Directorate of Special Programs, Bell Harris Building, Florence Nightingale Street, Windhoek, Namibia

Office Phone: +061 203 2436

Email: mutendan@nacop.net

If you have any questions about your rights as a participant in this survey, you can contact:

Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529]

Email: tmbeeli@mhss.gov.na

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 agree to be in this survey. 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 NO THEN STOP]

- 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 _____

Participation duration: 40 min

Anticipated number of research participants at this site: 25,865

Sponsor/Supporter: PEPFAR Award #1U2GGH001226

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: [061-2032118](tel:061-2032118)

Study title: Namibia Population-based HIV Impact Assessment (NAMPHIA)

Consent to Share Contact Information of NAMPHIA Participants with Ministry of Health & Social Services or their Partner Organizations (Ages 16-64).

Purpose of consent

You had a positive HIV test today. We have provided you with a referral form to bring to a health clinic and seek HIV treatment and care. We would like to help you in accessing the health care that you need. If you agree, we may be able to provide your contact information and HIV test results to health workers or counselors from the Ministry of Health and Social Services (MoHSS) or to a partner that the MoHSS work with. 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 experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

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

If you agree for your information to be shared and to be contacted, we will 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 about confidentiality?

Your HIV test results and your contact information will not be shared with any other parties aside from what was specified in the other consent forms, and with this support organization. They will also do their utmost to maintain your confidentiality. However, we cannot guarantee complete confidentiality.

What are the potential risks?

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

What are the potential benefits?

A trained health worker or counselor will assist you in accessing the health care that you need.

Who should you contact if you have questions?

If you want to leave the study, have any questions about the survey, or feel that taking part has harmed you, you should contact:

Mr. Nicholus Mutenda

Address: MoHSS Directorate of Special Programs.
Bell Harris Building, Florence Nightingale Street Windhoek
Phone: 061 203 2436
Email: mutendan@nacop.net

If you have any questions about your rights as a participant in this survey, you can contact:

Mr. Thomas Mbeeli
Address: MoHSS Directorate for Policy Planning and Human Resource Development,
Harvey Street Ministerial Building. Windhoek.
Phone: 061 203 2529
Email: tmbeeli@mhss.gov.na

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 MoHSS or a partner that the MoHSS 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

(If "No" then STOP)

2. If yes, do you agree to be contacted by? **[MUST SELECT AT LEAST ONE]**

SMS _____ Yes _____ No
Phone call _____ Yes _____ No
In person _____ Yes _____ No

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

Printed name of participant _____

Participant ID number _____

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

Printed name of person obtaining consent _____

Survey staff ID number _____

Participation duration: 40 min

Anticipated number of research participants at this site: 25,865

Sponsor/Supporter: PEPFAR Award #1U2GGH001226

Principal Investigator: Nicholus Mutenda, Control Health Programme Officer, Ministry of Health and Social Services, Directorate for Special Programs

Phone Number: 061-2032436

Co-Investigator/Study Coordinator: Karen Banda, Study Coordinator, University of California San Francisco Global Programs for Research and Training (Namibia)

Phone Number: [061-2032118](tel:061-2032118)

Study title: Namibia Population-based HIV Impact Assessment (NAMPHIA)

Consent to from Parent or Guardian to Share Contact Information of NAMPHIA Participants [aged 0-15] with Ministry of Health & Social Services or their Partner Organizations.

Purpose of consent

Your child/teenager had a positive HIV test today. We have provided you with a referral form to bring him/her to a health clinic and seek HIV treatment and care. We would like to help you in accessing the health care that your child needs. If you agree, we may be able to provide your contact information and HIV test results to health workers or counselors from the Ministry of Health and Social Services (MoHSS) or to a partner that the MoHSS work with. This counselor will contact you and your child to talk to you about HIV and help you go for HIV care. Anyone who is provided with your details will be experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

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

If you agree for your child's information to be shared and to be contacted, we will provide you and your child's name, phone number (if you provided it to us) and address to those counselors to provide you and your child with support. The counselor can contact you by SMS, phone or in person.

What about confidentiality?

Your child's HIV test results and your contact information will not be shared with any other parties aside from what was specified in the other consent forms, and with this support organization. They will also do their utmost to maintain your confidentiality. However, we cannot guarantee complete confidentiality.

What are the potential risks?

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

What are the potential benefits?

A trained health worker or counselor will assist your child in accessing the health care that he/she needs.

If your child is less than 18 months they will need to have another test as soon as possible. You need to take your child to a health facility as soon as possible and you should not wait for the result from us, or for someone else to contact you.

Who should you contact if you have questions?

If you want your child to leave the study, have any questions about the survey, or feel that you or your child have been harmed by taking part, you should contact:

Mr Nicholus Mutenda:

Address: MoHSS Directorate of Special Programs. Bell Harris Building, Florence Nightingale Street Windhoek

Phone: 061 203 2436

Email: mutendan@nacop.net

If you have any questions about your child’s rights as a participant in this survey, you can contact:

Mr Thomas Mbeeli

Address: MoHSS Directorate for Policy Planning and Human Resource Development, Harvey Street Ministerial Building. Windhoek.

Phone: 061 203 2529]

Email: tmbeeli@mhss.gov.na

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 MoHSS or a partner that MoHSS works with, who may contact you and your child to assist and support 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

(If “No” then STOP)

- 2. If yes, do you agree to be contacted by? [MUST PICK ONE]

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 _____

This project is supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through CDC under the terms of cooperative agreement #U2GGH001226. The findings and conclusions are those of the authors and do not necessarily represent the official position of the funding agencies.

