

# MALAWI POPULATION-BASED HIV IMPACT ASSESSMENT MPHIA 2015-2016

**FINAL REPORT**  
OCTOBER 2018



# Malawi Population-based HIV Impact Assessment (MPHIA) 2015-2016

## MPHIA 2015-2016 COLLABORATING INSTITUTIONS

Ministry of Health, Malawi  
The United States President's Emergency Plan for AIDS Relief (PEPFAR)  
The United States Centers for Disease Control and Prevention (CDC)  
Centre for Social Research (CSR), Chancellor College, University of Malawi  
National AIDS Commission, Malawi  
National Statistical Office, Malawi  
College of Medicine - Johns Hopkins Project  
The Joint United Nations Programme on HIV/AIDS (UNAIDS), Malawi  
Riders for Health, Malawi  
Statistical Center for HIV/AIDS Research and Prevention (SCHARP)  
WESTAT  
ICAP at Columbia University

## 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, Malawi. Malawi Population-Based HIV Impact Assessment (MPHIA) 2015-2016: Final Report. Lilongwe, Ministry of Health. October 2018.

## ACCESS THIS REPORT ONLINE

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

## CONTACT INFORMATION

Permanent Secretary  
Ministry of Health  
P.O. Box 30377  
Lilongwe  
Malawi

# CONTENTS

|                  |   |    |
|------------------|---|----|
|                  | <b>Glossary of Terms</b>                                  | 6  |
|                  | <b>List of Abbreviations</b>                              | 8  |
|                  | <b>List of Tables and Figures</b>                         | 10 |
|                  | <b>Foreword</b>   | 14 |
|                  | <b>Executive Summary</b>                                  | 15 |
| <b>Chapter 1</b> | <b>Introduction</b>                                       | 18 |
| 1.1              | Background  | 18 |
| 1.2              | Overview of MPHIA 2015-2016                               | 18 |
| 1.3              | Specific Objectives                                       | 18 |
| <b>Chapter 2</b> | <b>Survey Design, Methods, and Response Rates</b>         | 20 |
| 2.1              | Sample Frame and Design                                   | 20 |
| 2.2              | Eligibility Criteria, Recruitment, and Consent Procedures | 21 |
| 2.3              | Survey Implementation                                     | 21 |
| 2.4              | Field-Based Biomarker Testing                             | 23 |
| 2.5              | Laboratory-Based Biomarker Testing                        | 25 |
| 2.6              | Data Processing and Analysis                              | 29 |
| 2.7              | Response Rates  | 30 |
| 2.8              | References  | 31 |
| <b>Chapter 3</b> | <b>Survey Household Characteristics</b>                   | 32 |
| 3.1              | Key Findings  | 32 |
| 3.2              | Background  | 32 |
| 3.3              | Household Composition                                     | 32 |
| 3.4              | Prevalence of HIV-Affected Households                     | 35 |
| <b>Chapter 4</b> | <b>Survey Respondent Characteristics</b>                  | 38 |
| 4.1              | Key Findings  | 38 |
| 4.2              | Background  | 38 |
| 4.3              | Demographic Characteristics of the Adult Population       | 38 |
| 4.4              | Demographic Characteristics of the Pediatric Population   | 40 |
| <b>Chapter 5</b> | <b>HIV Incidence</b>                                      | 41 |
| 5.1              | Key Findings  | 41 |
| 5.2              | Background  | 41 |
| 5.3              | HIV Incidence Among Adults                                | 41 |
| 5.4              | Gaps and Unmet Needs                                      | 43 |
| 5.5              | References  | 43 |

|                   |   |    |
|-------------------|---|----|
| <b>Chapter 6</b>  | <b>HIV Prevalence</b>   | 44 |
| 6.1               | Key Findings  | 44 |
| 6.2               | Background  | 44 |
| 6.3               | Adult HIV Prevalence by Demographic Characteristics                                 | 44 |
| 6.4               | Adult HIV Prevalence by Age and Sex   | 48 |
| 6.5               | Adult HIV Prevalence by Zone  | 49 |
| <b>Chapter 7</b>  | <b>HIV Testing</b>  | 51 |
| 7.1               | Key Findings  | 51 |
| 7.2               | Background  | 51 |
| 7.3               | Self-Reported HIV Testing Among Adults  | 51 |
| 7.4               | Self-Reported HIV Status Among Adults Who Tested HIV Positive During the Survey     | 56 |
| 7.5               | Willingness to Use HIV Self-Testing if Available in the Country                     | 57 |
| 7.6               | Gaps and Unmet Needs  | 60 |
| <b>Chapter 8</b>  | <b>HIV Diagnosis and Treatment</b>  | 61 |
| 8.1               | Key Findings  | 61 |
| 8.2               | Background  | 61 |
| 8.3               | Self-Reported Diagnosis and Treatment Status Among HIV-Positive Adults              | 61 |
| 8.4               | Concordance of Self-Reported Treatment Status Versus Laboratory Antiretroviral Data | 66 |
| 8.5               | Gaps and Unmet Needs  | 68 |
| <b>Chapter 9</b>  | <b>Viral Load Suppression</b>   | 69 |
| 9.1               | Key Findings  | 69 |
| 9.2               | Background  | 69 |
| 9.3               | Adult Viral Load Suppression by Select Demographic Characteristics                  | 69 |
| 9.4               | Adult Viral Load Suppression by Age and Sex   | 71 |
| 9.5               | Adult Viral Load Suppression by Zone  | 72 |
| 9.6               | Gaps and Unmet Needs  | 73 |
| <b>Chapter 10</b> | <b>UNAIDS 90-90-90 TARGETS</b>  | 74 |
| 10.1              | Key Findings  | 74 |
| 10.2              | Background  | 74 |
| 10.3              | Status of the UNAIDS 90-90-90 Targets   | 75 |
| 10.4              | Gaps and Unmet Needs  | 78 |
| 10.5              | References  | 78 |
| <b>Chapter 11</b> | <b>Clinical Perspectives on People Living with HIV</b>                              | 79 |
| 11.1              | Key Findings  | 79 |
| 11.2              | Background  | 79 |
| 11.3              | CD4 Counts and Immunosuppression  | 79 |
| 11.4              | Late HIV Diagnosis  | 83 |
| 11.5              | Retention on Antiretroviral Therapy   | 85 |

|                   |   |     |
|-------------------|---|-----|
| 11.6              | Viral Load Suppression and Severe Immunosuppression According to Duration of Antiretroviral Therapy | 88  |
| 11.7              | Transmitted Resistance to Antiretroviral Therapy  | 90  |
| 11.8              | Gaps and Unmet Needs  | 91  |
| 11.9              | References  | 91  |
| <b>Chapter 12</b> | <b>Prevention of Mother-to-Child Transmission</b>   | 92  |
| 12.1              | Key Findings  | 92  |
| 12.2              | Background  | 92  |
| 12.3              | Antenatal Care Attendance   | 92  |
| 12.4              | Breastfeeding   | 94  |
| 12.5              | Awareness of Mother's HIV Status  | 95  |
| 12.6              | Antiretroviral Therapy Among HIV-Positive Pregnant Women  | 97  |
| 12.7              | Early Infant Diagnosis  | 98  |
| 12.8              | Mother-to-Child Transmission  | 99  |
| 12.9              | Gaps and Unmet Needs  | 99  |
| 12.10             | References  | 99  |
| <b>Chapter 13</b> | <b>Adolescents and Young Adults</b>   | 100 |
| 13.1              | Key Findings  | 100 |
| 13.2              | Background  | 100 |
| 13.3              | Sexual Intercourse Before the Age of 15 Years   | 100 |
| 13.4              | Knowledge About HIV Prevention  | 102 |
| 13.5              | HIV Incidence and Prevalence  | 106 |
| 13.6              | HIV Testing, Treatment, and Viral Load Suppression  | 106 |
| 13.7              | Status of the UNAIDS 90-90-90 Targets   | 106 |
| 13.8              | Gaps and Unmet Needs  | 107 |
| 13.9              | References  | 107 |
| <b>Chapter 14</b> | <b>Children</b>   | 108 |
| 14.1              | Key Findings  | 108 |
| 14.2              | Background  | 108 |
| 14.3              | HIV Prevalence  | 109 |
| 14.4              | Status of the UNAIDS 90-90-90 Targets   | 109 |
| 14.5              | Nutrition Status  | 113 |
| 14.6              | Gaps and Unmet Needs  | 113 |
| <b>Chapter 15</b> | <b>HIV Risk Factors</b>   | 114 |
| 15.1              | Key Findings  | 114 |
| 15.2              | Background  | 114 |
| 15.3              | HIV Prevalence by Sexual Behavior   | 114 |
| 15.4              | Sexual Behavior According to HIV and Antiretroviral Therapy Status                                  | 116 |
| 15.5              | Condom Use at Last Sex with a Non-Marital Non-Cohabiting Partner                                    | 118 |
| 15.6              | Male Circumcision   | 125 |

|                   |  |     |
|-------------------|--|-----|
| 15.7              | Gaps and Unmet Needs   | 127 |
| <b>Chapter 16</b> | <b>Intimate Partner Violence</b>   | 128 |
| 16.1              | Key Findings   | 128 |
| 16.2              | Background   | 128 |
| 16.3              | Prevalence of Recent Intimate Partner Violence   | 129 |
| 16.4              | Gaps and Unmet Needs   | 132 |
| 16.5              | References   | 132 |
| <b>Chapter 17</b> | <b>Discriminatory Attitudes Towards People Living with HIV</b>                               | 133 |
| 17.1              | Key Findings   | 133 |
| 17.2              | Background   | 133 |
| 17.3              | Discriminatory Attitudes Towards People Living with HIV                                      | 133 |
| 17.4              | Gaps and Unmet Needs   | 135 |
| 17.5              | References   | 135 |
| <b>Chapter 18</b> | <b>Tuberculosis, Sexually Transmitted Infections Symptoms, and Cervical Cancer Screening</b> | 136 |
| 18.1              | Key Findings   | 136 |
| 18.2              | Background   | 136 |
| 18.3              | Tuberculosis   | 136 |
| 18.4              | Self-Reported Symptoms and Diagnosis of Sexually Transmitted Infection                       | 138 |
| 18.5              | Cervical Cancer Screening Among HIV-Positive Women   | 142 |
| 18.6              | Gaps and Unmet Needs   | 144 |
| 18.7              | References   | 144 |
|                   | <b>Discussion and Conclusions</b>  | 145 |
|                   | <b>Appendices</b>  | 148 |
| <b>Appendix A</b> | <b>Sample Design and Weighting</b>   | 149 |
| <b>Appendix B</b> | <b>HIV Testing Methodology</b>   | 156 |
| <b>Appendix C</b> | <b>Estimates of Sampling Errors</b>  | 166 |
| <b>Appendix D</b> | <b>Survey Personnel</b>  | 175 |
| <b>Appendix E</b> | <b>Household Questionnaire</b>   | 178 |
| <b>Appendix F</b> | <b>Adult Questionnaire</b>   | 198 |
| <b>Appendix G</b> | <b>Survey Consent Forms</b>  | 263 |

# GLOSSARY OF TERMS

**90-90-90:** These are ambitious global program targets proposed by the Joint United Nations Programme on HIV/AIDS (UNAIDS) and adopted by each country to help end the Acquired Immunodeficiency Syndrome (AIDS) epidemic. By 2020, 90% of all people living with HIV (Human Immunodeficiency Virus) (PLHIV) will know their HIV status; 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy (ART); and 90% of all people receiving ART will have viral load (VL) suppression (VLS).

**Acquired Immunodeficiency Syndrome (AIDS):** AIDS is a disease caused by infection with HIV. AIDS results in severe damage to the immune system, leaving the body vulnerable to life-threatening conditions, such as infections and tumors.

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

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

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

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

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

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

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

**HIV Prevalence:** The proportion of living persons in a population who are living with HIV at a specific point in time. The denominator is the total population; the numerator is the number of persons living with HIV.

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

**HIV Viral Load Suppression:** An HIV VL of less than 1,000 copies per ml.

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

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

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

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

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

**Syphilis:** Syphilis is a curable STI caused by a bacterium, *Treponema pallidum*. Pregnant women can transmit syphilis to their fetuses.

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



# LIST OF ABBREVIATIONS

|         |   |
|---------|---|
| AIDS    | Acquired Immunodeficiency Syndrome                |
| ANC     | Antenatal Care                                    |
| ART     | Antiretroviral Therapy                            |
| ARV     | Antiretroviral                                    |
| CDC     | U.S. Centers for Disease Control and Prevention   |
| CD4     | CD4+ T-Cell                                       |
| CI      | Confidence Interval                               |
| COM-JHP | College of Medicine-Johns Hopkins Project         |
| CSR     | Centre for Social Research                        |
| DBS     | Dried Blood Spot                                  |
| EA      | Enumeration Area                                  |
| HBTC    | Home-Based HIV Testing and Counselling            |
| HIV     | Human Immunodeficiency Virus                      |
| HPV     | Human Papillomavirus                              |
| ID      | Identification Number                             |
| IPV     | Intimate Partner Violence                         |
| LAg     | Limiting Antigen                                  |
| ml      | Milliliters                                       |
| μl      | Microliters                                       |
| MOH     | Ministry of Health                                |
| MOS     | Measure of Size                                   |
| MPHIA   | Malawi Population-Based HIV Impact Assessment     |
| MTCT    | Mother-to-Child Transmission                      |
| NNRTI   | Non-Nucleoside Reverse Transcriptase Inhibitors   |
| NRTI    | Nucleoside Reverse Transcriptase Inhibitors       |
| NSO     | National Statistical Office                       |
| ODn     | Normalized Optical Density                        |
| PCR     | Polymerase Chain Reaction                         |
| PEPFAR  | U.S. President's Emergency Plan for AIDS Relief   |
| PFR     | Proportion False Recent                           |
| PHIA    | Population-Based HIV Impact Assessment            |
| PLHIV   | People Living with HIV                            |
| PMTCT   | Prevention of Mother-to-Child Transmission of HIV |
| POC     | Point of Care                                     |

|        |   |
|--------|---|
| RNA    | Ribonucleic acid                                |
| RR     | Response Rate                                   |
| RT-PCR | Reverse Transcription Polymerase Chain Reaction |
| QA     | Quality Assurance                               |
| QC     | Quality Control                                 |
| SMS    | Short Message Service                           |
| STI    | Sexually Transmitted Infection                  |
| TB     | Tuberculosis                                    |
| TNA    | Total Nucleic Acid                              |
| UEW    | Unequal Weighting                               |
| UNAIDS | Joint United Nations Programme on HIV / AIDS    |
| VL     | Viral Load                                      |
| VLS    | Viral Load Suppression                          |
| VMMC   | Voluntary Medical Male Circumcision             |

# LIST OF TABLES AND FIGURES

|                  |  |    |
|------------------|--|----|
| <b>Chapter 2</b> | <b>Survey Design, Methods, and Response Rates</b>  |    |
| Table 2.1.A      | Distribution of sampled enumeration areas and households, by zone                        | 20 |
| Figure 2.4.A     | Household-based HIV-testing algorithm, MPHIA 2015-2016                                   | 24 |
| Figure 2.5.A     | HIV-1 recent infection testing algorithm (LAg/VL algorithm), MPHIA 2015-2016             | 27 |
| Figure 2.5.B     | HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), MPHIA 2015-2016         | 28 |
| Table 2.7.A      | Household response rates   | 30 |
| Table 2.7.B      | Interview and blood draw response rates  | 31 |
| <b>Chapter 3</b> | <b>Survey Household Characteristics</b>  |    |
| Table 3.3.A      | Household composition  | 33 |
| Table 3.3.B      | Distribution of de facto household population by age and sex                             | 33 |
| Table 3.3.C      | Distribution of de facto household population by age, sex, and residence                 | 34 |
| Figure 3.3.A     | Distribution of the de facto population by sex and age, MPHIA 2015-2016                  | 34 |
| Figure 3.3.B     | Household population by age, sex, and residence, MPHIA 2015-2016                         | 35 |
| Table 3.4.A      | Prevalence of HIV-affected households  | 35 |
| Table 3.4.B      | HIV-affected households by number of HIV-positive members                                | 36 |
| Table 3.4.C      | Prevalence of households with an HIV-positive head of household                          | 36 |
| Figure 3.4.A     | Prevalence of HIV-affected households by residence, MPHIA 2015-2016                      | 36 |
| Figure 3.4.B     | HIV-affected households by number of HIV-positive members and residence, MPHIA 2015-2016 | 37 |
| Figure 3.4.C     | Prevalence of households with an HIV-positive head of household by sex, MPHIA 2015-2016  | 37 |
| <b>Chapter 4</b> | <b>Survey Respondent Characteristics</b>   |    |
| Table 4.3.A      | Demographic characteristics of the adult population                                      | 39 |
| Table 4.4.A      | Demographic characteristics of the pediatric population                                  | 40 |
| <b>Chapter 5</b> | <b>HIV Incidence</b>   |    |
| Table 5.3.A      | Annual HIV incidence using LAg/VL <sup>1</sup> testing algorithm                         | 42 |
| Table 5.3.B      | Annual HIV incidence using LAg/VL/ARV <sup>1</sup> testing algorithm                     | 42 |
| <b>Chapter 6</b> | <b>HIV Prevalence</b>  |    |
| Table 6.3.A      | HIV prevalence by demographic characteristics: Ages 15-64 years                          | 45 |
| Figure 6.3.A     | HIV prevalence by marital status: Ages 15-64 years, MPHIA 2015-2016                      | 46 |
| Table 6.3.B      | HIV prevalence by demographic characteristics: Ages 15-49 years                          | 47 |
| Table 6.4.A      | HIV prevalence by age and sex  | 48 |
| Figure 6.4.A     | HIV prevalence by age and sex, MPHIA 2015-2016   | 49 |
| Figure 6.5.A     | HIV prevalence among adults ages 15-64 years, by zone, MPHIA 2015-2016                   | 49 |
| Figure 6.5.B     | HIV prevalence among adults ages 15-64 years, by zone, MPHIA 2015-2016                   | 50 |

|                   |  |    |
|-------------------|--|----|
| <b>Chapter 7</b>  | <b>HIV Testing</b>   |    |
| Table 7.3.A       | Self-reported HIV testing: Males   | 53 |
| Table 7.3.B       | Self-reported HIV testing: Females   | 54 |
| Table 7.3.C       | HIV testing: Total   | 55 |
| Figure 7.3.A      | Proportion of adults who self-reported having received an HIV test in the last 12 months, by age and sex, MPHIA 2015-2016                                    | 56 |
| Table 7.4.A       | Self-reported HIV status among adults who tested HIV positive during the survey  | 57 |
| Table 7.5.A       | Self-testing: Males  | 58 |
| Table 7.5.B       | Self-testing: Females  | 59 |
| <b>Chapter 8</b>  | <b>HIV Diagnosis and Treatment</b>   |    |
| Table 8.3.A       | HIV treatment status: Males  | 63 |
| Table 8.3.B       | HIV treatment status: Females  | 64 |
| Table 8.3.C       | HIV treatment status: Total  | 65 |
| Figure 8.3.A      | Proportion of HIV-positive adults ages 15-64 years self-reporting awareness of HIV status and antiretroviral therapy status, by age and sex, MPHIA 2015-2016 | 66 |
| Table 8.4.A       | Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Males   | 67 |
| Table 8.4.B       | Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Females   | 67 |
| Table 8.4.C       | Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Total   | 67 |
| <b>Chapter 9</b>  | <b>Viral Load Suppression</b>  |    |
| Table 9.3.A       | Viral load suppression by demographic characteristics  | 70 |
| Table 9.4.A       | Viral load suppression by age (5-year age groups)  | 71 |
| Table 9.4.B       | Viral load suppression by age (10-15-year age groups)  | 71 |
| Figure 9.4.A      | Proportion of viral load suppression (<1000 copies/ml) among people living with HIV, by age and sex, MPHIA 2015-2016   | 72 |
| Figure 9.5.A      | Viral load suppression (<1000 copies/ml) among HIV-positive adults ages 15-64 years, by zone, MPHIA 2015-2016  | 72 |
| Figure 9.5.B      | Viral load suppression (<1000 copies/ml) among HIV-positive adults ages 15-64 years, by zone, MPHIA 2015-2016  | 73 |
| <b>Chapter 10</b> | <b>UNAIDS 90-90-90 TARGETS</b>   |    |
| Table 10.3.A      | Adult 90-90-90 (self-reported antiretroviral therapy (ART) status; conditional percentages)  | 76 |
| Table 10.3.B      | Adult 90-90-90 (self-reported antiretroviral therapy (ART) status and/or laboratory antiretroviral (ARV) data, conditional percentages)                      | 77 |
| Figure 10.3.A     | Adult 90-90-90 (adjusted for laboratory antiretroviral data among adults ages 15-64 years), MPHIA 2015-2016  | 78 |
| <b>Chapter 11</b> | <b>Clinical Perspectives on People Living with HIV</b>   |    |
| Table 11.3.A      | Median CD4 count and prevalence of immunosuppression   | 81 |

|                   |  |     |
|-------------------|--|-----|
| Figure 11.3.A     | CD4 count distribution among HIV-positive adults ages 15-64 years, by antiretroviral therapy status, MPHIA 2015-2016                     | 83  |
| Table 11.4.A      | Late HIV diagnosis   | 84  |
| Table 11.5.A      | Retention on antiretroviral therapy (ART): people initiating antiretroviral therapy less than 12 months prior to the survey              | 86  |
| Table 11.5.B      | Retention on antiretroviral therapy (ART): people initiating antiretroviral therapy more than 12 months prior to the survey              | 87  |
| Table 11.6.A      | Viral load suppression and severe immunosuppression  | 89  |
| Table 11.7.A      | Resistance to antiretrovirals  | 90  |
| Table 11.7.B      | HIV subtype  | 90  |
| <b>Chapter 12</b> | <b>Prevention of Mother-to-Child Transmission</b>  |     |
| Table 12.3.A      | Antenatal care   | 93  |
| Table 12.4.A      | Breastfeeding status by child's age and mother's HIV status  | 94  |
| Table 12.5.A      | Prevention of mother-to-child transmission, known HIV status   | 96  |
| Table 12.6.A      | Prevention of mother-to-child transmission, HIV-positive pregnant women who received antiretrovirals (ARVs)                              | 97  |
| Table 12.7.A      | Prevention of mother-to-child transmission, early infant testing   | 98  |
| Table 12.8.A      | Mother-to-child transmission of HIV  | 99  |
| <b>Chapter 13</b> | <b>Adolescents and Young Adults</b>  |     |
| Table 13.3.A      | Sex before the age of 15 years   | 101 |
| Table 13.4.A      | Young people, knowledge about HIV prevention: Males  | 103 |
| Table 13.4.B      | Young people, knowledge about HIV prevention: Females  | 104 |
| Table 13.4.C      | Young people, knowledge about HIV prevention: Total  | 105 |
| Figure 13.7.A     | Young adults 90-90-90 (laboratory ARV-adjusted data among young adults ages 15-24 years), MPHIA 2015-2016                                | 107 |
| <b>Chapter 14</b> | <b>Children</b>  |     |
| Table 14.4.A      | Pediatric 90-90-90 (parent-reported antiretroviral therapy (ART) data; conditional percentages)  | 110 |
| Table 14.4.B      | Pediatric 90-90-90 (parent-reported antiretroviral therapy (ART) data and laboratory antiretroviral (ARV) data, conditional percentages) | 111 |
| Figure 14.4.A     | Pediatric 90-90-90 (laboratory ARV-adjusted data), MPHIA 2015-2016   | 112 |
| Table 14.5.A      | Nutritional status of children ages 0-59 months  | 113 |
| <b>Chapter 15</b> | <b>HIV Risk Factors</b>  |     |
| Table 15.3.A      | HIV prevalence by sexual behavior  | 116 |
| Table 15.4.A      | Sexual behavior according to HIV status: Males   | 118 |
| Table 15.4.B      | Sexual behavior according to HIV status: Females   | 118 |
| Table 15.5.A      | Condom use at last sex with a non-marital, non-cohabitating partner: Males   | 120 |
| Table 15.5.B      | Condom use at last sex with a non-marital, non-cohabitating partner: Females   | 122 |
| Table 15.5.C      | Condom use at last sex with a non-marital, non-cohabitating partner: Total   | 124 |
| Table 15.6.A      | Male circumcision  | 126 |
| <b>Chapter 16</b> | <b>Intimate Partner Violence</b>   |     |

|                   |   |     |
|-------------------|---|-----|
| Table 16.3.A      | Prevalence of recent intimate partner violence                                  | 130 |
| <b>Chapter 17</b> | <b>Discriminatory Attitudes Towards People Living with HIV</b>                  |     |
| Table 17.3.A      | Discriminatory attitudes toward people living with HIV                          | 134 |
| <b>Chapter 18</b> | <b>Tuberculosis, Syphilis, HBV, STI Symptoms, and Cervical Cancer Screening</b> |     |
| Table 18.3.A      | HIV testing in tuberculosis clinics   | 137 |
| Table 18.3.B      | Tuberculosis clinic attendance and services among HIV-positive adults           | 137 |
| Table 18.3.C      | Tuberculosis symptom screening in HIV clinics                                   | 137 |
| Table 18.4.A      | Other sexually transmitted infections: Males                                    | 139 |
| Table 18.4.B      | Other sexually transmitted infections: Females                                  | 141 |
| Table 18.5.A      | Cervical cancer screening among women living with HIV <sup>1</sup>              | 143 |

## FOREWORD

We are pleased to present the results from Malawi Population-based HIV Impact Assessment (MPHIA) 2015-2016, the first national survey to provide comprehensive information on important HIV/AIDS indicators at national and zonal levels and measure progress toward the UNAIDS 90-90-90 targets. This survey included a nationally representative sample of over 11,000 households throughout Malawi. It described demographic characteristics of respondents, including reproductive history, PMTCT, male circumcision, HIV/AIDS knowledge and attitudes, HIV testing and awareness of HIV status, care and treatment status, TB, STI, cervical cancer, and intimate partner violence. MPHIA also collected information about HIV testing and treatment in children. Through blood tests, it measured national HIV incidence, VLS in adults, and HIV prevalence in adults and children.

This survey has come at the right time as the global HIV prevention and treatment community is focusing on epidemic control. These data facilitate better monitoring of HIV programs; understanding of which sub-populations are still unaware of their HIV status; and measure progress toward population VLS at a sub-national level. Both the biological and behavioral data from MPHIA allow program planners to target the right populations with tailored interventions and enable policy makers to appropriately improve service delivery models.

The MPHIA was led by the Government of Malawi through the Ministry of Health (MOH), conducted with funding from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and technical assistance through the U.S. Centers for Disease Control and Prevention (CDC). This survey was implemented from November 2015 to August 2016 by ICAP at Columbia University in collaboration with local partners, including the Centre for Social Research (CSR) at the University of Malawi, the National Statistical Office (NSO), and the College of Medicine-Johns Hopkins Project (COM-JHP) at the University of Malawi.

We would like to acknowledge the efforts of the national and international organizations in the planning and implementation of the survey and in writing this report, in particular the MPHIA Technical Working Group and Steering Committee. We are especially grateful to our field staff and the respondents, who graciously provided their time and data for the benefit of the nation.



Hon. Atupele Muluzi, MP  
Minister of Health and Population

# EXECUTIVE SUMMARY

Malawi Population-based HIV Impact Assessment (MPHIA) 2015-2016 was a nationally representative, cross-sectional, population-based survey of households across Malawi. 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 annual HIV incidence among adults ages 15-64 years, and the subnational prevalence of HIV VLS among HIV-positive adults. In addition, MPHIA measured national and subnational adult HIV prevalence, CD4 counts, ARVs in blood, transmitted HIV drug resistance, pediatric HIV prevalence, and progress toward the UNAIDS 90-90-90 targets defined by UNAIDS. The MPHIA is the first national survey to conduct these measurements in Malawi. The survey also collected information on behaviors associated with HIV acquisition and transmission, common HIV co-morbidities, and other health conditions.

The survey used a two-stage, stratified cluster sample design, in which census EA (clusters) were selected in the first stage and households in the second stage. The sample was stratified by seven geographical zones: North, Central-East, Central-West, Lilongwe City, South-East, South-West, and Blantyre City. Data collection was conducted between the end of November 2015 and August 2016. The survey interviewed 11,386 households. In the households surveyed, 22,405 adults ages 15-64 years and 9,993 children ages 0-14 years were eligible to participate in the survey. Altogether, 88% (19,652) of eligible adults were interviewed, and 87% (17,187) of interviewed adults and 62% (6,166) of eligible children provided blood for biomarkers assessment to determine HIV status. The MPHIA provided home-based HIV testing and counseling (HBTC) with return of results, and point of care (POC) CD4 count for those who were HIV positive. HIV VL results and early infant diagnosis (EID) results were returned to participants through health facilities of their choice. The MPHIA provides weighted estimates. Analysis weights account for sample selection probabilities and are adjusted for nonresponse and noncoverage. The key findings of MPHIA are:

- Annual incidence (adjusted for ARV detection) of HIV infection among adults ages 15-64 years was 0.37% (95% confidence interval (CI): 0.20%-0.54%) which corresponds to approximately 28,000 new cases of HIV infection among adults in the country every year.
- HIV prevalence among adults ages 15-64 years was 10.6%: 12.5% among females and 8.5% among males. Prevalence varied across the seven zones, ranging from 4.9% in the Central-East zone to 17.7% in Blantyre City. HIV prevalence among adults ages 15-49 years was 10.0%.
- Nearly one in five households in Malawi is HIV-affected. Approximately twice the percentage of female-headed households have a head of the household who is living with HIV as compared to male-headed households (21.3% of female household heads were HIV-positive in contrast to 12.2% of male household heads).
- Malawi has made substantial progress toward the achievement of the UNAIDS 90-90-90 targets in adults. Based on self-report and ARV detection data, it is estimated that among adults ages 15-64 years living with HIV, 76.8% were aware of their HIV-positive status, 91.4% of those aware of their status were receiving ART, and 91.3% of those on ART were virally suppressed. The achievement was lower among young people ages 15-24 years, of whom 53.7% were aware of their status, 85.7% of those aware of their status were receiving ART, and 81.2% of those on ART were virally suppressed.



- Among HIV-positive males ages 15-64 years, 39.6% of those residing in urban areas reported no awareness of their HIV status, compared to 29.2% reporting no awareness among those in rural areas. Among HIV-positive females ages 15-64 years, 25.7% and 23.6% of those residing in urban and rural areas, respectively, reported no awareness of their HIV status.
- Concordance between self-report of ART and detection of ARVs was high among HIV-positive individuals ages 15-64 years, with 96.4% of those who reported current ART use having detectable ARVs in blood. However, self-report of HIV diagnosis was less accurate, with 14.8% of those who reported that they had not been previously diagnosed with HIV having ARVs detected in blood.
- The overall prevalence of VLS (defined as HIV ribonucleic acid [RNA] less than 1,000 copies/ ml among adults ages 15-64 years living with HIV was 68.3%, higher among females (73.1%) than among males (60.9%). There is considerable geographical variation in the prevalence of VLS ranging from 59.5% in Blantyre City to 70.7% in the South-East zone.
- Severe immunosuppression was prevalent among those living with HIV who had not been diagnosed: 16.8% of males and 17.7% of females unaware of their HIV-positive status had CD4 counts of less than 200 cells/microliter ( $\mu$ l).
- HIV prevalence among children ages 0-14 years was 1.5%. Progress toward the achievement of the UNAIDS 90-90-90 targets in children is insufficient. Based on parents' report and ARV detection data, it is estimated that among children ages 0-14 years living with HIV, 69.3% had been diagnosed, 86.1% of those diagnosed were receiving ART, and 57.9% of those on ART were virally suppressed.
- Among those women ages 15-49 years who gave birth within the year preceding the survey, 97.2% knew their HIV status, and among those who were HIV-positive, 97.9% reported to have received ARVs (40.3% were newly initiated on ARVs during pregnancy or labor and delivery, while 57.7% were already taking ARVs at the time of their first ANC visit for the pregnancy), which indicates high coverage of ART provision for PMTCT.
- Among children born to HIV-positive mothers ages 15-49 years who gave birth during the three years preceding the survey, 49.4% received an infant HIV test before the age of two months, and 29.3% received an HIV test between ages 2-12 months, according to mothers' report.
- Among infants under the age of 18 months born to HIV-positive women ages 15-49 years, 3.0% were confirmed to be HIV-positive, based on virological testing.
- Among adolescents and young adults ages 15-24 years, only 47.0% have correct knowledge about HIV transmission and prevention of sexual transmission of HIV.
- Among adults ages 15-64 years, condom use was infrequent. Among males, condom use at last sexual intercourse in the 12 months preceding the survey was reported by 34.4% of those who were HIV positive who self-reported to be on ART, 20.6% of those who were HIV-positive but unaware of their status, and 18.9% of those who were HIV-negative. Furthermore, only 17.0% of those who were HIV-positive who self-reported not taking ART reported condom use at last sexual intercourse in the last 12 months preceding the survey.
- Among females, condom use at last sexual intercourse in the 12 months preceding the survey was reported by 26.0% of those who were HIV positive who self-reported taking ART, 12.4% of those who were HIV positive but unaware of their status, and 11.1% of those who were HIV negative. Furthermore, only 10.8% of those who were HIV positive who self-reported not taking ART reported condom use at last sexual intercourse in the last 12 months preceding the survey.
- Among men ages 15-64 years, 9.2% reported having undergone medical circumcision, 16.1% reported non-medical circumcision, and 69.9% reported being uncircumcised.
- Cervical cancer screening among HIV-positive women ages 30-49 years was infrequent with 18.7% reporting ever they had been screened for cervical cancer.

- HIV testing in tuberculosis (TB) clinics was reported by 48.0% of TB clinic attendees (any respondent who had ever visited a TB clinic). Among those who were not tested for HIV during a TB clinic visit, 42.9% did not know their status and 9.1% reported not having been tested because they already knew their positive status.
- Among self-reported HIV-positive persons ages 15-64 years, 28.0% were screened for TB symptoms (cough, fever, night sweats, and weight loss) during their last HIV clinic visit.
- Among adults ages 15-64 years who had ever heard of HIV, 11% reported discriminatory attitudes towards PLHIV; 18.9% of those with no education reported discriminatory attitudes.
- 4.1% of ever-married or partnered women ages 15-64 years reported experiencing physical or sexual violence from a live-in partner in the 12 months preceding the survey.

The MPHIA indicates that HIV continues to cause a significant burden of disease in the country. Although there has been remarkable progress toward the achievement of the UNAIDS 90-90-90 targets in adults, progress in the pediatric population is not comparable. The major challenge in both populations remains diagnosis, and a critical priority is to offer PLHIV unaware of their status testing and linkage to care. An additional challenge among children is to ensure VLS among those receiving ART.

The MPHIA incidence estimates indicate that there are approximately 28,000 new HIV infections annually among adults ages 15-64 years. The considerable variation in prevalence of HIV infection and VLS across regions and population groups, and the low frequency of preventative behaviors and practices, such as condom use and VMMC, respectively, indicate that the country requires an intensified, targeted approach to the delivery of a combination of effective, evidence-based, prevention interventions in order to reduce HIV transmission. Increasing coverage of diagnosis, while sustaining high levels of treatment and VLS, are key to reduce HIV incidence.

# 1 INTRODUCTION

## 1.1 Background

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

MPHIA was led by the government of Malawi through the MOH with technical assistance from CDC. The survey was implemented by ICAP at Columbia University in collaboration with local partners, including the CSR at the University of Malawi, the NSO, and the COM-JHP at the University of Malawi.

## 1.2 Overview of MPHIA 2015-2016

MPHIA, a household-based national survey, was conducted between November 2015 and August 2016 to measure the status of Malawi's national HIV response. The MPHIA offered HBTC with return of results and collected information about uptake of HIV care and treatment services. This survey is the first in Malawi to measure national HIV incidence, VLS prevalence, pediatric HIV prevalence, CD4 count distribution, presence of ARV drugs in blood, and transmitted HIV drug resistance. The survey also collected information on selected behaviors associated with HIV acquisition and transmission, and on common HIV co-morbidities and other health conditions.

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

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

## 1.3 Specific Objectives

The goal of the survey was to estimate HIV-infection incidence and prevalence in Malawi, to assess the coverage and impact of HIV services at the population level, and to characterize HIV-related risk behaviors using a nationally representative sample of adults and children.

### *Primary Objectives*

- To estimate national-level annual HIV incidence among adults ages 15-64 years.
- To estimate the subnational (zonal) prevalence of VLS (defined as HIV RNA less than 1,000 copies/ml) among HIV-positive adults ages 15-64 years.

### *Secondary Objectives*

- To estimate the national prevalence of HIV infection among children ages 0-14 years.
- To estimate the national and subnational (zonal) prevalence of HIV infection among adults ages 15-64 years.
- To determine the distribution of CD4 counts in HIV-positive persons ages 0-64 years.
- To estimate the prevalence of detectable ARVs in blood and the frequency of transmitted drug resistance among HIV-positive persons ages 0-64 years.
- To describe the prevalence of HIV-related risk behaviors among adults ages 15-64 years.
- To describe the uptake of HIV-related services among persons ages 0-64 years.
- To estimate the prevalence of stunting and undernutrition among HIV-exposed and HIV-positive children under the age of five years.

## 2 SURVEY DESIGN, METHODS, AND RESPONSE RATES

The MPHIA was a nationally representative, cross-sectional, population-based survey of households across Malawi. 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

The MPHIA used a two-stage, stratified cluster sample design. The sampling frame was comprised of all households in the country based on the 2008 Population and Housing Census, which includes 12,666 EAs, containing an estimated 2,869,933 households (NSO, 2008). The first stage selected 500 EAs (clusters) using a probability proportional to size method. The 500 EAs were stratified by seven geographical zones: North, Central-East, Central-West, Lilongwe City, South-East, South-West, and Blantyre City. 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 and the actual number of households selected per cluster ranged from 15 to 60 (Table 2.1.A).

The sample size was calculated to provide a representative national estimate of HIV incidence among adults ages 15-64 years with a relative standard error less than or equal to 28.9%, as well as representative zonal estimates of VLS prevalence among HIV-positive adults ages 15-64 years with 95% CIs with  $\pm 10\%$  bounds around the point estimates. One-half of the households were randomly selected for inclusion of children ages 0-14 years, which was designed to provide a representative national estimate of pediatric HIV prevalence with a relative standard error less than or equal to 16.2%. The target sample size was 18,711 for adults ages 15-64 years, and 8,949 for children ages 0-14 years.

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

| Zone          | Enumeration areas |       |       | Households |       |       |
|---------------|-------------------|-------|-------|------------|-------|-------|
|               | Urban             | Rural | Total | Urban      | Rural | Total |
| North         | 7                 | 55    | 62    | 238        | 1364  | 1602  |
| Central-East  | 3                 | 75    | 78    | 62         | 1777  | 1839  |
| Central-West  | 1                 | 57    | 58    | 42         | 1813  | 1855  |
| Lilongwe City | 72                | 0     | 72    | 2327       | 0     | 2327  |
| South-East    | 5                 | 79    | 84    | 109        | 1817  | 1926  |
| South-West    | 4                 | 74    | 78    | 131        | 2400  | 2531  |
| Blantyre City | 68                | 0     | 68    | 2188       | 0     | 2188  |
| Total         | 160               | 340   | 500   | 5097       | 9171  | 14268 |

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

## 2.2 Eligibility Criteria, Recruitment, and Consent Procedures

The eligible survey population included:

- Women and men ages 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;
- Persons ages 10-17 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 assent, and whose parents or guardians were willing and able to provide written permission for their participation; and
- Children ages 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.

An electronic informed consent form was administered using a tablet (Appendix G). At each stage of the consent process, consent was indicated by signing or making a mark on the consent form on the tablet and on a printed copy, which was retained by the participant. A designated head of household provided written consent for household members to participate in the survey, after which individual members were rostered during a household interview. Adults and emancipated minors then provided written consent on the tablet for an interview. 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.

Persons ages 10-17 years were asked for assent to the interview (ages 15-17 years only) and biomarker components (ages 10-17 years) after permission was granted by their parents or guardians. Parents provided consent for biomarker testing for minors below the age of assent (ages 0-9 years). In both cases, if a parent or guardian did not want to receive his or her HIV test result, this was considered a refusal and the survey was concluded. Procedures with 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 subjects protection, privacy, and confidentiality

- Blood collection for children and adults, including venipuncture and finger/heel stick
- Home-based HIV testing and counseling
- CD4 count measurement using POC PIMA Analyzer
- Referral of participants to health and social services
- Management and transportation of blood specimens
- Biosafety
- Communication skills
- Protocol deviations, adverse events, and reporting of events

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

### ***Survey Staff***

Fieldwork started at the end of November 2015 and was completed in August 2016. Fieldwork was conducted by 20 locally-hired field teams composed of a team leader, two field health workers, two HBTC providers, two research assistants, and a driver. Field teams included both male and female staff and members who spoke the languages used in the areas to which they were deployed. A total of 225 field coordinators, team leaders, field health workers, HBTC providers, research assistants, community-mobilization coordinators, and drivers participated in data collection. Survey personnel were selected based on their qualifications and areas of expertise. The research assistants had primary responsibility for obtaining consent and administering the interview. The field health workers conducted phlebotomy and performed CD4 counts using a POC instrument. The HBTC providers were responsible for delivering HBTC for adults and children. The field teams were supervised by four 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, 31 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 of data collection activities in the field and in the laboratories to provide technical support and ensure quality.

### ***Community Sensitization and Mobilization***

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

### ***Supervision***

Data-collection teams were continuously overseen by field-based supervisors as well as periodically monitored by national and international teams with representation from collaborating institutions. Monitoring teams visited field and laboratory sites at least monthly, and provided direct supervision as well as verification of results by household revisits. Daily monitoring forms for household and individual

outcome tracking were also reviewed by monitors for completeness. Field-based supervisors also supported teams by organizing supplies and transport of blood samples, coordinating community-mobilization efforts, providing technical troubleshooting, and checking the quality of household procedures and data collected.

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

### ***Electronic Monitoring System***

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

### ***Questionnaire Data Collection***

Questionnaire and field laboratory data were collected on mobile tablet devices using an application programmed in Open Data Kit, an open-source mobile data collection application. The household interview collected information on household residents, assets, economic support, recent deaths, and orphans and vulnerable children (see Appendix E). The adult interview was administered to participants ages 15 years and older and included modules on demographic characteristics, sexual and reproductive health, marriage, male circumcision, sexual activity, HIV/ AIDS knowledge and attitudes, the HIV testing and treatment history, TB and other diseases, alcohol use, and gender norms (see Appendix F). Participants who self-reported their HIV-positive status were asked questions about their HIV care experience. Parents also answered questions about their children's (ages 0-14 years) health and participation in HBTC services as a part of the adult interview. In each household, one woman among those ages 15-64 years was also randomly selected to answer questions about her experiences with violence. Participants of any age who reported being victims of violence and minors who reported being victims of sexual exploitation were provided with referrals to social services. Female participants were interviewed by female staff, and males by male staff, whenever possible. The questionnaire was administered in the three languages most commonly used in Malawi. The English, Chichewa, and Tumbuka versions of the questionnaires were reviewed and tested thoroughly for acceptability, feasibility, and flow of questions.

## **2.4 Field-based Biomarker Testing**

### ***Blood Collection***

Blood was collected by qualified survey staff from consenting participants. Fourteen ml of venous blood were collected from persons ages 15 years and older, while six ml were collected from persons ages 2-14 years. One ml of capillary blood was collected from children ages 0-2 years using finger-stick for children ages 6-24 months and heel-stick for children ages 6 months and younger.

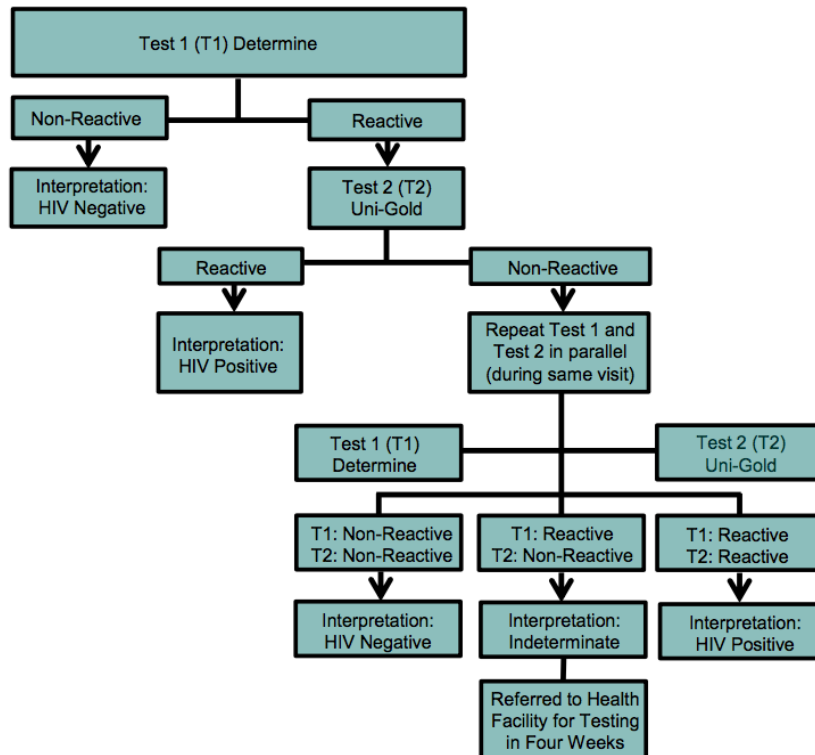
Blood samples were labeled with a unique bar-coded participant identification number (ID) and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for processing into plasma aliquots and dried blood spots (DBS), and were frozen within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



### HIV Home-Based Testing and Counseling

HIV HBTC was conducted in each household in accordance with national guidelines (Figure 2.4.A). As per these guidelines, the survey used a sequential rapid-testing algorithm in the field: Determine™ HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States) as a screening test, and Uni-Gold™ (Trinity Biotech, plc. Wicklow, Ireland) as a confirmatory test. Individuals with a non-reactive 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 non-reactive confirmatory test result, were retested in parallel. If the results were repeatedly discordant, the individual was classified as indeterminate.

Figure 2.4.A Household-based HIV testing algorithm, MPHIA 2015-2016



HIV-seropositive participants were referred to HIV care and treatment services at a health facility of their choice. For children under the age of 18 years, results were returned to a parent or guardian (with the presence of the child for those ages 15-17 years). Participants with indeterminate results were advised to attend a facility in four weeks for repeated testing, as per national guidelines.

For children ages 18 months or less, only the screening test (Determine) was performed in the field. If the test was reactive, HIV total nucleic acid (TNA) polymerase chain reaction (PCR) for virologic testing of HIV infection was performed in the reference laboratory, as described below (Section 2.5).

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

Quality control, using a panel of positive and negative dried tube specimens, 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 5.0% of those who tested HIV negative, received a CD4 count measurement in the field by qualified survey staff. The measurement was performed using the Pima™ CD4 Analyzer (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere).

#### ***Anthropometric Assessment***

Height and weight measurements were obtained for all children under the age of five years who tested HIV positive during HBTC. For the purpose of comparison, 5.0% of HIV-negative children under the age of five years also underwent this assessment. Weight was measured with a flat, electronic SECA 874 Mother and Baby scale. To weigh very young children, an adult was weighed first separately and again holding the child. Height was measured with a Shorr Board® measuring board. Children younger than age 24 months were measured lying down on the board (recumbent position), while standing height was measured for the older children.

Children's height/length, weight, and age data were used to calculate two indices: height-for-age and weight-for-age. Standard deviations and z-scores were based on the WHO child growth standards (<http://www.who.int/childgrowth/standards/en/>). These provide reference medians and standard deviations for height and weight by age in days. After converting ages from months into days and correcting heights for the measurement position (standing or recumbent), z-scores were calculated using this reference data.

## **2.5 Laboratory-based Biomarker Testing**

#### ***Satellite and Central Laboratories***

Nine satellite laboratories for the survey were established in existing health facility laboratories. One central reference laboratory was chosen for more specialized tests. At each satellite laboratory, trained technicians performed processing of whole blood specimens into plasma aliquots and DBS cards for 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 subsequently all indeterminate, and a random sample of 5.0% of specimens that tested HIV negative during HBTC, were retested in the laboratory using the national HIV rapid-testing algorithm. All specimens that tested HIV positive during HBTC, and those that had confirmed positive or indeterminate 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. Central laboratory procedures included HIV VL testing, HIV TNA PCR for infant virologic testing and for confirmation of status of those who self-reported an 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 using the Abbott m2000 System (Abbott Molecular Inc., Chicago, Illinois, United States). The Abbott m2000 System consists of two separate instruments, the m2000sp (which carries out automated extraction, purification, and preparation of HIV-1 RNA), and the m2000rt (which amplifies, detects, and measures the HIV-1 RNA load). For plasma, the 0.6 mL protocol was used, while the open-mode protocol for the Abbott RealTime HIV-1 assay was used to measure VL from DBS samples from children and adults with insufficient volume of plasma.

Viral load results were returned within eight to 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.

### ***Infant HIV Virologic Testing***

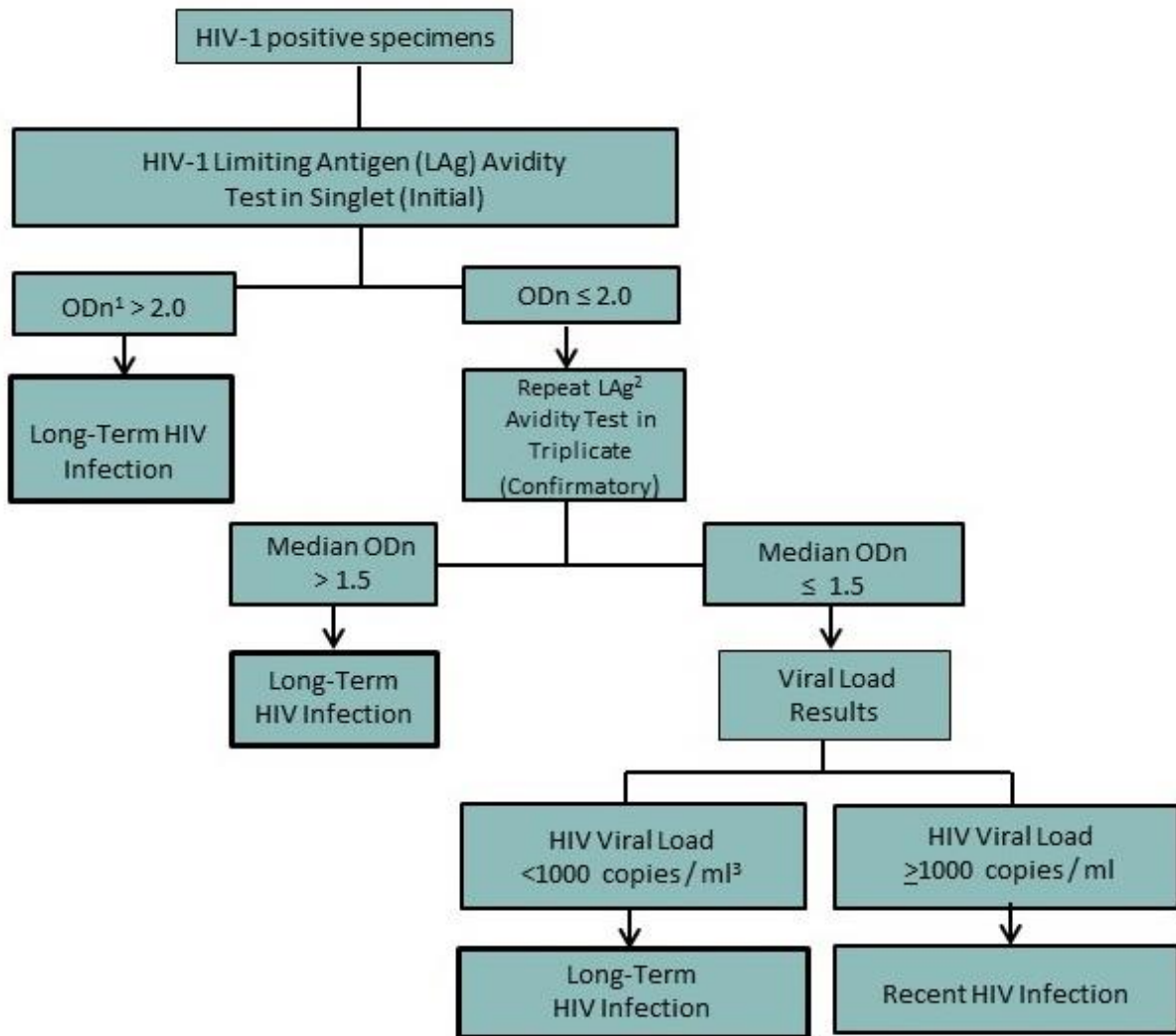
For infants ages 18 months and younger who screened positive for HIV during HBTC, virologic testing was conducted via HIV TNA PCR using the Abbott Real Time HIV-1 Qualitative Assay (Abbott Molecular, Wiesbaden, Germany) on the Abbott m2000 system. Results were returned to a health facility selected by the child's parent or guardian within eight weeks, and survey staff also contacted the parent or guardian via SMS to inform him or her that the child's results were available at the facility.

### ***HIV Recent Infection Testing Algorithm***

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

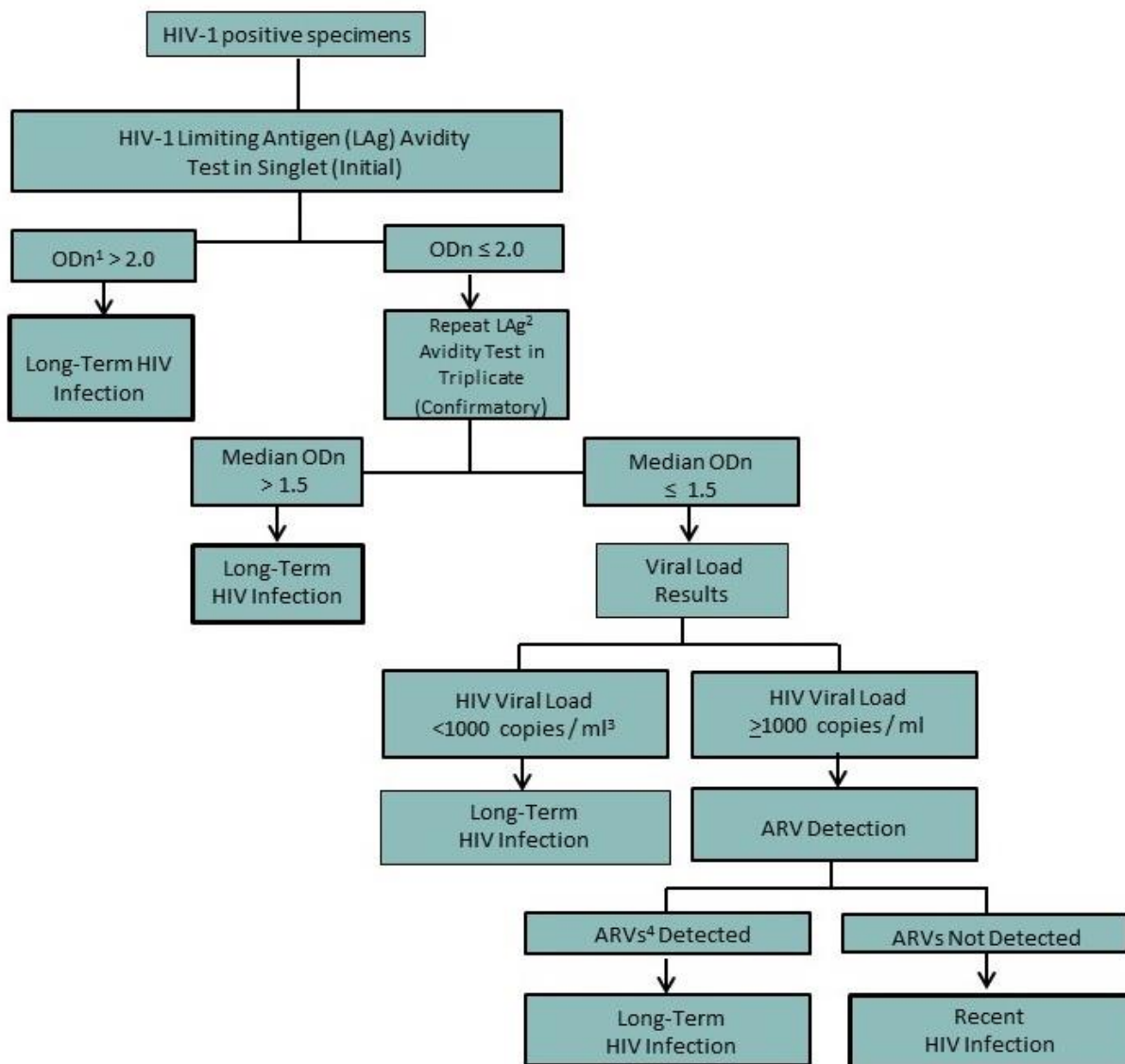
Specimens with median normalized optical density ( $OD_n$ )  $\leq 1.5$  were classified as potential recent infections, and their VL results were assessed. Specimens with VL  $< 1,000$  copies/ml were classified as long-term infections, while those with VL  $\geq 1,000$  copies/ml were classified as recent infections (Figure 2.5.A). In the ARV-adjusted algorithm, specimens with VL  $\geq 1,000$  copies/ml and with detectable ARVs were classified as long-term infections. Specimens with VL  $\geq 1,000$  copies/ml and without detectable ARVs were classified as recent infections.

Figure 2.5.A HIV-1 recent infection testing algorithm (LAg/VL algorithm), MPHIA 2015-2016



<sup>1</sup>ODn: normalized optical density; <sup>2</sup>LAg: Limiting Antigen; <sup>3</sup>ml: milliliter

Figure 2.5.B: HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), MPHIA 2015-2016



<sup>1</sup>ODn: normalized optical density; <sup>2</sup>LAg: Limiting Antigen; <sup>3</sup>ml: milliliter; <sup>4</sup>ARV: antiretroviral

**Detection of Antiretroviral Drug Resistance**

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

Specimens were sent to CDC in the United States where testing was performed at the International Laboratory Branch, a World Health Organization 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.<sup>3</sup> This qualitative assay was highly specific, as it separates the parent compound from the fragments, and highly sensitive, with a limit of detection of 0.02 µg/mL for each drug, and a signal-to-noise ratio of at least 5:1 for all drugs. As detection of all ARVs in use at the time of the survey was cost-prohibitive, three ARVs were selected as markers for the most commonly prescribed first and second line regimens: efavirenz, atazanavir and lopinavir. Samples from participants who were virally suppressed and/or self-reported on ART, but had no evidence of the first three compounds, were tested for nevirapine. These ARVs were also selected based on their relatively long half-lives, allowing for a longer period of detection following intake.

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

Detection of ARV was performed at the laboratory in the Department 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-square automatic interaction detection, or Chi-square Automatic Interaction Detector (CHAID), algorithm. The cells were defined based on data from the household interview for the adjustment of individual-level weights, and from both the household and individual interviews for the adjustment of blood sample-level weights. Post-stratification adjustments were implemented to compensate for noncoverage in the sampling process. This final adjustment calibrated the nonresponse-adjusted individual and blood weights to make the sum of each set of weights conform to national population totals by sex and five-year age groups.

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

Incidence estimates were based on the number of HIV infections identified as recent with the HIV-1 LAg Avidity plus VL algorithm, and obtained 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 cutoff (T) = 1.0 year and percentage false recent (PFR) = 0.00.

## 2.7 Response Rates

Household RR were calculated using the American Association for Public Opinion Research Response Rate 4 method (AAPOR, 2015) 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 RR 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 those ages 15-64 years were calculated as the number of individuals who provided blood divided by the number of individuals who were interviewed. Blood draw RR for those ages 0-14 years were calculated as the number of individuals who provided blood divided by the number of individuals eligible to participate in the survey.

Of the 14,268 selected households, 12,731 and 11,386 were occupied and interviewed, respectively. The overall household RR (unweighted) was 88.6% (83.5% in urban areas and 91.7% in rural areas). After adjusting for differential sampling probabilities and nonresponse, the overall weighted household RR was 90.2% (Table 2.7.A).

A total of 22,405 adults (10,170 males and 12,235 females) ages 15-64 years were eligible to participate in the survey. A total of 19,652 adults participated in the individual interview: interview RR were 81.5% for males and 92.9% for females ages 15-64 years. Among those adults who were interviewed, 87.0% of males and 87.8% of females also had their blood drawn (Table 2.7.B).

In MPHIA, children ages 0-14 years in half of the selected households were eligible for blood draw. Of the 6,762 eligible children ages 0-9 years, 59.4% of males and 60.9% of females had their blood drawn. Of the 3,231 eligible children ages 10-14 years, 65.1% of males and 64.7% of females had their blood drawn (Table 2.7.B).

**Table 2.7.A Household response rates**

Number of households selected, occupied, and interviewed and household RR (unweighted and weighted), by residence, MPHIA 2015-2016

| Result  | Residence |       | Total  |
|---|-----------|-------|--------|
|   | Urban     | Rural |        |
| <b>Household interviews</b>                       |           |       |        |
| Households selected                               | 5,097     | 9,171 | 14,268 |
| Households occupied                               | 4,689     | 8,042 | 12,731 |
| Households interviewed                            | 3,958     | 7,428 | 11,386 |
| Household response rate <sup>1</sup> (unweighted) | 83.5      | 91.7  | 88.6   |
| Household response rate <sup>1</sup> (weighted)   | 85.1      | 91.2  | 90.2   |

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

[http://www.aapor.org/AAPOR\\_Main/media/publications/Standard-Definitions20169theditionfinal.pdf](http://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf)

**Table 2.7.B Interview and blood draw response rates**

Number of eligible individuals and response rates for individual interviews<sup>1</sup> and blood draws<sup>2</sup> (unweighted and weighted), by residence and sex, MPHIA 2015-2016

| Result                                       | Residence |         |       |         |        |         |
|--|-----------|---------|-------|---------|--------|---------|
|  | Urban     |         | Rural |         | Total  |         |
|  | Males     | Females | Males | Females | Males  | Females |
| <b>Eligible individuals, age 0-9 years</b>   |           |         |       |         |        |         |
| Number of eligible individuals               | 1,003     | 1,073   | 2,282 | 2,404   | 3,285  | 3,477   |
| Blood draw response rate (unweighted)        | 60.4      | 62.3    | 58.9  | 60.3    | 59.4   | 60.9    |
| Blood draw response rate (weighted)          | 59.5      | 60.7    | 56.2  | 57.5    | 56.7   | 58.0    |
| <b>Eligible individuals, age 10-14 years</b> |           |         |       |         |        |         |
| Number of eligible individuals               | 478       | 531     | 1,142 | 1,080   | 1,620  | 1,611   |
| Blood draw response rate (unweighted)        | 65.7      | 63.1    | 64.8  | 65.6    | 65.1   | 64.7    |
| Blood draw response rate (weighted)          | 65.6      | 64.7    | 62.4  | 62.4    | 62.8   | 62.8    |
| <b>Eligible individuals, age 15-24 years</b> |           |         |       |         |        |         |
| Number of eligible individuals               | 1,545     | 1,845   | 2,253 | 2,749   | 3,798  | 4,594   |
| Interview response rate (unweighted)         | 79.9      | 88.0    | 81.4  | 90.1    | 80.8   | 89.3    |
| Interview response rate (weighted)           | 81.5      | 87.7    | 80.6  | 89.5    | 80.8   | 89.2    |
| Blood draw response rate (unweighted)        | 87.3      | 88.2    | 87.2  | 86.6    | 87.3   | 87.3    |
| Blood draw response rate (weighted)          | 88.0      | 89.3    | 86.5  | 85.4    | 86.8   | 86.2    |
| <b>Eligible individuals, age 15-49 years</b> |           |         |       |         |        |         |
| Number of eligible individuals               | 3,808     | 4,312   | 5,222 | 6,694   | 9,030  | 11,006  |
| Interview response rate (unweighted)         | 75.9      | 91.0    | 84.1  | 93.8    | 80.7   | 92.7    |
| Interview response rate (weighted)           | 75.9      | 91.1    | 83.5  | 93.4    | 81.9   | 93.0    |
| Blood draw response rate (unweighted)        | 84.4      | 88.4    | 88.0  | 87.3    | 86.6   | 87.7    |
| Blood draw response rate (weighted)          | 85.2      | 89.1    | 87.4  | 86.1    | 86.9   | 86.7    |
| <b>Eligible individuals, age 15-64 years</b> |           |         |       |         |        |         |
| Number of eligible individuals               | 4,150     | 4,661   | 6,020 | 7,574   | 10,170 | 12,235  |
| Interview response rate (unweighted)         | 76.4      | 91.1    | 85.0  | 94.1    | 81.5   | 92.9    |
| Interview response rate (weighted)           | 76.4      | 91.2    | 84.4  | 93.7    | 82.7   | 93.2    |
| Blood draw response rate (unweighted)        | 84.7      | 88.4    | 88.5  | 87.4    | 87.0   | 87.8    |
| Blood draw response rate (weighted)          | 85.5      | 89.0    | 87.8  | 86.3    | 87.3   | 86.8    |

<sup>1</sup>Interview response rate = number of individuals interviewed/number of eligible individuals

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

## 2.8 References

1. Malawi National Statistical Office (2008). *Malawi 2008 Population and Housing Census Results*. Retrieved from [http://www.nsomalawi.mw/images/stories/data\\_on\\_line/demography/census\\_2008/Main%20Report/Census%20Main%20Report.pdf](http://www.nsomalawi.mw/images/stories/data_on_line/demography/census_2008/Main%20Report/Census%20Main%20Report.pdf).
2. Ministry of Health, Malawi (2016). *3<sup>rd</sup> Edition of the Malawi Guidelines for Clinical Management of HIV in Children and Adults, 2016*. Retrieved from [https://aidsfree.usaid.gov/sites/default/files/malawi\\_art\\_2016.pdf](https://aidsfree.usaid.gov/sites/default/files/malawi_art_2016.pdf).
3. Koal, T., et al. (2005). Quantification of antiretroviral drugs in DBS samples by means of liquid chromatography/tandem mass spectrometry. *Rapid Communications in Mass Spectrometry*, 19(21), 2995-3001.
4. The American Association for Public Opinion Research (2015). *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 8th edition*. Retrieved from AAPOR: [https://www.aapor.org/AAPOR\\_Main/media/publications/Standard-Definitions2015\\_8theditionwithchanges\\_April2015\\_logo.pdf](https://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions2015_8theditionwithchanges_April2015_logo.pdf).



## 3 SURVEY HOUSEHOLD CHARACTERISTICS

### 3.1 Key Findings

- In Malawi, 18% of the households had at least one HIV-positive member (25.4% of urban and 16.3% of rural households).
- In Malawi, 16.4% of the households are headed by a person living with HIV (21.3% of the female-headed and 12.2% of the male-headed households).

### 3.2 Background

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

### 3.3 Household Composition

Overall, while the majority of the households (55.9%) were male-headed, a large percentage of the households (44.1%) were headed by females. This distribution was similar between urban and rural areas: 57.8% of urban households were male-headed and 42.2% were female-headed, while 55.5% of rural households were male-headed and 44.5% were female-headed. The median household size was four members (interquartile range three to five) and the median number of children ages 18 years of age and younger in households was two (interquartile range 1-3) (Table 3.3.A).

Children under the age of 15 years comprised 46.3% (23.1% males and 23.3% females) of the de facto household population, while those ages 15-49 years constituted 42.7% (18.8% males and 23.9% females) and those ages 50 years and older constituted 11.0% (4.6% males and 6.1% females; Figure 3.3.A; Table 3.3.B).

Overall, the de facto population in rural areas was younger than that in urban areas: 47.4% of the rural population was younger than 15 years compared with 41.2% of the urban population. In urban areas, the distribution by age did not differ considerably between males and females, with around half of the population ages 15-49 years (50.8% of males and 53.3% of females), and a quarter ages 5-14 years (27.9% of males and 26.9% of females). In contrast, in rural areas larger percentages of males than of females were younger than the age of 15 years (16.5% of males were ages 0-4 years and 34.5% were ages 5-14 years, while 14.9% of females were ages 0-4 years and 29.4% were ages 5-14 years). In urban and rural areas, the proportion of males and females over the age of 50 years was similar (urban: 7.0% and 6.5%; rural: 10.6% and 12.8%) (Table 3.3.C; Figure 3.3.B).

**Table 3.3.A Household composition**

Percent distribution of households by sex of head of household; median size of household and median (Q1<sup>1</sup>, Q3<sup>2</sup>) number of children 18 years of age, by residence, MPHIA 2015-2016

| Characteristic            | Residence    |              |              |              |              |               |
|---------------------------|--------------|--------------|--------------|--------------|--------------|---------------|
|                           | Urban        |              | Rural        |              | Total        |               |
|                           | Percent      | Number       | Percent      | Number       | Percent      | Number        |
| <b>Household headship</b> |              |              |              |              |              |               |
| Male                      | 57.8         | 2,287        | 55.5         | 4,136        | 55.9         | 6,423         |
| Female                    | 42.2         | 1,671        | 44.5         | 3,292        | 44.1         | 4,963         |
| <b>Total</b>              | <b>100.0</b> | <b>3,958</b> | <b>100.0</b> | <b>7,428</b> | <b>100.0</b> | <b>11,386</b> |

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

<sup>1</sup>Q1: quartile one

<sup>2</sup>Q3: quartile three

**Table 3.3.B Distribution of de facto household population by age and sex**

Percent distribution of the de facto household population, by five-year age groups and sex, MPHIA 2015-2016

| Age          | Males       |               | Females     |               | Total        |               |
|--------------|-------------|---------------|-------------|---------------|--------------|---------------|
|              | Percent     | Number        | Percent     | Number        | Percent      | Number        |
| 0-4          | 7.5         | 3,267         | 7.8         | 3,358         | 15.3         | 6,625         |
| 5-9          | 8.1         | 3,444         | 8.1         | 3,506         | 16.2         | 6,950         |
| 10-14        | 7.5         | 3,202         | 7.4         | 3,237         | 14.9         | 6,439         |
| 15-19        | 4.7         | 2,172         | 4.8         | 2,213         | 9.5          | 4,385         |
| 20-24        | 3.3         | 1,679         | 5.1         | 2,413         | 8.4          | 4,092         |
| 25-29        | 2.8         | 1,438         | 3.9         | 1,858         | 6.8          | 3,296         |
| 30-34        | 2.6         | 1,293         | 3.6         | 1,688         | 6.2          | 2,981         |
| 35-39        | 2.3         | 1,111         | 2.9         | 1,307         | 5.1          | 2,418         |
| 40-44        | 1.8         | 847           | 2.1         | 909           | 3.9          | 1,756         |
| 45-49        | 1.3         | 589           | 1.5         | 660           | 2.8          | 1,249         |
| 50-54        | 1.0         | 459           | 1.3         | 562           | 2.4          | 1,021         |
| 55-59        | 0.9         | 387           | 0.9         | 389           | 1.8          | 776           |
| 60-64        | 0.7         | 301           | 0.6         | 282           | 1.3          | 583           |
| 65-69        | 0.7         | 308           | 1.3         | 517           | 2.1          | 825           |
| 70-74        | 0.6         | 233           | 0.8         | 317           | 1.4          | 550           |
| 75-79        | 0.3         | 122           | 0.5         | 200           | 0.9          | 322           |
| ≥80          | 0.4         | 152           | 0.7         | 238           | 1.1          | 390           |
| <b>Total</b> | <b>46.6</b> | <b>21,004</b> | <b>53.4</b> | <b>23,654</b> | <b>100.0</b> | <b>44,658</b> |

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

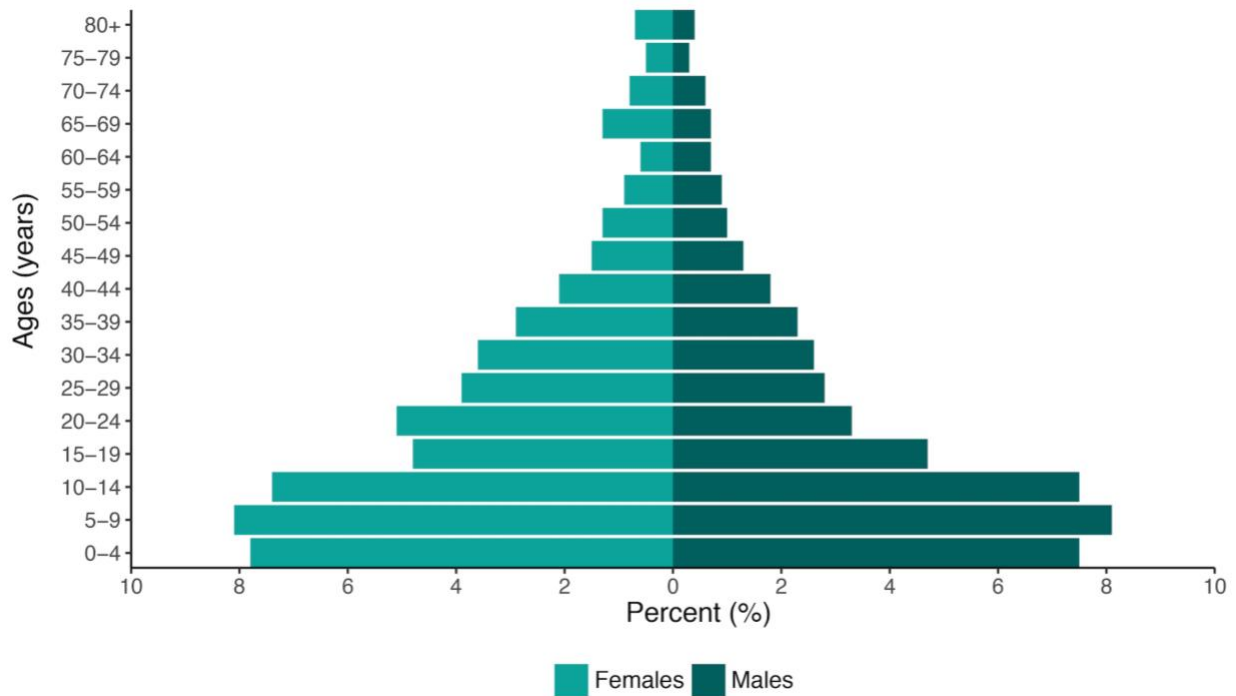
Percent distribution of the de facto household population, by sex, age, and residence, MPHIA 2015-2016

| Age          | Urban        |              |              |              |              |               |
|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
|              | Males        |              | Females      |              | Total        |               |
|              | Percent      | Number       | Percent      | Number       | Percent      | Number        |
| 0-4          | 14.3         | 1,068        | 13.3         | 1,072        | 13.8         | 2,140         |
| 5-14         | 27.9         | 1,974        | 26.9         | 2,110        | 27.4         | 4,084         |
| 15-49        | 50.8         | 3,864        | 53.3         | 4,333        | 52.1         | 8,197         |
| ≥50          | 7.0          | 527          | 6.5          | 516          | 6.7          | 1,043         |
| <b>Total</b> | <b>100.0</b> | <b>7,433</b> | <b>100.0</b> | <b>8,031</b> | <b>100.0</b> | <b>15,464</b> |

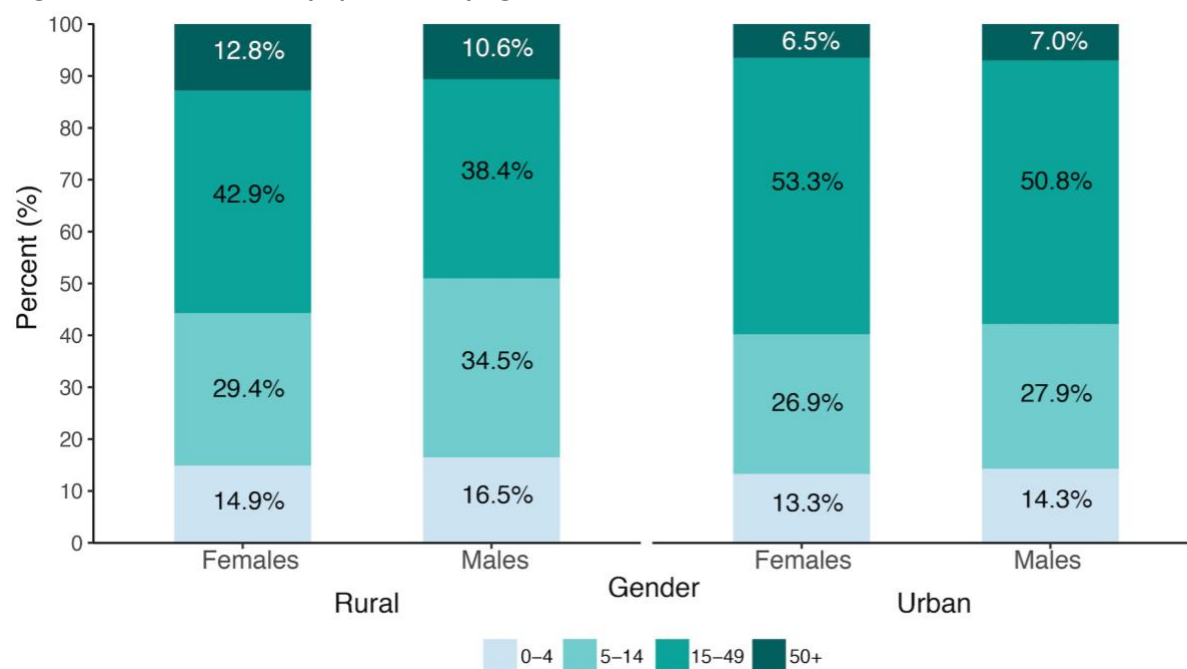
  

| Age          | Rural        |               |              |               |              |               |
|--------------|--------------|---------------|--------------|---------------|--------------|---------------|
|              | Males        |               | Females      |               | Total        |               |
|              | Percent      | Number        | Percent      | Number        | Percent      | Number        |
| 0-4          | 16.5         | 2,199         | 14.9         | 2,286         | 15.6         | 4,485         |
| 5-14         | 34.5         | 4,672         | 29.4         | 4,633         | 31.8         | 9,305         |
| 15-49        | 38.4         | 5,265         | 42.9         | 6,715         | 40.8         | 11,980        |
| ≥50          | 10.6         | 1,435         | 12.8         | 1,989         | 11.8         | 3,424         |
| <b>Total</b> | <b>100.0</b> | <b>13,571</b> | <b>100.0</b> | <b>15,623</b> | <b>100.0</b> | <b>29,194</b> |

**Figure 3.3.A Distribution of the de facto population by sex and age, MPHIA 2015-2016**



**Figure 3.3.B Household population by age, sex, and residence, MPHIA 2015-2016**



### 3.4 Prevalence of HIV-Affected Households

In Malawi, 18.0% of the households had at least one HIV-positive member (25.4% of urban households and 16.3% of rural households) (Table 3.4.A). Among these HIV-affected households, 77.7% had one HIV-positive member, 20.5% had two HIV-positive members. The distribution was similar for urban and rural households (Table 3.4.B). Overall, 16.4% of households in the country had an HIV-positive head of household. Approximately twice the percentage of female-headed households have a head of the household who is living with HIV as compared to male-headed households (21.3% of female household heads were HIV-positive in contrast to 12.2% of male household heads). (Table 3.4.C).

| Residence | Percent | Number |
|-----------|---------|--------|
| Urban     | 25.4    | 3,429  |
| Rural     | 16.3    | 5,930  |
| Total     | 18.0    | 9,359  |

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

Among households with at least one HIV-positive household member, percent distribution of households by number of HIV-positive household members, by residence, MPHIA 2015-2016

| Number of HIV-positive household members | Residence |        |         |        |         |        |
|--|-----------|--------|---------|--------|---------|--------|
|  | Urban     |        | Rural   |        | Total   |        |
|  | Percent   | Number | Percent | Number | Percent | Number |
| 1  | 79.1      | 684    | 77.1    | 754    | 77.7    | 1,438  |
| 2  | 19.4      | 180    | 20.9    | 207    | 20.5    | 387    |
| 3  | *         | 14     | *       | 20     | (1.8)   | 34     |
| 4  | *         | 3      | *       | 0      | *       | 3      |
| 5  | *         | 0      | *       | 0      | *       | 0      |
| ≥6                                       | *         | 0      | *       | 0      | *       | 0      |
| Total                                    | 100.0     | 881    | 100.0   | 981    | 100.0   | 1,862  |

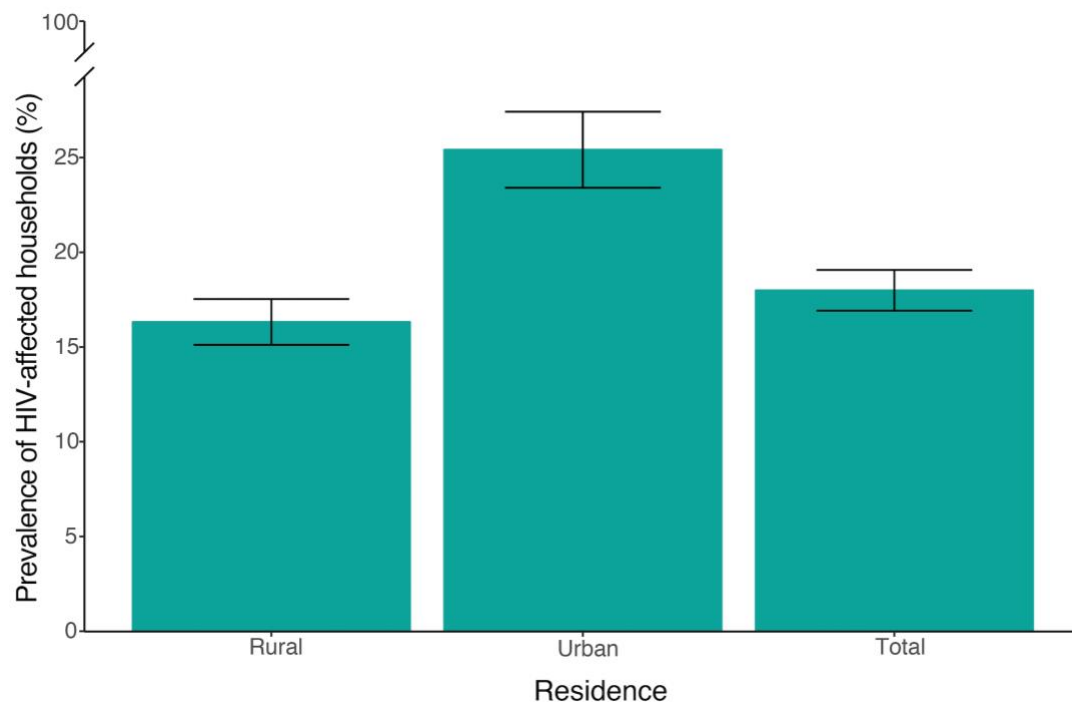
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

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

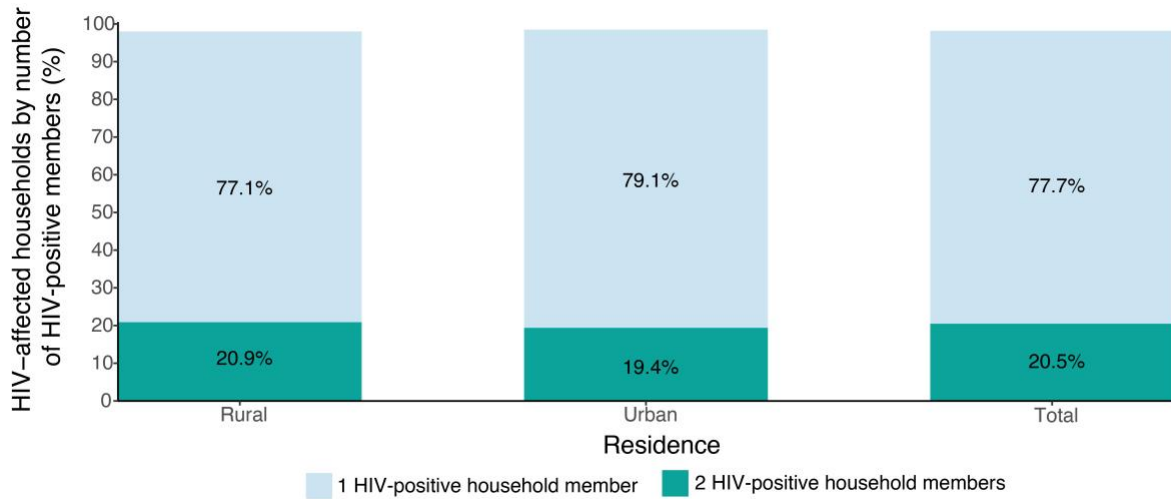
**Table 3.4.C Prevalence of households with an HIV-positive head of household**

Percentage of households with an HIV-positive head of household, by sex of head of household, MPHIA 2015-2016

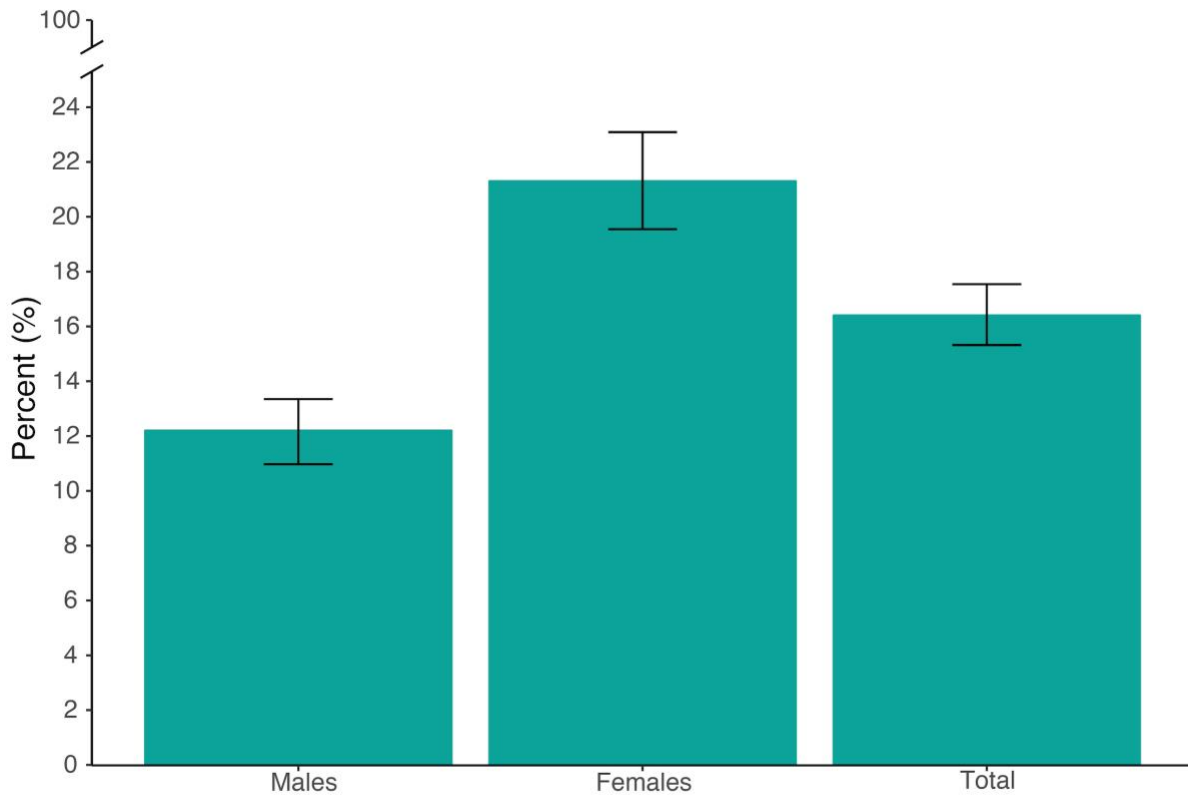
| Sex of head of household | Percent | Number |
|--------------------------|---------|--------|
| Male                     | 12.2    | 3,950  |
| Female                   | 21.3    | 3,534  |
| Total                    | 16.4    | 7,484  |

**Figure 3.4.A Prevalence of HIV-affected households by residence, MPHIA 2015-2016**

**Figure 3.4.B HIV-affected households by number of HIV-positive members and residence, MPHIA 2015-2016**



**Figure 3.4.C Prevalence of households with an HIV-positive head of household by sex, MPHIA 2015-2016**



## 4 SURVEY RESPONDENT CHARACTERISTICS

### 4.1 Key Findings

- In Malawi, 21.2% of adults were ages 15-19 years (68.2% were ages 20-49 years and 10.7% were ages 50-64 years).
- In Malawi, 72.5% of children who participated were younger than the age of 10 years and 27.5% were ages 10-14 years.
- In Malawi, 80.1% of adults and 85.3% of children were residing in rural areas.

### 4.2 Background

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

### 4.3 Demographic Characteristics of the Adult Population

Overall, four in five (80.1%) people ages 15-64 years lived in rural areas. The majority were (60.9%) married or living with a partner, while over a third (35.8%) of the males and one in five (21.6%) females had never been married. Almost two-thirds (62.1%) of the people ages 15-64 years had completed only primary education, while one-fourth (25.2%) had completed secondary education. Only 3.3% had more than secondary education. The most common ethnic groups were the Chewa (36.3%), the Lomwe (18%), the Yao (12.3%), the Ngoni (11%), and the Tumbuka (10.5%). Close to 80% of people professed Christian religions, while 11.7% followed Islam. Overall, 21.2% of the population was ages 15-19 years and 68.2% was ages 20-49 years, while only 10.7% was ages 50-64 years (Table 4.3.A).

**Table 4.3.A Demographic characteristics of the adult population**

Percent distribution of the population age 15-64 years, by sex and other selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Males   |        | Females |        | Total   |        |
|----------------------------|---------|--------|---------|--------|---------|--------|
|                            | Percent | Number | Percent | Number | Percent | Number |
| <b>Residence</b>           |         |        |         |        |         |        |
| Urban                      | 20.9    | 3,169  | 18.9    | 4,244  | 19.9    | 7,413  |
| Rural                      | 79.1    | 5,115  | 81.1    | 7,124  | 80.1    | 12,239 |
| <b>Zone</b>                |         |        |         |        |         |        |
| North                      | 14.3    | 1,109  | 13.2    | 1,424  | 13.8    | 2,533  |
| Central-East               | 17.4    | 1,272  | 15.1    | 1,493  | 16.2    | 2,765  |
| Central-West               | 20.9    | 951    | 20.5    | 1,303  | 20.7    | 2,254  |
| Lilongwe City              | 7.7     | 1,464  | 6.5     | 1,924  | 7.1     | 3,388  |
| South-East                 | 16.5    | 910    | 19.8    | 1,474  | 18.2    | 2,384  |
| South-West                 | 16.5    | 1,217  | 19.0    | 1,925  | 17.8    | 3,142  |
| Blantyre City              | 6.6     | 1,361  | 5.9     | 1,825  | 6.2     | 3,186  |
| <b>Marital status</b>      |         |        |         |        |         |        |
| Never married              | 35.8    | 3,007  | 21.6    | 2,249  | 28.5    | 5,256  |
| Married or living together | 59.9    | 4,860  | 61.9    | 7,248  | 60.9    | 12,108 |
| Divorced or separated      | 3.8     | 347    | 11.7    | 1,285  | 7.9     | 1,632  |
| Widowed                    | 0.5     | 58     | 4.9     | 574    | 2.8     | 632    |
| <b>Education</b>           |         |        |         |        |         |        |
| No education               | 5.4     | 413    | 13.2    | 1,247  | 9.4     | 1,660  |
| Primary                    | 59.8    | 4,468  | 64.3    | 6,757  | 62.1    | 11,225 |
| Secondary                  | 30.5    | 2,857  | 20.2    | 2,896  | 25.2    | 5,753  |
| More than secondary        | 4.4     | 543    | 2.3     | 461    | 3.3     | 1,004  |
| <b>Wealth quintile</b>     |         |        |         |        |         |        |
| Lowest                     | 13.9    | 877    | 16.8    | 1,426  | 15.4    | 2,303  |
| Second                     | 18.2    | 1,192  | 18.1    | 1,625  | 18.2    | 2,817  |
| Middle                     | 19.7    | 1,310  | 19.9    | 1,831  | 19.8    | 3,141  |
| Fourth                     | 22.4    | 1,750  | 21.3    | 2,270  | 21.8    | 4,020  |
| Highest                    | 25.8    | 3,155  | 23.8    | 4,216  | 24.8    | 7,371  |
| <b>Religion</b>            |         |        |         |        |         |        |
| Catholic                   | 19.5    | 1,646  | 18.8    | 2,142  | 19.2    | 3,788  |
| CCAP <sup>1</sup>          | 18.3    | 1,637  | 16.9    | 2,128  | 17.6    | 3,765  |
| Anglican                   | 2.5     | 209    | 2.3     | 276    | 2.4     | 485    |
| Seventh Day Adventist      | 5.9     | 561    | 6.1     | 833    | 6.0     | 1,394  |
| Baptist                    | 2.4     | 207    | 2.3     | 268    | 2.4     | 475    |
| Other Christian            | 29.9    | 2,370  | 33.5    | 3,739  | 31.8    | 6,109  |
| Muslim                     | 10.6    | 751    | 12.6    | 1,103  | 11.7    | 1,854  |
| Other                      | 7.5     | 640    | 6.6     | 807    | 7.0     | 1,447  |
| None                       | 3.4     | 245    | 0.7     | 63     | 2.0     | 308    |
| <b>Ethnicity</b>           |         |        |         |        |         |        |
| Chewa                      | 37.8    | 2,806  | 34.8    | 3,616  | 36.3    | 6,422  |
| Lomwe                      | 17.5    | 1,608  | 18.6    | 2,354  | 18.0    | 3,962  |
| Ngoni                      | 10.8    | 1,011  | 11.2    | 1,421  | 11.0    | 2,432  |
| Nkhonde                    | 0.9     | 85     | 0.9     | 117    | 0.9     | 202    |
| Sena                       | 3.9     | 335    | 3.9     | 472    | 3.9     | 807    |
| Tonga                      | 1.8     | 154    | 1.9     | 235    | 1.8     | 389    |
| Tumbuka                    | 10.8    | 941    | 10.2    | 1,216  | 10.5    | 2,157  |
| Yao                        | 11.3    | 881    | 13.3    | 1,287  | 12.3    | 2,168  |
| Other                      | 5.1     | 452    | 5.3     | 627    | 5.2     | 1,079  |
| <b>Age</b>                 |         |        |         |        |         |        |
| 15-19                      | 21.5    | 1,680  | 21.0    | 1,858  | 21.2    | 3,538  |
| 20-24                      | 17.7    | 1,389  | 17.4    | 2,244  | 17.5    | 3,633  |
| 25-29                      | 14.7    | 1,120  | 14.7    | 1,756  | 14.7    | 2,876  |
| 30-34                      | 12.1    | 1,010  | 12.3    | 1,608  | 12.2    | 2,618  |
| 35-39                      | 9.8     | 877    | 9.9     | 1,238  | 9.9     | 2,115  |
| 40-44                      | 7.8     | 706    | 7.9     | 873    | 7.9     | 1,579  |
| 45-49                      | 6.0     | 501    | 6.1     | 626    | 6.0     | 1,127  |
| 50-54                      | 4.4     | 395    | 4.5     | 531    | 4.5     | 926    |
| 55-59                      | 3.4     | 332    | 3.5     | 365    | 3.5     | 697    |
| 60-64                      | 2.5     | 274    | 2.8     | 269    | 2.7     | 543    |
| Total 15-24                | 39.2    | 3,069  | 38.4    | 4,102  | 38.8    | 7,171  |
| Total 15-49                | 89.6    | 7,283  | 89.2    | 10,203 | 89.4    | 17,486 |
| Total 15-64                | 100.0   | 8,284  | 100.0   | 11,368 | 100.0   | 19,652 |

<sup>1</sup>Church of Central Africa Presbyterian.

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 Pediatric Population

Survey participants younger than the age of 10 years accounted for 72.5% of all participants ages 0-14 years. The majority of the respondents ages 0-14 years resided in rural areas (85.3%), and the distribution across the five wealth quintiles ranged from 18.6% in the highest wealth quintile to 21.1% percent in the fourth wealth quintile (Table 4.4.A)

| Characteristic         | Males   |        | Females |        | Total   |        |
|------------------------|---------|--------|---------|--------|---------|--------|
|                        | Percent | Number | Percent | Number | Percent | Number |
| <b>Age</b>             |         |        |         |        |         |        |
| 0-17 months            | 11.1    | 418    | 11.4    | 467    | 11.2    | 885    |
| 18-59 months           | 29.0    | 1,103  | 27.9    | 1,128  | 28.5    | 2,231  |
| 5-9 years              | 32.8    | 1,569  | 32.8    | 1,671  | 32.8    | 3,240  |
| 10-14 years            | 27.1    | 1,481  | 28.0    | 1,462  | 27.5    | 2,943  |
| <b>Residence</b>       |         |        |         |        |         |        |
| Urban                  | 14.3    | 1,370  | 15.2    | 1,485  | 14.7    | 2,855  |
| Rural                  | 85.7    | 3,201  | 84.8    | 3,244  | 85.3    | 6,445  |
| <b>Zone</b>            |         |        |         |        |         |        |
| North                  | 14.0    | 683    | 14.3    | 711    | 14.1    | 1,394  |
| Central-East           | 16.8    | 680    | 15.8    | 660    | 16.3    | 1,340  |
| Central-West           | 21.1    | 554    | 21.1    | 576    | 21.1    | 1,130  |
| Lilongwe City          | 5.1     | 626    | 5.3     | 686    | 5.2     | 1,312  |
| South-East             | 20.2    | 645    | 20.9    | 675    | 20.5    | 1,320  |
| South-West             | 18.5    | 809    | 17.9    | 804    | 18.2    | 1,613  |
| Blantyre City          | 4.4     | 574    | 4.5     | 617    | 4.5     | 1,191  |
| <b>Wealth quintile</b> |         |        |         |        |         |        |
| Lowest                 | 20.7    | 724    | 19.8    | 721    | 20.3    | 1,445  |
| Second                 | 19.0    | 720    | 19.0    | 734    | 19.0    | 1,454  |
| Middle                 | 21.6    | 840    | 20.4    | 803    | 21.0    | 1,643  |
| Fourth                 | 21.0    | 989    | 21.2    | 989    | 21.1    | 1,978  |
| Highest                | 17.7    | 1,298  | 19.6    | 1,482  | 18.6    | 2,780  |
| Total 0-4              | 40.2    | 1,521  | 39.3    | 1,596  | 39.7    | 3,117  |
| Total 0-14             | 100.0   | 4,571  | 100.0   | 4,729  | 100.0   | 9,300  |

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

## 5 HIV INCIDENCE

### 5.1 Key Findings

- Annual incidence of HIV infection among adults ages 15-64 years in Malawi was 0.37%: 0.50% among females, and 0.23% among males. This corresponds to approximately 28,000 new cases of HIV infection annually among adults ages 15-64 years in the country.

### 5.2 Background

HIV prevalence is a measure of the relative burden of disease in a population, but is not optimal for measuring acute changes in an HIV epidemic, including changes in HIV transmission. HIV incidence is a 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 participants ages 15-64 years at the national level. For the purposes of this analysis, HIV incidence is expressed as the cumulative incidence or risk of new infections in a 12-month period, which is a close approximation to the instantaneous incidence rate. It is important to note that MPHIA was not powered to estimate incidence at the zonal level or across different subgroups.

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

Incidence estimation is based on recent/long-term (LT) classification using algorithms with LAg avidity.<sup>1,2</sup> 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 suppressed VL for years, drug resistance or lack of adherence may result in VL  $\geq$  1000 copies/ml. Based in part on data from multiple PHIA surveys, the updated incidence algorithm includes ARV detection as a second exclusion criteria. The addition of ARV detection is expected to produce more accurate estimates of both HIV incidence and transmitted HIV drug resistance.

### 5.3 HIV Incidence Among Adults

#### HIV incidence estimates using LAg Avidity and HIV viral load

Using the LAg Avidity assay and VL algorithm, estimated incidence was 0.39% (95% CI: 0.22%-0.57%) among adults ages 15-64 years (0.26% among males and 0.52% among females). Annual incidence

peaked among males ages 35-49 years (0.49%), and females ages 25-34 years (0.87%). HIV incidence for adults ages 15-49 years was estimated at 0.36% (95% CI: 0.19%-0.53%). HIV incidence was 0.26% among males and 0.46% among females ages 15-49 years. Estimates are not statistically significantly different; MPHIA was not designed to compare incidence estimates across demographic subgroups (Table 5.3.A).

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

Using the LAg Avidity assay, VL and ARV algorithm, estimated incidence was 0.37% (95% CI: 0.20%-0.54%) among adults ages 15-64 years (0.23% among males and 0.50% among females). Annual incidence peaked among males ages 25-34 years (0.40%) and among females ages 25-34 years (0.83%). HIV incidence for adults ages 15-49 years was estimated at 0.33% (95% CI: 0.17%-0.49%; 0.22% among males and 0.44% among females). Estimates are not statistically significantly different; MPHIA was not designed to compare incidence estimates across demographic subgroups (Table 5.3.B).

**Table 5.3.A Annual HIV incidence using LAg/VL<sup>1</sup> testing algorithm**

Annual incidence of HIV among persons ages 15-49 and 15-64 years using LAg/VL<sup>1</sup> algorithm, by sex and age, MPHIA 2015-2016

| Age   | Males                                    |                     | Females                                  |              | Total                                    |              |
|-------|--|---------------------|--|--------------|--|--------------|
|       | Percentage annual incidence <sup>2</sup> | 95% CI <sup>3</sup> | Percentage annual incidence <sup>2</sup> | 95% CI       | Percentage annual incidence <sup>2</sup> | 95% CI       |
| 15-24 | 0.05                                     | (0.00, 0.19)        | 0.40                                     | (0.04, 0.76) | 0.23                                     | (0.03, 0.43) |
| 25-34 | 0.40                                     | (0.00, 0.90)        | 0.87                                     | (0.11, 1.63) | 0.63                                     | (0.20, 1.07) |
| 35-49 | 0.49                                     | (0.00, 1.09)        | 0.06                                     | (0.00, 0.25) | 0.28                                     | (0.00, 0.57) |
| 15-49 | 0.26                                     | (0.04, 0.47)        | 0.46                                     | (0.18, 0.75) | 0.36                                     | (0.19, 0.53) |
| 15-64 | 0.26                                     | (0.06, 0.47)        | 0.52                                     | (0.22, 0.82) | 0.39                                     | (0.22, 0.57) |

<sup>1</sup> LAg/VL: Limiting antigen/viral load  
<sup>2</sup> Relates to Global AIDS Monitoring indicator 1.3: Retention on antiretroviral therapy at 12 months  
<sup>3</sup> CI (confidence interval) indicates the interval that is expected to include the true population parameter 95% of the time

**Table 5.3.B Annual HIV incidence using LAg/VL/ARV<sup>1</sup> testing algorithm**

Annual incidence of HIV among persons ages 15-49 and 15-64 years, by sex and age, using LAg/VL/ARV<sup>1</sup> algorithm, MPHIA 2015-2016

| Age   | Males                                    |                     | Females                                  |              | Total                                    |              |
|-------|--|---------------------|--|--------------|--|--------------|
|       | Percentage annual incidence <sup>2</sup> | 95% CI <sup>3</sup> | Percentage annual incidence <sup>2</sup> | 95% CI       | Percentage annual incidence <sup>2</sup> | 95% CI       |
| 15-24 | 0.05                                     | (0.00, 0.19)        | 0.38                                     | (0.02, 0.74) | 0.22                                     | (0.02, 0.41) |
| 25-34 | 0.40                                     | (0.00, 0.90)        | 0.83                                     | (0.09, 1.57) | 0.61                                     | (0.18, 1.04) |
| 35-49 | 0.34                                     | (0.00, 0.82)        | 0.06                                     | (0.00, 0.25) | 0.20                                     | (0.00, 0.45) |
| 15-49 | 0.22                                     | (0.02, 0.42)        | 0.44                                     | (0.16, 0.72) | 0.33                                     | (0.17, 0.49) |
| 15-64 | 0.23                                     | (0.04, 0.43)        | 0.50                                     | (0.20, 0.79) | 0.37                                     | (0.20, 0.54) |

<sup>1</sup> LAg/VL/ARV: Limiting antigen/viral load/antiretrovirals  
<sup>2</sup> Relates to Global AIDS Monitoring indicator 1.3: Retention on antiretroviral therapy at 12 months  
<sup>3</sup> CI (confidence interval) indicates the interval that is expected to include the true population parameter 95% of the time

## 5.4 Gaps and Unmet Needs

- The data suggests that there is still a deficit in the effective implementation of strategies to stop transmission and prevent the occurrence of new HIV infections, especially among women.

## 5.5 References

1. Duong, YT., Kassanjee, R., Welte, A., et al., (2015). Recalibration of the limiting antigen avidity EIA to determine mean duration of recent infection in divergent HIV-1 subtypes. *PLoS ONE*, 10(2): 10.1371/journal.pone.
2. Kassanjee, R., et al. (2012). A New General Biomarker-based Incidence Estimator. *Epidemiology*, 23(5):721-8. doi: 10.1097/EDE.0b013e3182576c07.
3. Duong, YT., Qiu, M., De, AK., et al. (2012). 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*, 7(3): e33328. doi:10.1371/journal.pone.0033328.

## 6 HIV PREVALENCE

### 6.1 Key Findings

- Prevalence of HIV infection among adults ages 15-64 years in Malawi was 10.6%: 12.5% among females and 8.5% among males. This corresponds to approximately 900,000 PLHIV ages 15-64 years in the country.
- HIV prevalence among females was significantly higher than among male peers among those ages 20-24 years, ages 25-29 years, ages 30-34 years, and ages 35-39 years.
- The burden of HIV infection varies across the country. HIV prevalence among adults ages 15-64 years ranged from 4.9% in Central-East to 17.7% in Blantyre City.

### 6.2 Background

This chapter presents representative estimates of prevalence of HIV infection among adults ages 15-64 years at the national and zonal level by selected demographic and behavioral characteristics. It also presents HIV prevalence estimates among children ages 0-14 years at the national level and estimates of the number of HIV-positive persons living in Malawi. HIV prevalence testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Malawi's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. Appendix A describes the sample design and Appendix C provides estimates of sampling errors. Appendix B describes the PHIA HIV testing methodology.

### 6.3 Adult HIV Prevalence by Select Demographic Characteristics

Overall, HIV prevalence among adults ages 15-64 years was 10.6%: 8.5% in males, and 12.5% in females. Prevalence in urban areas was 14.2%, compared to 9.7% in rural areas (Table 6.3.A).

Among adults ages 15-64 years, HIV prevalence was 14.8% among those with no education, compared to 10.4% among those with more than secondary school education. HIV prevalence in females with no education was 16.5%, compared to 11.8% and 12.9% in those with secondary and more than secondary education, respectively. HIV prevalence in males with no education was 10.7%, compared with 6.8% among those with secondary education (Table 6.3.A).

Among those ages 15-64 years who have never married—a group dominated by younger segments of the population—the HIV prevalence was 2.4%. Among those who were married or living with a partner, HIV prevalence was 11.4%; in comparison, HIV prevalence was nearly twice as high (21.7%) among those who were divorced or separated and four times as high (43.9%) among those who were widowed (Table 6.3.A, Figure 6.3.A).

HIV prevalence among women ages 15-49 years who were pregnant at the time of the survey was estimated at 8.7%, compared to 12.5% among women who were not pregnant (Table 6.3.B).

**Table 6.3.A HIV prevalence by demographic characteristics: Ages 15-64 years**

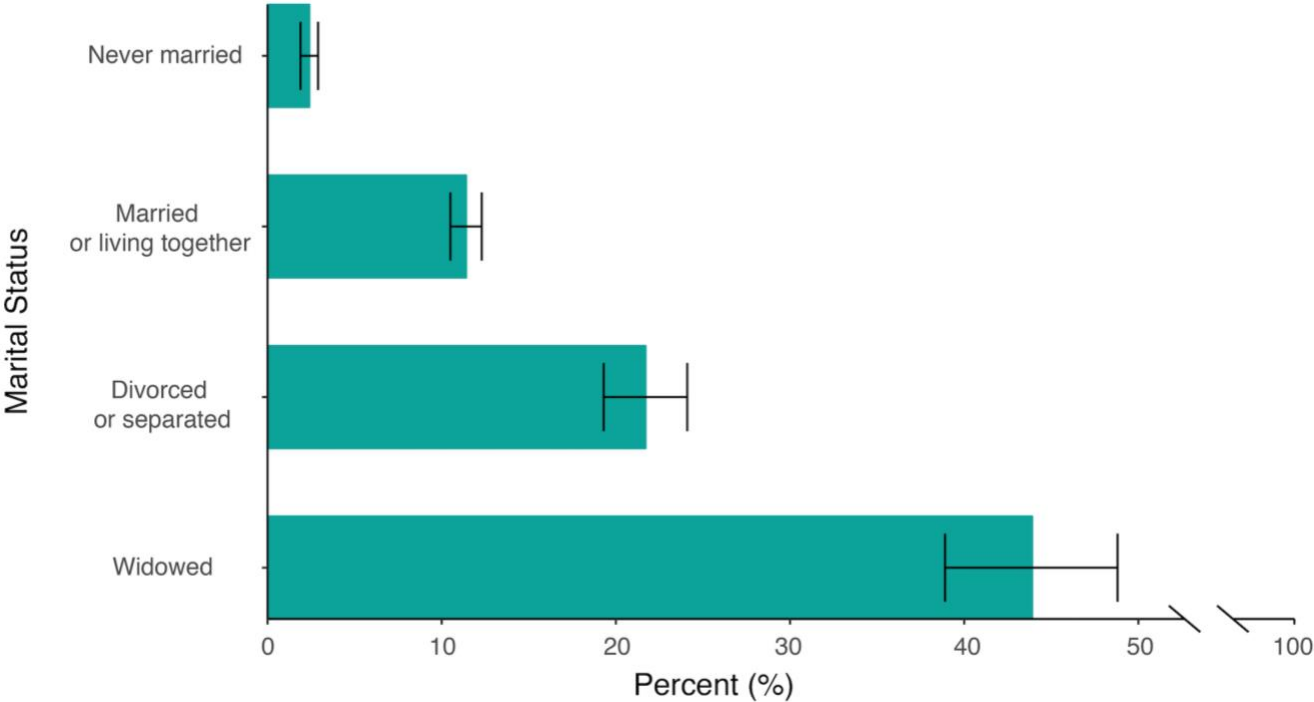
Prevalence of HIV among persons age 15-64 years, by sex and selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Males                   |              | Females                 |              | Total                   |               |
|----------------------------|-------------------------|--------------|-------------------------|--------------|-------------------------|---------------|
|                            | Percentage HIV positive | Number       | Percentage HIV positive | Number       | Percentage HIV positive | Number        |
| <b>Residence</b>           |                         |              |                         |              |                         |               |
| Urban                      | 10.8                    | 2,683        | 17.7                    | 3,750        | 14.2                    | 6,433         |
| Rural                      | 7.9                     | 4,525        | 11.3                    | 6,229        | 9.7                     | 10,754        |
| <b>Zone</b>                |                         |              |                         |              |                         |               |
| North                      | 6.0                     | 1,017        | 8.7                     | 1,301        | 7.4                     | 2,318         |
| Central-East               | 3.8                     | 1,160        | 6.2                     | 1,341        | 4.9                     | 2,501         |
| Central-West               | 5.7                     | 860          | 6.4                     | 1,149        | 6.1                     | 2,009         |
| Lilongwe City              | 8.5                     | 1,265        | 14.8                    | 1,729        | 11.5                    | 2,994         |
| South-East                 | 12.5                    | 742          | 17.4                    | 1,210        | 15.3                    | 1,952         |
| South-West                 | 13.1                    | 1,050        | 18.4                    | 1,682        | 16.0                    | 2,732         |
| Blantyre City              | 14.0                    | 1,114        | 21.8                    | 1,567        | 17.7                    | 2,681         |
| <b>Marital status</b>      |                         |              |                         |              |                         |               |
| Never married              | 1.6                     | 2,611        | 3.5                     | 1,997        | 2.4                     | 4,608         |
| Married or living together | 11.6                    | 4,230        | 11.3                    | 6,311        | 11.4                    | 10,541        |
| Divorced or separated      | 18.6                    | 304          | 22.8                    | 1,150        | 21.7                    | 1,454         |
| Widowed                    | 51.4                    | 53           | 43.1                    | 510          | 43.9                    | 563           |
| <b>Education</b>           |                         |              |                         |              |                         |               |
| No education               | 10.7                    | 353          | 16.5                    | 1,032        | 14.8                    | 1,385         |
| Primary                    | 9.1                     | 3,963        | 11.9                    | 5,994        | 10.6                    | 9,957         |
| Secondary                  | 6.8                     | 2,473        | 11.8                    | 2,559        | 8.9                     | 5,032         |
| More than secondary        | 9.0                     | 417          | 12.9                    | 387          | 10.4                    | 804           |
| <b>Wealth quintile</b>     |                         |              |                         |              |                         |               |
| Lowest                     | 9.9                     | 769          | 12.5                    | 1,202        | 11.3                    | 1,971         |
| Second                     | 7.6                     | 1,049        | 11.4                    | 1,416        | 9.6                     | 2,465         |
| Middle                     | 7.7                     | 1,155        | 11.4                    | 1,630        | 9.6                     | 2,785         |
| Fourth                     | 8.5                     | 1,568        | 11.6                    | 2,032        | 10.1                    | 3,600         |
| Highest                    | 9.1                     | 2,667        | 15.1                    | 3,699        | 12.1                    | 6,366         |
| <b>Religion</b>            |                         |              |                         |              |                         |               |
| Catholic                   | 6.6                     | 1,486        | 10.2                    | 1,916        | 8.4                     | 3,402         |
| CCAP <sup>1</sup>          | 7.9                     | 1,422        | 10.4                    | 1,875        | 9.2                     | 3,297         |
| Anglican                   | 10.0                    | 187          | 11.0                    | 241          | 10.5                    | 428           |
| Seventh Day Adventist      | 9.2                     | 484          | 14.0                    | 746          | 11.7                    | 1,230         |
| Baptist                    | 11.4                    | 187          | 16.2                    | 238          | 13.8                    | 425           |
| Other Christian            | 9.3                     | 2,054        | 13.3                    | 3,277        | 11.5                    | 5,331         |
| Muslim                     | 6.7                     | 632          | 14.7                    | 925          | 11.1                    | 1,557         |
| Other                      | 12.5                    | 542          | 14.0                    | 705          | 13.3                    | 1,247         |
| None                       | 7.4                     | 200          | (12.5)                  | 49           | 8.4                     | 249           |
| <b>Ethnicity</b>           |                         |              |                         |              |                         |               |
| Chewa                      | 5.5                     | 2,493        | 7.3                     | 3,217        | 6.4                     | 5,710         |
| Lomwe                      | 15.9                    | 1,345        | 19.3                    | 2,033        | 17.7                    | 3,378         |
| Ngoni                      | 9.3                     | 873          | 13.6                    | 1,265        | 11.6                    | 2,138         |
| Nkhonde                    | 11.2                    | 78           | 12.4                    | 105          | 11.8                    | 183           |
| Sena                       | 8.3                     | 298          | 16.1                    | 409          | 12.3                    | 707           |
| Tonga                      | 8.2                     | 125          | 8.6                     | 208          | 8.4                     | 333           |
| Tumbuka                    | 5.2                     | 859          | 9.1                     | 1,113        | 7.2                     | 1,972         |
| Yao                        | 9.0                     | 732          | 16.8                    | 1,062        | 13.2                    | 1,794         |
| Other                      | 10.1                    | 395          | 16.9                    | 549          | 13.6                    | 944           |
| <b>Pregnancy status</b>    |                         |              |                         |              |                         |               |
| Currently pregnant         | NA                      | NA           | 8.7                     | 562          | NA                      | NA            |
| Not currently pregnant     | NA                      | NA           | 12.9                    | 9,292        | NA                      | NA            |
| <b>Total 15-64</b>         | <b>8.5</b>              | <b>7,208</b> | <b>12.5</b>             | <b>9,979</b> | <b>10.6</b>             | <b>17,187</b> |

<sup>1</sup>Church of Central Africa Presbyterian.

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

Figure 6.3.A HIV prevalence by marital status: Ages 15-64 years, MPHIA 2015-2016



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

Prevalence of HIV among persons age 15-49 years, by sex and selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Males                   |              | Females                 |              | Total                   |               |
|----------------------------|-------------------------|--------------|-------------------------|--------------|-------------------------|---------------|
|                            | Percentage HIV positive | Number       | Percentage HIV positive | Number       | Percentage HIV positive | Number        |
| <b>Residence</b>           |                         |              |                         |              |                         |               |
| Urban                      | 9.9                     | 2,439        | 17.3                    | 3,470        | 13.5                    | 5,909         |
| Rural                      | 7.2                     | 3,867        | 10.9                    | 5,479        | 9.1                     | 9,346         |
| <b>Zone</b>                |                         |              |                         |              |                         |               |
| North                      | 4.9                     | 894          | 8.8                     | 1,157        | 6.8                     | 2,051         |
| Central-East               | 3.4                     | 987          | 5.8                     | 1,207        | 4.6                     | 2,194         |
| Central-West               | 5.0                     | 735          | 5.7                     | 1,009        | 5.3                     | 1,744         |
| Lilongwe City              | 7.6                     | 1,159        | 14.1                    | 1,607        | 10.6                    | 2,766         |
| South-East                 | 11.9                    | 627          | 16.6                    | 1,051        | 14.5                    | 1,678         |
| South-West                 | 12.2                    | 900          | 18.8                    | 1,472        | 15.8                    | 2,372         |
| Blantyre City              | 13.0                    | 1,004        | 21.6                    | 1,446        | 17.1                    | 2,450         |
| <b>Marital status</b>      |                         |              |                         |              |                         |               |
| Never married              | 1.5                     | 2,596        | 3.5                     | 1,960        | 2.3                     | 4,556         |
| Married or living together | 11.1                    | 3,412        | 11.7                    | 5,713        | 11.4                    | 9,125         |
| Divorced or separated      | 19.1                    | 262          | 23.2                    | 996          | 22.1                    | 1,258         |
| Widowed                    | (59.0)                  | 29           | 53.0                    | 269          | 53.7                    | 298           |
| <b>Education</b>           |                         |              |                         |              |                         |               |
| No education               | 10.0                    | 258          | 17.6                    | 750          | 15.3                    | 1,008         |
| Primary                    | 8.5                     | 3,348        | 11.6                    | 5,343        | 10.2                    | 8,691         |
| Secondary                  | 6.0                     | 2,326        | 11.1                    | 2,481        | 8.1                     | 4,807         |
| More than secondary        | 8.0                     | 373          | 12.6                    | 371          | 9.7                     | 744           |
| <b>Wealth quintile</b>     |                         |              |                         |              |                         |               |
| Lowest                     | 9.5                     | 673          | 12.0                    | 1,070        | 10.9                    | 1,743         |
| Second                     | 7.6                     | 907          | 11.2                    | 1,245        | 9.4                     | 2,152         |
| Middle                     | 6.7                     | 985          | 10.9                    | 1,426        | 8.9                     | 2,411         |
| Fourth                     | 7.8                     | 1,352        | 11.2                    | 1,815        | 9.5                     | 3,167         |
| Highest                    | 7.7                     | 2,389        | 14.6                    | 3,393        | 11.2                    | 5,782         |
| <b>Religion</b>            |                         |              |                         |              |                         |               |
| Catholic                   | 6.1                     | 1,298        | 9.7                     | 1,687        | 7.9                     | 2,985         |
| CCAP <sup>1</sup>          | 7.1                     | 1,266        | 9.6                     | 1,637        | 8.3                     | 2,903         |
| Anglican                   | 10.3                    | 165          | 11.5                    | 215          | 10.9                    | 380           |
| Seventh Day Adventist      | 8.0                     | 437          | 13.8                    | 694          | 11.1                    | 1,131         |
| Baptist                    | 10.3                    | 163          | 17.6                    | 218          | 13.9                    | 381           |
| Other Christian            | 8.2                     | 1,789        | 13.0                    | 2,971        | 10.9                    | 4,760         |
| Muslim                     | 6.2                     | 546          | 13.9                    | 839          | 10.5                    | 1,385         |
| Other                      | 12.3                    | 473          | 14.0                    | 637          | 13.1                    | 1,110         |
| None                       | 7.2                     | 158          | (10.8)                  | 44           | 7.9                     | 202           |
| <b>Ethnicity</b>           |                         |              |                         |              |                         |               |
| Chewa                      | 4.9                     | 2,204        | 6.6                     | 2,917        | 5.8                     | 5,121         |
| Lomwe                      | 15.3                    | 1,168        | 19.5                    | 1,837        | 17.5                    | 3,005         |
| Ngoni                      | 8.2                     | 757          | 13.5                    | 1,130        | 11.0                    | 1,887         |
| Nkhonde                    | 9.6                     | 68           | 12.2                    | 95           | 10.9                    | 163           |
| Sena                       | 7.4                     | 265          | 16.7                    | 360          | 12.1                    | 625           |
| Tonga                      | 5.4                     | 108          | 8.2                     | 186          | 6.9                     | 294           |
| Tumbuka                    | 4.8                     | 756          | 8.9                     | 986          | 6.8                     | 1,742         |
| Yao                        | 8.5                     | 638          | 15.6                    | 940          | 12.4                    | 1,578         |
| Other                      | 9.3                     | 333          | 17.3                    | 482          | 13.4                    | 815           |
| <b>Pregnancy status</b>    |                         |              |                         |              |                         |               |
| Currently pregnant         | NA                      | NA           | 8.7                     | 562          | NA                      | NA            |
| Not currently pregnant     | NA                      | NA           | 12.5                    | 8,263        | NA                      | NA            |
| <b>Total 15-49</b>         | <b>7.8</b>              | <b>6,306</b> | <b>12.1</b>             | <b>8,949</b> | <b>10.0</b>             | <b>15,255</b> |

<sup>1</sup>Church of Central Africa Presbyterian.

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.



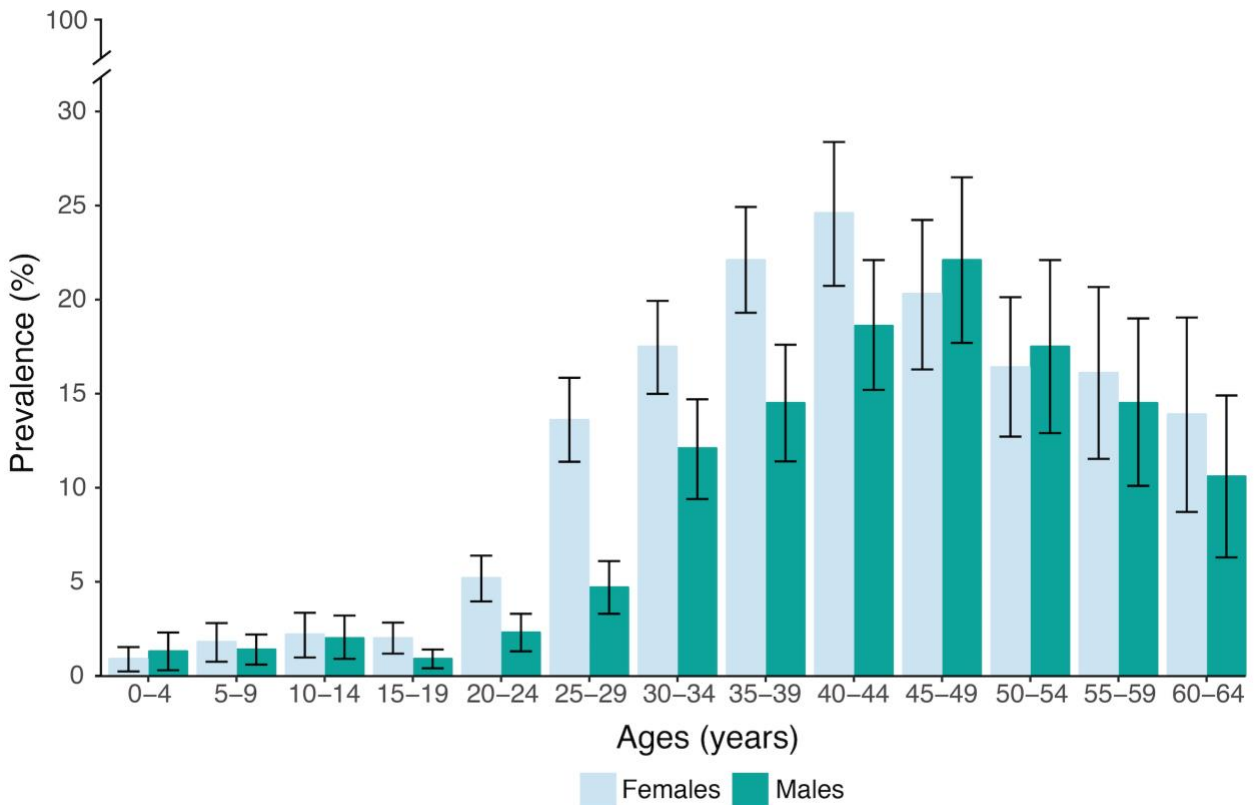
#### 6.4 Adult HIV Prevalence by Age and Sex

In adults ages 15-64 years, HIV prevalence ranged from 1.5% among those ages 15-19 years to 21.7% in those ages 40-44 years. The peak HIV prevalence in females was 24.6%, observed in those ages 40-44 years, and the peak HIV prevalence in males was 22.1%, observed in those ages 45-49 years. Prevalence among females ages 15-24 years was 3.4%, compared to 13.6% among females ages 25-29 years (Table 6.4.A).

Differences in prevalence between males and females were significant in the ages 20-24 years, ages 25-29 years, ages 30-34 years, and ages 35-39 years. There were not significant differences by sex above age 39 years. Among young people ages 15-24 years, HIV prevalence was twice as high among females (3.4%) as among males (1.5%), and HIV prevalence among those ages 25-29 years was almost three times greater in females (13.6%) compared to males (4.7%; Table 6.4.A; Figure 6.4.A).

| Age          | Males                   |        | Females                 |        | Total                   |        |
|--------------|-------------------------|--------|-------------------------|--------|-------------------------|--------|
|              | Percentage HIV positive | Number | Percentage HIV positive | Number | Percentage HIV positive | Number |
| 0-17 months  | 0.0                     | 230    | 0.7                     | 266    | 0.4                     | 496    |
| 18-59 months | 1.7                     | 664    | 0.9                     | 707    | 1.4                     | 1,371  |
| 5-9          | 1.4                     | 1,057  | 1.8                     | 1,144  | 1.6                     | 2,201  |
| 10-14        | 2.0                     | 1,054  | 2.2                     | 1,043  | 2.1                     | 2,097  |
| Total 0-4    | 1.3                     | 894    | 0.9                     | 974    | 1.1                     | 1,868  |
| Total 0-14   | 1.5                     | 3,005  | 1.5                     | 3,161  | 1.5                     | 6,166  |
| 15-19        | 0.9                     | 1,497  | 2.0                     | 1,646  | 1.5                     | 3,143  |
| 20-24        | 2.3                     | 1,181  | 5.2                     | 1,934  | 3.8                     | 3,115  |
| 25-29        | 4.7                     | 938    | 13.6                    | 1,511  | 9.3                     | 2,449  |
| 30-34        | 12.1                    | 870    | 17.5                    | 1,425  | 14.9                    | 2,295  |
| 35-39        | 14.5                    | 765    | 22.1                    | 1,097  | 18.4                    | 1,862  |
| 40-44        | 18.6                    | 609    | 24.6                    | 785    | 21.7                    | 1,394  |
| 45-49        | 22.1                    | 446    | 20.3                    | 551    | 21.2                    | 997    |
| 50-54        | 17.5                    | 355    | 16.4                    | 469    | 16.9                    | 824    |
| 55-59        | 14.5                    | 295    | 16.1                    | 326    | 15.4                    | 621    |
| 60-64        | 10.6                    | 252    | 13.9                    | 235    | 12.4                    | 487    |
| Total 15-24  | 1.5                     | 2,678  | 3.4                     | 3,580  | 2.5                     | 6,258  |
| Total 15-49  | 7.8                     | 6,306  | 12.1                    | 8,949  | 10.0                    | 15,255 |
| Total 15-64  | 8.5                     | 7,208  | 12.5                    | 9,979  | 10.6                    | 17,187 |

**Figure 6.4.A HIV prevalence by age and sex, MPHIA 2015-2016**



**6.5 Adult HIV Prevalence by Zone**

The burden of HIV infection varied across the country. HIV prevalence, among those 15-64 years, ranged from 4.9% in Central-East to 17.7% in Blantyre City (Figures 6.5.A and 6.5.B, Table 6.3.A). In the southern region of the country (South-East, South-West, and Blantyre City), HIV prevalence among females was statistically significantly higher than among males. In Blantyre City, prevalence in females ages 15-64 years was 21.8%, compared to 14.0% in their male peers (Table 6.3.A, Figure 6.5.A, Figure 6.5.B).

**Figure 6.5.A HIV prevalence among adults aged 15-64 years, by zone, MPHIA 2015-2016**

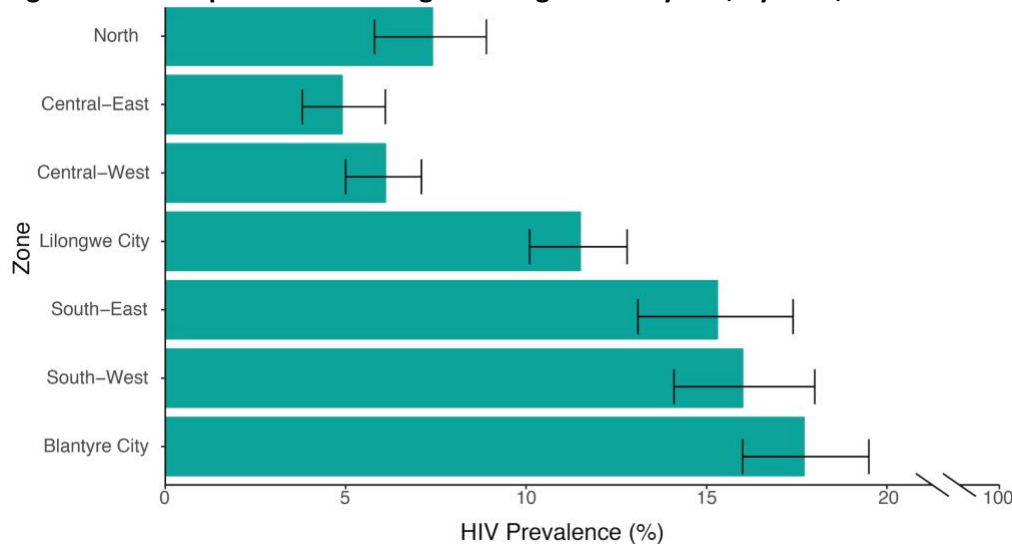
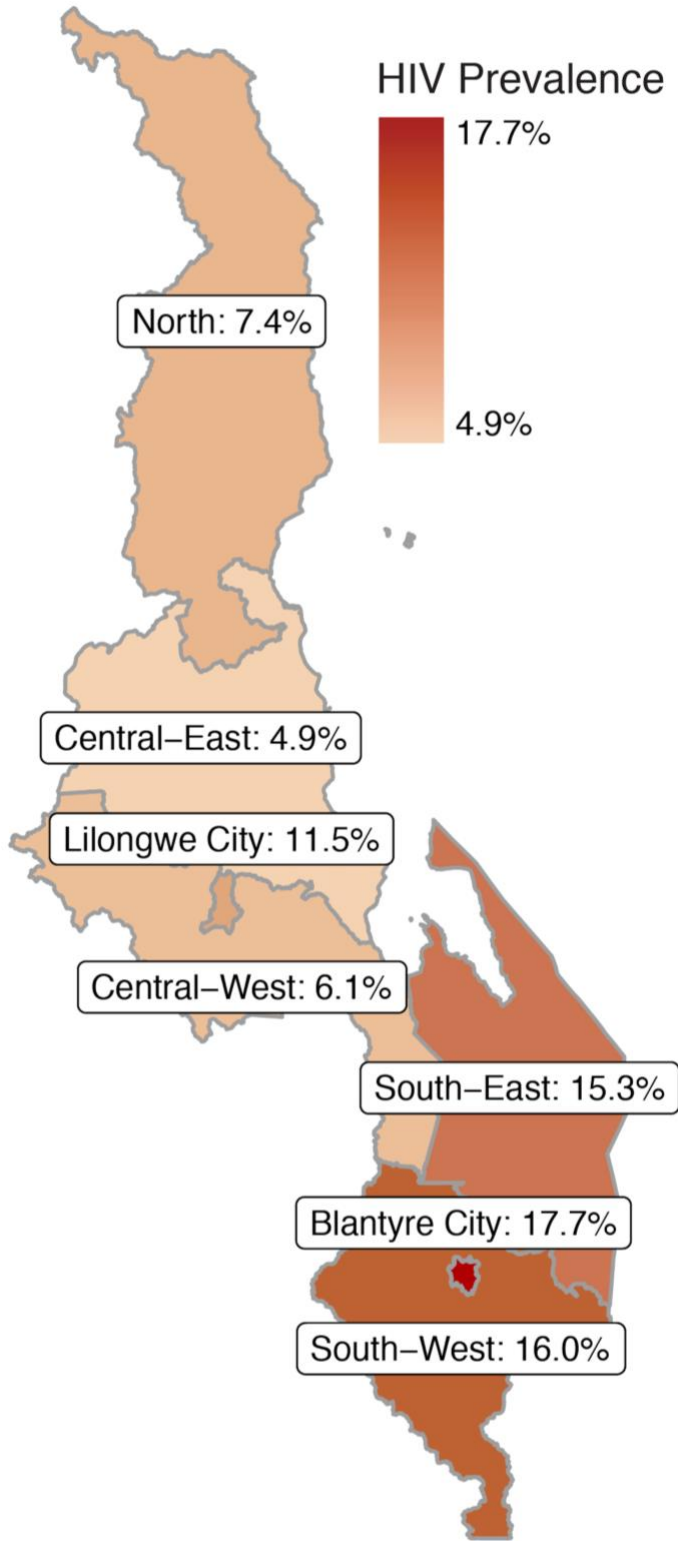


Figure 6.5.B HIV prevalence among adults aged 15-64 years, by zone, MPHIA 2015-2016



# 7 HIV TESTING

## 7.1 Key Findings

- In Malawi, 73.9% of the population ages 15-64 years had ever tested for HIV and received their results (81.6% of females and 65.6% of males).
- In Malawi, 35.9% of the population ages 15-64 years reported having had HIV testing and receiving results in the 12 months preceding the survey (39.3% of females and 32.2% of males).
- Among those ages 15-64 years who tested HIV positive in MPHIA, 7.7% reported that they had never been tested or that they had never received their results.
- If an HIV self-test kit were available in Malawi, 76.5% of males and 68.5% of females ages 15-64 years would use it.

## 7.2 Background

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

Data presented in this section pertain to adults ages 15-64 years, males and females, 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

Overall, 73.9% of the population ages 15-64 years reported that they had ever tested for HIV and received their results, while 35.9% indicated that they had tested in the 12 months preceding the survey and received their results. Nearly two-thirds (65.6%) of males and 81.6% of females ages 15-64 years reported having ever tested for HIV and receiving their test results. For both males and females, about one-third tested for HIV in the year preceding the survey (32.2% among males and 39.3% among females) (Tables 7.3.A, 7.3.B, and 7.3.C).

Among males of most age groups, over two-thirds reported ever testing for HIV and receiving their results; however, only 33.2% of males ages 15-19 years reported ever testing for HIV and receiving results. The percentage of males testing for HIV and receiving results in the year preceding the survey ranged from 17.1% among those ages 15-19 years to 42.2% among those ages 25-29 years. Among females, 47.2% of those ages 15-19 years had ever been tested for HIV and received results, compared to over 90.0% among females ages 20-44 years. Among older females ages 45-64 years, percentages ever tested ranged from 59.0% among those ages 60-64 years to 85.1% among those ages 45-49 years. About one-half of women ages 20-24 years and ages 25-29 years (52.3% and 49.7%, respectively) were tested for HIV in the year preceding the survey (Tables 7.3.A and 7.3.B; Figure 7.3.A).

There was variation in lifetime and recent HIV testing by education status. Overall, among the adults ages 15-64 years, 76.6% of those with no education have ever tested for HIV and received their results and 32.6% tested in the year preceding the survey. Among those with more than secondary education, 85% reported ever testing and 39.2% reported testing in the year preceding the survey. Among males with more than secondary education, 82.8% reported having ever tested for HIV and receiving their results, compared to 63.4% of males with no education. Among females, percentages ever tested for HIV, and testing for HIV in the year preceding the survey, were highest among those with more than secondary education (89.1% and 43.9%, respectively; Tables 7.3.A, 7.3.B and 7.3.C).

Among males, about three-quarters of those who were married or cohabiting and divorced or separated (77.9% and 72.3%, respectively) reported ever testing for HIV. Percentages of testing were even higher among females: 92.1% of married or cohabiting females and 90.6% of divorced or separated females reported ever testing for HIV. Among both males and females, less than half of those who were never married had ever been tested (44.1% and 46.3%, respectively; Tables 7.3.A and 7.3.B).

Among those adults ages 15-64 years who tested HIV positive in MPHIA, 92.3% reported ever testing for HIV and receiving their results (88.3% among males and 94.7% among females). Among those testing negative in MPHIA, 63.0% of males and 79.1% of females reported ever testing for HIV. Among those who were not tested in MPHIA, 47.6% reported having tested for HIV in the year preceding the survey and receiving their results (40.8% among males and 53.7% among females; Tables 7.3.A, 7.3.B and 7.3.C).

**Table 7.3.A Self-reported HIV testing: Males**

Percentage of males ages 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, MPHIA 2015-2016

| Characteristic                        | Percentage who ever received HIV testing and received results | Percentage who received HIV testing in the past 12 months and received results <sup>1</sup> | Number |
|---------------------------------------|---|---|--------|
| <b>Result of PHIA survey HIV test</b> |   |   |        |
| HIV positive                          | 88.3  | 27.4  | 707    |
| HIV negative                          | 63.0  | 31.3  | 6,421  |
| Not tested                            | 68.4  | 40.8  | 1,056  |
| <b>Residence</b>                      |   |   |        |
| Urban                                 | 66.8  | 33.1  | 3,131  |
| Rural                                 | 65.3  | 31.9  | 5,053  |
| <b>Zone</b>                           |   |   |        |
| North                                 | 68.6  | 34.0  | 1,095  |
| Central-East                          | 61.1  | 28.3  | 1,253  |
| Central-West                          | 63.8  | 33.1  | 944    |
| Lilongwe City                         | 67.5  | 34.4  | 1,448  |
| South-East                            | 66.9  | 31.9  | 896    |
| South-West                            | 66.5  | 32.8  | 1,206  |
| Blantyre City                         | 68.8  | 31.8  | 1,342  |
| <b>Marital status</b>                 |   |   |        |
| Never married                         | 44.1  | 23.3  | 2,983  |
| Married or living together            | 77.9  | 37.3  | 4,795  |
| Divorced or separated                 | 72.3  | 33.3  | 340    |
| Widowed                               | 81.7  | 41.7  | 56     |
| <b>Education</b>                      |   |   |        |
| No education                          | 63.4  | 27.4  | 408    |
| Primary                               | 61.8  | 29.7  | 4,411  |
| Secondary                             | 70.9  | 37.2  | 2,822  |
| More than secondary                   | 82.8  | 36.7  | 541    |
| <b>Wealth quintile</b>                |   |   |        |
| Lowest                                | 66.1  | 34.3  | 862    |
| Second                                | 65.5  | 31.9  | 1,176  |
| Middle                                | 62.0  | 29.4  | 1,298  |
| Fourth                                | 65.1  | 32.9  | 1,728  |
| Highest                               | 68.5  | 32.8  | 3,120  |
| <b>Religion</b>                       |   |   |        |
| Catholic                              | 66.1  | 33.5  | 1,624  |
| CCAP <sup>2</sup>                     | 66.6  | 31.8  | 1,624  |
| Anglican                              | 61.0  | 28.0  | 206    |
| Seventh Day Adventist                 | 69.0  | 35.8  | 556    |
| Baptist                               | 64.0  | 32.2  | 205    |
| Other Christian                       | 66.1  | 32.9  | 2,339  |
| Muslim                                | 63.7  | 33.4  | 742    |
| Other                                 | 64.5  | 25.6  | 631    |
| None                                  | 59.2  | 26.8  | 240    |
| <b>Ethnicity</b>                      |   |   |        |
| Chewa                                 | 62.7  | 31.6  | 2,773  |
| Lomwe                                 | 70.8  | 32.8  | 1,586  |
| Ngoni                                 | 64.8  | 30.3  | 1,000  |
| Nkhonde                               | 79.8  | 32.6  | 85     |
| Sena                                  | 64.6  | 33.9  | 331    |
| Tonga                                 | 59.0  | 29.8  | 152    |
| Tumbuka                               | 69.2  | 34.7  | 926    |
| Yao                                   | 63.2  | 32.3  | 873    |
| Other                                 | 69.1  | 31.7  | 447    |
| <b>Age</b>                            |   |   |        |
| 15-19                                 | 33.2  | 17.1  | 1,666  |
| 20-24                                 | 66.2  | 38.7  | 1,366  |
| 25-29                                 | 78.3  | 42.2  | 1,105  |
| 30-34                                 | 82.3  | 39.5  | 995    |
| 35-39                                 | 78.3  | 37.6  | 868    |
| 40-44                                 | 77.6  | 33.7  | 696    |
| 45-49                                 | 74.7  | 29.1  | 498    |
| 50-54                                 | 70.1  | 25.2  | 390    |
| 55-59                                 | 67.0  | 24.9  | 326    |
| 60-64                                 | 65.2  | 25.9  | 274    |
| Total 15-24                           | 48.0  | 26.8  | 3,032  |
| Total 15-49                           | 65.3  | 33.0  | 7,194  |
| Total 15-64                           | 65.6  | 32.2  | 8,184  |

<sup>1</sup>Relates to PEPFAR HTC\_TST.

<sup>2</sup>Church of Central Africa Presbyterian.

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: Females**

Percentage of females ages 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, MPHIA 2015-2016

| Characteristic                        | Percentage who ever received HIV testing and received results | Percentage who received HIV testing in the past 12 months and received results <sup>1</sup> | Number |
|---------------------------------------|---|---|--------|
| <b>Result of PHIA survey HIV test</b> |   |   |        |
| HIV positive                          | 94.7  | 20.5  | 1,503  |
| HIV negative                          | 79.1  | 39.7  | 8,440  |
| Not tested                            | 84.6  | 53.7  | 1,380  |
| <b>Residence</b>                      |   |   |        |
| Urban                                 | 83.3  | 41.1  | 4,228  |
| Rural                                 | 81.2  | 38.9  | 7,095  |
| <b>Zone</b>                           |   |   |        |
| North                                 | 83.6  | 39.7  | 1,418  |
| Central-East                          | 76.6  | 36.0  | 1,486  |
| Central-West                          | 80.4  | 39.7  | 1,297  |
| Lilongwe City                         | 83.7  | 44.0  | 1,919  |
| South-East                            | 82.5  | 39.7  | 1,468  |
| South-West                            | 83.0  | 38.8  | 1,920  |
| Blantyre City                         | 84.2  | 40.9  | 1,815  |
| <b>Marital status</b>                 |   |   |        |
| Never married                         | 46.3  | 25.0  | 2,233  |
| Married or living together            | 92.1  | 44.8  | 7,228  |
| Divorced or separated                 | 90.6  | 41.6  | 1,280  |
| Widowed                               | 82.4  | 27.9  | 570    |
| <b>Education</b>                      |   |   |        |
| No education                          | 81.6  | 34.5  | 1,239  |
| Primary                               | 81.3  | 39.4  | 6,731  |
| Secondary                             | 81.5  | 41.6  | 2,890  |
| More than secondary                   | 89.1  | 43.9  | 456    |
| <b>Wealth quintile</b>                |   |   |        |
| Lowest                                | 84.2  | 41.8  | 1,420  |
| Second                                | 81.8  | 39.6  | 1,619  |
| Middle                                | 82.1  | 40.1  | 1,824  |
| Fourth                                | 78.5  | 38.1  | 2,264  |
| Highest                               | 81.9  | 37.9  | 4,196  |
| <b>Religion</b>                       |   |   |        |
| Catholic                              | 79.6  | 37.6  | 2,128  |
| CCAP <sup>2</sup>                     | 80.3  | 39.4  | 2,120  |
| Anglican                              | 77.0  | 39.6  | 275    |
| Seventh Day Adventist                 | 81.9  | 40.9  | 831    |
| Baptist                               | 82.6  | 42.5  | 268    |
| Other Christian                       | 83.8  | 39.7  | 3,728  |
| Muslim                                | 80.9  | 39.0  | 1,101  |
| Other                                 | 81.3  | 40.1  | 800    |
| None                                  | 82.7  | 34.8  | 63     |
| <b>Ethnicity</b>                      |   |   |        |
| Chewa                                 | 79.2  | 40.0  | 3,601  |
| Lomwe                                 | 85.0  | 39.0  | 2,344  |
| Ngoni                                 | 83.6  | 39.7  | 1,412  |
| Nkhonde                               | 87.0  | 38.2  | 117    |
| Sena                                  | 77.0  | 36.4  | 472    |
| Tonga                                 | 83.9  | 40.6  | 235    |
| Tumbuka                               | 82.8  | 39.9  | 1,209  |
| Yao                                   | 81.5  | 37.6  | 1,284  |
| Other                                 | 81.6  | 39.8  | 626    |
| <b>Age</b>                            |   |   |        |
| 15-19                                 | 47.2  | 28.4  | 1,849  |
| 20-24                                 | 92.8  | 52.3  | 2,240  |
| 25-29                                 | 97.8  | 49.7  | 1,751  |
| 30-34                                 | 96.6  | 43.9  | 1,605  |
| 35-39                                 | 94.6  | 39.6  | 1,231  |
| 40-44                                 | 91.8  | 35.9  | 868    |
| 45-49                                 | 85.1  | 29.7  | 625    |
| 50-54                                 | 76.8  | 29.2  | 525    |
| 55-59                                 | 69.3  | 28.7  | 360    |
| 60-64                                 | 59.0  | 23.1  | 269    |
| Total 15-24                           | 67.9  | 39.3  | 4,089  |
| Total 15-49                           | 83.0  | 40.7  | 10,169 |
| Total 15-64                           | 81.6  | 39.3  | 11,323 |

<sup>1</sup>Relates to PEPFAR HTS\_TST. <sup>2</sup>Church of Central Africa Presbyterian.

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 HIV testing: Total**

Percentage of persons ages 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, MPHIA 2015-2016

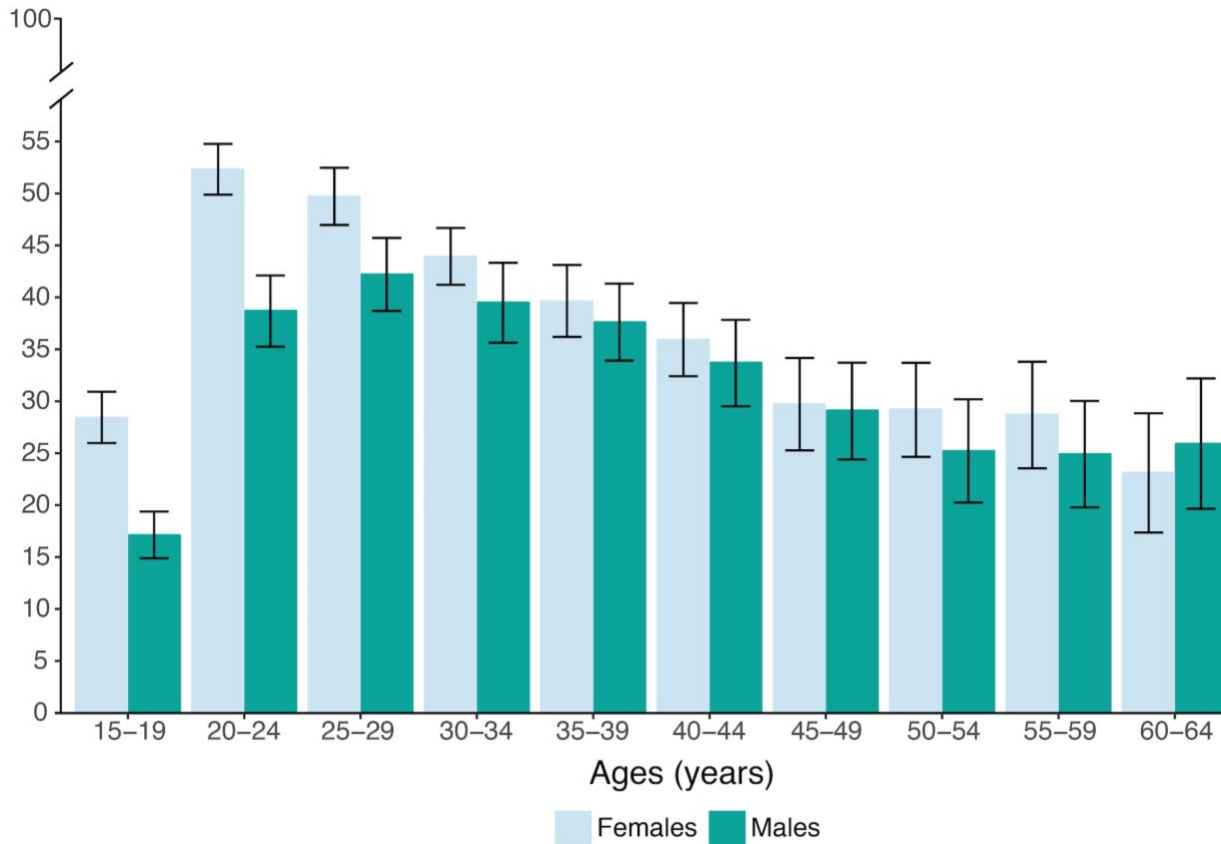
| Characteristic                        | Percentage who ever received HIV testing and received their results | Percentage who received HIV testing in the past 12 months and received their results <sup>1</sup> | Number |
|---------------------------------------|---|---|--------|
| <b>Result of PHIA survey HIV test</b> |   |   |        |
| HIV positive                          | 92.3  | 23.1  | 2,210  |
| HIV negative                          | 71.1  | 35.5  | 14,861 |
| Not tested                            | 76.9  | 47.6  | 2,436  |
| <b>Residence</b>                      |   |   |        |
| Urban                                 | 74.9  | 37.0  | 7,359  |
| Rural                                 | 73.6  | 35.6  | 12,148 |
| <b>Zone</b>                           |   |   |        |
| North                                 | 76.0  | 36.8  | 2,513  |
| Central-East                          | 68.6  | 32.0  | 2,739  |
| Central-West                          | 72.3  | 36.5  | 2,241  |
| Lilongwe City                         | 75.2  | 39.0  | 3,367  |
| South-East                            | 75.7  | 36.3  | 2,364  |
| South-West                            | 75.6  | 36.1  | 3,126  |
| Blantyre City                         | 76.3  | 36.3  | 3,157  |
| <b>Marital status</b>                 |   |   |        |
| Never married                         | 45.0  | 24.0  | 5,216  |
| Married or living together            | 85.4  | 41.2  | 12,023 |
| Divorced or separated                 | 86.4  | 39.7  | 1,620  |
| Widowed                               | 82.4  | 29.1  | 626    |
| <b>Education</b>                      |   |   |        |
| No education                          | 76.6  | 32.6  | 1,647  |
| Primary                               | 72.3  | 34.9  | 11,142 |
| Secondary                             | 75.3  | 39.0  | 5,712  |
| More than secondary                   | 85.0  | 39.2  | 997    |
| <b>Wealth quintile</b>                |   |   |        |
| Lowest                                | 76.3  | 38.5  | 2,282  |
| Second                                | 73.9  | 35.9  | 2,795  |
| Middle                                | 72.5  | 34.9  | 3,122  |
| Fourth                                | 71.9  | 35.5  | 3,992  |
| Highest                               | 75.2  | 35.3  | 7,316  |
| <b>Religion</b>                       |   |   |        |
| Catholic                              | 73.0  | 35.6  | 3,752  |
| CCAP <sup>2</sup>                     | 73.4  | 35.6  | 3,744  |
| Anglican                              | 69.0  | 33.9  | 481    |
| Seventh Day Adventist                 | 75.8  | 38.5  | 1,387  |
| Baptist                               | 73.4  | 37.4  | 473    |
| Other Christian                       | 75.8  | 36.6  | 6,067  |
| Muslim                                | 73.3  | 36.6  | 1,843  |
| Other                                 | 72.6  | 32.6  | 1,431  |
| None                                  | 63.3  | 28.2  | 303    |
| <b>Ethnicity</b>                      |   |   |        |
| Chewa                                 | 70.9  | 35.8  | 6,374  |
| Lomwe                                 | 78.3  | 36.1  | 3,930  |
| Ngoni                                 | 74.7  | 35.2  | 2,412  |
| Nkhonde                               | 83.5  | 35.5  | 202    |
| Sena                                  | 71.1  | 35.2  | 803    |
| Tonga                                 | 72.0  | 35.4  | 387    |
| Tumbuka                               | 76.0  | 37.3  | 2,135  |
| Yao                                   | 73.4  | 35.2  | 2,157  |
| Other                                 | 75.7  | 36.0  | 1,073  |
| <b>Age</b>                            |   |   |        |
| 15-19                                 | 40.4  | 22.9  | 3,515  |
| 20-24                                 | 79.9  | 45.7  | 3,606  |
| 25-29                                 | 88.4  | 46.1  | 2,856  |
| 30-34                                 | 89.7  | 41.8  | 2,600  |
| 35-39                                 | 86.7  | 38.7  | 2,099  |
| 40-44                                 | 84.9  | 34.8  | 1,564  |
| 45-49                                 | 80.1  | 29.4  | 1,123  |
| 50-54                                 | 73.5  | 27.3  | 915    |
| 55-59                                 | 68.2  | 26.9  | 686    |
| 60-64                                 | 61.9  | 24.4  | 543    |
| Total 15-24                           | 58.2  | 33.2  | 7,121  |
| Total 15-49                           | 74.5  | 37.0  | 17,363 |
| Total 15-64                           | 73.9  | 35.9  | 19,507 |

<sup>1</sup>Relates to PEPFAR HTC\_TST. <sup>2</sup>Church of Central Africa Presbyterian.

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



**Figure 7.3.A Proportion of adults who self-reported having received an HIV test in the last 12 months, by age and sex, MPHIA 2015-2016**



**7.4 Self-Reported HIV Status Among Adults Who Tested HIV Positive During the Survey**

Among those ages 15-64-years who tested HIV positive in MPHIA, 72.9% self-reported their HIV-positive status: 76.0% of females were aware of their HIV-positive status, while 68.1 of males were aware of their HIV-positive status (Table 7.4.A).

Among those ages 15-64-years who tested HIV positive in MPHIA, 18.3% self-reported an HIV-negative status, and 8.8% reported that they had never been tested or had never received their result. Approximately twice as many HIV-positive men reported never having been tested for HIV or never receiving their HIV test results (12.6%) compared to HIV-positive women (6.4%) (Table 7.4.A).

There was variation in awareness of HIV-positive status across geographic zones: self-reported awareness of HIV-positive status ranged from 66.5% in the Central-East to 76.5% in the South-West. About one in eight HIV-positive individuals from Blantyre (12.4%) and Central-East (12.2%) reported that they had never tested for HIV or had never received their HIV test results, compared to a range of 6.2% to 8.7% in the other zones (Table 7.4.A).

**Table 7.4.A Self-reported HIV status among adults who tested HIV positive during the survey**

Percent distribution of adults ages 15-64 years who tested HIV positive during the survey by self-reported HIV status, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic | Ever tested for HIV        |                            | Self-reported never tested or never received result | Total | Number |
|----------------|----------------------------|----------------------------|---|-------|--------|
|                | Self-reported HIV positive | Self-reported HIV negative |   |       |        |
| <b>Sex</b>     |                            |                            |   |       |        |
| Male           | 68.1                       | 19.3                       | 12.6  | 100.0 | 713    |
| Female         | 76.0                       | 17.6                       | 6.4   | 100.0 | 1,508  |
| <b>Zone</b>    |                            |                            |   |       |        |
| North          | 72.8                       | 21.0                       | 6.2   | 100.0 | 182    |
| Central-East   | 66.5                       | 21.3                       | 12.2  | 100.0 | 129    |
| Central-West   | 70.1                       | 21.9                       | 8.1   | 100.0 | 138    |
| Lilongwe City  | 70.1                       | 21.1                       | 8.7   | 100.0 | 399    |
| South-East     | 75.4                       | 16.2                       | 8.4   | 100.0 | 336    |
| South-West     | 76.5                       | 15.4                       | 8.1   | 100.0 | 497    |
| Blantyre City  | 67.5                       | 20.1                       | 12.4  | 100.0 | 540    |
| Total 15-49    | 71.9                       | 19.7                       | 8.4   | 100.0 | 1,880  |
| Total 15-64    | 72.9                       | 18.3                       | 8.8   | 100.0 | 2,221  |

### 7.5 Willingness to Use HIV Self-Testing if Available in the Country

Among men ages 15-64 years, 76.5% reported that they would use an HIV self-test kit if available in Malawi. Eighty percent (80.0%) of men who reside in urban areas compared to 75.5% of men who reside in rural areas reported that they would use self-testing for HIV. In Blantyre City, 83.0% of men reported they would use an HIV self-test kit, the highest percentage among the zones. The percentage willing to use self-tests for HIV among adult men was 81.3% among those in the highest quintile of wealth compared to 71.4% among those in the lowest quintile. It was 88.4% among those with more than secondary education compared to 64.8% among those with no education. The percentage of men willing to use a self-test for HIV was lowest among those ages 15-19 years (68.1%) and highest among those ages 30-34 years (81.3%) (Table 7.5.A).

Among women ages 15-64 years, 68.5% reported that they would use an HIV self-test kit if available in Malawi. Similar to men, 83.2% of women in Blantyre City reported they would use an HIV self-test kit, the highest percentage among the zones, with higher willingness to self-test reported among those residing in urban areas compared to those in rural areas (79.0% versus 66.1%, respectively). Willingness to use HIV self-test kits among women ages 15-64 years was reported by 81.5% of those in the highest quintile of wealth compared to 60.5% of those in the lowest wealth quintile, and by 91.9% of women with more than secondary education, compared to 53.3% of those with no education. The percentage who reported that they would use an HIV self-test kit was 75.4% among women ages 25-29 years, 61.6% among women ages 15-19 years, and 54.6% among women ages 60-64 years (Table 7.5.B).

**Table 7.5.A Self-testing: Males**

Among adults ages 15-64 years, percentage who reported that they would use an HIV self-test kit if available in the country, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Percentage who would use an HIV self-test kit if available in the country | Number |
|----------------------------|---|--------|
| <b>Residence</b>           |   |        |
| Urban                      | 80.0  | 3,156  |
| Rural                      | 75.5  | 5,095  |
| <b>Zone</b>                |   |        |
| North                      | 80.1  | 1,103  |
| Central-East               | 73.5  | 1,268  |
| Central-West               | 69.8  | 948    |
| Lilongwe City              | 78.3  | 1,458  |
| South-East                 | 79.7  | 904    |
| South-West                 | 78.1  | 1,215  |
| Blantyre City              | 83.0  | 1,355  |
| <b>Marital status</b>      |   |        |
| Never married              | 73.0  | 2,996  |
| Married or living together | 78.6  | 4,842  |
| Divorced or separated      | 77.6  | 344    |
| Widowed                    | 75.9  | 58     |
| <b>Education</b>           |   |        |
| No education               | 64.8  | 411    |
| Primary                    | 73.3  | 4,448  |
| Secondary                  | 83.0  | 2,850  |
| More than secondary        | 88.4  | 540    |
| <b>Wealth quintile</b>     |   |        |
| Lowest                     | 71.4  | 873    |
| Second                     | 74.4  | 1,184  |
| Middle                     | 75.3  | 1,306  |
| Fourth                     | 76.7  | 1,746  |
| Highest                    | 81.3  | 3,142  |
| <b>Religion</b>            |   |        |
| Catholic                   | 76.6  | 1,643  |
| CCAP <sup>1</sup>          | 78.6  | 1,628  |
| Anglican                   | 73.0  | 208    |
| Seventh Day Adventist      | 83.1  | 560    |
| Baptist                    | 76.6  | 205    |
| Other Christian            | 76.4  | 2,363  |
| Muslim                     | 77.3  | 746    |
| Other                      | 70.2  | 637    |
| None                       | 68.2  | 244    |
| <b>Ethnicity</b>           |   |        |
| Chewa                      | 72.0  | 2,792  |
| Lomwe                      | 81.6  | 1,600  |
| Ngoni                      | 78.5  | 1,006  |
| Nkhonde                    | 77.9  | 85     |
| Sena                       | 76.0  | 334    |
| Tonga                      | 81.3  | 154    |
| Tumbuka                    | 78.8  | 937    |
| Yao                        | 77.8  | 880    |
| Other                      | 78.1  | 452    |
| <b>Age</b>                 |   |        |
| 15-19                      | 68.1  | 1,672  |
| 20-24                      | 78.2  | 1,385  |
| 25-29                      | 78.5  | 1,119  |
| 30-34                      | 81.3  | 1,004  |
| 35-39                      | 79.1  | 875    |
| 40-44                      | 79.6  | 700    |
| 45-49                      | 79.6  | 500    |
| 50-54                      | 77.1  | 393    |
| 55-59                      | 73.8  | 329    |
| 60-64                      | 75.7  | 274    |
| Total 15-24                | 72.6  | 3,057  |
| Total 15-64                | 76.5  | 8,251  |

<sup>1</sup>Church of Central Africa Presbyterian.

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 7.5.B Self-testing: Females**

Among adults ages 15-64 years, percentage who reported that they would use an HIV self-test kit if available in the country, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Percentage who would use an HIV self-test kit if available in the country | Number |
|----------------------------|---|--------|
| <b>Residence</b>           |   |        |
| Urban                      | 79.0  | 4,217  |
| Rural                      | 66.1  | 7,036  |
| <b>Zone</b>                |   |        |
| North                      | 75.0  | 1,411  |
| Central-East               | 63.7  | 1,477  |
| Central-West               | 61.0  | 1,285  |
| Lilongwe City              | 77.8  | 1,917  |
| South-East                 | 67.8  | 1,449  |
| South-West                 | 69.1  | 1,905  |
| Blantyre City              | 83.2  | 1,809  |
| <b>Marital status</b>      |   |        |
| Never married              | 65.7  | 2,226  |
| Married or living together | 69.3  | 7,181  |
| Divorced or separated      | 70.4  | 1,273  |
| Widowed                    | 67.2  | 562    |
| <b>Education</b>           |   |        |
| No education               | 53.3  | 1,222  |
| Primary                    | 66.3  | 6,680  |
| Secondary                  | 82.6  | 2,886  |
| More than secondary        | 91.9  | 459    |
| <b>Wealth quintile</b>     |   |        |
| Lowest                     | 60.5  | 1,407  |
| Second                     | 62.2  | 1,602  |
| Middle                     | 63.7  | 1,804  |
| Fourth                     | 70.2  | 2,252  |
| Highest                    | 81.5  | 4,188  |
| <b>Religion</b>            |   |        |
| Catholic                   | 69.1  | 2,128  |
| CCAP <sup>1</sup>          | 72.3  | 2,108  |
| Anglican                   | 69.5  | 274    |
| Seventh Day Adventist      | 74.9  | 828    |
| Baptist                    | 61.8  | 267    |
| Other Christian            | 67.9  | 3,693  |
| Muslim                     | 67.8  | 1,087  |
| Other                      | 60.3  | 796    |
| None                       | 51.4  | 63     |
| <b>Ethnicity</b>           |   |        |
| Chewa                      | 63.5  | 3,585  |
| Lomwe                      | 72.4  | 2,327  |
| Ngoni                      | 74.7  | 1,404  |
| Nkhonde                    | 73.8  | 117    |
| Sena                       | 60.2  | 468    |
| Tonga                      | 72.8  | 233    |
| Tumbuka                    | 76.2  | 1,203  |
| Yao                        | 67.3  | 1,270  |
| Other                      | 67.8  | 624    |
| <b>Age</b>                 |   |        |
| 15-19                      | 61.6  | 1,838  |
| 20-24                      | 70.3  | 2,232  |
| 25-29                      | 75.4  | 1,743  |
| 30-34                      | 74.1  | 1,598  |
| 35-39                      | 70.0  | 1,223  |
| 40-44                      | 71.5  | 863    |
| 45-49                      | 66.3  | 616    |
| 50-54                      | 61.6  | 521    |
| 55-59                      | 66.2  | 358    |
| 60-64                      | 54.6  | 261    |
| Total 15-24                | 65.5  | 4,070  |
| Total 15-64                | 68.5  | 11,253 |

<sup>1</sup>Church of Central Africa Presbyterian.

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.

## 7.6 Gaps and Unmet Needs

- Although the majority of the population have tested for HIV at some point in their lives, the frequency of recent testing was low. There is need to ensure that people at risk of acquiring HIV are tested at least annually.
- There is an important deficit in reaching males with HIV testing services.
- The majority of men and women reported that they would use an HIV self-test kit if available in country. Acceptability was particularly high in Blantyre City where HIV prevalence is also high.

## 8 HIV DIAGNOSIS AND TREATMENT

### 8.1 Key Findings

- Based on self-reporting, among HIV-positive adults ages 15-64 years, 27.2% were unaware of their HIV-positive status (approximately one-third (32.0%) of males and one-quarter (24.1%) of females).
- Overall, 65.3% of HIV-positive adults ages 15-64 years reported awareness of their status and ART use.
- Concordance between self-report of ART and detection of ARVs was high among adults ages 15-64 years, with 96.4% of those who reported current ART use having detectable ARVs in blood. However, self-report of HIV status was less accurate, with detection of ARVs in blood among 14.8% of those who reported that they had not been previously diagnosed with HIV.

### 8.2 Background

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

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

Among HIV-positive adults ages 15-64 years, based on self-report, 27.2% were unaware of their HIV-positive status (one-third (32.0%) of males and one-quarter (24.1%) of females). Overall, 65.3% of HIV-positive adults reported awareness of their HIV status and ART use. Over half (58.7%) of HIV-positive males were aware of their status and on ART, while 69.5% of HIV-positive females were on ART. Among urban, HIV-positive males ages 15-64 years, 39.6% were unaware of their HIV status, compared to 29.2% among those in rural areas. Awareness of HIV status among females did not vary by residence with 25.7% and 23.6% aware among those residing in urban and rural areas, respectively (Tables 8.3.A, 8.3.B, and 8.3.C, Figure 8.3.A).

Among HIV-positive males, the percentage of those who were unaware of their HIV status ranged from 66.7% among those ages 20-24 years to 14.4% among those ages 60-64-years. Among HIV-positive females, the percentage unaware of their HIV status ranged from 58.3% among those ages 15-19 years to 14.2% among those ages 40-44 years. The percentage of HIV-positive males who reported ART use ranged from 23.1% among those ages 20-24 years to 75.0% among those ages 60-64 years, while the percentage of HIV-positive females who reported being on ART ranged from 37.4% among those ages 15-19 years to 79.9% among those ages 40-44 years (Tables 8.3.A and 8.3.B, Figure 8.3.A).

Among married and cohabiting HIV-positive adults ages 15-64 years, 64.9% were aware of their status and on ART, 59.9% of males and 69.5% of females, while among those who had never married, 42.1% were aware and on ART, 36.7% of males and 46.1% of females (Tables 8.3.A, 8.3.B and 8.3.C).

Overall, among HIV-positive adults ages 15-64 years, the percentage unaware of their status varied from 23.5% in South-West to 33.5% in the Central-East zone. By demographic category, the percentage unaware of their status was notably high among those never married (51.0%), among those belonging to the Tonga (39.2), Sena (34.7%), and Ngoni (34.0%) ethnicities, and among those ages 15-19 years (57.2%) (Table 8.3.C).

Among HIV-positive adults ages 15-64 years, 8.1% of those residing in urban areas reported being aware of their status, but not receiving ART. The percentages of those reporting awareness of their status but not receiving ART were highest in Lilongwe (9.9%) and Blantyre (9.2%) cities, among those divorced or separated (9.5%), those belonging to the Lomwe ethnicity (9.2%), and among those ages 20-24 years (10.2%) and ages 25-29 years (11.2%).

Among all HIV-positive adults, the percentage reporting awareness of their HIV status and receiving ART was 58.2% in Blantyre City, 59.9% in Lilongwe City, (the main urban zones), compared to 69.2% in the Southwest and 68.9% in the North zone

Percentages of those reporting ART use were also lowest among the never married (42.1%), those in the lowest wealth quintile (59.4%), and the youngest adults (less than 60% for those less than 30 years of age). Only 37.3% of those HIV positive ages 15-19 years, 42.8% of those ages 20-24 years, and 53.5% of those ages 25-29 years reported ART use (Table 8.3.C; Figure 8.3.A)

**Table 8.3.A HIV treatment status: Males**

Percent distribution of HIV-positive males age 15-64 years by self-reported ART status, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Unaware of HIV status | Aware of HIV status |                     | Total   | Number |
|----------------------------|-----------------------|---------------------|---------------------|---------|--------|
|                            |                       | Not on ART          | On ART <sup>1</sup> |         |        |
| <b>Residence</b>           |                       |                     |                     |         |        |
| Urban                      | 39.6                  | 8.9                 | 51.5                | 100.0   | 324    |
| Rural                      | 29.2                  | 9.4                 | 61.3                | 100.0   | 387    |
| <b>Zone</b>                |                       |                     |                     |         |        |
| North                      | 27.3                  | 3.2                 | 69.6                | 100.0   | 67     |
| Central-East               | (35.8)                | (7.1)               | (57.0)              | (100.0) | 45     |
| Central-West               | 32.9                  | 12.7                | 54.4                | 100.0   | 56     |
| Lilongwe City              | 38.8                  | 10.6                | 50.7                | 100.0   | 118    |
| South-East                 | 29.3                  | 10.8                | 59.9                | 100.0   | 104    |
| South-West                 | 29.8                  | 8.1                 | 62.1                | 100.0   | 150    |
| Blantyre City              | 38.7                  | 10.7                | 50.6                | 100.0   | 171    |
| <b>Marital status</b>      |                       |                     |                     |         |        |
| Never married              | 57.7                  | 5.6                 | 36.7                | 100.0   | 56     |
| Married or living together | 30.6                  | 9.5                 | 59.9                | 100.0   | 565    |
| Divorced or separated      | 32.3                  | 8.7                 | 58.9                | 100.0   | 61     |
| Widowed                    | (11.9)                | (13.8)              | (74.3)              | (100.0) | 29     |
| <b>Education</b>           |                       |                     |                     |         |        |
| No education               | (42.1)                | (8.4)               | (49.6)              | (100.0) | 44     |
| Primary                    | 31.3                  | 9.6                 | 59.1                | 100.0   | 427    |
| Secondary                  | 30.8                  | 9.4                 | 59.8                | 100.0   | 202    |
| More than secondary        | (33.7)                | (5.1)               | (61.3)              | (100.0) | 38     |
| <b>Wealth quintile</b>     |                       |                     |                     |         |        |
| Lowest                     | 47.7                  | 11.5                | 40.8                | 100.0   | 81     |
| Second                     | 30.3                  | 10.9                | 58.8                | 100.0   | 81     |
| Middle                     | 29.5                  | 12.3                | 58.2                | 100.0   | 102    |
| Fourth                     | 23.2                  | 7.9                 | 68.9                | 100.0   | 156    |
| Highest                    | 32.9                  | 6.1                 | 61.1                | 100.0   | 291    |
| <b>Religion</b>            |                       |                     |                     |         |        |
| Catholic                   | 33.1                  | 6.0                 | 60.9                | 100.0   | 127    |
| CCAP <sup>2</sup>          | 36.1                  | 9.4                 | 54.5                | 100.0   | 136    |
| Anglican                   | *                     | *                   | *                   | *       | 14     |
| Seventh Day Adventist      | (41.3)                | (7.5)               | (51.2)              | (100.0) | 48     |
| Baptist                    | *                     | *                   | *                   | *       | 22     |
| Other Christian            | 30.5                  | 9.1                 | 60.3                | 100.0   | 224    |
| Muslim                     | 25.0                  | 11.1                | 64.0                | 100.0   | 51     |
| Other                      | 28.5                  | 9.7                 | 61.8                | 100.0   | 72     |
| None                       | *                     | *                   | *                   | *       | 16     |
| <b>Ethnicity</b>           |                       |                     |                     |         |        |
| Chewa                      | 34.3                  | 11.7                | 54.0                | 100.0   | 164    |
| Lomwe                      | 27.3                  | 13.1                | 59.6                | 100.0   | 230    |
| Ngoni                      | 42.3                  | 4.9                 | 52.8                | 100.0   | 96     |
| Nkhonde                    | *                     | *                   | *                   | *       | 10     |
| Sena                       | (49.0)                | (0)                 | (50.9)              | (100.0) | 25     |
| Tonga                      | *                     | *                   | *                   | *       | 12     |
| Tumbuka                    | 25.7                  | 3.4                 | 70.9                | 100.0   | 51     |
| Yao                        | 31.0                  | 9.2                 | 59.9                | 100.0   | 77     |
| Other                      | (23.6)                | (3.8)               | (72.7)              | (100.0) | 46     |
| <b>Age</b>                 |                       |                     |                     |         |        |
| 15-19                      | *                     | *                   | *                   | *       | 15     |
| 20-24                      | (66.7)                | (10.2)              | (23.1)              | (100.0) | 29     |
| 25-29                      | (51.3)                | (16.9)              | (31.7)              | (100.0) | 49     |
| 30-34                      | 36.3                  | 15.1                | 48.6                | 100.0   | 110    |
| 35-39                      | 32.0                  | 8.4                 | 59.6                | 100.0   | 121    |
| 40-44                      | 27.3                  | 5.3                 | 67.4                | 100.0   | 126    |
| 45-49                      | 18.9                  | 10.1                | 71.1                | 100.0   | 106    |
| 50-54                      | 24.3                  | 1.9                 | 73.8                | 100.0   | 70     |
| 55-59                      | 25.0                  | 4.2                 | 70.7                | 100.0   | 50     |
| 60-64                      | (14.4)                | (10.7)              | (75.0)              | (100.0) | 35     |
| Total 15-24                | (62.9)                | (9.5)               | (27.6)              | (100.0) | 44     |
| Total 15-49                | 34.0                  | 10.4                | 55.6                | 100.0   | 556    |
| Total 15-64                | 32.0                  | 9.3                 | 58.7                | 100.0   | 711    |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 1.3: People living with HIV on antiretroviral therapy. <sup>2</sup>Church of Central Africa Presbyterian.

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.

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



**Table 8.3.B HIV treatment status: Females**

Percent distribution of HIV-positive females age 15-64 years by self-reported antiretroviral therapy (ART) status, by selected demographic characteristics, MPHIA 2015-16

| Characteristic             | Unaware of HIV status | Aware of HIV status |                     | Total   | Number |
|----------------------------|-----------------------|---------------------|---------------------|---------|--------|
|                            |                       | Not on ART          | On ART <sup>1</sup> |         |        |
| <b>Residence</b>           |                       |                     |                     |         |        |
| Urban                      | 25.7                  | 7.6                 | 66.7                | 100.0   | 731    |
| Rural                      | 23.6                  | 6.0                 | 70.5                | 100.0   | 772    |
| <b>Zone</b>                |                       |                     |                     |         |        |
| North                      | 27.3                  | 4.2                 | 68.5                | 100.0   | 114    |
| Central-East               | 32.0                  | 6.8                 | 61.1                | 100.0   | 84     |
| Central-West               | 27.6                  | 5.3                 | 67.1                | 100.0   | 81     |
| Lilongwe City              | 24.7                  | 9.6                 | 65.7                | 100.0   | 279    |
| South-East                 | 22.1                  | 5.5                 | 72.4                | 100.0   | 231    |
| South-West                 | 19.9                  | 6.8                 | 73.3                | 100.0   | 345    |
| Blantyre City              | 28.2                  | 8.2                 | 63.6                | 100.0   | 369    |
| <b>Marital status</b>      |                       |                     |                     |         |        |
| Never married              | 46.1                  | 7.8                 | 46.1                | 100.0   | 99     |
| Married or living together | 25.0                  | 5.5                 | 69.5                | 100.0   | 853    |
| Divorced or separated      | 22.0                  | 9.7                 | 68.3                | 100.0   | 308    |
| Widowed                    | 16.0                  | 4.9                 | 79.2                | 100.0   | 241    |
| <b>Education</b>           |                       |                     |                     |         |        |
| No education               | 19.4                  | 5.8                 | 74.8                | 100.0   | 196    |
| Primary                    | 22.5                  | 7.0                 | 70.5                | 100.0   | 884    |
| Secondary                  | 33.9                  | 5.5                 | 60.6                | 100.0   | 369    |
| More than secondary        | 18.4                  | 2.4                 | 79.2                | 100.0   | 52     |
| <b>Wealth quintile</b>     |                       |                     |                     |         |        |
| Lowest                     | 22.0                  | 6.9                 | 71.1                | 100.0   | 170    |
| Second                     | 21.4                  | 7.4                 | 71.3                | 100.0   | 178    |
| Middle                     | 23.2                  | 6.6                 | 70.2                | 100.0   | 206    |
| Fourth                     | 22.6                  | 4.2                 | 73.2                | 100.0   | 270    |
| Highest                    | 28.6                  | 7.0                 | 64.4                | 100.0   | 679    |
| <b>Religion</b>            |                       |                     |                     |         |        |
| Catholic                   | 20.3                  | 5.3                 | 74.4                | 100.0   | 246    |
| CCAP <sup>2</sup>          | 27.6                  | 4.4                 | 67.9                | 100.0   | 267    |
| Anglican                   | (22.9)                | (4.9)               | (72.2)              | (100.0) | 29     |
| Seventh Day Adventist      | 24.5                  | 7.6                 | 67.9                | 100.0   | 132    |
| Baptist                    | (18.5)                | (15.3)              | (66.2)              | (100.0) | 44     |
| Other Christian            | 22.8                  | 6.7                 | 70.5                | 100.0   | 509    |
| Muslim                     | 28.8                  | 7.0                 | 64.2                | 100.0   | 152    |
| Other                      | 27.3                  | 3.9                 | 68.7                | 100.0   | 113    |
| None                       | *                     | *                   | *                   | *       | 10     |
| <b>Ethnicity</b>           |                       |                     |                     |         |        |
| Chewa                      | 25.7                  | 5.6                 | 68.7                | 100.0   | 303    |
| Lomwe                      | 21.1                  | 6.5                 | 72.4                | 100.0   | 454    |
| Ngoni                      | 28.9                  | 6.8                 | 64.3                | 100.0   | 212    |
| Nkhonde                    | *                     | *                   | *                   | *       | 14     |
| Sena                       | 27.8                  | 5.5                 | 66.7                | 100.0   | 76     |
| Tonga                      | *                     | *                   | *                   | *       | 23     |
| Tumbuka                    | 25.3                  | 5.9                 | 68.8                | 100.0   | 115    |
| Yao                        | 23.6                  | 8.7                 | 67.7                | 100.0   | 200    |
| Other                      | 16.5                  | 4.8                 | 78.7                | 100.0   | 103    |
| <b>Age</b>                 |                       |                     |                     |         |        |
| 15-19                      | (58.3)                | (4.3)               | (37.4)              | (100.0) | 37     |
| 20-24                      | 38.6                  | 10.2                | 51.2                | 100.0   | 132    |
| 25-29                      | 30.2                  | 9.3                 | 60.5                | 100.0   | 217    |
| 30-34                      | 25.5                  | 5.4                 | 69.1                | 100.0   | 293    |
| 35-39                      | 19.4                  | 6.6                 | 74.0                | 100.0   | 293    |
| 40-44                      | 14.2                  | 5.9                 | 79.9                | 100.0   | 215    |
| 45-49                      | 18.3                  | 3.1                 | 78.6                | 100.0   | 132    |
| 50-54                      | 27.4                  | 4.1                 | 68.5                | 100.0   | 91     |
| 55-59                      | 14.6                  | 8.2                 | 77.2                | 100.0   | 58     |
| 60-64                      | (18.2)                | (3.2)               | (78.6)              | (100.0) | 35     |
| Total 15-24                | 44.7                  | 8.4                 | 46.9                | 100.0   | 169    |
| Total 15-49                | 24.6                  | 6.6                 | 68.8                | 100.0   | 1,319  |
| Total 15-64                | 24.1                  | 6.4                 | 69.5                | 100.0   | 1,503  |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 1.3: People living with HIV on antiretroviral therapy.<sup>2</sup>Church of Central Africa Presbyterian.

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.

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

**Table 8.3.C HIV treatment status: Total**

Percent distribution of HIV-positive persons ages 15-64 years by self-reported HIV diagnosis and antiretroviral therapy (ART) status, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Unaware of HIV status | Aware of HIV status |                     | Total   | Number |
|----------------------------|-----------------------|---------------------|---------------------|---------|--------|
|                            |                       | Not on ART          | On ART <sup>1</sup> |         |        |
| <b>Residence</b>           |                       |                     |                     |         |        |
| Urban                      | 31.1                  | 8.1                 | 60.8                | 100.0   | 1,055  |
| Rural                      | 25.8                  | 7.3                 | 66.9                | 100.0   | 1,159  |
| <b>Zone</b>                |                       |                     |                     |         |        |
| North                      | 27.3                  | 3.8                 | 68.9                | 100.0   | 181    |
| Central-East               | 33.5                  | 6.9                 | 59.5                | 100.0   | 129    |
| Central-West               | 30.1                  | 8.7                 | 61.2                | 100.0   | 137    |
| Lilongwe City              | 30.1                  | 9.9                 | 59.9                | 100.0   | 397    |
| South-East                 | 24.7                  | 7.5                 | 67.8                | 100.0   | 335    |
| South-West                 | 23.5                  | 7.3                 | 69.2                | 100.0   | 495    |
| Blantyre City              | 32.5                  | 9.2                 | 58.2                | 100.0   | 540    |
| <b>Marital status</b>      |                       |                     |                     |         |        |
| Never married              | 51.0                  | 6.9                 | 42.1                | 100.0   | 155    |
| Married or living together | 27.7                  | 7.4                 | 64.9                | 100.0   | 1,418  |
| Divorced or separated      | 24.1                  | 9.5                 | 66.4                | 100.0   | 369    |
| Widowed                    | 15.5                  | 5.9                 | 78.6                | 100.0   | 270    |
| <b>Education</b>           |                       |                     |                     |         |        |
| No education               | 24.0                  | 6.4                 | 69.6                | 100.0   | 240    |
| Primary                    | 26.0                  | 8.0                 | 65.9                | 100.0   | 1,311  |
| Secondary                  | 32.5                  | 7.3                 | 60.2                | 100.0   | 571    |
| More than secondary        | 26.8                  | 3.9                 | 69.3                | 100.0   | 90     |
| <b>Wealth quintile</b>     |                       |                     |                     |         |        |
| Lowest                     | 31.9                  | 8.7                 | 59.4                | 100.0   | 251    |
| Second                     | 24.8                  | 8.7                 | 66.4                | 100.0   | 259    |
| Middle                     | 25.6                  | 8.8                 | 65.6                | 100.0   | 308    |
| Fourth                     | 22.9                  | 5.8                 | 71.4                | 100.0   | 426    |
| Highest                    | 30.2                  | 6.6                 | 63.2                | 100.0   | 970    |
| <b>Religion</b>            |                       |                     |                     |         |        |
| Catholic                   | 25.3                  | 5.6                 | 69.2                | 100.0   | 373    |
| CCAP <sup>2</sup>          | 31.2                  | 6.6                 | 62.2                | 100.0   | 403    |
| Anglican                   | (24.2)                | (3.3)               | (72.5)              | (100.0) | 43     |
| Seventh Day Adventist      | 30.6                  | 7.6                 | 61.8                | 100.0   | 180    |
| Baptist                    | 25.9                  | 14.0                | 60.1                | 100.0   | 66     |
| Other Christian            | 25.7                  | 7.6                 | 66.7                | 100.0   | 733    |
| Muslim                     | 27.7                  | 8.1                 | 64.2                | 100.0   | 203    |
| Other                      | 27.9                  | 6.8                 | 65.3                | 100.0   | 185    |
| None                       | (18.8)                | (30.5)              | (50.7)              | (100.0) | (26)   |
| <b>Ethnicity</b>           |                       |                     |                     |         |        |
| Chewa                      | 29.5                  | 8.3                 | 62.2                | 100.0   | 467    |
| Lomwe                      | 23.7                  | 9.2                 | 67.1                | 100.0   | 684    |
| Ngoni                      | 34.0                  | 6.1                 | 59.9                | 100.0   | 308    |
| Nkhonde                    | *                     | *                   | *                   | *       | 24     |
| Sena                       | 34.7                  | 3.7                 | 61.6                | 100.0   | 101    |
| Tonga                      | (39.2)                | (5.1)               | (55.8)              | (100.0) | 35     |
| Tumbuka                    | 25.5                  | 5.0                 | 69.6                | 100.0   | 166    |
| Yao                        | 25.9                  | 8.8                 | 65.3                | 100.0   | 277    |
| Other                      | 19.0                  | 4.4                 | 76.6                | 100.0   | 149    |
| <b>Age</b>                 |                       |                     |                     |         |        |
| 15-19                      | 57.2                  | 5.4                 | 37.3                | 100.0   | 52     |
| 20-24                      | 47.0                  | 10.2                | 42.8                | 100.0   | 161    |
| 25-29                      | 35.3                  | 11.2                | 53.5                | 100.0   | 266    |
| 30-34                      | 29.7                  | 9.2                 | 61.1                | 100.0   | 403    |
| 35-39                      | 24.2                  | 7.3                 | 68.5                | 100.0   | 414    |
| 40-44                      | 19.6                  | 5.7                 | 74.8                | 100.0   | 341    |
| 45-49                      | 18.6                  | 6.7                 | 74.8                | 100.0   | 238    |
| 50-54                      | 25.8                  | 3.0                 | 71.2                | 100.0   | 161    |
| 55-59                      | 19.2                  | 6.4                 | 74.4                | 100.0   | 108    |
| 60-64                      | 16.7                  | 6.1                 | 77.1                | 100.0   | 70     |
| Total 15-24                | 50.2                  | 8.7                 | 41.1                | 100.0   | 213    |
| Total 15-49                | 28.2                  | 8.0                 | 63.8                | 100.0   | 1,875  |
| Total 15-64                | 27.2                  | 7.5                 | 65.3                | 100.0   | 2,214  |

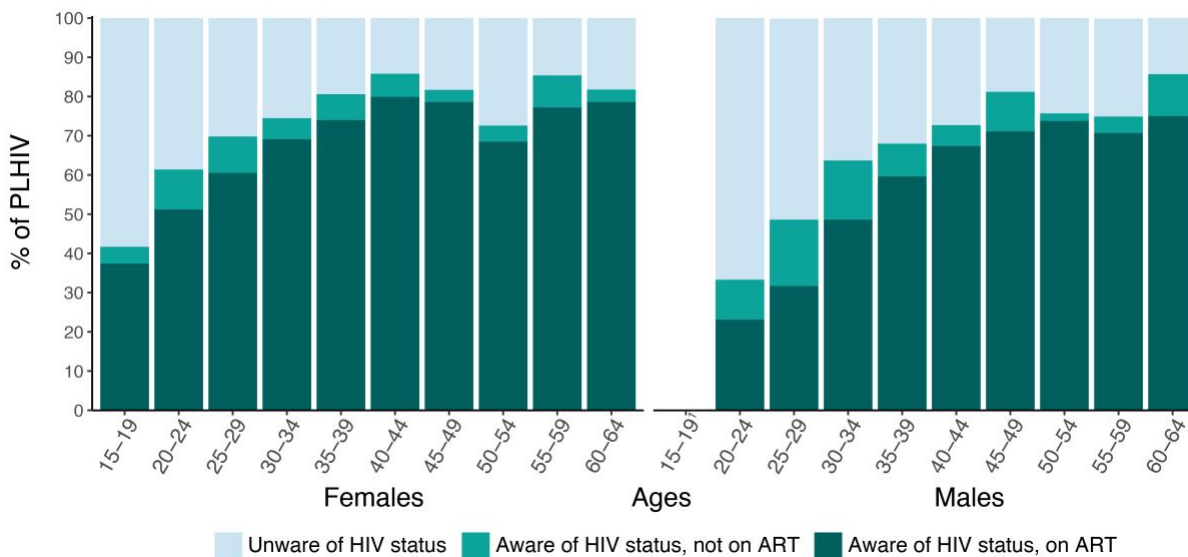
<sup>1</sup>Relates to Global AIDS Monitoring indicator 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX\_CURR\_NAT / SUBNAT. <sup>2</sup>Church of Central Africa Presbyterian.

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.

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

**Figure 8.3.A Proportion of HIV-positive adults ages 15-64 years self-reporting awareness of HIV status and antiretroviral therapy status, by age and sex, MPHIA 2015-2016**



<sup>1</sup> Estimate is based on a very small number of unweighted cases (less than 25) and has been suppressed.

#### 8.4 Concordance of Self-Reported Treatment Status Versus Laboratory Antiretroviral Data

MPHIA determined the presence of four ARVs in blood (atazanavir, efavirenz, lopinavir, and nevirapine) as markers of first- and second-line regimens prescribed in the country at the time of the survey. Overall, ARVs were detected in 68.0% of HIV-positive adults ages 15-64 years. Among those who reported current use of ART, ARVs were detected in 96.4% of adults in this age group (96.6% of males and 96.3% of females). Among those who reported to be previously diagnosed with HIV, but not on ART, 12.0% had ARVs detected in blood (13.3% of males and 10.9% of females). Among those who reported that they had not been previously diagnosed, 14.8% had ARVs detected in blood (11.4% among males and 17.5% among females) (Tables 8.4.A, 8.4.B and 8.4.C).

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

Percent distribution of HIV-positive males ages 15-64 years by presence of detectable ARVs versus self-reported HIV treatment status, MPHIA 2015-2016

| Characteristic                                | ARVs <sup>1</sup> |            | Total   | Number |
|---|-------------------|------------|---------|--------|
|   | Not detectable    | Detectable |         |        |
| <b>Self-reported treatment status</b>         |                   |            |         |        |
| Not previously diagnosed                      | 88.6              | 11.4       | 100.0   | 226    |
| Previously diagnosed, not on ART <sup>2</sup> | 86.7              | 13.3       | 100.0   | 60     |
| Previously diagnosed, on ART                  | 3.4               | 96.6       | 100.0   | 419    |
| Total 15-24                                   | (64.9)            | (35.1)     | (100.0) | 43     |
| Total 15-49                                   | 41.0              | 59.0       | 100.0   | 552    |
| Total 15-64                                   | 37.9              | 62.1       | 100.0   | 706    |

<sup>1</sup>Antiretroviral detection assay included only atazanavir, efavirenz, and lopinavir. Participants who reported antiretroviral therapy use and/or had undetectable viral load but had no evidence of the first three ARVs were tested for nevirapine as well.<sup>2</sup> ART: Antiretroviral therapy

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

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

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

Percent distribution of HIV-positive females ages 15-64 years by presence of detectable ARVs versus self-reported HIV treatment status, MPHIA 2015-2016

| Characteristic                                | ARVs <sup>1</sup> |            | Total | Number |
|---|-------------------|------------|-------|--------|
|   | Not detectable    | Detectable |       |        |
| <b>Self-reported treatment status</b>         |                   |            |       |        |
| Not previously diagnosed                      | 82.5              | 17.5       | 100.0 | 349    |
| Previously diagnosed, not on ART <sup>2</sup> | 89.1              | 10.9       | 100.0 | 110    |
| Previously diagnosed, on ART                  | 3.7               | 96.3       | 100.0 | 1,030  |
| Total 15-24                                   | 54.7              | 45.3       | 100.0 | 168    |
| Total 15-49                                   | 28.8              | 71.2       | 100.0 | 1,309  |
| Total 15-64                                   | 28.2              | 71.8       | 100.0 | 1,492  |

<sup>1</sup>Antiretroviral detection assay included only atazanavir, efavirenz, and lopinavir. Participants who reported antiretroviral therapy use and/or had undetectable viral load but had no evidence of the first three ARVs were tested for nevirapine as well.<sup>2</sup> ART: Antiretroviral therapy

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

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

Percent distribution of HIV-positive persons ages 15-64 years by presence of detectable ARVs versus self-reported HIV treatment status, MPHIA 2015-2016

| Characteristic                                | ARVs <sup>1</sup> |            | Total | Number |
|---|-------------------|------------|-------|--------|
|   | Not detectable    | Detectable |       |        |
| <b>Self-reported treatment status</b>         |                   |            |       |        |
| Not previously diagnosed                      | 85.2              | 14.8       | 100.0 | 575    |
| Previously diagnosed, not on ART <sup>2</sup> | 88.0              | 12.0       | 100.0 | 170    |
| Previously diagnosed, on ART                  | 3.6               | 96.4       | 100.0 | 1,449  |
| Total 15-24                                   | 57.7              | 42.3       | 100.0 | 211    |
| Total 15-49                                   | 33.4              | 66.6       | 100.0 | 1,861  |
| Total 15-64                                   | 32.0              | 68.0       | 100.0 | 2,198  |

<sup>1</sup>Antiretroviral detection assay included only atazanavir, efavirenz, and lopinavir. Participants who reported antiretroviral therapy use and/or had undetectable viral load but had no evidence of the first three ARVs were tested for nevirapine as well.<sup>2</sup> ART: Antiretroviral therapy

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

## 8.5 Gaps and Unmet Needs

- There is a major gap in reaching and diagnosing those living with HIV, particularly men and all individuals ages 15-24 years.
- Of all HIV-positive individuals ages 15-24 years, 60% were not on ART.

## 8.6 References

1. World Health Organization (2016). *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection*. Retrieved from WHO: [http://apps.who.int/iris/bitstream/handle/10665/208825/9789241549684\\_eng.pdf;jsessionid=D8D5E2BB12AEEB9347F82EC8C1ACA09F?sequence=1](http://apps.who.int/iris/bitstream/handle/10665/208825/9789241549684_eng.pdf;jsessionid=D8D5E2BB12AEEB9347F82EC8C1ACA09F?sequence=1)
2. World Health Organization (2017). *Treat all: policy adoption and implementation status in countries*. Retrieved from WHO: <http://www.who.int/hiv/pub/arv/treat-all-uptake/en/>

## 9 VIRAL LOAD SUPPRESSION

### 9.1 Key Findings

- In Malawi, 68.3% of HIV-positive adults ages 15-64 years are virally suppressed, 60.9% among males and 73.1% among females.
- The percentage of HIV-positive adults ages 15-64 years who are virally suppressed ranged from 59.5% in Blantyre City, 70.6% in the Central-West zone, and 70.7% in the South-East zone.

### 9.2 Background

Viral load suppression is a key indicator of treatment success in HIV-positive individuals. For the purposes of MPHIA, VLS is defined as VL less than 1,000 HIV RNA copies per ml of plasma. This chapter describes VLS among the population of HIV-positive persons ages 15-64 years by age, sex, region, and other demographic characteristics.

### 9.3 Adult Viral Load Suppression by Select Demographic Characteristics

Overall, 68.3% of HIV-positive persons ages 15-64 years had HIV VLS (60.9% among males and 73.1% among females). The proportion with VLS was highest among those who reported previous diagnosis and ART use (91.3%) and lowest among those who reported previously diagnosis but no ART use (15.9%). About one-quarter (27.7%) of HIV-positive persons who reported that they were not previously diagnosed had VLS (Table 9.3.A).

Less than one-half (47.7%) of never-married HIV-positive persons had VLS, while 67.3% of married or cohabiting persons, 71.3% of divorced or separated persons, and 81.3% of widowed persons had VLS. (Table 9.3.A).

**Table 9.3.A Viral load suppression by demographic characteristics**

Among HIV-positive persons ages 15-64 years, percentage with viral load suppression (< 1,000 copies/ml)<sup>1</sup>, by sex, self-reported HIV diagnosis and antiretroviral therapy (ART) status, and selected demographic characteristics, MPHIA 2015-2016

| Characteristic  | Males          |        | Females        |        | Total          |        |
|---|----------------|--------|----------------|--------|----------------|--------|
|   | Percentage VLS | Number | Percentage VLS | Number | Percentage VLS | Number |
| <b>Self-reported HIV diagnosis and treatment status</b> |                |        |                |        |                |        |
| Not previously diagnosed                                | 22.0           | 229    | 32.4           | 351    | 27.7           | 580    |
| Previously diagnosed, not on ART                        | 12.0           | 61     | 19.6           | 111    | 15.9           | 172    |
| Previously diagnosed, on ART                            | 89.7           | 419    | 92.1           | 1,040  | 91.3           | 1,459  |
| Missing   | *              | 3      | *              | 6      | *              | 9      |
| <b>Residence</b>  |                |        |                |        |                |        |
| Urban   | 53.6           | 325    | 68.6           | 734    | 62.8           | 1,059  |
| Rural   | 63.6           | 387    | 74.7           | 774    | 70.4           | 1,161  |
| <b>Zone</b>   |                |        |                |        |                |        |
| North   | 62.6           | 67     | 71.2           | 114    | 67.7           | 181    |
| Central-East  | (60.3)         | 45     | 72.7           | 84     | 67.9           | 129    |
| Central-West  | 66.3           | 56     | 74.3           | 82     | 70.6           | 138    |
| Lilongwe City   | 53.7           | 119    | 71.9           | 279    | 64.9           | 398    |
| South-East  | 59.8           | 104    | 77.1           | 231    | 70.7           | 335    |
| South-West  | 63.5           | 150    | 73.5           | 346    | 69.8           | 496    |
| Blantyre City   | 54.3           | 171    | 63.1           | 372    | 59.5           | 543    |
| <b>Marital status</b>                                   |                |        |                |        |                |        |
| Never married   | 42.2           | 54     | 51.4           | 100    | 47.7           | 154    |
| Married or living together                              | 62.2           | 567    | 72.1           | 854    | 67.3           | 1,421  |
| Divorced or separated                                   | 59.9           | 62     | 74.3           | 309    | 71.3           | 371    |
| Widowed   | (69.5)         | 29     | 82.8           | 243    | 81.3           | 272    |
| <b>Education</b>  |                |        |                |        |                |        |
| No education  | (53.5)         | 44     | 73.6           | 197    | 69.5           | 241    |
| Primary   | 60.1           | 429    | 74.6           | 886    | 68.8           | 1,315  |
| Secondary   | 63.1           | 202    | 67.1           | 370    | 65.3           | 572    |
| More than secondary                                     | (74.1)         | 37     | 72.4           | 53     | 73.3           | 90     |
| <b>Wealth quintile</b>                                  |                |        |                |        |                |        |
| Lowest  | 51.7           | 82     | 72.2           | 170    | 64.2           | 252    |
| Second  | 55.9           | 81     | 76.1           | 178    | 68.3           | 259    |
| Middle  | 62.6           | 102    | 74.5           | 207    | 70.0           | 309    |
| Fourth  | 68.2           | 155    | 74.9           | 271    | 72.1           | 426    |
| Highest   | 62.2           | 292    | 69.6           | 682    | 66.9           | 974    |
| <b>Religion</b>   |                |        |                |        |                |        |
| Catholic  | 58.9           | 128    | 77.5           | 246    | 70.2           | 374    |
| CCAP <sup>2</sup>                                       | 57.6           | 136    | 71.8           | 267    | 65.7           | 403    |
| Anglican  | *              | 14     | (84.5)         | 29     | (81.1)         | 43     |
| Seventh Day Adventist                                   | (49.6)         | 48     | 75.9           | 132    | 66.3           | 180    |
| Baptist   | *              | 22     | (61.7)         | 44     | 55.3           | 66     |
| Other Christian   | 64.7           | 225    | 73.1           | 511    | 70.0           | 736    |
| Muslim  | 66.6           | 51     | 70.0           | 153    | 69.1           | 204    |
| Other   | 65.4           | 71     | 68.3           | 115    | 66.9           | 186    |
| None  | *              | 16     | *              | 10     | (60.2)         | 26     |
| <b>Ethnicity</b>  |                |        |                |        |                |        |
| Chewa   | 65.3           | 163    | 73.5           | 305    | 69.9           | 468    |
| Lomwe   | 62.1           | 232    | 76.7           | 455    | 70.6           | 687    |
| Ngoni   | 52.7           | 96     | 69.5           | 212    | 63.1           | 308    |
| Nkhonde   | *              | 10     | *              | 14     | *              | 24     |
| Sena  | (60.1)         | 25     | 66.4           | 76     | 64.4           | 101    |
| Tonga   | *              | 12     | *              | 23     | (56.9)         | 35     |
| Tumbuka   | 63.3           | 51     | 77.8           | 115    | 72.6           | 166    |
| Yao   | 59.8           | 77     | 70.3           | 201    | 67.0           | 278    |
| Other   | (51.9)         | 46     | 77.5           | 104    | 68.3           | 150    |
| Total 15-24   | (37.2)         | 43     | 49.7           | 171    | 46.0           | 214    |
| Total 15-49   | 58.1           | 556    | 71.7           | 1,324  | 66.6           | 1,880  |
| Total 15-64   | 60.9           | 712    | 73.1           | 1,508  | 68.3           | 2,220  |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 1.4: People living with HIV who have suppressed viral loads

<sup>2</sup>Church of Central Africa Presbyterian.

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.

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

## 9.4 Adult Viral Load Suppression by Age and Sex

Among HIV-positive persons ages 15-64 years, the prevalence of VLS ranged from 39.3% among those ages 15-19 years to 78.8% among those ages 60-64 years. Viral load suppression prevalence was less than 50% among males younger than the age of 30 years, while among males ages 30-64 years, VLS prevalence ranged from 51.6% among males ages 30-34 years to 77.6% among males ages 50-54 years. Among HIV-positive females, prevalence of VLS was less than 50% among those ages 15-19 years, but higher than 70% among females age 30 years and older (Tables 9.4.A and 9.4.B; Figure 9.4.A).

**Table 9.4.A Viral load suppression by age (5-year age groups)**

Among HIV-positive persons age 0-64 years, percentage with viral load suppression (< 1,000 copies/ml)<sup>1</sup>, by sex and age, MPHIA 2015-2016

| Age         | Males                       |        | Females                     |        | Total                       |        |
|-------------|-----------------------------|--------|-----------------------------|--------|-----------------------------|--------|
|             | Percentage VLS <sup>2</sup> | Number | Percentage VLS <sup>2</sup> | Number | Percentage VLS <sup>2</sup> | Number |
| 0-4         | *                           | 11     | *                           | 7      | *                           | 18     |
| 5-9         | *                           | 14     | *                           | 23     | (51.8)                      | 37     |
| 10-14       | *                           | 21     | *                           | 20     | (49.2)                      | 41     |
| 15-19       | *                           | 15     | (35.6)                      | 38     | 39.3                        | 53     |
| 20-24       | (31.8)                      | 28     | 56.2                        | 133    | 49.2                        | 161    |
| 25-29       | (41.2)                      | 49     | 64.7                        | 217    | 58.9                        | 266    |
| 30-34       | 51.6                        | 110    | 75.1                        | 292    | 65.9                        | 402    |
| 35-39       | 61.1                        | 121    | 75.1                        | 295    | 69.8                        | 416    |
| 40-44       | 64.6                        | 127    | 80.2                        | 216    | 73.8                        | 343    |
| 45-49       | 72.7                        | 106    | 82.1                        | 133    | 77.3                        | 239    |
| 50-54       | 77.6                        | 70     | 78.3                        | 91     | 78.0                        | 161    |
| 55-59       | 71.2                        | 51     | 82.7                        | 58     | 77.5                        | 109    |
| 60-64       | (67.4)                      | 35     | (86.3)                      | 35     | 78.8                        | 70     |
| Total 15-24 | (37.2)                      | 43     | 49.7                        | 171    | 46.0                        | 214    |
| Total 15-49 | 58.1                        | 556    | 71.7                        | 1,324  | 66.6                        | 1,880  |
| Total 15-64 | 60.9                        | 712    | 73.1                        | 1,508  | 68.3                        | 2,220  |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 1.4: People living with HIV who have suppressed viral loads

<sup>2</sup>VLS: viral load suppression

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

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

**Table 9.4.B Viral load suppression by age (10-15-year age groups)**

Among HIV-positive persons age 0-64 years, percentage with viral load suppression<sup>1</sup> (< 1,000 copies/ml), by sex and age, MPHIA 2015-2016

| Age   | Males                       |        | Females                     |        | Total                       |        |
|-------|-----------------------------|--------|-----------------------------|--------|-----------------------------|--------|
|       | Percentage VLS <sup>2</sup> | Number | Percentage VLS <sup>2</sup> | Number | Percentage VLS <sup>2</sup> | Number |
| 0-14  | (38.0)                      | 46     | 46.8                        | 50     | 42.3                        | 96     |
| 15-24 | (37.2)                      | 43     | 49.7                        | 171    | 46.0                        | 214    |
| 25-34 | 48.2                        | 159    | 70.1                        | 509    | 62.9                        | 668    |
| 35-44 | 62.9                        | 248    | 77.5                        | 511    | 71.7                        | 759    |
| 45-54 | 74.5                        | 176    | 80.7                        | 224    | 77.5                        | 400    |
| 55-64 | 69.8                        | 86     | 84.2                        | 93     | 78.0                        | 179    |

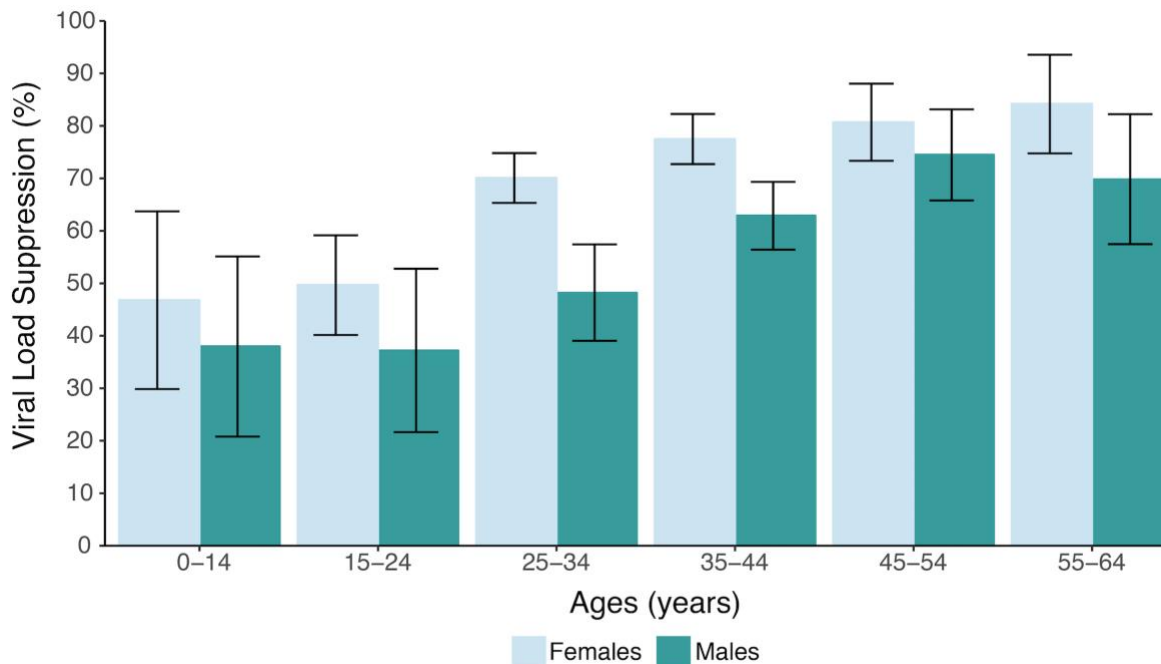
<sup>1</sup>Relates to Global AIDS Monitoring indicator 1.4: People living with HIV who have suppressed viral loads

<sup>2</sup>VLS: viral load suppression

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



**Figure 9.4.A Proportion of viral load suppression (<1000 copies/ml) among people living with HIV, by age and sex, MPHIA 2015-2016**



### 9.5 Adult Viral Load Suppression by Zone

The percentage of HIV-positive adults ages 15-64 years with VLS ranged from 59.5% in Blantyre City, 70.6% in the Central-West zone, and 70.7% in the South-East zone. Among females, the prevalence of VLS was higher than 70.0% in all zones (71.2% in North zone to 77.1% in South-East zone), except in Blantyre City (63.1%). Among males, percentages of VLS were similarly low in Lilongwe City (53.7%) and Blantyre City (54.3%), (Table 9.3.A, Figures 9.5.A and 9.5.B).

**Figure 9.5.A Viral load suppression (<1000 copies/ml) among HIV-positive adults ages 15-64 years, by zone, MPHIA 2015-2016**

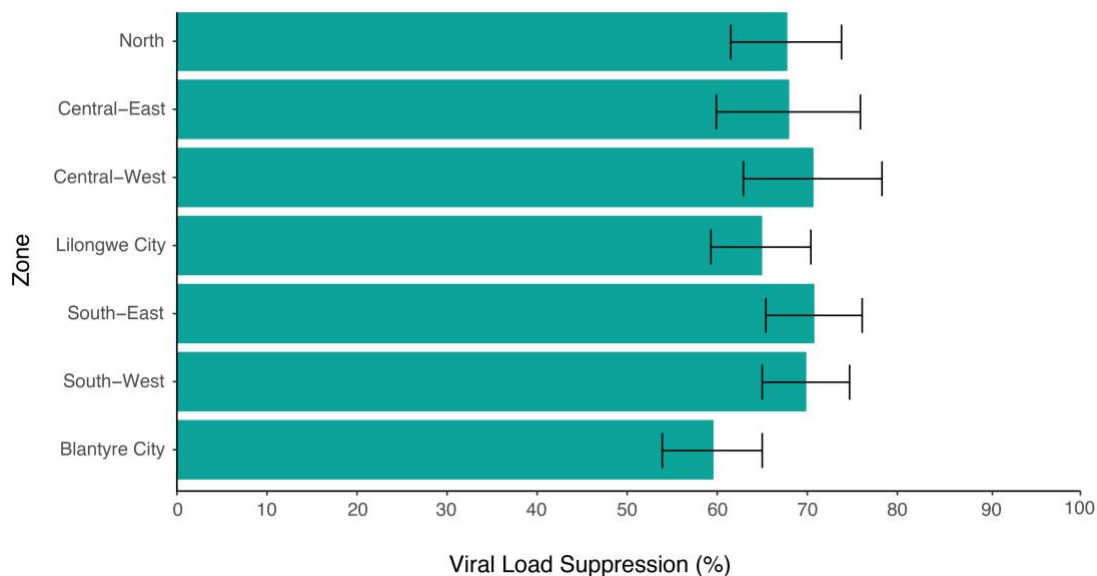
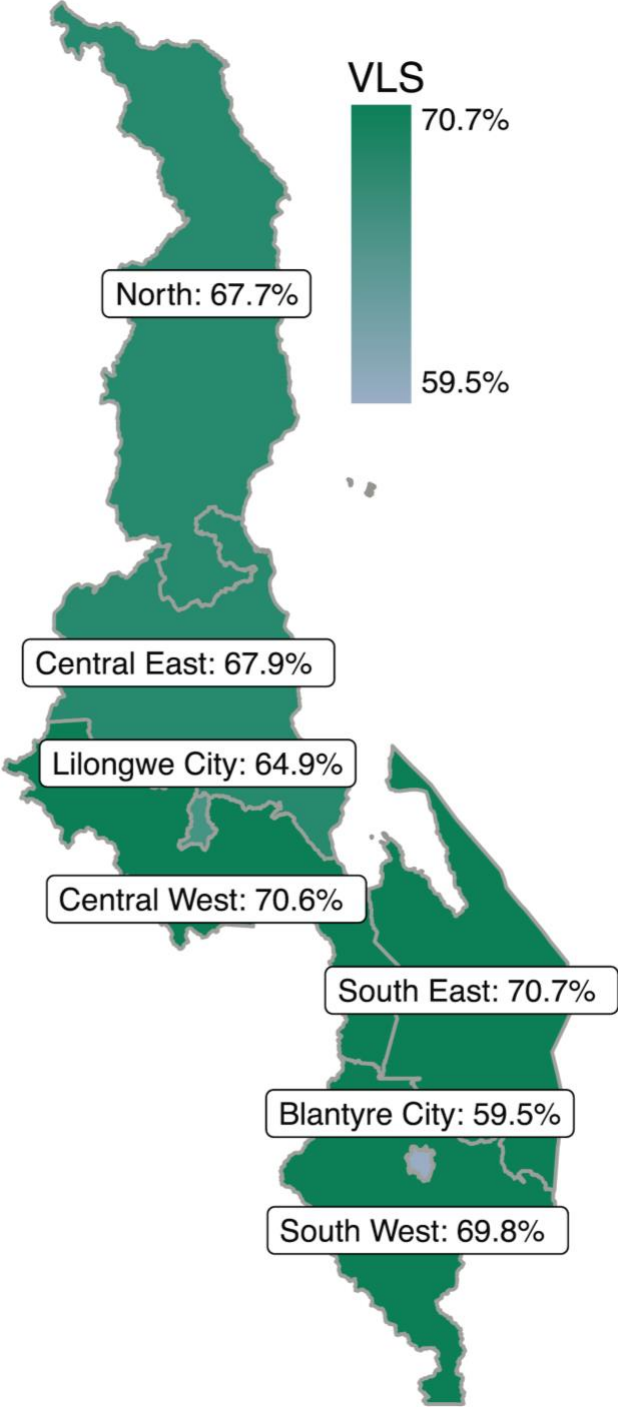


Figure 9.5.B Viral load suppression (<1000 copies/ml) among HIV-positive adults ages 15-64 years, by zone, MPHIA 2015-2016



9.6 Gaps and Unmet Needs

- Close to a third of the HIV-positive adults in the country are not virally suppressed. There is need to prioritize HIV testing to increase diagnosis, and once diagnosed, to initiate ART and ensure adherence in order to achieve a high level of VLS in the HIV-positive population.

# 10 UNAIDS 90-90-90 TARGETS

## 10.1 Key Findings

- **Diagnosed:** Based on self-report and ARV detection data, it is estimated that in Malawi, 76.8% of PLHIV ages 15-64 years know their HIV status (80.2% of HIV-positive females and 71.7% of HIV-positive males).
- **On treatment:** Based on self-report and ARV detection data, it is estimated that among PLHIV ages 15-64 years who know their HIV status, 91.4% were receiving ART (92.9% of females and 88.7% males).
- **Virally suppressed:** Among PLHIV ages 15-64 years who self-reported ARV use or had detectable ARVs in their blood, 91.3% were virally suppressed (92.1% females and 89.8% of males).

## 10.2 Background

In order to bring the HIV epidemic under control, UNAIDS has set the ambitious target referred to as 90-90-90: by 2020, 90% of all PLHIV will know their HIV status; 90% of all persons with diagnosed HIV infection will receive sustained ART; and 90% of all persons receiving ART will have VLS.<sup>1</sup>

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, irrespective of knowledge of status or treatment use. This chapter presents the status of the 90-90-90 indicators, which reflect each critical stage of program performance. Awareness of HIV-positive status and treatment status among those aware of their HIV-positive status are indicators of access to services. Viral load suppression among those aware of their HIV status and on treatment not only provides an indication of access to and retention in care, VLS among all HIV-positive individuals of 73% (90 x 90 x 90) or greater is an indication of successful testing and treatment services progress to epidemic control.

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

It is important to note that in both cascades, individuals who are not aware of their HIV-positive status or are not on ARVs, are excluded from the third 90 (VLS among those who are aware and on ARVs).

### 10.3 Status of the UNAIDS 90-90-90 Targets

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

Based on self-reported awareness of HIV status and ARV use, Malawi has nearly achieved the second and third of the UNAIDS 90-90-90 targets: 89.7% of HIV-positive adults ages 15-64 years who know their status reported ART use, and 91.3% of those on ART had VLS. However, achievement in diagnosis is below the first target, with 72.8% of HIV-positive persons ages 15-64 years having reported awareness of their HIV-positive status (Table 10.3.A).

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

**ARV-adjusted awareness of HIV-positive status:** Among adults ages 15-64 years living with HIV, 76.8% (71.7% of males and 80.2% of females) were classified as aware, according to combined self-reported awareness and/or detectable ARV data (ARV-adjusted awareness). Similar levels of ARV-adjusted awareness were observed for all age groups over the age of 25 years. However, ARV-adjusted awareness of HIV-positive status was observed in only 53.7% of PLHIV ages 15-24 years (44.6% of males and 57.6% of females)(Table 10.3.B; Figure 10.3.A).

**ARV-adjusted treatment status:** Based on either self-report ARV status or detectable ARVs, 91.4% of those with ARV-adjusted awareness status were classified as using ART. This was similar across age groups ranging from 85.7% among those ages 15-24 years to 92.8% among those ages 35-49 years. The greatest disparity by gender was seen in those ages 25-34 years, among whom 78.4% of males and 91.6% of females were on ART (ARV-adjusted treatment status) (Table 10.3.B; Figure 10.3.A).

**Viral suppression:** Among persons on ART (ARV-adjusted treatment status), 91.3% had VLS, ranging from 81.2% among those ages 15-24 years to 93.5% among those ages 25-34 years. Across all age bands, VLS among those on ART was similar among men and women (Table 10.3.B; Figure 10.3.A).

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

90-90-90 targets among people living with HIV ages 15-64 years, by sex and age, MPHIA 2015-2016

| Age   | Diagnosed                                 |        |   |        |   |        |
|-------|---|--------|---|--------|---|--------|
|       | Males                                     |        | Females                                   |        | Total                                     |        |
|       | Percentage who self-reported HIV positive | Number | Percentage who self-reported HIV positive | Number | Percentage who self-reported HIV positive | Number |
| 15-24 | (37.1)                                    | 44     | 55.3                                      | 169    | 49.8                                      | 213    |
| 25-34 | 58.9                                      | 159    | 72.2                                      | 510    | 67.9                                      | 669    |
| 35-49 | 73.8                                      | 353    | 82.7                                      | 640    | 78.9                                      | 993    |
| 15-49 | 66.0                                      | 556    | 75.4                                      | 1,319  | 71.8                                      | 1,875  |
| 15-64 | 68.0                                      | 711    | 75.9                                      | 1,503  | 72.8                                      | 2,214  |

| Age   | On Treatment, among those Diagnosed |        |                                     |        |                                     |        |
|-------|-------------------------------------|--------|-------------------------------------|--------|-------------------------------------|--------|
|       | Males                               |        | Females                             |        | Total                               |        |
|       | Percentage who self-reported on ART | Number | Percentage who self-reported on ART | Number | Percentage who self-reported on ART | Number |
| 15-24 | *                                   | 16     | 84.8                                | 97     | 82.5                                | 113    |
| 25-34 | 73.4                                | 85     | 89.9                                | 372    | 85.2                                | 457    |
| 35-49 | 89.4                                | 257    | 93.3                                | 535    | 91.7                                | 792    |
| 15-49 | 84.2                                | 358    | 91.3                                | 1,004  | 88.8                                | 1,362  |
| 15-64 | 86.3                                | 481    | 91.6                                | 1,151  | 89.7                                | 1,632  |

| Age   | Virally Suppressed, among those On Treatment |        |                               |        |                               |        |
|-------|--|--------|-------------------------------|--------|-------------------------------|--------|
|       | Males  |        | Females                       |        | Total                         |        |
|       | Percentage virally suppressed                | Number | Percentage virally suppressed | Number | Percentage virally suppressed | Number |
| 15-24 | *  | 13     | 79.6                          | 83     | 78.8                          | 96     |
| 25-34 | 91.7   | 60     | 94.1                          | 330    | 93.5                          | 390    |
| 35-49 | 89.5   | 228    | 91.6                          | 492    | 90.8                          | 720    |
| 15-49 | 89.4   | 301    | 91.5                          | 905    | 90.8                          | 1,206  |
| 15-64 | 89.7   | 419    | 92.1                          | 1,040  | 91.3                          | 1,459  |

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

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

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

| 90-90-90 targets among people living with HIV age 15-64 years, by sex and age, MPHIA 2015-2016 |   |        |   |        |   |        |
|--|---|--------|---|--------|---|--------|
| Age  | Diagnosed <sup>1</sup>  |        |   |        |   |        |
|  | Males   |        | Females   |        | Total   |        |
|  | Percentage who self-reported HIV positive AND/OR with detectable ARVs | Number | Percentage who self-reported HIV positive AND/OR with detectable ARVs | Number | Percentage who self-reported HIV positive AND/OR with detectable ARVs | Number |
| 15-24  | (44.6)  | 44     | 57.6  | 170    | 53.7  | 214    |
| 25-34  | 60.8  | 159    | 76.9  | 509    | 71.6  | 668    |
| 35-49  | 77.2  | 354    | 87.8  | 642    | 83.3  | 996    |
| 15-49  | 69.3  | 557    | 79.9  | 1,321  | 75.9  | 1,878  |
| 15-64  | 71.7  | 712    | 80.2  | 1,505  | 76.8  | 2,217  |

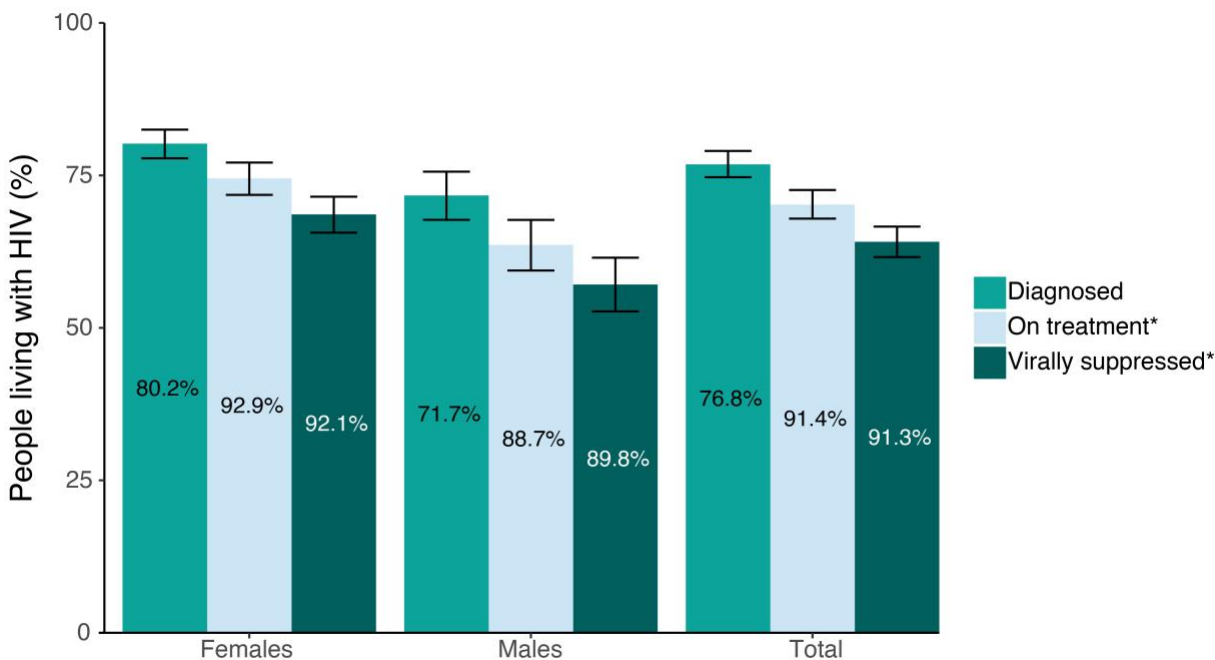
| On Treatment <sup>2</sup> , among those Diagnosed |   |        |   |        |   |        |
|---|---|--------|---|--------|---|--------|
| Age   | Males   |        | Females   |        | Total   |        |
|   | Percentage with detectable ARVs AND/OR who self-reported being on ART | Number | Percentage with detectable ARVs AND/OR who self-reported being on ART | Number | Percentage with detectable ARVs AND/OR who self-reported being on ART | Number |
|   | 15-24   | *      | 20  | 87.9   | 101   | 85.7   |
| 25-34   | 78.4  | 89     | 91.6  | 394    | 88.0  | 483    |
| 35-49   | 91.0  | 271    | 93.9  | 562    | 92.8  | 833    |
| 15-49   | 86.9  | 380    | 92.6  | 1,057  | 90.6  | 1,437  |
| 15-64   | 88.7  | 510    | 92.9  | 1,210  | 91.4  | 1,720  |

| Virally Suppressed <sup>3</sup> , among those On Treatment |                               |        |                               |        |                               |        |
|--|-------------------------------|--------|-------------------------------|--------|-------------------------------|--------|
| Age  | Males                         |        | Females                       |        | Total                         |        |
|  | Percentage virally suppressed | Number | Percentage virally suppressed | Number | Percentage virally suppressed | Number |
| 15-24  | *                             | 17     | 81.4                          | 89     | 81.2                          | 106    |
| 25-34  | 92.5                          | 66     | 93.8                          | 358    | 93.5                          | 424    |
| 35-49  | 89.1                          | 245    | 91.8                          | 521    | 90.7                          | 766    |
| 15-49  | 89.5                          | 328    | 91.6                          | 968    | 90.9                          | 1,296  |
| 15-64  | 89.8                          | 454    | 92.1                          | 1,110  | 91.3                          | 1,564  |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED\_NAT.  
<sup>2</sup>Relates to Global AIDS Monitoring indicator 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX\_CURR\_NAT / SUBNAT.  
<sup>3</sup>Relates to Global AIDS Monitoring indicator 1.4: People living with HIV who have suppressed viral loads and PEPFAR VL\_SUPPRESSION\_NAT.  
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.  
An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

**Figure 10.3.A Adult 90-90-90 (adjusted for laboratory antiretroviral data<sup>a</sup> among adults ages 15-64 years), MPHIA 2015-2016**



<sup>a</sup> In the antiretroviral (ARV)-adjusted 90-90-90 participants were classified as ‘aware’ or ‘diagnosed’ if they self-reported an HIV positive status before testing HIV positive in MPHIA and/or had detectable ARVs in their blood. Participants were classified as ‘on treatment’ if they self-reported that they were on treatment and/or if they had detectable ARVs in their blood.

\*Inset numbers are conditional proportions.

#### 10.4 Gaps and Unmet Needs

- The major gap is in diagnosis of PLHIV, especially among males and young adults.
- A gap persists in the initiation of ART, especially among males ages 25-34 years, among whom 22% of those already diagnosed were not receiving ART based on ARV-adjusted measures.
- Although VLS is high among those on ARVs, overall VLS among all PLHIV is 60.9% in males. This is even lower in the group ages 15-24 years (37.2% in males and 49.7% in females).

#### 10.5 References

1. UNAIDS (2014). *90-90-90. An ambitious treatment target to help end the AIDS epidemic*. Retrieved from UNAIDS: [http://www.unaids.org/sites/default/files/media\\_asset/90-90-90\\_en\\_0.pdf](http://www.unaids.org/sites/default/files/media_asset/90-90-90_en_0.pdf)

# 11 CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV

## 11.1 Key Findings

- Among adults ages 15-64 years living with HIV who had not been diagnosed, 16.8% of males and 17.7% of females had severe immunosuppression with CD4 count less than 200 cells/ $\mu$ l.
- Among adults ages 15-64 years living with HIV, 98% of those who reported initiating ART less than 12 months prior to the survey, and 98% of those who reported initiating ART more than 12 months prior to the survey, reported that they were still taking ART at the time of the survey.
- Among 22 samples from recently-infected HIV-positive persons identified in MPHIA, 9.1% (2) had mutations associated with resistance to ARVs. None of the samples had mutations associated with resistance to all three classes of ARVs (nucleoside and non-nucleoside reverse transcriptase inhibitors (NNRTI) and protease inhibitors (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 PLHIV, ensuring a sustainable health system that is people-centered and innovative requires diligent monitoring and responsiveness.<sup>1</sup> Indicators such as CD4 count at diagnosis and retention on ART can provide evidence of program coverage, the ability to reach vulnerable populations, and quality of care. The distribution of CD4 counts also reflects population health, and the potential impact of HIV on mortality. Finally, the measurement of transmitted drug resistance allows optimization of national ART guidelines including second- and third-line therapies. The MPHIA provided a unique opportunity to gauge progress in the expansion of HIV clinical services in Malawi, as well as identify gaps and future challenges.

## 11.3 CD4 Counts and Immunosuppression

Among HIV-positive adults ages 15-64 years, 58.4% were immunosuppressed with a CD4 count of less than 500 cells/ $\mu$ l. Nearly three-quarters of HIV-positive men were immunosuppressed (71.0%) compared to half of women (50.4%). The median CD4 count was 445 cells/ $\mu$ l in HIV-positive individuals ages 15-64 years (379 cells/ $\mu$ l in males and 497 cells/ $\mu$ l in females) (Table 11.3.A).

Among HIV-positive individuals ages 15-64 years who self-reported as previously diagnosed with HIV and on ART, 52.2% had a CD4 count of less than 500 cells/ $\mu$ l (66.9% of males and 44.2% of females). The overall median CD4 count was 486 cells/ $\mu$ l (400 cells/ $\mu$ l among males and 533 cells/ $\mu$ l among females). For those HIV-positive individuals not previously diagnosed, the median CD4 count was 380 cells/ $\mu$ l (344 cells/ $\mu$ l among males and 407 cells/ $\mu$ l among females) (Table 11.3.A; Figure 11.3.A).

Among HIV-positive individuals ages 15-64 years who self-reported as previously diagnosed with HIV, but not on ART, 78.7% had a CD4 count of less than 500 cells/ $\mu$ l (88.6% of males and 69.5% of females). The overall median CD4 count was 326 cells/ $\mu$ l (283 cells/ $\mu$ l in males and 386 cells/ $\mu$ l in females) (Table 11.3.A; Figure 11.3.A).



The percentage of individuals with CD4 count less than 500 cells/ $\mu$ l did not vary by residence, zone, marital status, education, religion, or age. Among the total adult population, the median CD4 count was observed to be less than 500 cells/ $\mu$ l across all zones, marital status, education, religion, and age categories, except among those ages 15-19 years. Among adult women however the median CD4 count was over 500 cells/ $\mu$ l in a number of these categories (Table 11.3.A).

**Table 11.3.A Median CD4 count and prevalence of immunosuppression**

Among HIV-positive persons ages 15-64 years, median (Q1, Q3) CD4 count and percentage with immunosuppression (< 500 cells/ $\mu$ L), by sex, self-reported diagnosis and antiretroviral therapy (ART) status, and selected demographic characteristics, MPHIA 2015-2016

| Characteristic                                      | Males           |                                 |        | Females         |                                 |        | Total           |                                 |        |
|---|-----------------|---------------------------------|--------|-----------------|---------------------------------|--------|-----------------|---------------------------------|--------|
|   | Median (Q1, Q3) | Percentage < 500 cells/ $\mu$ L | Number | Median (Q1, Q3) | Percentage < 500 cells/ $\mu$ L | Number | Median (Q1, Q3) | Percentage < 500 cells/ $\mu$ L | Number |
| <b>Self-reported diagnosis and treatment status</b> |                 |                                 |        |                 |                                 |        |                 |                                 |        |
| Not previously diagnosed                            | 344 (233, 524)  | 73.0                            | 219    | 407 (251, 602)  | 64.2                            | 338    | 380 (245, 562)  | 68.3                            | 557    |
| Previously diagnosed, not on ART                    | 283 (187, 426)  | 88.6                            | 62     | 386 (186, 534)  | 69.5                            | 111    | 326 (187, 482)  | 78.7                            | 173    |
| Previously diagnosed, on ART                        | 400 (269, 550)  | 66.9                            | 419    | 533 (381, 696)  | 44.2                            | 1,038  | 486 (336, 649)  | 52.2                            | 1,457  |
| Missing   | *               | *                               | 4      | *               | *                               | 9      | *               | *                               | 13     |
| <b>Residence</b>                                    |                 |                                 |        |                 |                                 |        |                 |                                 |        |
| Urban   | 355 (222, 515)  | 73.0                            | 323    | 480 (305, 665)  | 52.4                            | 732    | 424 (266, 613)  | 60.4                            | 1,055  |
| Rural   | 382 (251, 535)  | 70.3                            | 381    | 503 (352, 674)  | 49.6                            | 764    | 449 (307, 623)  | 57.7                            | 1,145  |
| <b>Zone</b>   |                 |                                 |        |                 |                                 |        |                 |                                 |        |
| North   | 308 (176, 465)  | 78.2                            | 67     | 439 (270, 602)  | 60.5                            | 112    | 380 (207, 536)  | 67.8                            | 179    |
| Central-East  | 352 (298, 423)  | (83.1)                          | 40     | 419 (273, 626)  | 56.1                            | 78     | 392 (288, 552)  | 66.5                            | 118    |
| Central-West  | 392 (233, 536)  | 67.2                            | 55     | 536 (344, 682)  | 41.6                            | 81     | 475 (302, 647)  | 53.3                            | 136    |
| Lilongwe City                                       | 358 (224, 580)  | 67.0                            | 117    | 512 (338, 661)  | 48.6                            | 280    | 450 (280, 633)  | 55.7                            | 397    |
| South-East  | 398 (249, 544)  | 70.2                            | 104    | 501 (356, 673)  | 49.9                            | 230    | 458 (304, 621)  | 57.4                            | 334    |
| South-West  | 399 (267, 544)  | 68.3                            | 150    | 506 (368, 690)  | 48.5                            | 346    | 468 (333, 644)  | 55.7                            | 496    |
| Blantyre City                                       | 361 (248, 519)  | 72.5                            | 171    | 469 (312, 635)  | 54.1                            | 369    | 418 (278, 590)  | 61.7                            | 540    |
| <b>Marital status</b>                               |                 |                                 |        |                 |                                 |        |                 |                                 |        |
| Never married                                       | 419 (260, 624)  | 55.7                            | 55     | 445 (283, 671)  | 53.3                            | 100    | 423 (275, 662)  | 54.3                            | 155    |
| Married or living together                          | 381 (260, 531)  | 71.0                            | 558    | 502 (359, 677)  | 49.8                            | 845    | 442 (297, 608)  | 60.0                            | 1,403  |
| Divorced or separated                               | 293 (189, 482)  | 77.2                            | 62     | 468 (317, 660)  | 53.3                            | 307    | 434 (289, 618)  | 58.3                            | 369    |
| Widowed   | 235 (119, 397)  | (86.2)                          | 29     | 512 (339, 660)  | 47.1                            | 242    | 476 (323, 639)  | 51.6                            | 271    |
| <b>Education</b>                                    |                 |                                 |        |                 |                                 |        |                 |                                 |        |
| No education  | 431 (300, 609)  | (60.8)                          | 44     | 466 (317, 633)  | 54.8                            | 195    | 461 (316, 631)  | 56.1                            | 239    |
| Primary   | 377 (234, 522)  | 72.5                            | 425    | 508 (359, 685)  | 48.3                            | 876    | 451 (298, 627)  | 58.0                            | 1,301  |
| Secondary   | 373 (262, 545)  | 70.5                            | 199    | 475 (312, 674)  | 53.6                            | 370    | 420 (285, 595)  | 61.1                            | 569    |
| More than secondary                                 | 366 (220, 515)  | (68.0)                          | 36     | 447 (307, 605)  | 52.7                            | 53     | 385 (278, 600)  | 60.9                            | 89     |
| <b>Wealth quintile</b>                              |                 |                                 |        |                 |                                 |        |                 |                                 |        |
| Lowest  | 387 (270, 535)  | 73.2                            | 80     | 485 (311, 653)  | 51.1                            | 169    | 432 (296, 604)  | 59.6                            | 249    |
| Second  | 403 (247, 542)  | 66.1                            | 81     | 498 (342, 674)  | 50.1                            | 176    | 447 (306, 635)  | 56.3                            | 257    |
| Middle  | 369 (229, 523)  | 72.1                            | 99     | 502 (382, 728)  | 49.2                            | 203    | 457 (305, 660)  | 57.9                            | 302    |
| Fourth  | 386 (268, 568)  | 67.8                            | 155    | 495 (340, 640)  | 51.5                            | 270    | 449 (311, 607)  | 58.4                            | 425    |
| Highest   | 336 (203, 498)  | 74.9                            | 289    | 499 (331, 660)  | 50.0                            | 678    | 432 (275, 609)  | 59.2                            | 967    |

**Table 11.3.A Median CD4 count and prevalence of immunosuppression (continued)**

| Characteristic        | Males              |                                 |        | Females            |                                 |        | Total              |                                 |        |
|-----------------------|--------------------|---------------------------------|--------|--------------------|---------------------------------|--------|--------------------|---------------------------------|--------|
|                       | Median<br>(Q1, Q3) | Percentage<br>< 500<br>cells/μL | Number | Median<br>(Q1, Q3) | Percentage<br>< 500<br>cells/μL | Number | Median<br>(Q1, Q3) | Percentage<br>< 500<br>cells/μL | Number |
| <b>Religion</b>       |                    |                                 |        |                    |                                 |        |                    |                                 |        |
| Catholic              | 410 (280, 587)     | 59.9                            | 125    | 523 (366, 693)     | 45.7                            | 245    | 486 (328, 661)     | 51.1                            | 370    |
| CCAP <sup>1</sup>     | 378 (273, 531)     | 70.2                            | 133    | 482 (335, 646)     | 52.7                            | 264    | 423 (294, 604)     | 60.2                            | 397    |
| Anglican              | *                  | *                               | 14     | 473 (382, 585)     | (52.8)                          | 28     | 478 (404, 602)     | (55.6)                          | 42     |
| Seventh Day Adventist | 337 (220, 437)     | (82.1)                          | 49     | 498 (328, 679)     | 49.8                            | 130    | 426 (293, 591)     | 61.9                            | 179    |
| Baptist               | *                  | *                               | 21     | 440 (322, 598)     | (58.1)                          | 44     | 385 (220, 563)     | 65.9                            | 65     |
| Other Christian       | 372 (246, 522)     | 72.5                            | 223    | 507 (340, 688)     | 48.9                            | 507    | 452 (299, 631)     | 57.7                            | 730    |
| Muslim                | 303 (194, 455)     | 86.2                            | 51     | 465 (300, 625)     | 55.7                            | 152    | 423 (262, 555)     | 64.0                            | 203    |
| Other                 | 393 (248, 587)     | 67.1                            | 71     | 499 (323, 709)     | 48.9                            | 115    | 411 (297, 651)     | 57.7                            | 186    |
| None                  | *                  | *                               | 16     | *                  | *                               | 10     | 356 (204, 522)     | (64.3)                          | 26     |
| <b>Ethnicity</b>      |                    |                                 |        |                    |                                 |        |                    |                                 |        |
| Chewa                 | 387 (249, 531)     | 70.5                            | 160    | 519 (352, 676)     | 46.7                            | 302    | 446 (297, 615)     | 57.1                            | 462    |
| Lomwe                 | 391 (262, 543)     | 68.3                            | 230    | 516 (366, 690)     | 47.5                            | 454    | 462 (316, 635)     | 56.2                            | 684    |
| Ngoni                 | 330 (230, 430)     | 81.0                            | 94     | 505 (347, 635)     | 48.5                            | 208    | 421 (285, 599)     | 60.8                            | 302    |
| Nkhonde               | *                  | *                               | 10     | *                  | *                               | 14     | *                  | *                               | 24     |
| Sena                  | 438 (293, 544)     | (65.1)                          | 25     | 468 (333, 709)     | 56.4                            | 76     | 467 (333, 643)     | 59.2                            | 101    |
| Tonga                 | *                  | *                               | 12     | *                  | *                               | 23     | 367 (173, 516)     | (72.1)                          | 35     |
| Tumbuka               | 305 (169, 418)     | 81.2                            | 51     | 403 (254, 643)     | 62.4                            | 112    | 364 (208, 527)     | 69.3                            | 163    |
| Yao                   | 398 (223, 504)     | 73.5                            | 77     | 474 (328, 635)     | 53.2                            | 200    | 445 (293, 601)     | 59.6                            | 277    |
| Other                 | 400 (279, 578)     | (59.8)                          | 45     | 540 (375, 737)     | 43.7                            | 104    | 504 (327, 677)     | 49.5                            | 149    |
| <b>Age</b>            |                    |                                 |        |                    |                                 |        |                    |                                 |        |
| 15-19                 | *                  | *                               | 14     | 516 (313, 738)     | (45.8)                          | 38     | 514 (298, 736)     | 47.1                            | 52     |
| 20-24                 | 405 (284, 545)     | (62.3)                          | 27     | 506 (341, 736)     | 49.8                            | 131    | 474 (315, 701)     | 53.4                            | 158    |
| 25-29                 | 364 (250, 496)     | (74.8)                          | 48     | 483 (340, 661)     | 56.0                            | 215    | 456 (283, 633)     | 60.6                            | 263    |
| 30-34                 | 341 (214, 500)     | 74.7                            | 107    | 511 (337, 698)     | 47.8                            | 291    | 437 (284, 615)     | 58.2                            | 398    |
| 35-39                 | 409 (265, 587)     | 64.6                            | 121    | 486 (331, 637)     | 51.8                            | 294    | 465 (298, 612)     | 56.7                            | 415    |
| 40-44                 | 337 (220, 527)     | 71.7                            | 126    | 503 (365, 601)     | 48.5                            | 213    | 444 (299, 576)     | 58.1                            | 339    |
| 45-49                 | 394 (279, 526)     | 68.1                            | 106    | 507 (330, 673)     | 48.1                            | 134    | 418 (314, 620)     | 58.2                            | 240    |
| 50-54                 | 326 (232, 449)     | 78.3                            | 69     | 432 (300, 640)     | 57.9                            | 90     | 400 (257, 570)     | 68.1                            | 159    |
| 55-59                 | 361 (224, 511)     | 74.5                            | 51     | 514 (370, 599)     | 44.1                            | 57     | 421 (295, 578)     | 58.0                            | 108    |
| 60-64                 | 371 (225, 457)     | (85.9)                          | 35     | 540 (378, 724)     | (44.5)                          | 33     | 424 (348, 644)     | 61.4                            | 68     |
| Total 15-24           | 420 (281, 607)     | (58.5)                          | 41     | 520 (340, 739)     | 48.5                            | 169    | 496 (312, 714)     | 51.4                            | 210    |
| Total 15-49           | 381 (248, 536)     | 69.4                            | 549    | 498 (337, 673)     | 50.4                            | 1,316  | 450 (298, 625)     | 57.5                            | 1,865  |
| Total 15-64           | 379 (240, 531)     | 71.0                            | 704    | 497 (339, 673)     | 50.4                            | 1,496  | 445 (297, 621)     | 58.4                            | 2,200  |

<sup>1</sup>Church of Central Africa Presbyterian.

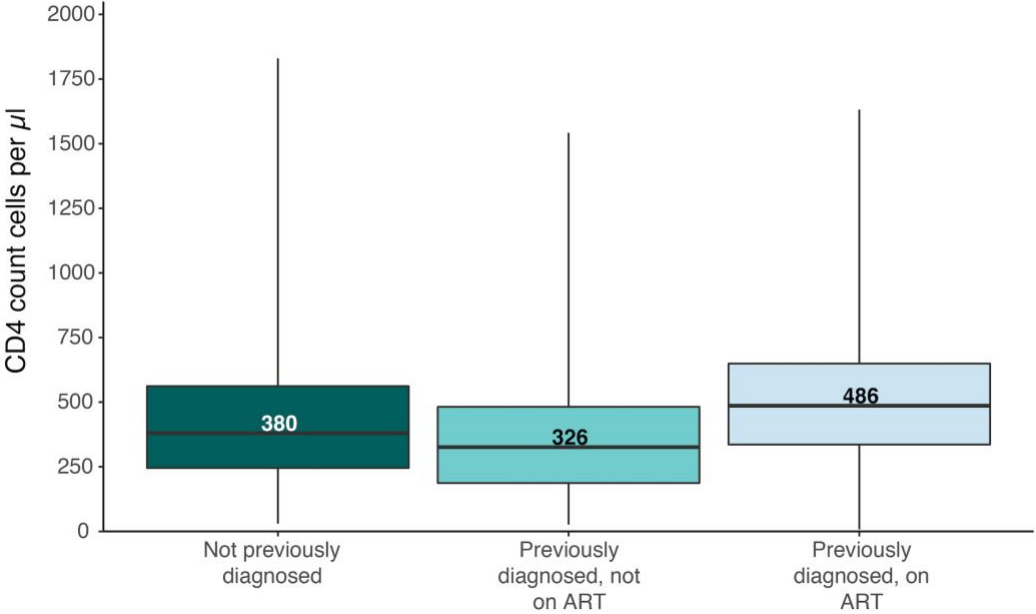
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

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

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

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

**Figure 11.3.A CD4 count distribution among HIV-positive adults ages 15-64 years, by antiretroviral therapy status, MPHIA 2015-2016**



**11.4 Late HIV Diagnosis**

Among HIV-positive adults ages 15-64 years who were unaware of their status (that is, they self-reported HIV-negative or never tested), close to half (47.3%) had a CD4 count less than 350 cells/μl (51.0% of males and 43.9% of females), and 17.2% had a CD4 count less than 200 cells/μl (16.8% of males and 17.7% of females).

In these HIV-positive adults ages 15-64 years who were unaware of their status, the prevalence of severe immunosuppression with CD4 counts less than 200 cells/μl peaked among those residing in urban areas (24.0%), those in the highest wealth quintile (25.4%), and those ages 15-19 years (29.8%).

**Table 11.4.A Late HIV diagnosis**

Among persons ages 15-64 years who tested HIV positive in the PHIA survey but self-reported HIV negative and with no detectable antiretrovirals, percentage who had a CD4 cell count < 200 cells/ $\mu$ l and < 350 cells/ $\mu$ l, by sex and selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Males  |  |        | Females                                      |  |        | Total  |  |        |
|----------------------------|--|--|--------|--|--|--------|--|--|--------|
|                            | Percentage < 200 cells/ $\mu$ l <sup>1</sup> | Percentage < 350 cells/ $\mu$ l <sup>1</sup> | Number | Percentage < 200 cells/ $\mu$ l <sup>1</sup> | Percentage < 350 cells/ $\mu$ l <sup>1</sup> | Number | Percentage < 200 cells/ $\mu$ l <sup>1</sup> | Percentage < 350 cells/ $\mu$ l <sup>1</sup> | Number |
| <b>Residence</b>           |  |  |        |  |  |        |  |  |        |
| Urban                      | 25.5   | 54.3   | 99     | 22.6   | 43.2   | 152    | 24.0   | 48.7   | 251    |
| Rural                      | 12.4   | 49.4   | 92     | 15.5   | 44.2   | 129    | 14.0   | 46.6   | 221    |
| <b>Zone</b>                |  |  |        |  |  |        |  |  |        |
| North                      | *  | *  | 15     | *  | *  | 22     | (39.8)                                       | (68.7)                                       | 37     |
| Central-East               | *  | *  | 11     | *  | *  | 14     | (10.5)                                       | (50.0)                                       | 25     |
| Central-West               | *  | *  | 16     | *  | *  | 14     | (5.7)  | (45.2)                                       | 30     |
| Lilongwe City              | (27.5)                                       | (63.6)                                       | 38     | 18.0   | 35.8   | 56     | 22.7   | 49.4   | 94     |
| South-East                 | (16.8)                                       | (41.0)                                       | 25     | (9.2)  | (45.7)                                       | 39     | 12.7   | 43.5   | 64     |
| South-West                 | (10.8)                                       | (44.6)                                       | 35     | 20.9   | 36.9   | 54     | 16.3   | 40.4   | 89     |
| Blantyre City              | 20.5   | 56.6   | 51     | 21.4   | 43.9   | 82     | 21.0   | 50.1   | 133    |
| <b>Marital status</b>      |  |  |        |  |  |        |  |  |        |
| Never married              | *  | *  | 22     | (21.4)                                       | (49.6)                                       | 37     | 20.6   | 43.1   | 59     |
| Married or living together | 14.6   | 51.5   | 146    | 16.8   | 45.0   | 156    | 15.6   | 48.7   | 302    |
| Divorced or separated      | *  | *  | 20     | 17.7   | 37.2   | 54     | 20.7   | 45.0   | 74     |
| Widowed                    | *  | *  | 3      | (17.1)                                       | (44.0)                                       | 34     | (19.6)                                       | (47.0)                                       | 37     |
| <b>Education</b>           |  |  |        |  |  |        |  |  |        |
| No education               | *  | *  | 15     | (10.2)                                       | (54.7)                                       | 27     | (6.1)  | (42.0)                                       | 42     |
| Primary                    | 15.8   | 52.1   | 122    | 19.6   | 44.2   | 149    | 17.6   | 48.3   | 271    |
| Secondary                  | (27.3)                                       | (61.4)                                       | 48     | 17.9   | 39.8   | 94     | 21.7   | 48.5   | 142    |
| More than secondary        | *  | *  | 6      | *  | *  | 10     | *  | *  | 16     |
| <b>Wealth quintile</b>     |  |  |        |  |  |        |  |  |        |
| Lowest                     | (9.8)  | (40.1)                                       | 31     | (13.6)                                       | (57.7)                                       | 25     | 11.4   | 47.3   | 56     |
| Second                     | *  | *  | 22     | (9.8)  | (44.2)                                       | 26     | (13.7)                                       | (50.5)                                       | 48     |
| Middle                     | (16.5)                                       | (46.5)                                       | 26     | (12.8)                                       | (35.9)                                       | 35     | 14.4   | 40.7   | 61     |
| Fourth                     | (6.7)  | (40.0)                                       | 32     | 21.9   | 38.7   | 51     | 14.5   | 39.3   | 83     |
| Highest                    | 29.5   | 67.4   | 80     | 22.6   | 44.9   | 144    | 25.4   | 54.0   | 224    |
| <b>Religion</b>            |  |  |        |  |  |        |  |  |        |
| Catholic                   | (7.2)  | (53.3)                                       | 31     | (14.9)                                       | (45.3)                                       | 49     | 11.0   | 49.3   | 80     |
| CCAP <sup>2</sup>          | (22.6)                                       | (49.7)                                       | 37     | 13.8   | 45.9   | 55     | 18.3   | 47.9   | 92     |
| Anglican                   | *  | *  | 3      | *  | *  | 3      | *  | *  | 6      |
| Seventh Day Adventist      | *  | *  | 20     | (10.7)                                       | (35.6)                                       | 27     | (10.9)                                       | (42.0)                                       | 47     |
| Baptist                    | *  | *  | 7      | *  | *  | 6      | *  | *  | 13     |
| Other Christian            | 18.6   | 51.6   | 61     | 20.6   | 47.1   | 86     | 19.7   | 49.2   | 147    |
| Muslim                     | *  | *  | 10     | (24.8)                                       | (46.3)                                       | 30     | (23.7)                                       | (51.5)                                       | 40     |
| Other                      | *  | *  | 16     | *  | *  | 24     | (14.3)                                       | (35.3)                                       | 40     |
| None                       | *  | *  | 5      | *  | *  | 1      | *  | *  | 6      |
| <b>Ethnicity</b>           |  |  |        |  |  |        |  |  |        |
| Chewa                      | (10.8)                                       | (40.0)                                       | 47     | 9.9  | 38.9   | 56     | 10.3   | 39.5   | 103    |
| Lomwe                      | 13.8   | 49.8   | 51     | 11.4   | 42.4   | 86     | 12.5   | 45.8   | 137    |
| Ngoni                      | (15.2)                                       | (61.2)                                       | 30     | (14.1)                                       | (30.4)                                       | 43     | 14.7   | 46.8   | 73     |
| Nkhonde                    | *  | *  | 5      | *  | *  | 5      | *  | *  | 10     |
| Sena                       | *  | *  | 12     | *  | *  | 14     | (15.1)                                       | (38.4)                                       | 26     |
| Tonga                      | *  | *  | 3      | *  | *  | 7      | *  | *  | 10     |
| Tumbuka                    | *  | *  | 11     | *  | *  | 20     | (44.8)                                       | (72.1)                                       | 31     |
| Yao                        | *  | *  | 22     | (26.5)                                       | (50.0)                                       | 37     | 22.2   | 50.7   | 59     |
| Other                      | *  | *  | 10     | *  | *  | 12     | *  | *  | 22     |
| <b>Age</b>                 |  |  |        |  |  |        |  |  |        |
| 15-19                      | *  | *  | 5      | *  | *  | 22     | (29.8)                                       | (42.8)                                       | 27     |
| 20-24                      | *  | *  | 16     | (2.4)  | (39.8)                                       | 45     | 6.4  | 34.5   | 61     |
| 25-29                      | *  | *  | 23     | 13.7   | 37.3   | 53     | 17.1   | 43.3   | 76     |
| 30-34                      | (14.7)                                       | (53.6)                                       | 42     | 12.1   | 46.3   | 58     | 13.5   | 50.1   | 100    |
| 35-39                      | (7.9)  | (41.7)                                       | 34     | (41.0)                                       | (59.8)                                       | 40     | 22.0   | 49.4   | 74     |
| 40-44                      | (27.4)                                       | (66.4)                                       | 28     | *  | *  | 23     | 29.1   | 59.6   | 51     |
| 45-49                      | *  | *  | 19     | *  | *  | 14     | (11.7)                                       | (45.6)                                       | 33     |
| 50-54                      | *  | *  | 10     | *  | *  | 15     | (17.0)                                       | (52.6)                                       | 25     |
| 55-59                      | *  | *  | 10     | *  | *  | 6      | *  | *  | 16     |
| 60-64                      | *  | *  | 4      | *  | *  | 5      | *  | *  | 9      |
| Total 15-24                | *  | *  | 21     | 11.8   | 37.4   | 67     | 14.5   | 37.4   | 88     |
| Total 15-49                | 17.0   | 49.2   | 167    | 18.2   | 44.5   | 255    | 17.6   | 46.8   | 422    |
| Total 15-64                | 16.8   | 51.0   | 191    | 17.7   | 43.9   | 281    | 17.2   | 47.3   | 472    |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 1.5: Late HIV diagnosis

<sup>2</sup>Church of Central Africa Presbyterian.

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.

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

### **11.5 Retention on Antiretroviral Therapy**

Among PLHIV ages 15-64 years who initiated ART less than 12 months prior to the survey, 98.0% (100% of men and 96.9% of women) reported that they were still taking ART at the time of the survey (Table 11.5.A). Nearly all (99.0%) PLHIV with detectable ARVs reported they were still on ART. There was little variation by sociodemographic characteristics aside from marital status. Among people who were divorced or separated, 91.5% reported they were still on ART compared to 100% of persons who were married (Table 11.5.A).

Among PLHIV ages 15-64 years who initiated ART 12 months or more prior to the survey, 98.0% reported that they were still taking ART at the time of the survey. This was nearly identical between men and women (98.0% and 98.1% respectively). There was little variation by geographic or sociodemographic characteristics. Nearly all (99.8%) PLHIV with detectable ARVs reported they were still on ART compared to 84.7% of people with no detectable ARVs (Table 11.5.B).

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

Among HIV-positive persons age 15-64 years who self-reported initiating ART less than 12 months prior to the survey, percentage who self-reported still receiving ART, by sex and selected demographic characteristics, MPHIA 2015-2016

| Characteristic                                 | Males                                       |        | Females                                     |        | Total                                       |        |
|--|---|--------|---|--------|---|--------|
|  | Percentage still receiving ART <sup>1</sup> | Number | Percentage still receiving ART <sup>1</sup> | Number | Percentage still receiving ART <sup>1</sup> | Number |
| <b>Presence of detectable ARVs<sup>2</sup></b> |   |        |   |        |   |        |
| Detectable                                     | 100.0                                       | 58     | 98.4  | 149    | 99.0  | 207    |
| Not detectable                                 | *   | 1      | *   | 13     | *   | 14     |
| <b>Residence</b>                               |   |        |   |        |   |        |
| Urban  | *   | 22     | 100   | 83     | 100.0                                       | 105    |
| Rural  | (100.0)                                     | 37     | 95.7  | 80     | 97.3  | 117    |
| <b>Zone</b>                                    |   |        |   |        |   |        |
| North  | *   | 10     | *   | 10     | *   | 20     |
| Central-East                                   | *   | 3      | *   | 8      | *   | 11     |
| Central-West                                   | *   | 4      | *   | 10     | *   | 14     |
| Lilongwe City                                  | *   | 6      | (100.0)                                     | 36     | (100.0)                                     | 42     |
| South-East                                     | *   | 8      | *   | 24     | (100.0)                                     | 32     |
| South-West                                     | *   | 17     | (94.3)                                      | 36     | 96.3  | 53     |
| Blantyre City                                  | *   | 11     | (100.0)                                     | 39     | 100.0                                       | 50     |
| <b>Marital status</b>                          |   |        |   |        |   |        |
| Never married                                  | *   | 2      | *   | 10     | *   | 12     |
| Married or living together                     | (100.0)                                     | 42     | 100.0                                       | 91     | 100.0                                       | 133    |
| Divorced or separated                          | *   | 11     | (88.6)                                      | 40     | 91.5  | 51     |
| Widowed  | *   | 4      | *   | 22     | (100.0)                                     | 26     |
| <b>Education</b>                               |   |        |   |        |   |        |
| No education                                   | *   | 3      | *   | 24     | (96.4)                                      | 27     |
| Primary  | (100.0)                                     | 39     | 96.3  | 94     | 97.7  | 133    |
| Secondary                                      | *   | 14     | (100.0)                                     | 41     | 100.0                                       | 55     |
| More than secondary                            | *   | 3      | *   | 4      | *   | 7      |
| <b>Wealth quintile</b>                         |   |        |   |        |   |        |
| Lowest   | *   | 10     | *   | 21     | (100.0)                                     | 31     |
| Second   | *   | 1      | *   | 24     | (94.0)                                      | 25     |
| Middle   | *   | 6      | (93.0)                                      | 29     | (94.4)                                      | 35     |
| Fourth   | *   | 22     | *   | 21     | (100.0)                                     | 43     |
| Highest  | *   | 20     | 100.0                                       | 68     | 100.0                                       | 88     |
| <b>Religion</b>                                |   |        |   |        |   |        |
| Catholic                                       | *   | 10     | *   | 23     | (100.0)                                     | 33     |
| CCAP <sup>3</sup>                              | *   | 10     | (100.0)                                     | 28     | (100.0)                                     | 38     |
| Anglican                                       | *   | 1      | *   | 4      | *   | 5      |
| Seventh Day Adventist                          | *   | 2      | *   | 13     | *   | 15     |
| Baptist  | *   | 3      | *   | 7      | *   | 10     |
| Other Christian                                | *   | 19     | (97.6)                                      | 49     | 98.5  | 68     |
| Muslim   | *   | 9      | *   | 22     | (96.9)                                      | 31     |
| Other  | *   | 5      | *   | 15     | *   | 20     |
| None   | *   | 0      | *   | 2      | *   | 2      |
| <b>Ethnicity</b>                               |   |        |   |        |   |        |
| Chewa  | *   | 10     | (92.9)                                      | 33     | (95.5)                                      | 43     |
| Lomwe  | *   | 22     | (96.9)                                      | 41     | 98.1  | 63     |
| Ngoni  | *   | 7      | *   | 22     | (100.0)                                     | 29     |
| Nkhonde  | *   | 1      | *   | 0      | *   | 1      |
| Sena   | *   | 1      | *   | 10     | *   | 11     |
| Tonga  | *   | 1      | *   | 1      | *   | 2      |
| Tumbuka  | *   | 7      | *   | 12     | *   | 19     |
| Yao  | *   | 9      | (95.8)                                      | 28     | (97.1)                                      | 37     |
| Other  | *   | 1      | *   | 16     | *   | 17     |
| <b>Age</b>                                     |   |        |   |        |   |        |
| 15-19  | *   | 0      | *   | 1      | *   | 1      |
| 20-24  | *   | 1      | *   | 14     | *   | 15     |
| 25-29  | *   | 5      | (96.2)                                      | 33     | (96.9)                                      | 38     |
| 30-34  | *   | 15     | (96.1)                                      | 40     | 97.9  | 55     |
| 35-39  | *   | 14     | (100.0)                                     | 26     | (100.0)                                     | 40     |
| 40-44  | *   | 14     | *   | 19*    | (100.0)                                     | 33     |
| 45-49  | *   | 2      | *   | 17     | *   | 19     |
| 50-54  | *   | 5      | *   | 5      | *   | 10     |
| 55-59  | *   | 2      | *   | 5      | *   | 7      |
| 60-64  | *   | 1      | *   | 3      | *   | 4      |
| Total 15-24                                    | *   | 1      | *   | 15     | *   | 16     |
| Total 15-49                                    | 100.0                                       | 51     | 98.2  | 150    | 98.8  | 201    |
| Total 15-64                                    | 100.0                                       | 59     | 96.9  | 163    | 98.0  | 222    |

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

<sup>3</sup>Church of Central Africa Presbyterian.

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

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

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

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

Among HIV-positive persons age 15-64 years who self-reported initiating ART 12 months or more prior to the survey, percentage who self-reported still receiving ART, by sex and selected demographic characteristics, MPHIA 2015-2016

| Characteristic                                 | Males                                       |        | Females                                     |        | Total                                       |        |
|--|---|--------|---|--------|---|--------|
|  | Percentage still receiving ART <sup>1</sup> | Number | Percentage still receiving ART <sup>1</sup> | Number | Percentage still receiving ART <sup>1</sup> | Number |
| <b>Presence of detectable ARVs<sup>2</sup></b> |   |        |   |        |   |        |
| Detectable                                     | 99.6  | 344    | 100.0                                       | 824    | 99.8  | 1,168  |
| Not detectable                                 | *   | 17     | 64.5  | 45     | 66.0  | 62     |
| <b>Residence</b>                               |   |        |   |        |   |        |
| Urban  | 97.7  | 155    | 98.6  | 403    | 98.3  | 558    |
| Rural  | 98.1  | 206    | 97.9  | 474    | 98.0  | 680    |
| <b>Zone</b>                                    |   |        |   |        |   |        |
| North  | (100.0)                                     | 39     | 100.0                                       | 67     | 100.0                                       | 106    |
| Central-East                                   | *   | 24     | (95.5)                                      | 45     | 97.2  | 69     |
| Central-West                                   | (100.0)                                     | 26     | (97.5)                                      | 45     | 98.6  | 71     |
| Lilongwe City                                  | 96.9  | 58     | 97.3  | 153    | 97.2  | 211    |
| South-East                                     | 95.4  | 57     | 97.8  | 148    | 97.0  | 205    |
| South-West                                     | 99.0  | 75     | 98.6  | 220    | 98.7  | 295    |
| Blantyre City                                  | 96.9  | 82     | 98.1  | 199    | 97.6  | 281    |
| <b>Marital status</b>                          |   |        |   |        |   |        |
| Never married                                  | *   | 21     | (98.0)                                      | 40     | 97.4  | 61     |
| Married or living together                     | 98.0  | 300    | 97.1  | 504    | 97.5  | 804    |
| Divorced or separated                          | *   | 24     | 99.1  | 171    | 99.0  | 195    |
| Widowed  | *   | 16     | 99.8  | 160    | 99.8  | 176    |
| <b>Education</b>                               |   |        |   |        |   |        |
| No education                                   | *   | 23     | 99.1  | 121    | 98.9  | 144    |
| Primary  | 98.8  | 212    | 97.7  | 528    | 98.0  | 740    |
| Secondary                                      | 95.8  | 106    | 98.2  | 192    | 97.1  | 298    |
| More than secondary                            | *   | 20     | (100.0)                                     | 35     | 100.0                                       | 55     |
| <b>Wealth quintile</b>                         |   |        |   |        |   |        |
| Lowest   | (94.81)                                     | 25     | 97.3  | 104    | 96.8  | 129    |
| Second   | (97.3)                                      | 47     | 98.0  | 106    | 97.7  | 153    |
| Middle   | 100.0                                       | 51     | 98.2  | 118    | 98.9  | 169    |
| Fourth   | 97.4  | 83     | 100.0                                       | 168    | 99.0  | 251    |
| Highest  | 98.7  | 155    | 97.0  | 381    | 97.6  | 536    |
| <b>Religion</b>                                |   |        |   |        |   |        |
| Catholic                                       | 100.0                                       | 65     | 99.1  | 150    | 99.4  | 215    |
| CCAP <sup>3</sup>                              | 98.8  | 65     | 98.9  | 153    | 98.9  | 218    |
| Anglican                                       | *   | 8      | *   | 17     | (100.0)                                     | 25     |
| Seventh Day Adventist                          | (96.3)                                      | 25     | 96.8  | 76     | 96.6  | 101    |
| Baptist  | *   | 9      | *   | 24     | (100.0)                                     | 33     |
| Other Christian                                | 97.5  | 118    | 98.2  | 306    | 98.0  | 424    |
| Muslim   | (93.7)                                      | 26     | 94.7  | 82     | 94.5  | 108    |
| Other  | (99.1)                                      | 38     | 98.6  | 63     | 98.9  | 101    |
| None   | *   | 7      | *   | 5      | *   | 12     |
| <b>Ethnicity</b>                               |   |        |   |        |   |        |
| Chewa  | 97.6  | 77     | 98.2  | 175    | 98.0  | 252    |
| Lomwe  | 98.0  | 117    | 98.8  | 280    | 98.5  | 397    |
| Ngoni  | (99.1)                                      | 49     | 97.4  | 117    | 98.0  | 166    |
| Nkhonde  | *   | 4      | *   | 9      | *   | 13     |
| Sena   | *   | 11     | (97.0)                                      | 43     | 97.9  | 54     |
| Tonga  | *   | 7      | *   | 14     | *   | 21     |
| Tumbuka  | (100.0)                                     | 30     | 98.7  | 66     | 99.2  | 96     |
| Yao  | (94.1)                                      | 38     | 96.0  | 108    | 95.5  | 146    |
| Other  | (100.0)                                     | 28     | 100.0                                       | 63     | 100   | 91     |



**Table 11.5.B Retention on antiretroviral therapy (ART): people initiating antiretroviral therapy MORE THAN 12 months prior to the survey (continued)**

| Characteristic | Males                                       |        | Females                                     |        | Total                                       |        |
|----------------|---|--------|---|--------|---|--------|
|                | Percentage still receiving ART <sup>1</sup> | Number | Percentage still receiving ART <sup>1</sup> | Number | Percentage still receiving ART <sup>1</sup> | Number |
| <b>Age</b>     |   |        |   |        |   |        |
| 15-19          | *   | 6      | *   | 11     | *   | 17     |
| 20-24          | *   | 5      | 97.0  | 54     | 97.5  | 59     |
| 25-29          | *   | 8      | 93.9  | 101    | 94.7  | 109    |
| 30-34          | (98.6)                                      | 32     | 97.8  | 161    | 98.0  | 193    |
| 35-39          | 96.0  | 56     | 98.3  | 192    | 97.6  | 248    |
| 40-44          | 98.9  | 73     | 98.7  | 149    | 98.8  | 222    |
| 45-49          | 100.0                                       | 72     | 100.0                                       | 85     | 100.0                                       | 157    |
| 50-54          | (98.0)                                      | 47     | 99.3  | 61     | 98.7  | 108    |
| 55-59          | (100.0)                                     | 33     | (100.0)                                     | 40     | 100.0                                       | 73     |
| 60-64          | (87.1)                                      | 29     | *   | 23     | 94.3  | 52     |
| Total 15-24    | *   | 11     | 97.7  | 65     | 98.2  | 76     |
| Total 15-49    | 98.6  | 252    | 97.7  | 753    | 98.0  | 1,005  |
| Total 15-64    | 98.0  | 361    | 98.1  | 877    | 98.0  | 1,238  |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 1.3: Retention on antiretroviral therapy at 12 months; <sup>2</sup>Antiretroviral detection assay included only atazanavir, efavirenz, and lopinavir. Participants who reported antiretroviral therapy use and/or had undetectable viral load but had no evidence of the first three ARVs were tested for nevirapine as well. <sup>3</sup>Church of Central Africa Presbyterian.

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

## 11.6 Viral Load Suppression and Severe Immunosuppression According to Duration of Antiretroviral Therapy

Among HIV-positive adults ages 15-64 years, those who reported ART use had high levels of VLS irrespective of the reported duration of therapy, with similar percentages of VLS among those who reported ART use for 24 months or longer (91.8%), among those on ART between 12-23 months (89.4%), and among those on ART for less than 12 months (90.0%). In contrast, the prevalence of severe immunosuppression (CD4 count less than 200 cells/ $\mu$ l) differed considerably between those who reported ART use for more than 24 months (6.5%), those who reported ART use between 12-23 months (18.2%), and less than 12 months (17.2%) (Table 11.6.A).

Among those who reported ART use for more than 24 months, those ages 15-24 years had a lower prevalence of VLS (71.2%) and higher prevalence of severe immunosuppression (7.3%) than those ages 25-65 years, among whom 92.9% had VLS and 6.5% were severely immunosuppressed. Males had a higher prevalence of severe immunosuppression than females (9.1% compared to 5.2%, respectively) (Table 11.6.A).

Among those who reported ART use between 12-23 months, a lower percentage of males (82.4%) than females (93.6%) had VLS and a higher percentage of males (33.4%) than females (9.1%) were severely immunosuppressed (Table 11.6.A).

Among those who reported ART use for less than 12 months, although similar percentages of males (88.8%) and females 90.7%) had VLS, a considerably larger fraction of males (27.8%) than females (11.4%) had severe immunosuppression (Table 11.6.A).

**Table 11.6.A Viral load suppression and severe immunosuppression**

Among HIV-positive persons ages 15-64 years, percentage with viral load suppression (< 1,000 copies/ml) and percentage with severe immunosuppression (CD4 count < 200 cells/μl) by antiretroviral therapy (ART) status, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic   | On ART ≥ 24 months             |        | On ART 12-23 months            |        | On ART < 12 months             |        | Not on ART                     |        | Total |
|------------------|--------------------------------|--------|--------------------------------|--------|--------------------------------|--------|--------------------------------|--------|-------|
|                  | With viral load suppression    | Number | With viral load suppression    | Number | With viral load suppression    | Number | With viral load suppression    | Number |       |
| <b>Sex</b>       |                                |        |                                |        |                                |        |                                |        |       |
| Male             | 92.0                           | 294    | 82.4                           | 53     | 88.8                           | 59     | 19.7                           | 290    | 696   |
| Female           | 91.7                           | 722    | 93.6                           | 129    | 90.7                           | 159    | 29.7                           | 462    | 1,472 |
| <b>Residence</b> |                                |        |                                |        |                                |        |                                |        |       |
| Urban            | 89.9                           | 463    | 86.2                           | 80     | 89.7                           | 105    | 21.5                           | 394    | 1,042 |
| Rural            | 92.5                           | 553    | 90.3                           | 102    | 90.1                           | 113    | 26.7                           | 358    | 1,126 |
| <b>Age</b>       |                                |        |                                |        |                                |        |                                |        |       |
| 15-24            | 71.2                           | 53     | *                              | 20     | *                              | 16     | 21.9                           | 116    | 205   |
| 25-64            | 92.9                           | 963    | 90.4                           | 162    | 89.58                          | 202    | 25.7                           | 636    | 1,963 |
| Total 15-64      | 91.8                           | 1,016  | 89.4                           | 182    | 90.0                           | 218    | 25.1                           | 752    | 2,168 |
| Characteristic   | On ART ≥ 24 months             |        | On ART 12-23 months            |        | On ART < 12 months             |        | Not on ART                     |        | Total |
|                  | With severe immuno-suppression | Number | With severe immuno-suppression | Number | With severe immuno-suppression | Number | With severe immuno-suppression | Number |       |
| <b>Sex</b>       |                                |        |                                |        |                                |        |                                |        |       |
| Male             | 9.1                            | 295    | 33.4                           | 53     | 27.8                           | 59     | 19.8                           | 281    | 688   |
| Female           | 5.2                            | 721    | 9.1                            | 129    | 11.4                           | 161    | 18.3                           | 449    | 1,460 |
| <b>Residence</b> |                                |        |                                |        |                                |        |                                |        |       |
| Urban            | 6.7                            | 462    | 21.7                           | 80     | 18.2                           | 105    | 24.4                           | 391    | 1,038 |
| Rural            | 6.5                            | 554    | 17.3                           | 102    | 16.9                           | 115    | 16.6                           | 339    | 1,110 |
| <b>Age</b>       |                                |        |                                |        |                                |        |                                |        |       |
| 15-24            | 7.3                            | 53     | *                              | 20     | *                              | 16     | 12.3                           | 112    | 201   |
| 25-64            | 6.5                            | 963    | 19.9                           | 162    | 17.2                           | 204    | 20.3                           | 618    | 1,947 |
| Total 15-64      | 6.5                            | 1,016  | 18.2                           | 182    | 17.2                           | 220    | 19.0                           | 730    | 2,148 |

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

## 11.7 Transmitted Resistance to Antiretroviral Therapy

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

Among 22 successfully amplified samples from recently infected, HIV-positive adults identified in MPHIA, two had evidence of resistance to ARVs. One had mutations associated with resistance to non-nucleoside reverse transcriptase inhibitors (NNRTI) and one had mutations associated with resistance to protease inhibitors. None had resistance to more than one class of ARVs (Table 11.7.A). Among the subset of samples that underwent genotyping, 100% were Subtype C (Table 11.7.B).

**Table 11.7.A Resistance to antiretrovirals**

Among persons ages 15-64 years who were recently infected with HIV, percentage with resistance to antiretrovirals (ARVs), by class of ARV, MPHIA 2015-2016

|                                     | Percent | Number | DR Mutations Detected <sup>1</sup> |
|-------------------------------------|---------|--------|------------------------------------|
| Successfully amplified <sup>2</sup> | *       | 22     |                                    |
| Any                                 | *       | 2      | K103S, M46I                        |
| NRTI                                | *       | 0      |                                    |
| NNRTI                               | *       | 1      | K103S                              |
| PI                                  | *       | 1      | M46I                               |
| NRTI & NNRTI                        | *       | 0      |                                    |
| NRTI, NNRTI & PI                    | *       | 0      |                                    |

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

<sup>2</sup>Unweighted figures, from a total of 22 cases.

NRTI: Nucleoside Reverse Transcriptase Inhibitors

NNRTI: Non-Nucleoside Reverse Transcriptase Inhibitors

PI: Protease inhibitor

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

\* Commonly used ARVs by class include: Non-nucleoside reverse transcriptase inhibitors nevirapine (NVP) and efavirenz (EFV); Nucleoside reverse transcriptase inhibitors tenofovir (TDF), lamivudine (3TC), zidovudine (AZT), emtricitabine (FTC) and PIs lopinavir/ritonavir (LPV/r) and atazanavir (ATV).

**Table 11.7.B HIV subtype**

Percent distribution of HIV-positive persons age 15-64 years that underwent genotyping, by HIV Subtype, MPHIA 2015-2016

| Subtype     | Total   |        |
|-------------|---------|--------|
|             | Percent | Number |
| Subtype A   | 0       | 0      |
| Subtype B   | 0       | 0      |
| Subtype C   | 100     | 107    |
| Subtype D   | 0       | 0      |
| Subtype G   | 0       | 0      |
| Recombinant | 0       | 0      |
| Total       | 100.0   | 107    |

Unweighted figures

## 11.8 Gaps and Unmet Needs

- Late diagnosis, or CD4 counts less than 350 cells/ $\mu$ L, among undiagnosed PLHIV is common, particularly among older PLHIV. There is a need to reach this high-risk population of undiagnosed PLHIV over the age of 30 years.

## 11.9 References

1. World Health Organization (2016). *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection*. Retrieved from WHO: <http://www.who.int/hiv/pub/arv/arv-2016/en/>

# 12 PREVENTION OF MOTHER-TO-CHILD TRANSMISSION

## 12.1 Key Findings

- Among women ages 15-49 years, who gave birth during the three years preceding the survey, 99.4% attended at least one antenatal care (ANC) visit for their most recent pregnancy during the three years prior to the survey.
- Among women ages 15-49 years who gave birth during the 12 months preceding the survey, 97.2% knew their HIV status.
- Among HIV-positive women ages 15-49 years who gave birth during the 12 months preceding the survey, 97.9% received ARVs.
- Among infants under the age of one year born to HIV-positive women ages 15-49 years, 1.2% were HIV-positive, according to virological testing conducted by MPHIA.

## 12.2 Background

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

To prevent MTCT, the United Nations recommends a comprehensive four-pronged approach including: (1) primary prevention of HIV infection among women of childbearing age; (2) preventing unintended pregnancies among women living with HIV; (3) preventing HIV transmission from women living with HIV to their infants; and (4) providing appropriate treatment, care, and support to mothers living with HIV, their children, and families.<sup>2</sup>

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 during the survey.

## 12.3 Antenatal Care Attendance

Among women ages 15-49 years who gave birth during the three years preceding the survey, the percentage who attended at least one ANC visit for their most recent birth was 99.4%, with very little variation across demographic characteristics (Table 12.3.A).

**Table 12.3.A Antenatal care**

Among women ages 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, MPHIA 2015-2016

| Characteristic             | Percentage who attended at least one antenatal care visit | Number |
|----------------------------|---|--------|
| <b>Residence</b>           |   |        |
| Urban                      | 99.3  | 1,185  |
| Rural                      | 99.5  | 2,412  |
| <b>Zone</b>                |   |        |
| North                      | 99.8  | 451    |
| Central-East               | 99.5  | 510    |
| Central-West               | 99.4  | 461    |
| Lilongwe City              | 99.4  | 565    |
| South-East                 | 99.6  | 528    |
| South-West                 | 99.3  | 601    |
| Blantyre City              | 98.3  | 481    |
| <b>Marital status</b>      |   |        |
| Never married              | 99.3  | 178    |
| Married or living together | 99.6  | 2,990  |
| Divorced or separated      | 98.4  | 388    |
| Widowed                    | (97.4)  | 40     |
| <b>Education</b>           |   |        |
| No education               | 98.1  | 291    |
| Primary                    | 99.5  | 2,338  |
| Secondary                  | 99.8  | 872    |
| More than secondary        | 100.0   | 95     |
| <b>Wealth quintile</b>     |   |        |
| Lowest                     | 99.0  | 618    |
| Second                     | 99.3  | 617    |
| Middle                     | 99.7  | 597    |
| Fourth                     | 99.8  | 694    |
| Highest                    | 99.3  | 1,071  |
| <b>Religion</b>            |   |        |
| Catholic                   | 99.9  | 553    |
| CCAP <sup>1</sup>          | 100.0   | 581    |
| Anglican                   | 100.0   | 83     |
| Seventh Day Adventist      | 100.0   | 257    |
| Baptist                    | 100.0   | 92     |
| Other Christian            | 99.1  | 1,332  |
| Muslim                     | 99.1  | 413    |
| Other                      | 98.8  | 263    |
| None                       | *   | 20     |
| <b>Ethnicity</b>           |   |        |
| Chewa                      | 99.6  | 1,200  |
| Lomwe                      | 99.3  | 729    |
| Ngoni                      | 99.6  | 427    |
| Nkhonde                    | (100.0)   | 39     |
| Sena                       | 99.1  | 160    |
| Tonga                      | 100.0   | 68     |
| Tumbuka                    | 99.7  | 355    |
| Yao                        | 99.2  | 432    |
| Other                      | 98.8  | 179    |

| Characteristic | Percentage who attended at least one antenatal care visit | Number |
|----------------|---|--------|
| <b>Age</b>     |   |        |
| 15-19          | 99.6  | 323    |
| 20-24          | 99.7  | 1,217  |
| 25-29          | 99.5  | 839    |
| 30-34          | 99.8  | 685    |
| 35-39          | 98.2  | 364    |
| 40-44          | 98.4  | 125    |
| 45-49          | (98.2)  | 44     |
| Total 15-24    | 99.6  | 1,540  |
| Total 15-49    | 99.4  | 3,597  |

<sup>1</sup>Church of Central Africa Presbyterian.

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.

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

## 12.4 Breastfeeding

Among women ages 15-49 years who gave birth within the three years preceding the survey, over 90% were currently breastfeeding their last-born children younger than the age of 18 months. Current breastfeeding decreased to 69.5% among last-born children ages 18-23 months and to 16.3% among last-born children ages 24-36 months. For children last-born to women ages 15-49 years in the three years preceding the survey, current breastfeeding was reported by 56.7% of those whose mothers tested HIV positive during the survey, and for 67.9% of those whose mothers tested HIV negative (Table 12.4.A).

| Characteristic                                 | Never breast fed | Ever breast fed, but not currently breast feeding | Currently breast feeding | Total | Number |
|--|------------------|---|--------------------------|-------|--------|
| <b>Child's age (months)</b>                    |                  |   |                          |       |        |
| 0-1  | 0.8              | 0.0   | 99.2                     | 100.0 | 204    |
| 2-3  | 0.3              | 0.0   | 99.7                     | 100.0 | 204    |
| 4-5  | 1.1              | 1.3   | 97.5                     | 100.0 | 251    |
| 6-8  | 1.0              | 0.9   | 98.1                     | 100.0 | 318    |
| 9-11   | 1.2              | 2.0   | 96.8                     | 100.0 | 296    |
| 12-17  | 0.7              | 6.3   | 93.0                     | 100.0 | 594    |
| 18-23  | 1.4              | 28.8  | 69.8                     | 100.0 | 580    |
| 24-36  | 1.1              | 82.3  | 16.6                     | 100.0 | 1,086  |
| <b>Result of mother's PHIA survey HIV test</b> |                  |   |                          |       |        |
| HIV positive                                   | 1.7              | 38.8  | 59.5                     | 100.0 | 354    |
| HIV negative                                   | 1.0              | 30.4  | 68.6                     | 100.0 | 2,748  |
| Not tested                                     | 0.8              | 27.7  | 71.5                     | 100.0 | 442    |
| Total  | 1.0              | 30.8  | 68.2                     | 100.0 | 3,544  |

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

### **12.5 Awareness of Mother's HIV Status**

Among women ages 15-49 years who gave birth during the 12 months preceding the survey, 97.2% reported that they knew their HIV status. Over 90% of these women reported testing for HIV and receiving their result during ANC for this pregnancy (2.3% reported testing positive and 89.7% reported testing negative), while 5.3% of them reported that they already knew they were HIV positive. In urban areas, 7.3% already knew their HIV-positive status, compared to 4.9% in rural areas. A higher percentage of women older than the age of 30 years already knew that they were HIV positive (8.3% among those ages 35-39 years and 10.9% among those ages 40-44-years), compared to women in younger age groups (2.1% among ages 15-19 years and 5.7% among ages 25-29 years). Among women ages 15-49 years who gave birth during the 12 months preceding the survey, 4.3% in Blantyre City and 4.2% in Lilongwe reported learning about their HIV-positive status as a result of ANC testing in comparison to lower percentages in the other five zones (from 0.0% in Central-West to 3.6% in South-East) (Table 12.5.A).



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

Among women ages 15-49 years who gave birth within the past 12 months, percentage who were tested for HIV during ANC and received their results or who already knew they were HIV positive, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Tested for HIV and received result <sup>1</sup> |                                    | Percentage who already knew they were HIV positive | Total percentage with known HIV status <sup>2</sup> | Number of women who delivered within the past 12 months |
|----------------------------|---|------------------------------------|--|---|---|
|                            | Percentage who tested HIV positive              | Percentage who tested HIV negative |  |   |   |
| <b>Residence</b>           |   |                                    |  |   |   |
| Urban                      | 2.7   | 88.7                               | 7.3  | 98.7  | 431   |
| Rural                      | 2.2   | 89.8                               | 4.9  | 96.9  | 853   |
| <b>Zone</b>                |   |                                    |  |   |   |
| North                      | 2.3   | 94.6                               | 1.7  | 98.7  | 167   |
| Central-East               | 1.4   | 93.5                               | 0.7  | 95.6  | 186   |
| Central-West               | 0.0   | 93.7                               | 3.4  | 97.2  | 166   |
| Lilongwe City              | 4.2   | 89.0                               | 4.4  | 97.6  | 206   |
| South-East                 | 3.6   | 84.6                               | 8.3  | 96.6  | 186   |
| South-West                 | 3.3   | 85.2                               | 9.6  | 98.1  | 203   |
| Blantyre City              | 4.3   | 82.7                               | 11.3   | 98.3  | 170   |
| <b>Marital status</b>      |   |                                    |  |   |   |
| Never married              | 0.3   | 91.8                               | 3.1  | 95.2  | 72  |
| Married or living together | 2.2   | 90.3                               | 4.7  | 97.2  | 1,077   |
| Divorced or separated      | 4.5   | 83.2                               | 10.4   | 98.1  | 122   |
| Widowed                    | *   | *                                  | *  | *   | 12  |
| <b>Education</b>           |   |                                    |  |   |   |
| No education               | 4.8   | 85.5                               | 7.8  | 98.1  | 99  |
| Primary                    | 1.9   | 90.0                               | 5.4  | 97.2  | 829   |
| Secondary                  | 2.5   | 90.6                               | 3.9  | 97.1  | 324   |
| More than secondary        | (5.6)   | (85.8)                             | (2.2)  | (93.6)  | 32  |
| <b>Wealth quintile</b>     |   |                                    |  |   |   |
| Lowest                     | 3.0   | 88.2                               | 5.5  | 96.8  | 228   |
| Second                     | 1.1   | 90.2                               | 3.3  | 94.6  | 225   |
| Middle                     | 2.6   | 89.8                               | 6.0  | 98.4  | 212   |
| Fourth                     | 2.2   | 89.1                               | 7.7  | 99.0  | 227   |
| Highest                    | 2.6   | 91.2                               | 4.2  | 98.0  | 392   |
| <b>Religion</b>            |   |                                    |  |   |   |
| Catholic                   | 2.4   | 86.9                               | 6.5  | 95.8  | 211   |
| CCAP <sup>2</sup>          | 1.9   | 92.9                               | 3.2  | 98.0  | 206   |
| Anglican                   | (0.0)   | (82.7)                             | (12.5)   | (95.2)  | 28  |
| Seventh Day Adventist      | 1.7   | 91.9                               | 4.8  | 98.4  | 99  |
| Baptist                    | (3.5)   | (76.2)                             | (8.7)  | (88.4)  | 40  |
| Other Christian            | 2.4   | 90.4                               | 5.0  | 97.8  | 465   |
| Muslim                     | 2.7   | 89.0                               | 6.0  | 97.7  | 146   |
| Other                      | 2.2   | 92.9                               | 2.8  | 97.9  | 84  |
| None                       | *   | *                                  | *  | *   | 4   |
| <b>Ethnicity</b>           |   |                                    |  |   |   |
| Chewa                      | 1.2   | 94.1                               | 1.8  | 97.1  | 447   |
| Lomwe                      | 5.1   | 85.7                               | 8.2  | 99.1  | 242   |
| Ngoni                      | 0.9   | 83.5                               | 8.6  | 93.1  | 154   |
| Nkhonde                    | *   | *                                  | *  | *   | 10  |
| Sena                       | 2.7   | 83.4                               | 12.2   | 98.3  | 60  |
| Tonga                      | *   | *                                  | *  | *   | 24  |
| Tumbuka                    | 0.0   | 95.4                               | 2.8  | 98.1  | 135   |
| Yao                        | 4.3   | 84.3                               | 9.4  | 98.1  | 147   |
| Other                      | 3.1   | 88.9                               | 4.0  | 96.0  | 62  |
| <b>Age</b>                 |   |                                    |  |   |   |
| 15-19                      | 0.0   | 94.8                               | 2.1  | 96.9  | 162   |
| 20-24                      | 1.5   | 92.9                               | 3.2  | 97.6  | 457   |
| 25-29                      | 4.1   | 86.5                               | 5.7  | 96.2  | 290   |
| 30-34                      | 4.5   | 83.0                               | 10.2   | 97.8  | 211   |
| 35-39                      | 2.5   | 87.0                               | 8.3  | 97.8  | 117   |
| 40-44                      | (0.0)   | (85.5)                             | (10.9)   | (96.4)  | 36  |
| 45-49                      | *   | *                                  | *  | *   | 11  |
| Total 15-24                | 1.0   | 93.6                               | 2.8  | 97.4  | 619   |
| Total 15-49                | 2.3   | 89.7                               | 5.3  | 97.2  | 1,284   |

<sup>1</sup>Relates to PEPFAR PMTCT\_STAT\_NAT / SUBNAT. <sup>2</sup>Church of Central Africa Presbyterian. An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

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

## 12.6 Antiretroviral Therapy Among HIV-Positive Pregnant Women

Among self-reported HIV-positive women ages 15-49 years who gave birth within the 12 months preceding the survey, 97.9% reported receiving ARVs during pregnancy: 40.3% were newly initiated on ARVs during pregnancy or labor and delivery, while 57.7% were already taking ARVs at the time of their first ANC visit for the pregnancy (Table 12.6.A).

| <b>Table 12.6.A Prevention of mother-to-child transmission, HIV-positive pregnant women who received antiretrovirals (ARVs)</b>   |  |  |   |   |
|---|--|--|---|---|
| Among HIV-positive women ages 15-49 years who gave birth within the past 12 months, percentage who received antiretrovirals during pregnancy to reduce the risk of mother-to-child-transmission, by selected demographic characteristics, MPHIA 2015-2016 |  |  |   |   |
| Characteristic  | Percentage who were already on ARVs prior to pregnancy | Percentage who were newly initiated on ARVs during pregnancy or labor and delivery | Total percentage who received ARVs <sup>1</sup> | Number of HIV-positive women who gave birth within the past 12 months |
| <b>Residence</b>  |  |  |   |   |
| Urban   | 59.0   | 36.0   | 95.1  | 51  |
| Rural   | 57.3   | 41.4   | 98.7  | 62  |
| <b>Zone</b>   |  |  |   |   |
| North   | *  | *  | *   | 7   |
| Central-East  | *  | *  | *   | 3   |
| Central-West  | *  | *  | *   | 7   |
| Lilongwe City   | *  | *  | *   | 18  |
| South-East  | *  | *  | *   | 22  |
| South-West  | (64.0)   | (36.0)   | (100.0)   | 27  |
| Blantyre City   | (50.0)   | (45.7)   | (95.6)  | 29  |
| <b>Marital status</b>   |  |  |   |   |
| Never married   | *  | *  | *   | 3   |
| Married or living together  | 57.6   | 41.4   | 99.0  | 89  |
| Divorced or separated   | *  | *  | *   | 19  |
| Widowed   | *  | *  | *   | 2   |
| <b>Education</b>  |  |  |   |   |
| No education  | *  | *  | *   | 14  |
| Primary   | 59.0   | 38.5   | 97.4  | 72  |
| Secondary   | (53.1)   | (45.0)   | (98.1)  | 25  |
| More than secondary   | *  | *  | *   | 2   |
| <b>Wealth Quintile</b>  |  |  |   |   |
| Lowest  | *  | *  | *   | 21  |
| Second  | *  | *  | *   | 9   |
| Middle  | *  | *  | *   | 20  |
| Fourth  | (70.8)   | (27.4)   | (98.2)  | 27  |
| Highest   | (48.0)   | (48.0)   | (96.0)  | 36  |
| <b>Religion</b>   |  |  |   |   |
| Catholic  | *  | *  | *   | 18  |
| CCAP <sup>2</sup>   | *  | *  | *   | 17  |
| Anglican  | *  | *  | *   | 3   |
| Seventh Day Adventist   | *  | *  | *   | 7   |
| Baptist   | *  | *  | *   | 6   |
| Other Christian   | (58.3)   | (40.6)   | (98.9)  | 44  |
| Muslim  | *  | *  | *   | 11  |
| Other   | *  | *  | *   | 7   |
| None  | *  | *  | *   | 0   |

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

Among HIV-positive women ages 15-49 years who gave birth within the past 12 months, percentage who received antiretrovirals during pregnancy to reduce the risk of mother-to-child-transmission, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic | Percentage who were already on ARVs prior to pregnancy | Percentage who were newly initiated on ARVs during pregnancy or labor and delivery | Total percentage who received ARVs <sup>1</sup> | Number of HIV-positive women who gave birth within the past 12 months |
|----------------|--|--|---|---|
| Chewa          | *  | *  | *   | 18  |
| Lomwe          | (55.4)   | (38.7)   | (94.1)  | 36  |
| Ngoni          | *  | *  | *   | 18  |
| Nkhonde        | *  | *  | *   | 1   |
| Sena           | *  | *  | *   | 11  |
| Tonga          | *  | *  | *   | 1   |
| Tumbuka        | *  | *  | *   | 5   |
| Yao            | *  | *  | *   | 18  |
| Other          | *  | *  | *   | 5   |
| <b>Age</b>     |  |  |   |   |
| 15-19          | *  | *  | *   | 3   |
| 20-24          | *  | *  | *   | 23  |
| 25-29          | (49.0)   | (47.5)   | (96.5)  | 29  |
| 30-34          | (56.8)   | (40.9)   | (97.7)  | 37  |
| 35-39          | *  | *  | *   | 16  |
| 40-44          | *  | *  | *   | 5   |
| 45-49          | *  | *  | *   | 0   |
| Total 15-24    | (57.9)   | (40.5)   | (98.4)  | 26  |
| Total 15-49    | 57.7   | 40.3   | 97.9  | 113   |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 2.3: Preventing the mother-to-child transmission of HIV and PMTCT\_ARV\_NAT / SUBNAT. <sup>2</sup>Church of Central Africa Presbyterian.

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

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

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

## 12.7 Early Infant Diagnosis

Among infants born in the three years preceding the survey to women who self-reported an HIV-positive status during the corresponding pregnancy (diagnosed before or at any time during it), about half (49.4%) received an HIV test within two months of birth, while 29.3% received a test within 2-12 months of birth, according to mothers' reporting (Table 12.7.A).

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

Among HIV-positive women ages 15-49 years who delivered within the past 36 months, percentage whose last-born infant had an HIV test done within two months of birth and within 12 months of birth, by result of HIV test, MPHIA 2015-2016

| Characteristic                     | Percentage of infants who had an HIV test done within 2 months of birth <sup>1</sup> | Percentage of infants who had an HIV test done between 2 to 12 months of birth <sup>2,3</sup> | Number of last-born infants of HIV-positive women who delivered within the past 36 months |
|------------------------------------|--|---|---|
| <b>Result of infant's HIV test</b> |  |   |   |
| HIV positive                       | *  | *   | 5   |
| HIV negative                       | 58.8   | 38.9  | 206   |
| Don't know/other                   | (78.0)   | (22.0)  | 32  |
| Total                              | 49.4   | 29.3  | 292   |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 2.1: Early infant diagnosis and PEPFAR PMTCT\_EID; <sup>2</sup>Relates to PEPFAR PMTCT\_EID; <sup>3</sup>Includes only last-born infants

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

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

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

## 12.8 Mother-to-Child Transmission

Among infants born to HIV-positive women during the 17 and 11 months preceding the survey, 3.0% and 1.2%, respectively, were confirmed to be HIV-positive using virological testing. None of the infants whose mothers reported ARV use at the first ANC visit had confirmed HIV infection (Table 12.8.A).

| Characteristic   | Percentage of infants confirmed HIV positive <sup>1</sup> | Number of infants born to HIV-positive women <sup>2</sup> |
|--|---|---|
| <b>Mother's self-reported ARV status</b>                       |   |   |
| Mother unaware of HIV status during pregnancy                  | *   | 10  |
| Already on ARVs at first antenatal visit                       | (0.0)   | 27  |
| Newly initiated on ARVs during pregnancy or labor and delivery | *   | 22  |
| Did not receive ARVs during pregnancy                          | *   | 0   |
| Missing self-reported ARV status during pregnancy              | *   | 4   |
| <b>Mother's self-reported breastfeeding status</b>             |   |   |
| Ever breastfed the infant                                      | 2.5   | 60  |
| Never breastfed the infant                                     | *   | 0   |
| Missing breastfeeding status                                   | *   | 3   |
| Total 0-11 months  | (1.2)   | 34  |
| Total 0-17 months  | 3.1   | 63  |

<sup>1</sup>Relates to GAM 2.2; <sup>2</sup>Includes only infants who were tested for HIV during the PHIA survey  
 Weighted figures calculated using btwt0.  
 The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

## 12.9 Gaps and Unmet Needs

- Among self-reported HIV-positive women ages 15-49 years, 40.0% reported newly initiating ART during pregnancy, labor, or delivery. Evidence shows that MTCT rates are lower if women are on ART before pregnancy.
- According to mothers' reporting, half of infants born to HIV-positive women did not receive a virological test for HIV infection in the first two months of life. It is essential to ensure early testing of HIV-exposed children.

## 12.10 References

1. De Cock, KM., et al., (2000). Prevention of mother-to-child HIV transmission in resource-poor countries: translating research into policy and practice. *Journal of the American Medical Association*, 283(9):1175-1182. doi:10.1001/jama.283.9.1175
2. WHO, UNICEF, UNFPA and UNAIDS (2011). *Towards the elimination of mother-to-child transmission of HIV: Report of a WHO technical consultation*. Retrieved from WHO: [http://apps.who.int/iris/bitstream/handle/10665/44638/9789241501910\\_eng.pdf;jsessionid=CD35DAE3C3D00349A9B149BCFF9262C4?sequence=1](http://apps.who.int/iris/bitstream/handle/10665/44638/9789241501910_eng.pdf;jsessionid=CD35DAE3C3D00349A9B149BCFF9262C4?sequence=1)

# 13 ADOLESCENTS AND YOUNG ADULTS

## 13.1 Key Findings

- Among those ages 15-24 years, 13.7% reported having sexual intercourse before the age of 15 years (19.0% among males and 8.8% among females).
- Among those ages 15-24 years, 47.0% correctly responded to all questions in a set that assessed knowledge of HIV transmission and prevention (50.1% of males and 44.0% of females).
- Incidence of HIV infection among those ages 15-24 years was estimated to be 0.23 (95% CI 0.03, 0.43).
- HIV prevalence in those ages 15-19 years was 1.5% (0.9% in males, 2.0% in females) and 3.8% in those ages 20-24 years (2.3% in males, 5.2% in females).
- Progress on UNAIDS 90-90-90 targets among those ages 15-24 years: Based on self-report and detection of ARVs in blood, it is estimated that 53.7% of PLHIV ages 15-24 years had been diagnosed with HIV (44.6% of males and 57.6% of females), and that among those who had been previously diagnosed, 85.7% were on ART. Among those on treatment, 81.2% had VLS.

## 13.2 Background

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

This chapter presents the prevalence of early sexual debut before age 15 years among men and women, by marital status, region, and socio-demographic characteristics. It describes knowledge of HIV prevention among men and women ages 15-24 years. These data were measured by asking participants to agree or disagree with both accurate and inaccurate statements about HIV prevention. This chapter also describes HIV incidence, prevalence, and the 90-90-90 cascade for those ages 15-24 years.

## 13.3 Sexual Intercourse Before the Age of 15 Years

Among those ages 15-24 years, twice the proportion of males (19.0%) compared to females (8.8%) reported having had sexual intercourse before the age of 15 years. Among males, 23.7% of those ages 15-19 years reported sexual intercourse before the age of 15 years, compared to 13.2% of those ages 20-24 years. Among those ages 15-24-years with more than secondary education, 5.2% reported sexual intercourse before the age of 15 years, compared to 23.1% of those with no education. The percentage of young people reporting sexual intercourse before the age of 15 years is elevated in the South-East (18.4%) and South-West (16.2%) zones (Table 13.3.A).

**Table 13.3.A Sex before the age of 15 years**

Percentage of males and females age 15–24 years who have had sexual intercourse before the age of 15; by sex and selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Males                                |        | Females                              |        | Total                                |        |
|----------------------------|--------------------------------------|--------|--------------------------------------|--------|--------------------------------------|--------|
|                            | Percentage who had sex before age 15 | Number | Percentage who had sex before age 15 | Number | Percentage who had sex before age 15 | Number |
| <b>Residence</b>           |                                      |        |                                      |        |                                      |        |
| Urban                      | 18.2                                 | 1,218  | 8.3                                  | 1,602  | 13.3                                 | 2,820  |
| Rural                      | 19.2                                 | 1,798  | 8.9                                  | 2,447  | 13.9                                 | 4,245  |
| <b>Zone</b>                |                                      |        |                                      |        |                                      |        |
| North                      | 15.5                                 | 430    | 7.9                                  | 522    | 11.9                                 | 952    |
| Central-East               | 15.2                                 | 443    | 6.5                                  | 530    | 11.0                                 | 973    |
| Central-West               | 17.0                                 | 303    | 7.7                                  | 437    | 12.1                                 | 740    |
| Lilongwe City              | 15.8                                 | 553    | 6.5                                  | 730    | 11.2                                 | 1,283  |
| South-East                 | 27.9                                 | 325    | 10.8                                 | 510    | 18.4                                 | 835    |
| South-West                 | 21.8                                 | 449    | 11.2                                 | 635    | 16.2                                 | 1,084  |
| Blantyre City              | 17.1                                 | 513    | 8.7                                  | 685    | 12.8                                 | 1,198  |
| <b>Marital status</b>      |                                      |        |                                      |        |                                      |        |
| Never married              | 20.2                                 | 2,496  | 7.0                                  | 1,920  | 14.9                                 | 4,416  |
| Married or living together | 13.4                                 | 454    | 9.2                                  | 1,811  | 10.4                                 | 2,265  |
| Divorced or separated      | 18.2                                 | 58     | 18.4                                 | 299    | 18.3                                 | 357    |
| Widowed                    | *                                    | 1      | *                                    | 13     | *                                    | 14     |
| <b>Education</b>           |                                      |        |                                      |        |                                      |        |
| No education               | 31.2                                 | 66     | 19.3                                 | 159    | 23.1                                 | 225    |
| Primary                    | 21.6                                 | 1,563  | 10.2                                 | 2,306  | 15.5                                 | 3,869  |
| Secondary                  | 14.9                                 | 1,263  | 4.2                                  | 1,435  | 10.1                                 | 2,698  |
| More than secondary        | 7.5                                  | 123    | 2.2                                  | 149    | 5.2                                  | 272    |
| <b>Wealth quintile</b>     |                                      |        |                                      |        |                                      |        |
| Lowest                     | 18.6                                 | 300    | 13.3                                 | 505    | 15.6                                 | 805    |
| Second                     | 20.3                                 | 407    | 8.0                                  | 554    | 14.0                                 | 961    |
| Middle                     | 22.3                                 | 462    | 9.1                                  | 638    | 15.5                                 | 1,100  |
| Fourth                     | 18.4                                 | 629    | 8.8                                  | 804    | 13.6                                 | 1,433  |
| Highest                    | 16.4                                 | 1,218  | 6.0                                  | 1,548  | 11.3                                 | 2,766  |
| <b>Religion</b>            |                                      |        |                                      |        |                                      |        |
| Catholic                   | 17.2                                 | 617    | 8.4                                  | 803    | 12.7                                 | 1,420  |
| CCAP <sup>1</sup>          | 13.4                                 | 626    | 6.8                                  | 773    | 10.1                                 | 1,399  |
| Anglican                   | 25.1                                 | 76     | 17.1                                 | 97     | 21.2                                 | 173    |
| Seventh Day Adventist      | 15.0                                 | 225    | 6.9                                  | 337    | 10.7                                 | 562    |
| Baptist                    | 28.1                                 | 92     | 5.2                                  | 94     | 18.0                                 | 186    |
| Other Christian            | 20.4                                 | 813    | 9.1                                  | 1,268  | 14.3                                 | 2,081  |
| Muslim                     | 26.5                                 | 326    | 10.2                                 | 392    | 17.9                                 | 718    |
| Other                      | 13.8                                 | 178    | 11.0                                 | 267    | 12.3                                 | 445    |
| None                       | 30.3                                 | 60     | *                                    | 13     | 27.4                                 | 73     |
| <b>Ethnicity</b>           |                                      |        |                                      |        |                                      |        |
| Chewa                      | 17.7                                 | 1,044  | 7.9                                  | 1,371  | 12.7                                 | 2,415  |
| Lomwe                      | 19.3                                 | 544    | 10.7                                 | 795    | 14.7                                 | 1,339  |
| Ngoni                      | 14.6                                 | 332    | 5.7                                  | 467    | 10.0                                 | 799    |
| Nkhonde                    | (15.4)                               | 31     | (7.9)                                | 41     | 11.5                                 | 72     |
| Sena                       | 30.5                                 | 128    | 8.9                                  | 178    | 19.2                                 | 306    |
| Tonga                      | 16.9                                 | 70     | 14.6                                 | 91     | 15.8                                 | 161    |
| Tumbuka                    | 13.1                                 | 374    | 7.4                                  | 455    | 10.4                                 | 829    |
| Yao                        | 30.0                                 | 357    | 10.9                                 | 457    | 19.8                                 | 814    |
| Other                      | 15.2                                 | 126    | 7.9                                  | 181    | 11.3                                 | 307    |
| <b>Age</b>                 |                                      |        |                                      |        |                                      |        |
| 15-19                      | 23.7                                 | 1,655  | 9.2                                  | 1,843  | 16.3                                 | 3,498  |
| 20-24                      | 13.2                                 | 1,361  | 8.3                                  | 2,206  | 10.7                                 | 3,567  |
| Total 15-24                | 19.0                                 | 3,016  | 8.8                                  | 4,049  | 13.7                                 | 7,065  |

<sup>1</sup>Church of Central Africa Presbyterian.

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

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

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

### 13.4 Knowledge About HIV Prevention

The MPHIA also collected information on knowledge of HIV prevention, by asking two questions about prevention of sexual transmission of HIV and three questions related to common misconceptions about contracting HIV.

Only 50.1% of males ages 15-24 years answered all five HIV knowledge questions correctly with a higher proportion of young men in urban areas (59.5%) responding correctly to all five questions, compared to those in rural areas (47.4%). Among males in this age group, 87.2% responded correctly that the risk of HIV transmission can be reduced by having one partner and 80.8% responded correctly that HIV transmission risk can be reduced by consistent condom use. A higher proportion of males in the highest wealth quintile (62.2%) answered all questions correctly compared to those in the lowest wealth quintile (40.2%). Among young men with more than secondary education, 77.6% answered all questions correctly compared to 44.9% of those with no education and 41.0% of those with primary education (Table 13.4.A)

Only 44.0% of females ages 15-24 years answered all five HIV knowledge questions correctly. Among females in this age group, 84.4% responded correctly that the risk of HIV transmission can be reduced by having one partner and 72.3% correctly responded that HIV transmission risk can be reduced by consistent condom use. Among young women with more than secondary education, 79.2% answered all questions correctly compared to 28.5% of those with no education and 38.6% of those with primary education. Among females ages 15-24 years in Lilongwe City and Blantyre City, the percentage who answered all five questions correctly was 54.4% and 57.5%, respectively, compared to 35.2% in the North and 37.0% in Central West (Table 13.4.B).

Overall, among males and females ages 15-24 years, 47.0% answered all five HIV knowledge questions correctly. Among both males and females, 85.8% responded correctly that the risk of HIV transmission can be reduced by having one partner and 76.5% responded correctly that HIV transmission risk can be reduced by consistent condom use. Regarding misconceptions, 20% responded that a person can get HIV from a mosquito bite. Geographically, the highest proportion that responded to all five questions correctly was in Blantyre City (61.4%) and the lowest proportion of young adults who responded correctly was in the Central West (37.7%). The percentage of those answering all questions correctly varied in terms of wealth and education from 38.8% among those in the lowest wealth quintile to 57.4% among those in the highest wealth quintile, and from 34.2% among those with no education to 78.3% among those with more than secondary education. Correct knowledge was also more frequent among urban residents (55.5%) than among rural residents (44.7%). It also varied among age groups with 51.7% answering all questions correctly among those ages 20-24 years compared to 43.1% in those ages 15-19 years (Table 13.4.C)

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

Among males ages 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Percentage who correctly answered the questions:  |   |  |   |  |                    | Number <sup>2</sup> |
|----------------------------|---|---|--|---|--|--------------------|---------------------|
|                            | Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners? | Can a person reduce the risk of getting HIV by using a condom every time they have sex? | Can a healthy-looking person have HIV? | Can a person get HIV from mosquito bites? | Can a person get HIV by sharing food with someone who is infected? | All five questions |                     |
| <b>Residence</b>           |   |   |  |   |  |                    |                     |
| Urban                      | 90.0  | 82.9  | 91.3                                   | 84.1                                      | 93.9   | 59.5               | 634                 |
| Rural                      | 86.5  | 80.2  | 83.8                                   | 77.7                                      | 92.4   | 47.4               | 907                 |
| <b>Zone</b>                |   |   |  |   |  |                    |                     |
| North                      | 86.2  | 82.3  | 86.4                                   | 77.5                                      | 92.7   | 53.4               | 213                 |
| Central-East               | 86.7  | 76.4  | 82.8                                   | 81.3                                      | 93.0   | 52.2               | 214                 |
| Central-West               | 80.7  | 78.2  | 80.4                                   | 75.5                                      | 92.5   | 38.5               | 156                 |
| Lilongwe City              | 92.0  | 82.5  | 88.3                                   | 84.5                                      | 94.6   | 56.8               | 297                 |
| South-East                 | 90.0  | 81.4  | 87.5                                   | 76.0                                      | 90.6   | 47.6               | 175                 |
| South-West                 | 90.0  | 84.0  | 87.0                                   | 79.8                                      | 92.8   | 52.1               | 230                 |
| Blantyre City              | 90.4  | 84.4  | 92.4                                   | 88.4                                      | 97.1   | 65.6               | 256                 |
| <b>Marital status</b>      |   |   |  |   |  |                    |                     |
| Never married              | 86.5  | 80.8  | 84.2                                   | 80.3                                      | 92.4   | 50.4               | 1,283               |
| Married or living together | 90.2  | 80.7  | 93.1                                   | 74.2                                      | 94.7   | 49.6               | 227                 |
| Divorced or separated      | (90.5)  | (82.1)  | (77.3)                                 | (71.8)                                    | (90.4)   | (43.8)             | 26                  |
| Widowed                    | *   | *   | *                                      | *   | *  | *                  | 1                   |
| <b>Education</b>           |   |   |  |   |  |                    |                     |
| No education               | (69.3)  | (78.7)  | (77.2)                                 | (74.1)                                    | (88.6)   | (44.9)             | 35                  |
| Primary                    | 84.6  | 78.9  | 81.6                                   | 73.3                                      | 91.5   | 41.0               | 793                 |
| Secondary                  | 92.3  | 83.8  | 91.1                                   | 87.3                                      | 94.6   | 62.8               | 652                 |
| More than secondary        | 90.6  | 81.9  | 98.7                                   | 98.0                                      | 98.8   | 77.6               | 60                  |
| <b>Wealth quintile</b>     |   |   |  |   |  |                    |                     |
| Lowest                     | 83.5  | 78.7  | 86.3                                   | 70.7                                      | 86.1   | 40.2               | 151                 |
| Second                     | 84.8  | 79.8  | 83.5                                   | 72.1                                      | 94.2   | 42.0               | 195                 |
| Middle                     | 84.7  | 76.2  | 79.0                                   | 77.8                                      | 90.4   | 43.1               | 228                 |
| Fourth                     | 88.8  | 82.8  | 86.0                                   | 81.8                                      | 96.0   | 53.1               | 343                 |
| Highest                    | 91.0  | 84.0  | 90.4                                   | 85.9                                      | 93.9   | 62.2               | 624                 |
| <b>Religion</b>            |   |   |  |   |  |                    |                     |
| Catholic                   | 87.2  | 80.0  | 84.8                                   | 82.1                                      | 93.0   | 49.4               | 332                 |
| CCAP <sup>3</sup>          | 88.7  | 81.6  | 89.6                                   | 82.7                                      | 95.4   | 53.9               | 306                 |
| Anglican                   | (97.8)  | (96.4)  | (92.1)                                 | (85.8)                                    | (95.1)   | (74.3)             | 39                  |
| Seventh Day Adventist      | 91.3  | 78.4  | 90.7                                   | 85.0                                      | 95.7   | 56.3               | 107                 |
| Baptist                    | (84.1)  | (75.0)  | (83.9)                                 | (73.2)                                    | (85.3)   | (33.2)             | 46                  |
| Other Christian            | 87.6  | 81.0  | 85.3                                   | 74.5                                      | 94.6   | 48.5               | 416                 |
| Muslim                     | 84.4  | 81.7  | 82.3                                   | 77.2                                      | 87.9   | 45.8               | 171                 |
| Other                      | 83.5  | 80.6  | 77.6                                   | 79.0                                      | 90.6   | 46.3               | 87                  |
| None                       | (83.9)  | (76.1)  | (84.1)                                 | (82.0)                                    | (85.5)   | (59.7)             | 36                  |
| <b>Ethnicity</b>           |   |   |  |   |  |                    |                     |
| Chewa                      | 86.5  | 77.7  | 82.3                                   | 80.0                                      | 93.7   | 47.5               | 528                 |
| Lomwe                      | 93.3  | 86.6  | 91.1                                   | 79.8                                      | 96.5   | 57.1               | 280                 |
| Ngoni                      | 86.2  | 82.0  | 91.2                                   | 80.0                                      | 87.7   | 51.4               | 176                 |
| Nkhonde                    | *   | *   | *                                      | *   | *  | *                  | 18                  |
| Sena                       | 90.0  | 71.3  | 86.4                                   | 73.4                                      | 87.9   | 40.9               | 65                  |
| Tonga                      | (82.4)  | (84.0)  | (91.3)                                 | (82.9)                                    | (97.4)   | (54.6)             | 40                  |
| Tumbuka                    | 84.9  | 82.5  | 84.0                                   | 77.2                                      | 93.2   | 52.9               | 182                 |
| Yao                        | 84.9  | 80.7  | 83.5                                   | 76.1                                      | 90.3   | 44.3               | 187                 |
| Other                      | 90.7  | 87.1  | 90.1                                   | 83.9                                      | 90.1   | 59.1               | 59                  |
| <b>Age</b>                 |   |   |  |   |  |                    |                     |
| 15-19                      | 84.9  | 79.9  | 80.6                                   | 78.6                                      | 91.2   | 45.2               | 856                 |
| 20-24                      | 90.1  | 81.9  | 91.4                                   | 79.7                                      | 94.6   | 56.1               | 685                 |
| Total 15-24                | 87.2  | 80.8  | 85.5                                   | 79.1                                      | 92.8   | 50.1               | 1,541               |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 5.1: Young people: Knowledge about HIV prevention. <sup>2</sup>Includes only participants who answered all five questions. <sup>3</sup>Church of Central Africa Presbyterian.

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

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

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



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

Among females ages 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Percentage who correctly answered the questions   |   |  |   |  | All five questions | Number <sup>2</sup> |
|----------------------------|---|---|--|---|--|--------------------|---------------------|
|                            | Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners? | Can a person reduce the risk of getting HIV by using a condom every time they have sex? | Can a healthy-looking person have HIV? | Can a person get HIV from mosquito bites? | Can a person get HIV by sharing food with someone who is infected? |                    |                     |
| <b>Residence</b>           |   |   |  |   |  |                    |                     |
| Urban                      | 91.3  | 77.5  | 87.5                                   | 84.1                                      | 94.1   | 51.3               | 819                 |
| Rural                      | 82.7  | 71.0  | 80.8                                   | 80.1                                      | 92.2   | 42.2               | 1,239               |
| <b>Zone</b>                |   |   |  |   |  |                    |                     |
| North                      | 84.2  | 70.8  | 77.3                                   | 77.0                                      | 90.9   | 35.2               | 272                 |
| Central-East               | 81.1  | 69.0  | 79.2                                   | 79.7                                      | 93.7   | 43.5               | 271                 |
| Central-West               | 81.5  | 63.9  | 82.3                                   | 85.1                                      | 92.7   | 37.0               | 222                 |
| Lilongwe City              | 90.0  | 79.4  | 89.3                                   | 85.9                                      | 93.5   | 54.4               | 365                 |
| South-East                 | 85.3  | 73.4  | 79.3                                   | 81.4                                      | 92.3   | 45.1               | 250                 |
| South-West                 | 85.1  | 78.3  | 85.7                                   | 76.1                                      | 91.9   | 48.9               | 325                 |
| Blantyre City              | 91.4  | 81.4  | 89.8                                   | 87.1                                      | 95.5   | 57.5               | 353                 |
| <b>Marital status</b>      |   |   |  |   |  |                    |                     |
| Never married              | 83.4  | 70.9  | 79.5                                   | 83.1                                      | 93.1   | 45.0               | 987                 |
| Married or living together | 86.1  | 73.3  | 85.7                                   | 78.1                                      | 91.5   | 42.5               | 906                 |
| Divorced or separated      | 81.8  | 75.5  | 79.4                                   | 82.5                                      | 94.7   | 45.7               | 155                 |
| Widowed                    | *   | *   | *                                      | *   | *  | *                  | 8                   |
| <b>Education</b>           |   |   |  |   |  |                    |                     |
| No education               | 68.8  | 64.9  | 82.7                                   | 68.7                                      | 86.9   | 28.5               | 75                  |
| Primary                    | 81.7  | 70.6  | 77.2                                   | 78.8                                      | 91.8   | 38.6               | 1,167               |
| Secondary                  | 92.0  | 76.6  | 92.0                                   | 86.8                                      | 95.0   | 56.4               | 741                 |
| More than secondary        | 99.0  | 84.4  | 100.0                                  | 95.4                                      | 98.3   | 79.2               | 75                  |
| <b>Wealth quintile</b>     |   |   |  |   |  |                    |                     |
| Lowest                     | 80.5  | 70.2  | 84.4                                   | 74.3                                      | 90.1   | 37.6               | 244                 |
| Second                     | 84.0  | 70.2  | 78.0                                   | 80.1                                      | 90.1   | 41.6               | 280                 |
| Middle                     | 84.4  | 73.6  | 81.8                                   | 82.2                                      | 93.3   | 43.6               | 330                 |
| Fourth                     | 81.5  | 70.4  | 77.7                                   | 82.3                                      | 94.2   | 41.5               | 411                 |
| Highest                    | 89.8  | 75.7  | 87.8                                   | 83.5                                      | 94.0   | 52.3               | 793                 |
| <b>Religion</b>            |   |   |  |   |  |                    |                     |
| Catholic                   | 83.8  | 69.2  | 78.3                                   | 82.4                                      | 91.9   | 43.2               | 399                 |
| CCAP <sup>3</sup>          | 89.4  | 75.3  | 84.7                                   | 82.6                                      | 95.9   | 48.8               | 382                 |
| Anglican                   | 86.0  | 80.3  | 76.6                                   | 88.7                                      | 91.8   | 54.1               | 53                  |
| Seventh Day Adventist      | 90.1  | 77.7  | 88.4                                   | 81.2                                      | 90.8   | 54.4               | 174                 |
| Baptist                    | 85.0  | 71.4  | 83.2                                   | 78.2                                      | 96.4   | 34.8               | 50                  |
| Other Christian            | 82.5  | 69.5  | 83.5                                   | 79.0                                      | 92.3   | 40.6               | 660                 |
| Muslim                     | 83.3  | 76.3  | 82.3                                   | 79.1                                      | 89.4   | 42.0               | 199                 |
| Other                      | 76.6  | 71.8  | 73.1                                   | 83.5                                      | 94.3   | 42.9               | 134                 |
| None                       | *   | *   | *                                      | *   | *  | *                  | 5                   |
| <b>Ethnicity</b>           |   |   |  |   |  |                    |                     |
| Chewa                      | 83.0  | 67.1  | 81.7                                   | 81.5                                      | 93.7   | 40.5               | 692                 |
| Lomwe                      | 86.6  | 77.9  | 83.6                                   | 81.9                                      | 94.6   | 50.3               | 421                 |
| Ngoni                      | 86.3  | 78.0  | 88.8                                   | 84.9                                      | 94.2   | 52.1               | 230                 |
| Nkhonde                    | *   | *   | *                                      | *   | *  | *                  | 20                  |
| Sena                       | 88.1  | 77.1  | 83.2                                   | 75.0                                      | 93.1   | 48.0               | 85                  |
| Tonga                      | 83.7  | 73.6  | 79.0                                   | 76.7                                      | 92.9   | 41.8               | 47                  |
| Tumbuka                    | 83.6  | 70.1  | 76.2                                   | 79.3                                      | 89.8   | 39.1               | 242                 |
| Yao                        | 84.2  | 74.3  | 78.9                                   | 80.5                                      | 87.5   | 43.3               | 216                 |
| Other                      | 85.1  | 79.4  | 87.9                                   | 77.6                                      | 93.7   | 46.8               | 99                  |
| <b>Age</b>                 |   |   |  |   |  |                    |                     |
| 15-19                      | 82.7  | 69.1  | 78.4                                   | 81.8                                      | 92.8   | 41.1               | 937                 |
| 20-24                      | 86.5  | 76.1  | 86.6                                   | 79.9                                      | 92.4   | 47.5               | 1,121               |
| Total 15-24                | 84.4  | 72.3  | 82.1                                   | 80.9                                      | 92.6   | 44.0               | 2,058               |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 5.1: Young people: Knowledge about HIV prevention.

<sup>2</sup>Includes only participants who answered all five questions.

<sup>3</sup>Church of Central Africa Presbyterian.

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

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

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

Among males and females ages 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Percentage who correctly answered the questions   |   |  |   |  |                    | Number <sup>2</sup> |
|----------------------------|---|---|--|---|--|--------------------|---------------------|
|                            | Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners? | Can a person reduce the risk of getting HIV by using a condom every time they have sex? | Can a healthy-looking person have HIV? | Can a person get HIV from mosquito bites? | Can a person get HIV by sharing food with someone who is infected? | All five questions |                     |
| <b>Residence</b>           |   |   |  |   |  |                    |                     |
| Urban                      | 90.6  | 80.3  | 89.5                                   | 84.1                                      | 94.0   | 55.5               | 1,453               |
| Rural                      | 84.5  | 75.4  | 82.2                                   | 79.0                                      | 92.3   | 44.7               | 2,146               |
| <b>Zone</b>                |   |   |  |   |  |                    |                     |
| North                      | 85.2  | 76.7  | 82.0                                   | 77.3                                      | 91.8   | 44.6               | 485                 |
| Central-East               | 83.9  | 72.7  | 81.0                                   | 80.5                                      | 93.3   | 47.8               | 485                 |
| Central-West               | 81.1  | 70.8  | 81.4                                   | 80.5                                      | 92.6   | 37.7               | 378                 |
| Lilongwe City              | 91.1  | 81.1  | 88.8                                   | 85.2                                      | 94.1   | 55.7               | 662                 |
| South-East                 | 87.5  | 77.2  | 83.2                                   | 78.9                                      | 91.5   | 46.3               | 425                 |
| South-West                 | 87.4  | 81.0  | 86.3                                   | 77.8                                      | 92.3   | 50.4               | 555                 |
| Blantyre City              | 90.9  | 82.9  | 91.0                                   | 87.7                                      | 96.3   | 61.4               | 609                 |
| <b>Marital status</b>      |   |   |  |   |  |                    |                     |
| Never married              | 85.3  | 76.9  | 82.4                                   | 81.4                                      | 92.7   | 48.2               | 2,270               |
| Married or living together | 87.2  | 75.4  | 87.8                                   | 77.0                                      | 92.4   | 44.5               | 1,133               |
| Divorced or separated      | 83.5  | 76.8  | 79.0                                   | 80.3                                      | 93.9   | 45.3               | 181                 |
| Widowed                    | *   | *   | *                                      | *   | *  | *                  | 9                   |
| <b>Education</b>           |   |   |  |   |  |                    |                     |
| No education               | 69.0  | 69.7  | 80.8                                   | 70.6                                      | 87.5   | 34.2               | 110                 |
| Primary                    | 83.1  | 74.4  | 79.2                                   | 76.3                                      | 91.7   | 39.7               | 1,960               |
| Secondary                  | 92.2  | 80.6  | 91.5                                   | 87.1                                      | 94.8   | 60.0               | 1,393               |
| More than secondary        | 94.4  | 83.1  | 99.3                                   | 96.8                                      | 98.6   | 78.3               | 135                 |
| <b>Wealth quintile</b>     |   |   |  |   |  |                    |                     |
| Lowest                     | 81.8  | 74.0  | 85.3                                   | 72.7                                      | 88.3   | 38.8               | 395                 |
| Second                     | 84.4  | 74.7  | 80.6                                   | 76.4                                      | 92.1   | 41.8               | 475                 |
| Middle                     | 84.5  | 74.8  | 80.5                                   | 80.1                                      | 91.9   | 43.4               | 558                 |
| Fourth                     | 85.3  | 76.8  | 82.0                                   | 82.0                                      | 95.1   | 47.5               | 754                 |
| Highest                    | 90.4  | 80.0  | 89.2                                   | 84.7                                      | 93.9   | 57.4               | 1,417               |
| <b>Religion</b>            |   |   |  |   |  |                    |                     |
| Catholic                   | 85.5  | 74.6  | 81.6                                   | 82.2                                      | 92.4   | 46.3               | 731                 |
| CCAP <sup>3</sup>          | 89.0  | 78.5  | 87.2                                   | 82.6                                      | 95.7   | 51.4               | 688                 |
| Anglican                   | 91.9  | 88.3  | 84.3                                   | 87.3                                      | 93.4   | 64.1               | 92                  |
| Seventh Day Adventist      | 90.7  | 78.0  | 89.4                                   | 82.9                                      | 93.1   | 55.2               | 281                 |
| Baptist                    | 84.5  | 73.4  | 83.6                                   | 75.4                                      | 90.1   | 33.9               | 96                  |
| Other Christian            | 84.8  | 74.7  | 84.3                                   | 77.0                                      | 93.3   | 44.1               | 1,076               |
| Muslim                     | 83.8  | 79.0  | 82.3                                   | 78.2                                      | 88.6   | 43.9               | 370                 |
| Other                      | 79.8  | 75.9  | 75.2                                   | 81.4                                      | 92.6   | 44.5               | 221                 |
| None                       | (85.4)  | (74.6)  | (85.6)                                 | (81.4)                                    | (86.8)   | (57.4)             | 41                  |
| <b>Ethnicity</b>           |   |   |  |   |  |                    |                     |
| Chewa                      | 84.8  | 72.4  | 82.0                                   | 80.8                                      | 93.7   | 44.0               | 1,220               |
| Lomwe                      | 89.7  | 81.9  | 87.0                                   | 81.0                                      | 95.4   | 53.4               | 701                 |
| Ngoni                      | 86.2  | 80.0  | 90.0                                   | 82.4                                      | 90.9   | 51.7               | 406                 |
| Nkhonde                    | (76.7)  | (75.3)  | (82.1)                                 | (81.4)                                    | (92.0)   | (50.7)             | 38                  |
| Sena                       | 89.1  | 74.2  | 84.8                                   | 74.2                                      | 90.5   | 44.4               | 150                 |
| Tonga                      | 83.0  | 79.3  | 85.7                                   | 80.1                                      | 95.4   | 48.8               | 87                  |
| Tumbuka                    | 84.2  | 76.3  | 80.1                                   | 78.2                                      | 91.5   | 46.0               | 424                 |
| Yao                        | 84.6  | 77.5  | 81.2                                   | 78.3                                      | 88.9   | 43.8               | 403                 |
| Other                      | 87.4  | 82.6  | 88.8                                   | 80.3                                      | 92.2   | 51.9               | 158                 |
| <b>Age</b>                 |   |   |  |   |  |                    |                     |
| 15-19                      | 83.8  | 74.4  | 79.5                                   | 80.2                                      | 92.0   | 43.1               | 1,793               |
| 20-24                      | 88.3  | 79.0  | 88.9                                   | 79.8                                      | 93.5   | 51.7               | 1,806               |
| Total 15-24                | 85.8  | 76.5  | 83.8                                   | 80.0                                      | 92.7   | 47.0               | 3,599               |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 5.1: Young people: Knowledge about HIV prevention.

<sup>2</sup>Includes only participants who answered all five questions.

<sup>3</sup>Church of Central Africa Presbyterian.

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

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

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

### **13.5 HIV Incidence and Prevalence**

Overall incidence among those ages 15-24 years was estimated at 0.22% (95% CI 0.02, 0.41), 0.05 among males and 0.38% among females. These figures, however, should be interpreted cautiously as MPHIA was designed to estimate incidence among the overall population ages 15-49 years and the precision of estimates for other age-sex subgroups is low (Table 5.3.B).

Overall HIV prevalence among those ages 15-24 years was 2.5% and twice as large in females (3.4%) as in males (1.5%). HIV prevalence was 2.0% and 5.2% in females ages 15-19 years and ages 20-24 years, respectively; and 0.9% and 2.3% in males in the corresponding age groups (Table 6.4.A).

### **13.6 HIV Testing, Treatment, and Viral Load Suppression**

Among those ages 15-24 years, 58.2% reported that they had ever tested for HIV and received their results (48.0% among males and 67.9% among females). However, the percentage among those ages 15-19 years was half that among those ages 20-24 years (40.4% vs.79.9%, respectively). Recent testing was lower, with 33.2% of those ages 15-24 years reporting testing in the 12 months preceding the survey (26.8% among males and 39.3% among females) (Tables 7.3.A , 7.3.B, and 7.3.C).

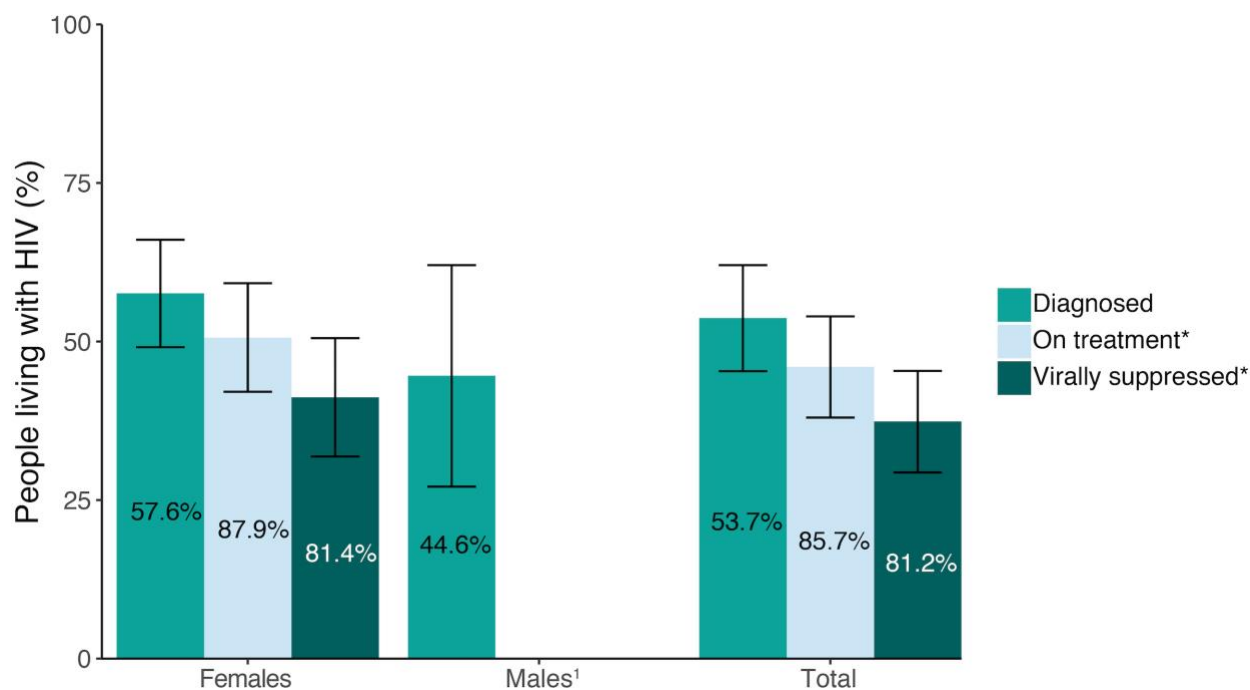
Among HIV-positive adolescents and young adults ages 15-24 years, 50.2% were unaware of their status according to self-report, while 41.1% were on ART, and 8.7% reported awareness of HIV status, but not yet on ART. The percentage unaware was higher among males (62.9%) than among females (44.7%) (Tables 8.3.A, 8.3.B and 8.3.C).

Viral load suppression was observed in 39.3% and 49.2% of those ages 15-19 years and ages 20-24 years living with HIV, respectively. Overall, 37.2% of HIV-positive males and 49.7% of HIV-positive females ages 15-24 years were virally suppressed (Tables 9.4.A and 9.4.B).

### **13.7 Status of the UNAIDS 90-90-90 Targets**

Based on self-report and detection of ARVs in blood, it is estimated that 53.7% of those living with HIV ages 15-24 years had been diagnosed with HIV (44.6% of males and 57.6% of females), and that among those who had been previously diagnosed, 85.7% were on ART. Among those on treatment, 81.2% had VLS (Table 10.3.B and Figure 13.7.A).

**Figure 13.7.A: Young adults 90-90-90 (laboratory ARV-adjusted data<sup>a</sup> among young adults ages 15-24 years), MPHIA 2015-2016**



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

\*Inset numbers are conditional proportions.

<sup>1</sup> Estimates are suppressed due to less than 25 observations.

### 13.8 Gaps and Unmet Needs

- Among adolescents and young adults ages 15-24 years, 53% lack correct knowledge about HIV transmission and prevention, with 19% of males and 28% of females not knowing that the risk of sexual acquisition of HIV can be reduced by consistent condom use.
- More than one in eight persons (13.7%) ages 15-24 years reported having sexual intercourse before the age of 15 years. Sexual debut before the age of 15 years was especially high among those with no education.
- Among those ages 15-24 years living with HIV, 46% had not been diagnosed, and among those diagnosed, 14% had not initiated ART. Among those on treatment, 19% have not achieved VLS.
- Overall, among those ages 15-24 years living with HIV, close to 63% of males and 50% of females do not have VLS.

### 13.9 References

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

# 14 CHILDREN

## 14.1 Key Findings

- The estimated prevalence of HIV infection among children ages 0-14 years was 1.5%.
- **Diagnosed:** Based on parents' report and ARV detection data, it was estimated that in Malawi, 69.3% of children living with HIV were diagnosed.
- **On treatment:** Based on parents' report and ARV detection data, it was estimated that 86.1% of HIV-positive children who have been diagnosed were on ART.
- **Virally suppressed:** Among children who were on ART, 57.9% were virally suppressed.

## 14.2 Background

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

This chapter presents results on the UNAIDS 90-90-90 targets in children ages 0-14 years, using both parent/guardian-reported data (on awareness of child's HIV status and ARV use) and data on detectable ARVs. Analyses for the UNAIDS 90-90-90 tables for children were similar to that described for adults in Chapter 10. Parents or guardians were asked about a child's HIV infection status and ART use. Data on detectable ARVs were used in combination with self-reported ARV use to define awareness of HIV-positive status and ARV status of a child. Presence of detectable ARVs among children who were reported as HIV negative was used to reclassify the child as aware.

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

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

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

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

### 14.3 HIV Prevalence

It is estimated that 1.5% of children under the age of 15 years were living with HIV (1.5% of males and 1.5% of females). The prevalence of HIV infection was 1.1% among those under five years of age, 1.6% among those ages 5-9 years, and 2.1% among those ages 10-14 years (Table 6.4.A)

### 14.4 Status of the UNAIDS 90-90-90 Targets

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

Among all HIV-positive children (children who tested HIV positive in MPHIA) ages 0-14 years, 60.9% were reported by their parents as HIV positive, 83.0% were reported by their parent/guardian as receiving ARVs, and 54.0% were virally suppressed (Table 14.4.A).

#### **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 guardian-reported HIV-positive status of the child and/or presence of detectable ARVs, 69.3% of HIV-positive children ages 0-14 years were classified as aware (ARV-adjusted awareness) (Table 14.4.B, Figure 14.4.A).

**ARV-adjusted treatment status:** Using guardian-reported ARV status of the child and/or detectable ARVs, 86.1% of children with ARV-adjusted awareness, were classified as being on ART (Table 14.4.B, Figure 14.4.A).

**Viral load suppression:** Among children with ARV-adjusted treatment status, 57.9% were virally suppressed (Table 14.4.B, Figure 14.4.A).

**Table 14.4.A Pediatric 90-90-90 (parent-reported antiretroviral therapy (ART) data; conditional percentages)**

90-90-90 targets among people living with HIV ages 0-14 years, by age MPHIA 2015-2016

| Age          | Diagnosed   |        |
|--------------|---|--------|
|              | Total   |        |
|              | Percentage<br>whose parent reported that<br>the child is HIV positive | Number |
| 0-17 months  | *   | 2      |
| 18-59 months | *   | 17     |
| 0-4 years    | *   | 19     |
| 5-9 years    | (62.1)  | 31     |
| 10-14 years  | (62.0)  | 37     |
| 0-14 years   | 60.9  | 87     |

| Age          | On Treatment  |        |
|--------------|---|--------|
|              | Among children whose parent reported that the child is HIV positive |        |
|              | Percentage<br>whose parent reported that<br>the child is on ART     | Number |
| 0-17 months  | *   | 0      |
| 18-59 months | *   | 9      |
| 0-4 years    | *   | 9      |
| 5-9 years    | *   | 19     |
| 10-14 years  | *   | 23     |
| 0-14 years   | 83.0  | 51     |

| Age          | Virally Suppressed  |        |
|--------------|---|--------|
|              | Among children whose parent reported that the child is on ART |        |
|              | Percentage<br>virally suppressed                              | Number |
| 0-17 months  | *   | 0      |
| 18-59 months | *   | 8      |
| 0-4 years    | *   | 8      |
| 5-9 years    | *   | 12     |
| 10-14 years  | *   | 21     |
| 0-14 years   | (54.0)  | 41     |

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

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

**Table 14.4.B Pediatric 90-90-90 (parent-reported antiretroviral therapy (ART) data and laboratory antiretroviral (ARV) data; conditional percentages)**

90-90-90 targets among people living with HIV ages 0-14 years, by age MPHIA 2015-2016

| Age          | Diagnosed  |        |
|--------------|--|--------|
|              | Total  |        |
|              | Percentage<br>whose parent reported that the child is<br>HIV positive AND/OR with detectable<br>ARVs | Number |
| 0-17 months  | *  | 2      |
| 18-59 months | *  | 18     |
| 0-4 years    | *  | 20     |
| 5-9 years    | (72.2)   | 37     |
| 10-14 years  | (67.0)   | 38     |
| 0-14 years   | 69.3   | 95     |

| Age          | On Treatment   |        |
|--------------|--|--------|
|              | Among children whose parent reported that the child is HIV positive AND/OR with<br>detectable ARVs |        |
|              | Percentage<br>whose parent reported the child was on<br>ART AND/OR with detectable ARVs            | Number |
| 0-17 months  | *  | 0      |
| 18-59 months | *  | 12     |
| 0-4 years    | *  | 12     |
| 5-9 years    | (75.8)   | 28     |
| 10-14 years  | (90.2)   | 27     |
| 0-14 years   | 86.1   | 67     |

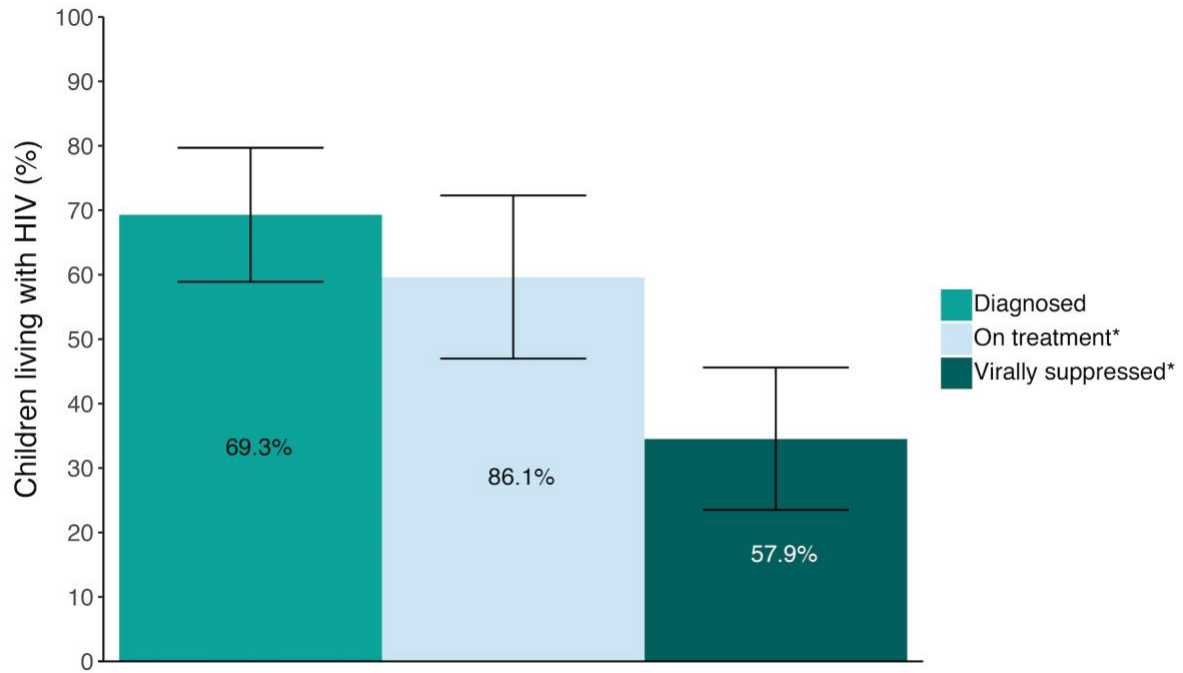
  

| Age          | Virally Suppressed   |        |
|--------------|--|--------|
|              | Among children whose parent reported the child was on ART AND/OR with detectable<br>ARVs |        |
|              | Percentage<br>virally suppressed   | Number |
| 0-17 months  | *  | 0      |
| 18-59 months | *  | 11     |
| 0-4 years    | *  | 11     |
| 5-9 years    | *  | 21     |
| 10-14 years  | (63.0)   | 25     |
| 0-14 years   | 57.9   | 57     |

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



**Figure 14.4.A Pediatric 90-90-90 (laboratory ARV-adjusted data<sup>a</sup>), MPHIA 2015-2016**



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

\*Inset numbers are conditional proportions.

## 14.5 Nutrition Status

Among HIV unexposed children (i.e. children born to an HIV-negative mother), 12.4% were stunted and 32.0% were severely stunted. Among HIV exposed and uninfected children (i.e. HIV-negative children born to HIV-positive mothers), 43.6% were stunted and 7.5% were severely stunted (Table 14.5.A).

Among HIV-unexposed children, 5.1% were underweight while 28.8% of HIV-exposed and uninfected children were underweight (Table 14.5.A).

| <b>Table 14.5.A Nutritional status of children ages 0-59 months</b>   |                |                        |                                     |                   |                    |
|---|----------------|------------------------|-------------------------------------|-------------------|--------------------|
| Prevalence of undernutrition among HIV-positive <sup>1</sup> and HIV-negative children ages 0-59 months by mother's HIV status, according to two anthropometric indices of nutritional status: height-for-age and weight-for-age <sup>2</sup> , MPHIA 2015-2016 |                |                        |                                     |                   |                    |
| Mother's HIV Status   | Child's Status | Height-for-age         |                                     |                   | Number of children |
|   |                | Percentage below -3 SD | Percentage below -2 SD <sup>3</sup> | Mean Z-score (SD) |                    |
| HIV-positive, unknown, dead   | HIV-positive   | *                      | *                                   | *                 | 16                 |
|   | HIV-negative   | (7.5)                  | (43.6)                              | (-1.1)            | 44                 |
|   | Total          | 8.6                    | 43.2                                | -1.2              | 60                 |
| HIV-negative  | HIV-positive   | *                      | *                                   | *                 | 0                  |
|   | HIV-negative   | (32.0)                 | (12.4)                              | (-2.0)            | 49                 |
|   | Total          | (32.0)                 | (12.4)                              | (-2.0)            | 49                 |
| Mother's HIV Status   | Child's Status | Weight-for-age         |                                     |                   | Number of children |
|   |                | Percentage below -3 SD | Percentage below -2 SD <sup>3</sup> | Mean Z-score (SD) |                    |
| HIV-positive, unknown, dead   | HIV-positive   | *                      | *                                   | *                 | 19                 |
|   | HIV-negative   | 0.1                    | 28.8                                | (-0.9)            | 45                 |
|   | Total          | 0.4                    | 27.9                                | -1.0              | 64                 |
| HIV-negative  | HIV-positive   | *                      | *                                   | *                 | 0                  |
|   | HIV-negative   | 0.0                    | 5.1                                 | -0.7              | 62                 |
|   | Total          | 0.0                    | 5.1                                 | -0.7              | 62                 |

<sup>1</sup>Child's HIV status as defined by the result of the child's MPHIA HIV test result.

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

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

## 14.6 Gaps and Unmet Needs

- Close to 31% of children under the age of 15 years who were living with HIV had not been diagnosed, and close to 14% of those diagnosed had not initiated ART. Among those receiving treatment, 42% were not virally suppressed.
- Overall among children under 15 years living with HIV, 42.3% were not virally suppressed.

# 15 HIV RISK FACTORS

## 15.1 Key Findings

- Among adults ages 15-64 years who reported sexual debut before the age of 15 years, the estimated HIV prevalence was 16.8% for females and 7% for males.
- The HIV prevalence in women ages 15-64 years, who reported engaging in paid sexual intercourse in the 12 months preceding the survey, was 23.2%. Among those women who did not engage in paid sexual intercourse, HIV prevalence was 11.7%.
- Among males ages 15-64 years, condom use at last sexual intercourse in the 12 months preceding the survey was reported by 34.4% of those HIV positive who self-reported being on ART, 20.6% of those who were HIV positive but unaware of their status, and 18.9% of those who were HIV negative.
- Among females ages 15-64 years, condom use at last sexual intercourse in the 12 months preceding the survey was reported by 26.0% of those HIV positive who self-reported being on ART, 12.4% of those who were HIV positive but unaware of their status, and 11.1% of those who were HIV negative.
- Among sexually active adults ages 15-64 years, 27.6% reported having sex with a non-marital or non-cohabiting partner in the 12 months preceding the survey, of whom 51.4% reported using a condom during their last sexual intercourse with a non-marital or non-cohabiting partner.
- Among men ages 15-64 years, 9.2% reported to have undergone medical circumcision (16.1% to have had a non-medical circumcision and 69.9% to be uncircumcised)

## 15.2 Background

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

Since 2007, WHO and UNAIDS have recommended VMMC as a cost-effective strategy to reduce female-to-male sexual transmission of HIV. To inform VMMC programs, males ages 15-64 years were asked if they had been medically or traditionally circumcised.

## 15.3 HIV Prevalence by Sexual Behavior

Among adults ages 15-64 years in each category defined by age of sexual debut, the prevalence of HIV infection was higher for females than for males. However, the major disparity was observed for those who reported sexual intercourse before the age of 15 years, with females having an HIV prevalence of 16.8%, which is more than twice as high as the prevalence among males in the same category (7.0%) (Table 15.3.A).

Among males ages 15-64 years, HIV prevalence was similar for those who reported one partner (10.0%) and for those who reported two or more partners (9.0%) in the 12 months preceding the survey. However, HIV prevalence among women with two or more partners in the 12 months preceding the survey (20.9%) was nearly twice as high as the prevalence in women reporting one partner in the same time period (11.6%) (Table 15.3.A).

HIV prevalence among persons ages 15-64 years who reported that they used a condom at last sexual intercourse in the year preceding the survey was 17.8%, compared to 9.2% among persons who reported that they did not use a condom at last sex.

The MPHIA defined paid sexual intercourse as paying or receiving money for sexual intercourse. HIV prevalence in women ages 15-64 years who reported engaging in this activity in the year preceding the survey was twice as high as in those who did not (23.2% versus 11.7%, respectively). However, among those females who engaged in paid sexual intercourse, HIV prevalence was similar among those who used a condom during the last paid sexual intercourse (24.7%) and those who did not (22.7%). HIV prevalence in men ages 15-64 years who reported that they did and did not engage in paid sexual intercourse in the 12 months preceding the survey was 8.0% and 9.9%, respectively (Table 15.3.A).

**Table 15.3.A HIV prevalence by sexual behavior**

Prevalence of HIV among persons age 15-64 years, by sex and sexual behavior characteristics, MPHIA 2015-2016

| Characteristic   | Males                   |        | Females                 |        | Total                   |        |
|--|-------------------------|--------|-------------------------|--------|-------------------------|--------|
|  | Percentage HIV positive | Number | Percentage HIV positive | Number | Percentage HIV positive | Number |
| <b>Age at first sexual intercourse</b>                             |                         |        |                         |        |                         |        |
| <15  | 7.0                     | 881    | 16.8                    | 816    | 11.0                    | 1,697  |
| 15-19  | 10.0                    | 3,401  | 13.6                    | 6,237  | 12.1                    | 9,638  |
| 20-24  | 9.2                     | 1,430  | 12.9                    | 1,562  | 10.8                    | 2,992  |
| ≥25  | 11.6                    | 411    | 16.1                    | 179    | 12.7                    | 590    |
| <b>Number of sexual partners in the past 12 months</b>             |                         |        |                         |        |                         |        |
| 0  | 7.7                     | 887    | 22.4                    | 1,592  | 16.3                    | 2,479  |
| 1  | 10.0                    | 3,924  | 11.6                    | 6,882  | 10.9                    | 10,806 |
| ≥2   | 9.0                     | 1,299  | 20.9                    | 318    | 10.7                    | 1,617  |
| <b>Condom use at last sexual intercourse in the past 12 months</b> |                         |        |                         |        |                         |        |
| Used condom  | 13.3                    | 1,225  | 24.6                    | 1,150  | 17.8                    | 2,375  |
| Did not use condom   | 8.7                     | 3,989  | 9.7                     | 6,043  | 9.2                     | 10,032 |
| No sexual intercourse in the past 12 months                        | 7.7                     | 887    | 22.4                    | 1,592  | 16.3                    | 2,479  |
| <b>Paid sexual intercourse in the past 12 months</b>               |                         |        |                         |        |                         |        |
| Yes <sup>1</sup>   | 8.0                     | 449    | 23.2                    | 195    | 11.9                    | 644    |
| Used condom at last paid sexual intercourse                        | 7.1                     | 312    | 24.7                    | 102    | 10.5                    | 414    |
| Did not use condom at last paid sexual intercourse                 | 9.7                     | 136    | 22.7                    | 90     | 14.4                    | 226    |
| No <sup>2</sup>  | 9.9                     | 4,763  | 11.7                    | 6,993  | 10.8                    | 11,756 |
| Total 15-24  | 1.5                     | 2,678  | 3.4                     | 3,580  | 2.5                     | 6,258  |
| Total 15-49  | 7.8                     | 6,306  | 12.1                    | 8,949  | 10.0                    | 15,255 |
| Total 15-64  | 8.5                     | 7,208  | 12.5                    | 9,979  | 10.6                    | 17,187 |

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

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

### 15.4 Sexual Behavior According to HIV and Antiretroviral Therapy Status

Among HIV-positive men ages 15-64 years, the percentage reporting two or more sexual partners in the 12 months preceding the survey varied according to reported awareness of status and care, with 24.0% of those who were unaware of their HIV status, 20.3% of those aware but not on ART, and 18.0% of those on ART having reported two or more sexual partners. Overall, condom use was low. However, HIV-positive men on ART reported using a condom at the last sexual intercourse in the 12 months preceding the survey with a higher frequency (34.4%) than those unaware of their status (20.6%) or than those aware, but not on ART (17.0%). Among HIV-positive men, who according to self-report were unaware of their status, 60.7% reported not using a condom during the last sexual intercourse with a non-marital, non-cohabiting partner in the 12 months preceding the survey, while 50.4% of HIV-positive men on ART, and 45.4% of HIV-negative men reported not using a condom at last sex with a non-marital, non-cohabiting partner. Among HIV-positive men, 4.8% of those unaware of their HIV status and 16.5% of those aware of their HIV status, but not on ART, reported paying for sexual intercourse in the 12 months preceding the survey (Table 15.4.A).

Among HIV-positive women ages 15-64 years who were unaware of their HIV status, 7.9% reported having two or more sexual partners in the 12 months preceding the survey, while 5.6% of those

aware, but not on ART, and 3.9% of those on ART reported having two or more sexual partners in the same time period. As in males, condom use was low. However, HIV-positive women on ART reported using a condom at the last sexual intercourse in the 12 months preceding the survey with a higher frequency (26.0%) than those unaware of their status (12.4%), aware but not on ART (10.8%), and those HIV negative (11.1%). Among HIV-positive women who were unaware of their status, 68.1% reported not using a condom during last sex with a non-marital, non-cohabiting partner in the 12 months preceding the survey, while 56.6% of HIV-positive women on ART and 53.8% of HIV-negative women reported not using a condom at last sex with a non-marital, non-cohabiting partner. Among HIV-positive women, 4.7% of those unaware of their HIV status and 10.6% of those aware, but not on ART, reported paid sexual intercourse in the 12 months preceding the survey (Table 15.4.B).

Among both males and females ages 15-64 years, sexual intercourse using a condom in the 12 months preceding the survey was reported by those HIV positive, who self-reported awareness of their status and on ART, with a higher frequency than by those who were HIV negative (34.4% versus 18.9%, respectively, among males; and 26.0% versus 11.1% respectively, among females). In addition, 31.8% of HIV-positive females who reported awareness of HIV status and ART use reported not having sexual intercourse in the 12 months preceding the survey, compared to 16.5% of HIV-negative females (Tables 15.4.A and 15.4.B). These findings may help to elucidate the observations in Table 15.3.A of high HIV prevalence among those who reported using a condom at last sexual intercourse and among those not having sexual intercourse in the 12 months preceding the survey.

**Table 15.4.A Sexual behavior according to HIV status: Males**

Sexual behavior in the 12 months preceding the survey according to HIV status, MPHIA 2015-2016

| Characteristic  | HIV-positive                        |                                   |                   | HIV Negative<br>(N=6493) |
|---|-------------------------------------|-----------------------------------|-------------------|--------------------------|
|   | Unaware of<br>HIV status<br>(N=230) | Aware of HIV Status               |                   |                          |
|   |                                     | Not on ART <sup>3</sup><br>(N=62) | On ART<br>(N=419) |                          |
| <b>Number of sexual partners in the past 12 months</b>                  |                                     |                                   |                   |                          |
| 0   | 10.2                                | 13.9                              | 10.3              | 14.2                     |
| 1   | 65.8                                | 65.8                              | 71.8              | 64.5                     |
| ≥2  | 24.0                                | 20.3                              | 18.0              | 21.3                     |
| <b>Condom use at last sexual intercourse in the past 12 months</b>      |                                     |                                   |                   |                          |
| Used condom   | 20.6                                | 17.0                              | 34.4              | 18.9                     |
| Did not use condom  | 69.2                                | 69.1                              | 55.4              | 66.9                     |
| No sexual intercourse in the past 12 months                             | 10.2                                | 13.9                              | 10.3              | 14.2                     |
| <b>Condom use at last sex with a non-marital non-cohabiting partner</b> |                                     |                                   |                   |                          |
| Used condom   | 39.3                                | *                                 | 49.6              | 54.6                     |
| Did not use condom  | 60.7                                | *                                 | 50.4              | 45.4                     |
| <b>Paid sexual intercourse in the past 12 months</b>                    |                                     |                                   |                   |                          |
| Yes <sup>1</sup>  | 4.8                                 | 16.5                              | 6.5               | 8.3                      |
| Used condom at last paid sexual intercourse                             | *                                   | *                                 | *                 | 70.7                     |
| Did not use condom at last paid sexual intercourse                      | *                                   | *                                 | *                 | 29.3                     |
| No <sup>2</sup>   | 95.2                                | 83.5                              | 93.5              | 91.7                     |
| Total 15-64   | 100.0                               | 100.0                             | 100.0             | 100.0                    |

<sup>1</sup>Includes persons who paid or received money for sexual intercourse. <sup>2</sup>No paid sexual intercourse or no sexual intercourse in the past 12 months.<sup>3</sup>ART: antiretroviral therapy. An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.**Table 15.4.B Sexual behavior according to HIV status: Females**

Sexual behavior in the 12 months preceding the survey according to HIV status, MPHIA 2015-2016

| Characteristic  | HIV-positive                        |                                    |                    | HIV Negative<br>(N=8467) |
|---|-------------------------------------|------------------------------------|--------------------|--------------------------|
|   | Unaware of<br>HIV status<br>(N=352) | Aware of HIV Status                |                    |                          |
|   |                                     | Not on ART <sup>3</sup><br>(N=111) | On ART<br>(N=1040) |                          |
| <b>Number of sexual partners in the past 12 months</b>                  |                                     |                                    |                    |                          |
| 0   | 23.1                                | 30.0                               | 31.8               | 16.5                     |
| 1   | 69.0                                | 64.4                               | 64.3               | 80.5                     |
| ≥2  | 7.9                                 | 5.6                                | 3.9                | 3.0                      |
| <b>Condom use at last sexual intercourse in the past 12 months</b>      |                                     |                                    |                    |                          |
| Used condom   | 12.4                                | 10.8                               | 26.0               | 11.1                     |
| Did not use condom  | 64.4                                | 59.2                               | 42.1               | 72.4                     |
| No sexual intercourse in the past 12 months                             | 23.1                                | 30.0                               | 31.9               | 16.5                     |
| <b>Condom use at last sex with a non-marital non-cohabiting partner</b> |                                     |                                    |                    |                          |
| Used condom   | 31.9                                | (16.4)                             | 43.4               | 46.2                     |
| Did not use condom  | 68.1                                | (83.6)                             | 56.6               | 53.8                     |
| <b>Paid sexual intercourse in the past 12 months</b>                    |                                     |                                    |                    |                          |
| Yes <sup>1</sup>  | 4.7                                 | 10.6                               | 5.5                | 2.4                      |
| Used condom at last paid sexual intercourse                             | *                                   | *                                  | (38.8)             | 50.9                     |
| Did not use condom at last paid sexual intercourse                      | *                                   | *                                  | (61.2)             | 49.1                     |
| No <sup>2</sup>   | 95.3                                | 89.4                               | 94.5               | 97.6                     |
| Total 15-64   | 100.0                               | 100.0                              | 100.0              | 100.0                    |

<sup>1</sup>Includes persons who paid or received money for sexual intercourse. <sup>2</sup>No paid sexual intercourse or no sexual intercourse in the past 12 months.<sup>3</sup>ART: antiretroviral therapy. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

### **15.5 Condom Use at Last Sex with a Non-Marital, Non-Cohabiting Partner**

Overall among adults ages 15-64 years who reported having sex in the year preceding the survey, 27.6% (35.6% of males and 19.8% of females) reported having sex with a non-marital, non-cohabiting partner during this time. Of these adults, 51.4% (54.8% of males and 45.4% of females) reported using a condom during their last sexual intercourse with this non-marital, non-cohabiting partner (Tables 15.5.A, Table 15.5.B and Table 15.5.C).

The percentage of sexually-active persons reporting sexual intercourse with a non-marital, non-cohabiting partner was higher among those residing in urban areas (35.5%) than among those in rural areas (25.7%), with the highest percentages in Blantyre City and Lilongwe City (36.6% and 35.7%, respectively). The percentage of sexually active persons reporting sexual intercourse with a non-marital, non-cohabiting partner increased with educational level from 13.0% among those with no education to 39.9% among those with more than secondary education. It also increased with wealth from 23.5% among those in the lowest wealth quintile to 35.1% among those in the highest quintile. The percentage reporting condom use at last sexual intercourse with a non-marital, non-cohabiting partner followed a similar pattern, and increased with educational attainment from 36.7% among those with no education to 66.2% among those with more than secondary education, and with wealth, from 43.2% among those in the lowest wealth quintile to 59.2% among those in the highest quintile (Table 15.5.C).

The percentages of sexually-active adults that reported sexual intercourse with non-marital, non-cohabiting partners and condom use at last sexual intercourse with this type of partners decreased from the youngest age groups to the oldest. Among sexually active persons ages 15-19 years, 72.4% (90.7% of males and 57.2% of females) reported having sex with a non-marital, non-cohabiting partner and 59.2% (58.3% of males and 60.4% of females) reported using a condom at last sexual intercourse with such partner, while among those ages 55-59 years, 5.9% reported having sex with a non-marital, non-cohabiting partner and 28.4% reported using a condom at last sex with such a partner (Tables 15.5.A, Table 15.5.B, and Table 15.5.C).



**Table 15.5.A Condom use at last sex with a non-marital, non-cohabitating partner: Males**

Among males age 15-64 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Among males who reported having sex in the past 12 months   |        | Among males who reported having sex with a non-marital, non-cohabitating partner in the past 12 months                      |        |
|----------------------------|---|--------|---|--------|
|                            | Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months | Number | Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner <sup>1</sup> | Number |
| <b>Residence</b>           |   |        |   |        |
| Urban                      | 45.5  | 2,205  | 59.4  | 1,008  |
| Rural                      | 33.1  | 3,775  | 53.1  | 1,186  |
| <b>Zone</b>                |   |        |   |        |
| North                      | 38.5  | 761    | 59.3  | 267    |
| Central-East               | 31.6  | 928    | 67.1  | 270    |
| Central-West               | 28.5  | 738    | 49.9  | 198    |
| Lilongwe City              | 44.9  | 1,015  | 56.0  | 460    |
| South-East                 | 36.3  | 681    | 47.7  | 234    |
| South-West                 | 38.1  | 908    | 51.3  | 327    |
| Blantyre City              | 45.1  | 949    | 55.4  | 438    |
| <b>Marital status</b>      |   |        |   |        |
| Never married              | 92.7  | 1,403  | 62.3  | 1,299  |
| Married or living together | 14.8  | 4,305  | 45.1  | 644    |
| Divorced or separated      | 91.3  | 246    | 39.7  | 227    |
| Widowed                    | *   | 19     | *   | 18     |
| <b>Education</b>           |   |        |   |        |
| No education               | 19.0  | 300    | 49.5  | 60     |
| Primary                    | 32.6  | 3,248  | 48.9  | 1,054  |
| Secondary                  | 43.5  | 2,016  | 62.2  | 892    |
| More than secondary        | 42.0  | 415    | 65.3  | 187    |
| <b>Wealth quintile</b>     |   |        |   |        |
| Lowest                     | 27.9  | 649    | 52.7  | 182    |
| Second                     | 30.6  | 899    | 47.5  | 268    |
| Middle                     | 30.1  | 955    | 50.1  | 275    |
| Fourth                     | 38.4  | 1,284  | 54.3  | 488    |
| Highest                    | 45.5  | 2,193  | 61.9  | 981    |
| <b>Religion</b>            |   |        |   |        |
| Catholic                   | 35.0  | 1,180  | 56.4  | 439    |
| CCAP <sup>2</sup>          | 37.3  | 1,144  | 60.9  | 425    |
| Anglican                   | 43.2  | 140    | 56.7  | 58     |
| Seventh Day Adventist      | 41.5  | 397    | 57.2  | 170    |
| Baptist                    | 39.0  | 153    | 46.6  | 59     |
| Other Christian            | 33.3  | 1,774  | 53.7  | 604    |
| Muslim                     | 42.2  | 538    | 52.4  | 244    |
| Other                      | 29.4  | 452    | 44.2  | 135    |
| None                       | 28.9  | 189    | 47.3  | 58     |
| <b>Ethnicity</b>           |   |        |   |        |
| Chewa                      | 34.2  | 2,029  | 54.6  | 710    |
| Lomwe                      | 35.5  | 1,159  | 48.2  | 430    |
| Ngoni                      | 33.4  | 741    | 56.8  | 273    |
| Nkhonde                    | 25.6  | 54     | *   | 13     |
| Sena                       | 43.2  | 252    | 58.3  | 107    |
| Tonga                      | 42.4  | 96     | (72.3)  | 39     |
| Tumbuka                    | 39.3  | 638    | 61.1  | 242    |
| Yao                        | 40.0  | 649    | 54.5  | 278    |
| Other                      | 27.5  | 357    | 53.2  | 98     |

**Table 15.5.A Condom use at last sex with a non-marital, non-cohabiting partner: Males (continued)**

| Characteristic | Among males who reported having sex in the past 12 months   |        | Among males who reported having sex with a non-marital, non-cohabiting partner in the past 12 months                      |        |
|----------------|---|--------|---|--------|
|                | Percentage who reported having sex with a non-marital, non-cohabiting partner in the past 12 months | Number | Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabiting partner <sup>1</sup> | Number |
| <b>Age</b>     |   |        |   |        |
| 15-19          | 90.7  | 596    | 58.3  | 535    |
| 20-24          | 61.1  | 1,000  | 64.1  | 655    |
| 25-29          | 33.2  | 942    | 50.5  | 359    |
| 30-34          | 24.2  | 884    | 48.9  | 241    |
| 35-39          | 21.0  | 762    | 43.9  | 179    |
| 40-44          | 15.2  | 586    | 40.2  | 100    |
| 45-49          | 10.3  | 413    | (34.8)  | 48     |
| 50-54          | 10.3  | 325    | (19.5)  | 37     |
| 55-59          | 7.8   | 258    | *   | 21     |
| 60-64          | 7.4   | 214    | *   | 19     |
| Total 15-24    | 72.3  | 1,596  | 61.4  | 1,190  |
| Total 15-49    | 39.1  | 5,183  | 55.7  | 2,117  |
| Total 15-64    | 35.6  | 5,980  | 54.8  | 2,194  |

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

<sup>2</sup>Church of Central Africa Presbyterian.

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

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

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

**Table 15.5.B Condom use at last sex with a non-marital, non-cohabitating partner: Females**

Among females age 15-64 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Among females who reported having sex in the past 12 months   |        | Among females who reported having sex with a non-marital, non-cohabitating partner in the past 12 months                    |        |
|----------------------------|---|--------|---|--------|
|                            | Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months | Number | Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner <sup>1</sup> | Number |
| <b>Residence</b>           |   |        |   |        |
| Urban                      | 24.7  | 3,055  | 50.6  | 736    |
| Rural                      | 18.6  | 5,125  | 43.8  | 883    |
| <b>Zone</b>                |   |        |   |        |
| North                      | 18.2  | 951    | 58.1  | 159    |
| Central-East               | 16.5  | 1,160  | 54.9  | 165    |
| Central-West               | 15.4  | 979    | 40.4  | 137    |
| Lilongwe City              | 25.8  | 1,431  | 50.3  | 342    |
| South-East                 | 21.4  | 1,048  | 39.8  | 210    |
| South-West                 | 22.4  | 1,328  | 38.3  | 277    |
| Blantyre City              | 27.2  | 1,283  | 49.8  | 329    |
| <b>Marital status</b>      |   |        |   |        |
| Never married              | 88.9  | 873    | 59.1  | 777    |
| Married or living together | 2.4   | 6,511  | 46.8  | 167    |
| Divorced or separated      | 83.3  | 680    | 27.5  | 575    |
| Widowed                    | 93.1  | 108    | 36.0  | 96     |
| <b>Education</b>           |   |        |   |        |
| No education               | 10.4  | 827    | 26.7  | 86     |
| Primary                    | 17.4  | 4,963  | 40.1  | 800    |
| Secondary                  | 31.7  | 2,062  | 55.8  | 615    |
| More than secondary        | 35.8  | 325    | 68.2  | 118    |
| <b>Wealth quintile</b>     |   |        |   |        |
| Lowest                     | 19.8  | 1,000  | 31.8  | 187    |
| Second                     | 16.6  | 1,196  | 38.5  | 188    |
| Middle                     | 18.2  | 1,338  | 40.1  | 230    |
| Fourth                     | 19.1  | 1,646  | 54.5  | 292    |
| Highest                    | 24.2  | 3,000  | 53.7  | 722    |
| <b>Religion</b>            |   |        |   |        |
| Catholic                   | 21.2  | 1,524  | 49.6  | 335    |
| CCAP <sup>2</sup>          | 21.2  | 1,497  | 58.3  | 325    |
| Anglican                   | 25.1  | 193    | (64.3)  | 41     |
| Seventh Day Adventist      | 24.0  | 583    | 41.3  | 142    |
| Baptist                    | 21.7  | 209    | (43.4)  | 42     |
| Other Christian            | 17.5  | 2,767  | 40.3  | 483    |
| Muslim                     | 20.1  | 778    | 38.4  | 143    |
| Other                      | 17.1  | 567    | 34.1  | 97     |
| None                       | 18.1  | 56     | *   | 11     |

**Table 15.5.B Condom use at last sex with a non-marital, non-cohabiting partner: Females (continued)**

| Characteristic   | Among females who reported having sex in the past 12 months   |        | Among females who reported having sex with a non-marital, non-cohabiting partner in the past 12 months                    |        |
|------------------|---|--------|---|--------|
|                  | Percentage who reported having sex with a non-marital, non-cohabiting partner in the past 12 months | Number | Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabiting partner <sup>1</sup> | Number |
| <b>Ethnicity</b> |   |        |   |        |
| Chewa            | 16.8  | 2,747  | 45.5  | 458    |
| Lomwe            | 24.4  | 1,731  | 41.1  | 411    |
| Ngoni            | 21.3  | 1,026  | 47.9  | 228    |
| Nkhonde          | 20.0  | 78     | *   | 15     |
| Sena             | 18.9  | 335    | 38.4  | 61     |
| Tonga            | 25.1  | 142    | (66.5)  | 37     |
| Tumbuka          | 18.2  | 804    | 60.0  | 149    |
| Yao              | 21.5  | 880    | 39.6  | 181    |
| Other            | 17.2  | 421    | 44.6  | 74     |
| <b>Age</b>       |   |        |   |        |
| 15-19            | 57.2  | 803    | 60.4  | 461    |
| 20-24            | 22.3  | 1,863  | 46.1  | 468    |
| 25-29            | 13.8  | 1,533  | 33.6  | 227    |
| 30-34            | 12.2  | 1,360  | 31.2  | 181    |
| 35-39            | 14.3  | 977    | 24.4  | 143    |
| 40-44            | 11.5  | 633    | 39.2  | 74     |
| 45-49            | 8.2   | 435    | (24.0)  | 34     |
| 50-54            | 6.3   | 292    | *   | 19     |
| 55-59            | 3.0   | 178    | *   | 6      |
| 60-64            | 5.4   | 106    | *   | 6      |
| Total 15-24      | 35.6  | 2,666  | 54.8  | 929    |
| Total 15-49      | 21.0  | 7,604  | 45.8  | 1,588  |
| Total 15-64      | 19.8  | 8,180  | 45.4  | 1,619  |

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

<sup>2</sup>Church of Central Africa Presbyterian.

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

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

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

**Table 15.5.C Condom use at last sex with a non-marital, non-cohabitating partner: Total**

Among persons age 15-64 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Among persons who reported having sex in the past 12 months   |        | Among persons who reported having sex with a non-marital, non-cohabitating partner in the past 12 months                    |        |
|----------------------------|---|--------|---|--------|
|                            | Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months | Number | Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner <sup>1</sup> | Number |
| <b>Residence</b>           |   |        |   |        |
| Urban                      | 35.5  | 5,260  | 56.4  | 1,744  |
| Rural                      | 25.7  | 8,900  | 49.7  | 2,069  |
| <b>Zone</b>                |   |        |   |        |
| North                      | 28.7  | 1,712  | 58.9  | 426    |
| Central-East               | 24.2  | 2,088  | 63.1  | 435    |
| Central-West               | 22.0  | 1,717  | 46.6  | 335    |
| Lilongwe City              | 35.7  | 2,446  | 54.0  | 802    |
| South-East                 | 28.2  | 1,729  | 44.4  | 444    |
| South-West                 | 29.8  | 2,236  | 46.1  | 604    |
| Blantyre City              | 36.6  | 2,232  | 53.4  | 767    |
| <b>Marital status</b>      |   |        |   |        |
| Never married              | 91.4  | 2,276  | 61.3  | 2,076  |
| Married or living together | 8.3   | 10,816 | 45.4  | 811    |
| Divorced or separated      | 85.8  | 926    | 31.5  | 802    |
| Widowed                    | 93.4  | 127    | 37.1  | 114    |
| <b>Education</b>           |   |        |   |        |
| No education               | 13.0  | 1,127  | 36.7  | 146    |
| Primary                    | 24.6  | 8,211  | 45.6  | 1,854  |
| Secondary                  | 38.8  | 4,078  | 60.1  | 1,507  |
| More than secondary        | 39.9  | 740    | 66.2  | 305    |
| <b>Wealth quintile</b>     |   |        |   |        |
| Lowest                     | 23.5  | 1,649  | 43.2  | 369    |
| Second                     | 23.6  | 2,095  | 44.3  | 456    |
| Middle                     | 24.0  | 2,293  | 46.2  | 505    |
| Fourth                     | 28.9  | 2,930  | 54.3  | 780    |
| Highest                    | 35.1  | 5,193  | 59.2  | 1,703  |
| <b>Religion</b>            |   |        |   |        |
| Catholic                   | 28.1  | 2,704  | 53.8  | 774    |
| CCAP <sup>2</sup>          | 29.5  | 2,641  | 60.0  | 750    |
| Anglican                   | 33.9  | 333    | 59.5  | 99     |
| Seventh Day Adventist      | 32.3  | 980    | 51.0  | 312    |
| Baptist                    | 30.5  | 362    | 45.5  | 101    |
| Other Christian            | 24.8  | 4,541  | 48.6  | 1,087  |
| Muslim                     | 30.1  | 1,316  | 47.3  | 387    |
| Other                      | 23.7  | 1,019  | 40.8  | 232    |
| None                       | 26.7  | 245    | 42.2  | 69     |

**Table 15.5.C Condom use at last sex with a non-marital, non-cohabiting partner: Total (continued)**

| Characteristic   | Among persons who reported having sex in the past 12 months   |        | Among persons who reported having sex with a non-marital, non-cohabiting partner in the past 12 months                    |        |
|------------------|---|--------|---|--------|
|                  | Percentage who reported having sex with a non-marital, non-cohabiting partner in the past 12 months | Number | Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabiting partner <sup>1</sup> | Number |
| <b>Ethnicity</b> |   |        |   |        |
| Chewa            | 25.5  | 4,776  | 51.7  | 1,168  |
| Lomwe            | 29.7  | 2,890  | 45.1  | 841    |
| Ngoni            | 27.2  | 1,767  | 53.3  | 501    |
| Nkhonde          | 22.7  | 132    | (45.6)  | 28     |
| Sena             | 31.3  | 587    | 52.4  | 168    |
| Tonga            | 33.6  | 238    | 70.1  | 76     |
| Tumbuka          | 29.0  | 1,442  | 60.8  | 391    |
| Yao              | 30.2  | 1,529  | 48.9  | 459    |
| Other            | 22.7  | 778    | 50.1  | 172    |
| <b>Age</b>       |   |        |   |        |
| 15-19            | 72.4  | 1,399  | 59.2  | 996    |
| 20-24            | 40.0  | 2,863  | 58.6  | 1,123  |
| 25-29            | 23.1  | 2,475  | 45.3  | 586    |
| 30-34            | 18.1  | 2,244  | 42.9  | 422    |
| 35-39            | 17.7  | 1,739  | 36.1  | 322    |
| 40-44            | 13.4  | 1,219  | 39.8  | 174    |
| 45-49            | 9.3   | 848    | 30.2  | 82     |
| 50-54            | 8.6   | 617    | 22.8  | 56     |
| 55-59            | 5.9   | 436    | (28.4)  | 27     |
| 60-64            | 6.6   | 320    | (28.1)  | 25     |
| Total 15-24      | 52.3  | 4,262  | 58.9  | 2,119  |
| Total 15-49      | 29.8  | 12,787 | 52.0  | 3,705  |
| Total 15-64      | 27.6  | 14,160 | 51.4  | 3,813  |

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

<sup>2</sup>Church of Central Africa Presbyterian.

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

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

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

## 15.6 Male Circumcision

Among men ages 15-64 years, 9.2% reported undergoing medical circumcision and 16.1% reported having a non-medical circumcision. The percentage of males who reported being uncircumcised ranged from 65.8% among those ages 60-64 years to 73.2% among those ages 50-54 years. Among those who tested HIV positive in the survey, 8.8% reported having undergone medical circumcision, while 67.4% self-reported their status as uncircumcised. Of those who tested HIV negative, 71.7% self-reported not having undergone any form of circumcision, while 9.0% reported having undergone medical circumcision. The percentage of men who self-reported having undergone medical circumcision ranged from 2.4% in Central-West to 20.9% in Blantyre City (Table 15.6.A).

The proportion who reported medical circumcision was 10 times greater in men with more than secondary education (21.6%) compared to men with no education (2.5%). However, the frequency of non-medical circumcision was approximately three times greater in men with no education (25.3%) compared to men with more than secondary education (7.6%). The highest frequency of medical circumcision was reported among those in the highest wealth quintile (16.5%). As expected, the lowest

frequency of uncircumcised men was observed among those who identified as Muslim (3%), with the majority of them (79.5%) having undergone non-medical circumcision (Table 15.6.A).

**Table 15.6.A Male circumcision**

Percent distribution of males ages 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, MPHIA 2015-2016

| Characteristic                        | Circumcised <sup>1</sup> |                          | Uncircumcised | Unknown | Total | Number |
|---------------------------------------|--------------------------|--------------------------|---------------|---------|-------|--------|
|                                       | Medical circumcision     | Non-medical circumcision |               |         |       |        |
| <b>Result of PHIA survey HIV test</b> |                          |                          |               |         |       |        |
| HIV positive                          | 8.8                      | 18.3                     | 67.4          | 5.4     | 100.0 | 715    |
| HIV negative                          | 9.0                      | 14.6                     | 71.7          | 4.7     | 100.0 | 6,493  |
| Not tested                            | 10.8                     | 24.3                     | 60.0          | 4.9     | 100.0 | 1,076  |
| <b>Residence</b>                      |                          |                          |               |         |       |        |
| Urban                                 | 16.8                     | 17.0                     | 63.3          | 2.9     | 100.0 | 3,169  |
| Rural                                 | 7.2                      | 15.9                     | 71.6          | 5.3     | 100.0 | 5,115  |
| <b>Zone</b>                           |                          |                          |               |         |       |        |
| North                                 | 3.5                      | 2.8                      | 85.2          | 8.4     | 100.0 | 1,109  |
| Central-East                          | 5.4                      | 9.6                      | 79.9          | 5.1     | 100.0 | 1,272  |
| Central-West                          | 2.4                      | 7.6                      | 85.0          | 5.0     | 100.0 | 951    |
| Lilongwe City                         | 17.5                     | 13.2                     | 66.1          | 3.2     | 100.0 | 1,464  |
| South-East                            | 14.0                     | 44.4                     | 37.2          | 4.4     | 100.0 | 910    |
| South-West                            | 13.3                     | 16.7                     | 67.0          | 3.0     | 100.0 | 1,217  |
| Blantyre City                         | 20.9                     | 20.5                     | 55.8          | 2.8     | 100.0 | 1,361  |
| <b>Marital status</b>                 |                          |                          |               |         |       |        |
| Never married                         | 13.8                     | 13.4                     | 68.7          | 4.1     | 100.0 | 3,007  |
| Married or living together            | 6.6                      | 17.4                     | 71.2          | 4.8     | 100.0 | 4,860  |
| Divorced or separated                 | 7.5                      | 19.9                     | 62.7          | 9.9     | 100.0 | 347    |
| Widowed                               | 6.3                      | 23.6                     | 63.2          | 7.0     | 100.0 | 58     |
| <b>Education</b>                      |                          |                          |               |         |       |        |
| No education                          | 2.5                      | 25.3                     | 62.9          | 9.3     | 100.0 | 413    |
| Primary                               | 6.6                      | 17.3                     | 70.5          | 5.6     | 100.0 | 4,468  |
| Secondary                             | 13.7                     | 13.4                     | 70.1          | 2.8     | 100.0 | 2,857  |
| More than secondary                   | 21.6                     | 7.6                      | 68.0          | 2.7     | 100.0 | 543    |
| <b>Wealth quintile</b>                |                          |                          |               |         |       |        |
| Lowest                                | 5.0                      | 16.6                     | 71.8          | 6.6     | 100.0 | 877    |
| Second                                | 5.1                      | 15.2                     | 74.4          | 5.4     | 100.0 | 1,192  |
| Middle                                | 7.0                      | 17.6                     | 70.1          | 5.3     | 100.0 | 1,310  |
| Fourth                                | 8.7                      | 16.1                     | 70.4          | 4.8     | 100.0 | 1,750  |
| Highest                               | 16.5                     | 15.5                     | 65.0          | 3.1     | 100.0 | 3,155  |

**Table 15.6.A Male circumcision (continued)**

| Characteristic        | Circumcised <sup>1</sup> |                          | Uncircumcised | Unknown | Total | Number |
|-----------------------|--------------------------|--------------------------|---------------|---------|-------|--------|
|                       | Medical circumcision     | Non-medical circumcision |               |         |       |        |
| <b>Religion</b>       |                          |                          |               |         |       |        |
| Catholic              | 7.7                      | 5.8                      | 81.4          | 5.0     | 100.0 | 1,646  |
| CCAP <sup>2</sup>     | 10.0                     | 8.1                      | 77.6          | 4.3     | 100.0 | 1,637  |
| Anglican              | 11.6                     | 15.2                     | 70.1          | 3.1     | 100.0 | 209    |
| Seventh Day Adventist | 15.4                     | 15.0                     | 66.0          | 3.6     | 100.0 | 561    |
| Baptist               | 5.8                      | 8.2                      | 80.2          | 5.7     | 100.0 | 207    |
| Other Christian       | 7.9                      | 9.5                      | 77.4          | 5.2     | 100.0 | 2,370  |
| Muslim                | 14.4                     | 79.5                     | 3.0           | 3.1     | 100.0 | 751    |
| Other                 | 7.5                      | 8.5                      | 76.1          | 7.9     | 100.0 | 640    |
| None                  | 3.3                      | 4.9                      | 88.9          | 2.9     | 100.0 | 245    |
| <b>Ethnicity</b>      |                          |                          |               |         |       |        |
| Chewa                 | 5.6                      | 6.8                      | 82.5          | 5.0     | 100.0 | 2,806  |
| Lomwe                 | 14.7                     | 20.7                     | 61.0          | 3.5     | 100.0 | 1,608  |
| Ngoni                 | 10.1                     | 6.3                      | 79.7          | 3.8     | 100.0 | 1,011  |
| Nkhonde               | 3.5                      | 0.0                      | 87.2          | 9.3     | 100.0 | 85     |
| Sena                  | 10.0                     | 4.7                      | 81.8          | 3.5     | 100.0 | 335    |
| Tonga                 | 8.5                      | 3.8                      | 82.6          | 5.1     | 100.0 | 154    |
| Tumbuka               | 5.4                      | 1.9                      | 84.7          | 7.9     | 100.0 | 941    |
| Yao                   | 14.1                     | 71.9                     | 10.7          | 3.4     | 100.0 | 881    |
| Other                 | 12.0                     | 12.5                     | 69.5          | 6.1     | 100.0 | 452    |
| <b>Age</b>            |                          |                          |               |         |       |        |
| 15-19                 | 12.9                     | 13.8                     | 67.8          | 5.5     | 100.0 | 1,680  |
| 20-24                 | 12.7                     | 15.8                     | 66.5          | 5.0     | 100.0 | 1,389  |
| 25-29                 | 9.4                      | 13.8                     | 72.3          | 4.5     | 100.0 | 1,120  |
| 30-34                 | 7.1                      | 16.4                     | 72.3          | 4.2     | 100.0 | 1,010  |
| 35-39                 | 8.0                      | 18.2                     | 69.3          | 4.6     | 100.0 | 877    |
| 40-44                 | 6.5                      | 16.1                     | 71.7          | 5.6     | 100.0 | 706    |
| 45-49                 | 4.2                      | 19.7                     | 72.6          | 3.6     | 100.0 | 501    |
| 50-54                 | 3.0                      | 20.5                     | 73.2          | 3.3     | 100.0 | 395    |
| 55-59                 | 4.5                      | 17.4                     | 72.5          | 5.6     | 100.0 | 332    |
| 60-64                 | 4.2                      | 25.5                     | 65.8          | 4.5     | 100.0 | 274    |
| Total 15-24           | 12.8                     | 14.7                     | 67.2          | 5.3     | 100.0 | 3,069  |
| Total 15-49           | 9.8                      | 15.6                     | 69.7          | 4.8     | 100.0 | 7,283  |
| Total 15-64           | 9.2                      | 16.1                     | 69.9          | 4.8     | 100.0 | 8,284  |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 3.16: Prevalence of male circumcision and PEPFAR VMMC\_TOTALCIRC NAT / SUBNAT.

<sup>2</sup>Church of Central Africa Presbyterian.

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.

## 15.7 Gaps and Unmet Needs

- The low percentage of reported condom use both overall and with high-risk (non-marital, non-cohabiting) sexual partners suggests that knowledge, access, and acceptability of condoms needs improvement.
- Among males ages 15-24 years, 67.2% reported to be uncircumcised. Among HIV-negative males ages 15-64 years, 71.7% reported to be uncircumcised.



# 16 INTIMATE PARTNER VIOLENCE

## 16.1 Key Findings

- Among ever-married or partnered women ages 15-64 years, 3.1% reported experiencing physical violence by a live-in partner in the 12 months preceding the survey.
- Among ever-married or partnered women ages 15-64 years, 1.3% reported experiencing sexual violence by a live-in partner in the 12 months preceding the survey.
- Of ever-married or partnered women ages 15-64 years, 4.1% reported experiencing physical or sexual violence by a live-in partner in the 12 months preceding the survey.
- Among ever-married or partnered women, 5.6% of women ages 15-19 years, and 4.8% of women ages 20-24 years, reported experiencing physical or sexual violence by a live-in partner in the 12 months preceding the survey.

## 16.2 Background

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

This chapter reports the prevalence of experiencing sexual or physical violence perpetrated by a live-in partner in the last 12 months among ever married or partnered women. Sexual violence was defined in MPHIA as experiencing physical force or pressure to have sex. Physical violence was defined as experiencing punching, kicking, whipping, beating, slapping, pushing, shoving, choking, smothering, drowning or burning. It also included having an object thrown at you or being hurt or threatened with a knife, gun or other weapon. Prevalence numbers are broken down by age, education, region, and sociodemographic characteristics. Violence markers are measured against a woman's HIV status, as well as demographic characteristics.

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

### **16.3 Prevalence of Recent Intimate Partner Violence**

Among ever-married or partnered women ages 15-64 years, 3.1% reported experiencing physical violence, 1.3% reported experiencing sexual violence, and 4.1% reported experiencing either form of violence from a live-in intimate partner in the 12 months preceding the survey. Among young women ages 15-24 years, 3.3% reported experiencing physical violence, while 2.0% reported experiencing sexual violence, and 5.0% reported experiencing either form of violence. Self-reported sexual violence was highest among those ages 15-19 years (4.1%), while self-reported physical violence was highest among those ages 25-29 years (5.4%) (Table 16.3.A).

The prevalence of recent violence by a live-in partner in the last 12 months varied slightly by sociodemographic characteristics. Among women in urban areas, 5.9% reported either form of violence, compared to 3.8% in rural areas. In addition, the highest proportion of women who reported either form of violence was observed in Lilongwe City (6.9%) and Blantyre City (5.9%). Among women in Central East and Central West, 3.1% and 3.7%, respectively, reported experiencing either form of violence. Across educational levels, 5.3% of those with secondary education reported experiencing either form of violence, compared to 2.1% of those with no education. Among women in the highest wealth quintile, 5.3% reported experiencing violence compared to 2.9% among those in the lowest wealth quintile. Among women who tested HIV positive in MPHIA, 4.7% reported experiencing physical violence, compared to 3.0% among those who tested HIV negative (Table 16.3.A).

**Table 16.3.A Prevalence of recent intimate partner violence**

Among ever-married or partnered women ages 15-64 years, percentage who experienced physical or sexual violence from a live-in partner in the past 12 months<sup>1</sup>, by woman's HIV status and selected demographic characteristics, MPHIA 2015-2016

| Characteristic                        | Physical violence | Sexual violence | Physical and sexual violence | Physical or sexual violence <sup>2</sup> | Number of ever-married or partnered women |
|---------------------------------------|-------------------|-----------------|------------------------------|--|---|
| <b>Result of PHIA survey HIV test</b> |                   |                 |                              |  |   |
| HIV positive                          | 4.7               | 0.8             | 0.1                          | 5.5                                      | 1,141                                     |
| HIV negative                          | 3.0               | 1.5             | 0.3                          | 4.2                                      | 5,348                                     |
| Not tested                            | 2.0               | 0.6             | 0.1                          | 2.4                                      | 948                                       |
| <b>Residence</b>                      |                   |                 |                              |  |   |
| Urban                                 | 4.4               | 1.7             | 0.3                          | 5.9                                      | 2,527                                     |
| Rural                                 | 2.8               | 1.2             | 0.2                          | 3.8                                      | 4,910                                     |
| <b>Zone</b>                           |                   |                 |                              |  |   |
| North                                 | 2.4               | 1.5             | 0.0                          | 3.8                                      | 875                                       |
| Central-East                          | 2.8               | 0.4             | 0.2                          | 3.1                                      | 1,001                                     |
| Central-West                          | 2.3               | 1.5             | 0.1                          | 3.7                                      | 952                                       |
| Lilongwe City                         | 5.2               | 2.0             | 0.4                          | 6.9                                      | 1,195                                     |
| South-East                            | 3.1               | 1.3             | 0.3                          | 4.0                                      | 1,068                                     |
| South-West                            | 3.6               | 1.2             | 0.5                          | 4.4                                      | 1,326                                     |
| Blantyre City                         | 4.4               | 1.7             | 0.2                          | 5.9                                      | 1,020                                     |
| <b>Marital status</b>                 |                   |                 |                              |  |   |
| Never married                         | *                 | *               | *                            | *  | -   |
| Married or living together            | 3.4               | 1.4             | 0.3                          | 4.5                                      | 6,094                                     |
| Divorced or separated                 | 2.7               | 1.0             | 0.1                          | 3.6                                      | 912                                       |
| Widowed                               | 0.2               | 0.3             | 0.0                          | 0.5                                      | 422                                       |
| <b>Education</b>                      |                   |                 |                              |  |   |
| No education                          | 1.6               | 0.5             | 0.0                          | 2.1                                      | 967                                       |
| Primary                               | 3.2               | 1.3             | 0.2                          | 4.4                                      | 4,725                                     |
| Secondary                             | 4.1               | 1.8             | 0.6                          | 5.3                                      | 1,554                                     |
| More than secondary                   | 2.2               | 0.8             | 0.0                          | 2.9                                      | 184                                       |
| <b>Wealth quintile</b>                |                   |                 |                              |  |   |
| Lowest                                | 2.3               | 1.1             | 0.5                          | 2.9                                      | 1,096                                     |
| Second                                | 2.9               | 1.7             | 0.1                          | 4.5                                      | 1,237                                     |
| Middle                                | 3.3               | 0.9             | 0.3                          | 3.9                                      | 1,258                                     |
| Fourth                                | 2.7               | 1.2             | 0.1                          | 3.8                                      | 1,458                                     |
| Highest                               | 4.1               | 1.4             | 0.2                          | 5.3                                      | 2,388                                     |
| <b>Religion</b>                       |                   |                 |                              |  |   |
| Catholic                              | 3.3               | 1.7             | 0.4                          | 4.6                                      | 1,312                                     |
| CCAP <sup>3</sup>                     | 2.5               | 1.0             | 0.1                          | 3.5                                      | 1,277                                     |
| Anglican                              | 5.7               | 0.2             | 0.0                          | 5.9                                      | 162                                       |
| Seventh Day Adventist                 | 3.4               | 2.2             | 0.3                          | 5.3                                      | 493                                       |
| Baptist                               | 2.9               | 0.8             | 0.2                          | 3.5                                      | 187                                       |
| Other Christian                       | 3.2               | 1.0             | 0.3                          | 3.9                                      | 2,653                                     |
| Muslim                                | 2.2               | 0.7             | 0.0                          | 2.9                                      | 757                                       |
| Other                                 | 3.2               | 2.9             | 0.2                          | 5.9                                      | 542                                       |
| None                                  | (9.9)             | (0.5)           | (0.0)                        | (10.3)                                   | 49  |

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

| Characteristic   | Physical violence | Sexual violence | Physical and sexual violence | Physical or sexual violence <sup>2</sup> | Number of ever-married or partnered women |
|------------------|-------------------|-----------------|------------------------------|--|---|
| <b>Ethnicity</b> |                   |                 |                              |  |   |
| Chewa            | 2.8               | 1.1             | 0.2                          | 3.8                                      | 2,421                                     |
| Lomwe            | 3.4               | 1.1             | 0.3                          | 4.2                                      | 1,579                                     |
| Ngoni            | 2.7               | 1.9             | 0.2                          | 4.4                                      | 943                                       |
| Nkhonde          | 3.1               | 1.1             | 0.0                          | 4.2                                      | 68  |
| Sena             | 5.6               | 2.8             | 1.4                          | 7.0                                      | 297                                       |
| Tonga            | 2.8               | 1.2             | 0.0                          | 4.0                                      | 125                                       |
| Tumbuka          | 2.6               | 1.9             | 0.1                          | 4.4                                      | 720                                       |
| Yao              | 3.2               | 0.5             | 0.0                          | 3.7                                      | 842                                       |
| Other            | 3.1               | 1.6             | 0.7                          | 4.0                                      | 432                                       |
| <b>Age</b>       |                   |                 |                              |  |   |
| 15-19            | 1.8               | 4.1             | 0.2                          | 5.6                                      | 323                                       |
| 20-24            | 3.8               | 1.3             | 0.3                          | 4.8                                      | 1,519                                     |
| 25-29            | 5.4               | 1.5             | 0.6                          | 6.3                                      | 1,424                                     |
| 30-34            | 4.2               | 1.1             | 0.0                          | 5.2                                      | 1,329                                     |
| 35-39            | 3.2               | 1.0             | 0.3                          | 3.9                                      | 946                                       |
| 40-44            | 1.4               | 0.9             | 0.2                          | 2.2                                      | 626                                       |
| 45-49            | 1.3               | 1.4             | 0.0                          | 2.7                                      | 454                                       |
| 50-54            | 1.0               | 0.2             | 0.0                          | 1.2                                      | 375                                       |
| 55-59            | 0.1               | 0.5             | 0.0                          | 0.6                                      | 257                                       |
| 60-64            | 0.0               | 0.0             | 0.0                          | 0.0                                      | 184                                       |
| Total 15-24      | 3.3               | 2.0             | 0.3                          | 5.0                                      | 1,842                                     |
| Total 15-49      | 3.5               | 1.4             | 0.3                          | 4.6                                      | 6,621                                     |
| Total 15-64      | 3.1               | 1.3             | 0.2                          | 4.1                                      | 7,437                                     |

<sup>1</sup>Based on the following variables and questionnaire wording:

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

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

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

- Punched, kicked, whipped, or beat you with an object
- Slapped you, threw something at you that could hurt you, pushed you or shoved you
- Choked smothered, tried to drown you, or burned you intentionally
- Used or threatened you with a knife, gun or other weapon?"

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

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

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

<sup>2</sup>Relates 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.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.<sup>3</sup>Church of Central Africa Presbyterian.

## 16.4 Gaps and Unmet Needs

- While IPV is likely under-reported in face-to-face interviews, 5% of women ages 15-24 years (5.6% of those ages 15-19 years and 4.8% of those ages 20-24 years) reported experiencing physical or sexual violence by a live-in partner in the last 12 months. Violence prevention interventions should target partners of young women while social support services should target the affected women themselves.

## 16.5 References

1. Breiding M.J., Basile K.C., Smith S.G., Black M.C., Mahendra R.R. (2015) *Intimate Partner Violence Surveillance: Uniform Definitions and Recommended Data Elements, Version 2.0*. Atlanta, Georgia: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.
2. Maman, S., Campbell, J., Sweat, M.D., Gielen, A.C. (2000). The intersections of HIV and violence: directions for future research and interventions. *Social Science & Medicine* 50(4), 459-478.

# 17 DISCRIMINATORY ATTITUDES TOWARDS PEOPLE LIVING WITH HIV

## 17.1 Key Findings

- Among adults ages 15-64 years who had ever heard of HIV, 11% reported discriminatory attitudes towards PLHIV.
- More adults ages 15-64 years in rural areas (11.9%) reported discriminatory attitudes towards PLHIV, compared to those in urban areas (7.1%).
- The largest variation in discriminatory attitudes occurs across different levels of educational attainment; 18.9% of those with no education reported discriminatory attitudes in contrast to 4.4% among those with more than secondary education.

## 17.2 Background

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

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

## 17.3 Discriminatory Attitudes Towards People Living with HIV

Eleven percent (11.0%) of adults ages 15-64 years who had ever heard of HIV reported discriminatory attitudes towards PLHIV (responded “no” to either of the two questions used to assess discriminatory attitudes). There were slight variations in discriminatory attitudes based on geographic area, marital status, socioeconomic status, age, and ethnicity. An estimated 7.1% of adults ages 15-64 years in urban areas reported discriminatory attitudes towards PLHIV compared to 11.9% of adults in rural areas. The lowest proportions of persons who reported discriminatory attitudes toward PLHIV were in Blantyre City (6.0%), Lilongwe City (7.1%) and South West (8.3%) compared to higher proportions in the North (13.3%) and Central West (13.4%). The largest variation in discriminatory attitudes occurred across different levels of educational attainment; 18.9% of those with no education reported discriminatory attitudes in contrast to 4.4% among those with more than secondary education. Similarly, 15.2% of those in the lowest wealth quintile reported discriminatory attitudes compared to 7.2% among those in the highest wealth quintile. Individuals ages 15-19 years and ages 60-64 years had the highest

percentages of persons who reported discriminatory attitudes (16.4% and 13.4%, respectively). Among those ages 20-59 years, the proportion of persons who reported discriminatory attitudes ranged from 7.9% to 10.7% (Table 17.3.A).

| <b>Table 17.3.A Discriminatory attitudes toward people living with HIV</b>   |  |  |   |                     |
|--|--|--|---|---------------------|
| Among persons ages 15-64 years who have heard of HIV, percentage who reported discriminatory attitudes towards PLHIV, by selected demographic characteristics, MPHIA 2015-2016 |  |  |   |                     |
| Characteristic   | Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV? | Do you think that children living with HIV should be able to attend school with children who are HIV negative? | Both questions  | Number <sup>2</sup> |
|  | Percentage who responded "No"  | Percentage who responded "No"  | Percentage who responded "No" to either of the two questions <sup>1</sup> |                     |
| <b>Residence</b>   |  |  |   |                     |
| Urban  | 5.1  | 3.9  | 7.1   | 3,697               |
| Rural  | 7.9  | 8.2  | 11.9  | 6,044               |
| <b>Zone</b>  |  |  |   |                     |
| North  | 8.2  | 9.0  | 13.3  | 1,240               |
| Central-East   | 7.8  | 9.0  | 11.8  | 1,372               |
| Central-West   | 8.9  | 9.1  | 13.4  | 1,125               |
| Lilongwe City  | 4.7  | 4.1  | 7.1   | 1,699               |
| South-East   | 8.8  | 6.8  | 11.5  | 1,167               |
| South-West   | 5.2  | 5.3  | 8.3   | 1,567               |
| Blantyre City  | 4.0  | 3.8  | 6.0   | 1,571               |
| <b>Marital status</b>  |  |  |   |                     |
| Never married  | 10.2   | 9.7  | 14.5  | 2,646               |
| Married or living together   | 5.7  | 6.3  | 9.1   | 5,985               |
| Divorced or separated  | 9.0  | 6.3  | 11.9  | 795                 |
| Widowed  | 8.6  | 8.7  | 13.2  | 305                 |
| <b>Education</b>   |  |  |   |                     |
| No education   | 14.1   | 11.9   | 18.9  | 793                 |
| Primary  | 8.4  | 8.3  | 12.4  | 5,562               |
| Secondary  | 2.9  | 3.6  | 5.4   | 2,881               |
| More than secondary  | 2.1  | 3.3  | 4.4   | 500                 |
| <b>Wealth quintile</b>   |  |  |   |                     |
| Lowest   | 11.4   | 10.0   | 15.2  | 1,112               |
| Second   | 8.3  | 9.8  | 13.3  | 1,384               |
| Middle   | 7.5  | 7.5  | 11.4  | 1,560               |
| Fourth   | 6.1  | 6.5  | 10.0  | 2,015               |
| Highest  | 5.1  | 4.4  | 7.2   | 3,670               |
| <b>Religion</b>  |  |  |   |                     |
| Catholic   | 7.3  | 8.3  | 11.1  | 1,895               |
| CCAP <sup>3</sup>  | 5.8  | 5.3  | 8.8   | 1,870               |
| Anglican   | 9.3  | 8.1  | 11.6  | 238                 |
| Seventh Day Adventist  | 6.4  | 5.5  | 9.0   | 669                 |
| Baptist  | 9.6  | 6.4  | 13.7  | 235                 |
| Other Christian  | 6.5  | 6.8  | 10.5  | 3,059               |
| Muslim   | 10.9   | 9.5  | 14.7  | 904                 |
| Other  | 9.8  | 10.0   | 13.8  | 702                 |
| None   | 2.5  | 7.4  | 7.5   | 156                 |

**Table 17.3.A Discriminatory attitudes toward people living with HIV (continued)**

| Characteristic   | Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV? | Do you think that children living with HIV should be able to attend school with children who are HIV negative? | Both questions  | Number <sup>2</sup> |
|------------------|--|--|---|---------------------|
|                  | Percentage who responded "No"  | Percentage who responded "No"  | Percentage who responded "No" to either of the two questions <sup>1</sup> |                     |
| <b>Ethnicity</b> |  |  |   |                     |
| Chewa            | 8.3  | 8.4  | 12.0  | 3,188               |
| Lomwe            | 4.4  | 3.9  | 6.5   | 1,955               |
| Ngoni            | 5.1  | 6.3  | 8.5   | 1,225               |
| Nkhonde          | 7.1  | 8.0  | 10.3  | 104                 |
| Sena             | 7.5  | 7.8  | 11.9  | 400                 |
| Tonga            | 7.2  | 11.4   | 14.7  | 188                 |
| Tumbuka          | 7.1  | 7.3  | 11.5  | 1,056               |
| Yao              | 11.2   | 8.5  | 15.2  | 1,070               |
| Other            | 6.4  | 9.6  | 11.8  | 539                 |
| <b>Age</b>       |  |  |   |                     |
| 15-19            | 12.4   | 10.3   | 16.4  | 1,780               |
| 20-24            | 6.9  | 7.2  | 10.5  | 1,791               |
| 25-29            | 4.4  | 5.7  | 7.9   | 1,427               |
| 30-34            | 5.1  | 6.8  | 9.2   | 1,322               |
| 35-39            | 4.9  | 6.2  | 8.4   | 1,047               |
| 40-44            | 7.0  | 6.3  | 10.7  | 759                 |
| 45-49            | 8.0  | 6.3  | 10.1  | 542                 |
| 50-54            | 5.7  | 4.9  | 8.4   | 448                 |
| 55-59            | 6.7  | 7.1  | 10.1  | 353                 |
| 60-64            | 7.7  | 9.0  | 13.4  | 272                 |
| Total 15-24      | 9.9  | 8.9  | 13.7  | 3,571               |
| Total 15-49      | 7.4  | 7.4  | 11.1  | 8,668               |
| Total 15-64      | 7.3  | 7.3  | 11.0  | 9,741               |

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

<sup>2</sup>Includes only participants who answered both questions.

<sup>3</sup>Church of Central Africa Presbyterian.

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

## 17.4 Gaps and Unmet Needs

- Discriminatory attitudes were more common among young adults ages 15-19 years. Interventions to reduce discrimination should target venues where these young people are found, including schools and youth groups.
- Discriminatory attitudes towards PLHIV were somewhat more common in the North and Central West Zones. Education and community interventions to decrease stigma could improve the lives of PLHIV in these areas.

## 17.5 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.



# 18 TUBERCULOSIS, SEXUALLY TRANSMITTED INFECTION SYMPTOMS, AND CERVICAL CANCER SCREENING

## 18.1 Key Findings

- Among self-reported HIV-positive persons ages 15-64 years, 28.0% were screened for TB symptoms (cough, fever, night sweats, and weight loss) during their last HIV clinic visit.
- Among adults ages 15-64 years who ever visited a TB clinic, 48% were tested for HIV during this visit.
- Among HIV-positive males ages 15-64 years, 16.2% reported to have had a genital ulcer, 5.0% to have had abnormal discharge from the penis, and 5.8% to have been diagnosed with an STI in the 12 months preceding the survey.
- Among HIV-positive females ages 15-64 years, 12.1% reported to have had a genital ulcer, 10.9% to have had abnormal discharge from the vagina, and 6.7% to have been diagnosed with an STI in the 12 months preceding the survey.
- Among HIV positive women ages 30-49 years, 18.7% reported ever having been screened for cervical cancer.

## 18.2 Background

Persons living with HIV are at risk for acquiring other diseases, including TB, hepatitis B, syphilis, and other STIs. Tuberculosis is one of the leading causes of death for PLHIV. A UNAIDS model estimates there were 6,000 [95% CI: 3,200, 9,700] TB-related deaths among HIV-positive persons in Malawi in 2016.<sup>1</sup> This chapter describes the TB clinical care cascade for HIV-positive individuals: received care at a TB clinic, TB diagnoses among those receiving care, and treatment among those diagnosed with TB.

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

## 18.3 Tuberculosis

Forty-eight percent (48%) of adults ages 15-64 years who had ever visited a TB clinic reported being tested for HIV during the visit, with similar distribution in testing coverage in women and men. Among adults ages 15-64 years who attended a TB clinic, 9.1% already knew that they were HIV positive and were not tested, and 42.9% were not tested for HIV although they did not know their status (Table 18.3.A).

Among self-reported HIV-positive persons ages 15-64 years, 22.5% reported ever visiting a TB clinic (25.8% of HIV-positive men compared to 20.7% of HIV-positive women). Among those who ever visited a TB clinic, 47.2% were diagnosed with TB. Among those diagnosed with TB, 98% of males and 100% of females reported receiving TB treatment (Table 18.3.B).

Among self-reported HIV-positive persons ages 15-64 years, 28.0% reported having been screened for TB symptoms (cough, fever, night sweats, and weight loss) during their last HIV clinic visit. The percentage who reported having been screened was similar between men and women (28.7% and 27.6%, respectively) (Table 18.3.C).

| <b>Table 18.3.A HIV testing in tuberculosis clinics</b>   |   |   |                           |       |        |
|---|---|---|---------------------------|-------|--------|
| Percent distribution of persons ages 15-64 years who had ever visited a TB clinic by whether they were tested for HIV during a TB clinic visit, by sex, MPHIA 2015-2016 |   |   |                           |       |        |
| Characteristic  | Tested for HIV during a TB clinic visit | Not Tested For HIV during a TB clinic visit |                           | Total | Number |
|   |   | Already knew they were HIV positive         | Did not know their status |       |        |
| <b>Sex</b>  |   |   |                           |       |        |
| Male  | 49.0                                    | 8.4   | 42.6                      | 100.0 | 442    |
| Female  | 47.3                                    | 9.6   | 43.1                      | 100.0 | 677    |
| Total 15-64   | 48.0                                    | 9.1   | 42.9                      | 100.0 | 1,119  |

| <b>Table 18.3.B Tuberculosis clinic attendance and services among HIV-positive adults</b>  |   |        |   |        |   |        |
|--|---|--------|---|--------|---|--------|
| Among self-reported HIV-positive persons ages 15-64 years, percentage who ever visited a TB clinic; among those who had ever visited a TB clinic, percentage who were diagnosed for TB; and among those diagnosed with TB, percentage who were treated for TB, by sex, MPHIA 2015-2016 |   |        |   |        |   |        |
| Characteristic   | Among HIV-positive persons              |        | Among HIV-positive persons who ever visited a TB clinic |        | Among HIV-positive persons who were diagnosed with TB |        |
|  | Percentage who ever visited a TB clinic | Number | Percentage who were diagnosed with TB                   | Number | Percentage who were treated for TB                    | Number |
| <b>Sex</b>   |   |        |   |        |   |        |
| Male   | 25.8                                    | 510    | 45.7  | 155    | 98.0  | 77     |
| Female   | 20.7                                    | 1,220  | 48.2  | 282    | 100.0   | 143    |
| Total 15-64  | 22.5                                    | 1,730  | 47.2  | 437    | 99.2  | 220    |

| <b>Table 18.3.C Tuberculosis symptom screening in HIV clinics</b>   |  |        |
|---|--|--------|
| Among self-reported HIV-positive persons in HIV care ages 15-64 years, percentage who were screened for TB symptoms during their last HIV clinic visit, by sex, MPHIA 2015-2016 |  |        |
| Characteristic  | Percentage who were screened for TB symptoms | Number |
| <b>Sex</b>  |  |        |
| Male  | 28.7   | 464    |
| Female  | 27.6   | 1,165  |
| Total 15-64   | 28.0   | 1,629  |

#### **18.4 Self-Reported Symptoms and Diagnosis of Sexually Transmitted Infection**

Among males ages 15-64 years, 2.9% reported having had abnormal discharge from the penis and 6.3% having had an ulcer or sore on or near the penis in the 12 months preceding the survey, while 2.5% reported that they were diagnosed with an STI by a healthcare provider (doctor, clinical officer, or nurse) in that same period of time (Table 18.4.A).

Among HIV-positive males ages 15-64 years, 5.0% reported having had abnormal discharge from the penis and 16.2% having had an ulcer, while among HIV-negative males, 3.0% reported having had abnormal discharge from the penis and 5.7% reported having had an ulcer. An STI diagnosis in the 12 months preceding the survey was reported by 5.8% of HIV-positive males in contrast to 2.3% of HIV-negative males (Table 18.4.A).

The percentage of males reporting abnormal discharge from the penis or ulcerative symptoms tended to decrease with educational level with 3.9% and 8.2% of those with no education reporting these symptoms, respectively, and 1.9% reporting abnormal discharge from the penis and 5.3% reporting ulcerative symptoms among those with more than secondary education. In contrast, the diagnosis of an STI in the 12 months preceding the survey was reported more frequently by those with more than secondary education (4.9%) than by those with lower educational attainment (2.3% among those with primary education and 2.4% among those with no education and among those with secondary education). Abnormal discharge from the penis was reported with the highest frequency among males ages 15-19 years (5.0%) and with the lowest frequency among those ages 60-64 years (0.1%). Ulcerative symptoms were reported with the highest frequency among males ages 30-34 years (9.3%) and with the lowest frequency among those ages 60-64 years (4.1%) (Table 18.4.A).

Among females ages 15-64 years, 8.9% reported having had abnormal vaginal discharge and 6.8% having had an ulcer or sore on or near the vagina in the 12 months preceding the survey. Among females in this age group, 2.5% reported that they were diagnosed with an STI by a healthcare provider (doctor, clinical officer, or nurse) in that same time period (Table 18.4.B).

Among HIV-positive females ages 15-64 years, 10.9% reported having had abnormal vaginal discharge and 12.1% having had an ulcer, while among HIV-negative females, 9.1% reported having had abnormal vaginal discharge and 6.4% reported having had an ulcer in the 12 months preceding the survey. An STI diagnosis in the 12 months preceding the survey was reported by 6.7% of HIV-positive females and 1.9% of HIV-negative females (Table 18.4.B).

Abnormal vaginal discharge was reported with the highest frequency among females ages 30-34 years (11.9%) and with the lowest frequency among those ages 55-59 years (4.0%). Ulcerative symptoms were reported with the highest frequency among females ages 25-29 years (8.7%) and with the lowest frequency among those ages 60-64 years (2.5%) (Table 18.6.B).

Although a higher percentage of females than males reported having had abnormal genital discharge (8.9% versus 2.9%, respectively), similar percentages of females and males reported having had genital ulcers (6.8% and 6.3%, respectively) and diagnosis of an STI (2.5% for both males and females) in the 12 months preceding the survey (Tables 18.4.A and 18.4.B).

**Table 18.4.A Other sexually transmitted infections: Males**

Among males ages 15-64 years, percentage who self-reported symptoms of a sexually transmitted infection and percentage who reported clinical diagnosis of a sexually transmitted infection in the 12 months preceding the survey; by HIV status and selected demographic characteristics, MPHIA 2015-2016

| Characteristic                        | Self-reported symptoms in the past 12 months                      |  |        | Percentage who were diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse |        |
|---------------------------------------|---|--|--------|---|--------|
|                                       | Percentage who had abnormal discharge from the penis <sup>1</sup> | Percentage who had an ulcer or sore on or near the penis | Number |   | Number |
| <b>Result of PHIA survey HIV test</b> |   |  |        |   |        |
| HIV positive                          | 5.0   | 16.2   | 653    | 5.8   | 676    |
| HIV negative                          | 3.0   | 5.7  | 5,503  | 2.3   | 5,610  |
| Not tested                            | 1.2   | 4.1  | 909    | 1.6   | 923    |
| <b>Residence</b>                      |   |  |        |   |        |
| Urban                                 | 3.5   | 5.1  | 2,710  | 3.4   | 2,755  |
| Rural                                 | 2.8   | 6.7  | 4,355  | 2.2   | 4,454  |
| <b>Zone</b>                           |   |  |        |   |        |
| North                                 | 3.8   | 5.8  | 913    | 2.7   | 931    |
| Central-East                          | 2.1   | 5.3  | 1,072  | 1.7   | 1,099  |
| Central-West                          | 2.7   | 6.7  | 826    | 1.8   | 844    |
| Lilongwe City                         | 4.0   | 6.2  | 1,256  | 3.8   | 1,282  |
| South-East                            | 2.4   | 8.3  | 790    | 2.6   | 807    |
| South-West                            | 3.2   | 5.9  | 1,050  | 3.0   | 1,074  |
| Blantyre City                         | 3.4   | 5.0  | 1,158  | 3.3   | 1,172  |
| <b>Marital status</b>                 |   |  |        |   |        |
| Never married                         | 4.4   | 4.8  | 2,121  | 1.8   | 2,135  |
| Married or living together            | 2.0   | 6.9  | 4,566  | 2.7   | 4,672  |
| Divorced or separated                 | 7.8   | 7.3  | 317    | 3.8   | 338    |
| Widowed                               | 0.9   | 13.9   | 52     | 4.3   | 55     |
| <b>Education</b>                      |   |  |        |   |        |
| No education                          | 3.9   | 8.2  | 353    | 2.4   | 375    |
| Primary                               | 3.2   | 6.7  | 3,787  | 2.3   | 3,868  |
| Secondary                             | 2.5   | 5.5  | 2,436  | 2.4   | 2,467  |
| More than secondary                   | 1.9   | 5.3  | 488    | 4.9   | 498    |
| <b>Wealth quintile</b>                |   |  |        |   |        |
| Lowest                                | 2.6   | 7.9  | 757    | 1.7   | 779    |
| Second                                | 2.7   | 6.0  | 1,032  | 2.4   | 1,051  |
| Middle                                | 3.8   | 6.7  | 1,109  | 2.9   | 1,137  |
| Fourth                                | 2.6   | 6.5  | 1,490  | 2.5   | 1,525  |
| Highest                               | 3.0   | 5.3  | 2,677  | 2.6   | 2,717  |
| <b>Religion</b>                       |   |  |        |   |        |
| Catholic                              | 3.0   | 6.2  | 1,389  | 2.4   | 1,414  |
| CCAP <sup>2</sup>                     | 3.5   | 5.7  | 1,390  | 2.4   | 1,412  |
| Anglican                              | 2.3   | 8.8  | 180    | 2.3   | 181    |
| Seventh Day Adventist                 | 2.1   | 6.6  | 464    | 3.0   | 476    |
| Baptist                               | 4.9   | 9.7  | 176    | 5.8   | 180    |
| Other Christian                       | 3.0   | 6.3  | 2,045  | 2.4   | 2,097  |
| Muslim                                | 1.6   | 5.8  | 644    | 1.8   | 652    |
| Other                                 | 4.5   | 6.2  | 541    | 2.5   | 559    |
| None                                  | 0.8   | 7.9  | 222    | 3.6   | 223    |
| <b>Ethnicity</b>                      |   |  |        |   |        |
| Chewa                                 | 2.8   | 6.4  | 2,383  | 2.1   | 2,438  |
| Lomwe                                 | 3.3   | 6.0  | 1,385  | 2.8   | 1,412  |
| Ngoni                                 | 3.1   | 6.1  | 875    | 2.6   | 883    |
| Nkhonde                               | 1.7   | 1.8  | 67     | 0.5   | 69     |
| Sena                                  | 4.2   | 6.0  | 291    | 4.9   | 300    |
| Tonga                                 | 1.5   | 7.0  | 125    | 2.4   | 130    |
| Tumbuka                               | 3.7   | 6.3  | 764    | 3.2   | 784    |
| Yao                                   | 1.8   | 7.7  | 764    | 2.1   | 777    |
| Other                                 | 3.2   | 5.1  | 403    | 2.1   | 408    |

**Table 18.4.A Other sexually transmitted infections: Males (continued)**

| Characteristic | Self-reported symptoms in the past 12 months                      |  |        | Percentage who were diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse | Number |
|----------------|---|--|--------|---|--------|
|                | Percentage who had abnormal discharge from the penis <sup>1</sup> | Percentage who had an ulcer or sore on or near the penis | Number |   |        |
| <b>Age</b>     |   |  |        |   |        |
| 15-19          | 5.0   | 4.8  | 989    | 0.4   | 1,000  |
| 20-24          | 2.9   | 5.2  | 1,199  | 2.3   | 1,232  |
| 25-29          | 3.3   | 6.0  | 1,048  | 2.3   | 1,071  |
| 30-34          | 3.6   | 9.3  | 953    | 4.5   | 977    |
| 35-39          | 2.5   | 8.7  | 826    | 5.0   | 843    |
| 40-44          | 2.3   | 6.1  | 648    | 2.2   | 662    |
| 45-49          | 1.7   | 6.4  | 463    | 3.2   | 473    |
| 50-54          | 1.2   | 4.2  | 368    | 0.8   | 370    |
| 55-59          | 0.3   | 5.9  | 310    | 0.8   | 320    |
| 60-64          | 0.1   | 4.1  | 261    | 0.1   | 261    |
| Total 15-24    | 3.8   | 5.1  | 2,188  | 1.5   | 2,232  |
| Total 15-49    | 3.2   | 6.5  | 6,126  | 2.7   | 6,258  |
| Total 15-64    | 2.9   | 6.3  | 7,065  | 2.5   | 7,209  |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 10.4: Men with urethral discharge.

<sup>2</sup>Church of Central Africa Presbyterian.

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

**Table 18.4.B Other sexually transmitted infections: Females**

Among females ages 15-64 years, percentage who self-reported symptoms of an STI and percentage who reported clinical diagnosis of an STI in the 12 months preceding the survey; by HIV status and selected demographic characteristics, MPHIA 2015-16

| Characteristic                        | Self-reported symptoms in the past 12 months          |   |        | Percentage who were diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse |        |
|---------------------------------------|---|---|--------|---|--------|
|                                       | Percentage who had abnormal discharge from the vagina | Percentage who had an ulcer or sore on or near the vagina | Number |   | Number |
| <b>Result of PHIA survey HIV test</b> |   |   |        |   |        |
| HIV positive                          | 10.9  | 12.1  | 1,457  | 6.7   | 1,457  |
| HIV negative                          | 9.1   | 6.4   | 7,472  | 1.9   | 7,514  |
| Not tested                            | 6.1   | 4.2   | 1,202  | 2.4   | 1,211  |
| <b>Residence</b>                      |   |   |        |   |        |
| Urban                                 | 9.0   | 7.1   | 3,767  | 4.0   | 3,794  |
| Rural                                 | 8.9   | 6.8   | 6,364  | 2.2   | 6,388  |
| <b>Zone</b>                           |   |   |        |   |        |
| North                                 | 7.9   | 5.4   | 1,261  | 3.0   | 1,268  |
| Central-East                          | 9.4   | 6.9   | 1,299  | 2.1   | 1,307  |
| Central-West                          | 8.0   | 5.4   | 1,180  | 1.0   | 1,185  |
| Lilongwe City                         | 9.9   | 6.2   | 1,731  | 3.5   | 1,740  |
| South-East                            | 9.6   | 8.7   | 1,334  | 2.4   | 1,334  |
| South-West                            | 9.2   | 7.4   | 1,719  | 3.8   | 1,723  |
| Blantyre City                         | 8.9   | 7.4   | 1,607  | 3.1   | 1,625  |
| <b>Marital status</b>                 |   |   |        |   |        |
| Never married                         | 8.9   | 6.6   | 1,325  | 2.0   | 1,352  |
| Married or living together            | 9.0   | 6.9   | 7,010  | 2.7   | 7,030  |
| Divorced or separated                 | 10.6  | 7.9   | 1,237  | 3.0   | 1,242  |
| Widowed                               | 3.7   | 4.1   | 548    | 0.9   | 547    |
| <b>Education</b>                      |   |   |        |   |        |
| No education                          | 6.9   | 5.7   | 1,150  | 1.8   | 1,153  |
| Primary                               | 9.5   | 6.8   | 6,079  | 2.7   | 6,104  |
| Secondary                             | 8.9   | 7.8   | 2,495  | 2.6   | 2,517  |
| More than secondary                   | 7.1   | 6.8   | 400    | 2.4   | 401    |
| <b>Wealth quintile</b>                |   |   |        |   |        |
| Lowest                                | 8.9   | 5.9   | 1,295  | 2.4   | 1,299  |
| Second                                | 9.9   | 7.7   | 1,476  | 2.4   | 1,483  |
| Middle                                | 8.5   | 6.8   | 1,647  | 2.3   | 1,650  |
| Fourth                                | 9.1   | 6.9   | 2,011  | 2.5   | 2,023  |
| Highest                               | 8.4   | 6.8   | 3,702  | 3.0   | 3,727  |
| <b>Religion</b>                       |   |   |        |   |        |
| Catholic                              | 9.5   | 7.0   | 1,879  | 2.6   | 1,888  |
| CCAP <sup>1</sup>                     | 7.5   | 5.5   | 1,878  | 1.8   | 1,886  |
| Anglican                              | 8.6   | 7.4   | 235    | 1.2   | 238    |
| Seventh Day Adventist                 | 8.7   | 6.1   | 736    | 3.2   | 742    |
| Baptist                               | 9.7   | 9.4   | 247    | 2.8   | 248    |
| Other Christian                       | 9.4   | 6.9   | 3,379  | 2.5   | 3,396  |
| Muslim                                | 8.9   | 8.3   | 994    | 2.9   | 997    |
| Other                                 | 9.2   | 6.5   | 717    | 3.0   | 720    |
| None                                  | 1.8   | 6.3   | 58     | 3.2   | 59     |
| <b>Ethnicity</b>                      |   |   |        |   |        |
| Chewa                                 | 9.8   | 6.4   | 3,209  | 2.0   | 3,221  |
| Lomwe                                 | 9.2   | 8.0   | 2,114  | 2.9   | 2,125  |
| Ngoni                                 | 7.3   | 7.1   | 1,288  | 2.4   | 1,295  |
| Nkhonde                               | 3.2   | 2.1   | 101    | 1.9   | 102    |
| Sena                                  | 9.4   | 6.7   | 412    | 3.6   | 414    |
| Tonga                                 | 8.3   | 6.4   | 205    | 1.0   | 206    |
| Tumbuka                               | 8.2   | 5.3   | 1,063  | 3.1   | 1,071  |
| Yao                                   | 7.8   | 7.6   | 1,153  | 2.9   | 1,156  |
| Other                                 | 10.7  | 7.1   | 566    | 2.6   | 572    |

**Table 18.4.B Other sexually transmitted infections: Females (continued)**

| Characteristic | Self-reported symptoms in the past 12 months          |   |        | Percentage who were diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse | Number |
|----------------|---|---|--------|---|--------|
|                | Percentage who had abnormal discharge from the vagina | Percentage who had an ulcer or sore on or near the vagina | Number |   |        |
| <b>Age</b>     |   |   |        |   |        |
| 15-19          | 8.0   | 4.3   | 1,084  | 0.7   | 1,096  |
| 20-24          | 9.5   | 7.4   | 2,082  | 3.0   | 2,096  |
| 25-29          | 9.7   | 8.7   | 1,694  | 2.5   | 1,703  |
| 30-34          | 11.9  | 7.5   | 1,558  | 4.1   | 1,564  |
| 35-39          | 10.4  | 8.4   | 1,182  | 4.1   | 1,187  |
| 40-44          | 7.4   | 7.1   | 835    | 1.8   | 837    |
| 45-49          | 8.5   | 8.6   | 597    | 3.1   | 599    |
| 50-54          | 4.4   | 3.8   | 506    | 1.4   | 505    |
| 55-59          | 4.0   | 2.6   | 342    | 0.9   | 343    |
| 60-64          | 4.9   | 2.5   | 251    | 0.0   | 252    |
| Total 15-24    | 8.9   | 6.1   | 3,166  | 2.0   | 3,192  |
| Total 15-49    | 9.5   | 7.3   | 9,032  | 2.8   | 9,082  |
| Total 15-64    | 8.9   | 6.8   | 10,131 | 2.5   | 10,182 |

<sup>1</sup>Church of Central Africa Presbyterian.

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

### 18.5 Cervical Cancer Screening Among HIV-Positive Women

Among HIV-positive women ages 30-49 years, 18.7% reported that they had been screened for cervical cancer. Twice the percentage of women in urban areas (33.3%) than in rural areas (13.6%) reported having ever been screened for cervical cancer. The highest proportions of women who reported having ever been screened for cervical cancer were found in the North zone (34.9%), Lilongwe City (33.0%), and Blantyre City (30.6%), whereas the lowest proportions were found in South-East (10.7%), Central-West (12.2%), and Central-East (14.4%) zones. Screening for cervical cancer also differed by women's education and wealth quintile. Among women with more than secondary education, 48.0% had ever been screened for cervical cancer, compared to 12.7% of women with no education. Among women in the highest wealth quintile, 34.3% had ever been screened compared to only 2.4% of women in the lowest wealth quintile (Table 18.5.A).

**Table 18.5.A Cervical cancer screening among women living with HIV<sup>1</sup>**

Among HIV-positive women ages 30-49 years, percentage who reported being screened for cervical cancer, by selected demographic characteristics, MPHIA 2015-2016

| Characteristic             | Percentage who reported ever having had a screening test for cervical cancer <sup>1</sup> | Number |
|----------------------------|---|--------|
| <b>Residence</b>           |   |        |
| Urban                      | 33.3  | 446    |
| Rural                      | 13.6  | 489    |
| <b>Zone</b>                |   |        |
| North                      | 34.9  | 76     |
| Central-East               | 14.4  | 59     |
| Central-West               | 12.2  | 50     |
| Lilongwe City              | 33.0  | 171    |
| South-East                 | 10.7  | 133    |
| South-West                 | 15.3  | 219    |
| Blantyre City              | 30.6  | 227    |
| <b>Marital status</b>      |   |        |
| Never married              | (37.1)  | 40     |
| Married or living together | 17.6  | 560    |
| Divorced or separated      | 17.9  | 190    |
| Widowed                    | 20.3  | 144    |
| <b>Education</b>           |   |        |
| No education               | 12.7  | 127    |
| Primary                    | 16.0  | 551    |
| Secondary                  | 29.4  | 222    |
| More than secondary        | (48.0)  | 35     |
| <b>Wealth quintile</b>     |   |        |
| Lowest                     | 2.4   | 102    |
| Second                     | 13.0  | 114    |
| Middle                     | 14.2  | 126    |
| Fourth                     | 17.6  | 169    |
| Highest                    | 34.3  | 424    |
| <b>Religion</b>            |   |        |
| Catholic                   | 17.2  | 147    |
| CCAP <sup>2</sup>          | 31.9  | 160    |
| Anglican                   | *   | 20     |
| Seventh Day Adventist      | 27.3  | 85     |
| Baptist                    | (18.0)  | 31     |
| Other Christian            | 18.0  | 323    |
| Muslim                     | 7.9   | 89     |
| Other                      | 15.6  | 75     |
| None                       | *   | 4      |
| <b>Ethnicity</b>           |   |        |
| Chewa                      | 12.5  | 182    |
| Lomwe                      | 18.7  | 283    |
| Ngoni                      | 27.7  | 140    |
| Nkhonde                    | *   | 9      |
| Sena                       | (17.0)  | 44     |
| Tonga                      | *   | 16     |
| Tumbuka                    | 31.8  | 76     |
| Yao                        | 9.3   | 114    |
| Other                      | 19.4  | 70     |
| <b>Age</b>                 |   |        |
| 30-34                      | 9.1   | 292    |
| 35-39                      | 22.0  | 294    |
| 40-44                      | 20.8  | 215    |
| 45-49                      | 26.4  | 134    |
| Total 30-49                | 18.7  | 935    |

<sup>1</sup>Relates to Global AIDS Monitoring indicator 10.10: Cervical cancer screening among women living with HIV.<sup>2</sup>Church of Central Africa Presbyterian.

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

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

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



## 18.6 Gaps and Unmet Needs

- Among HIV-positive adults ages 15-64 years, 72% were not screened for TB symptoms during their last HIV clinic visit.
- Among adults ages 15-64 years who ever visited a TB clinic, 42.9% were not tested for HIV, although they did not know their HIV status.
- Among HIV-positive women ages 30-49 years, 81.3% reported that they had never been screened for cervical cancer (86.4% and 66.7% in rural and urban areas, respectively).

## 18.7 References

1. AIDSinfo. (2018, April). Retrieved from <http://aidsinfo.unaids.org/>

## DISCUSSION AND CONCLUSIONS

- HIV continues to cause a significant burden of disease in the country with an estimated 10.6% of adults ages 15-64 years (900,000 people) living with HIV. However, there is remarkable progress toward the achievement of the UNAIDS 90-90-90 targets in adults (based on self-reported and/or detectable ARV data), with 77% of those ages 15-64 years living with HIV diagnosed, 91% of those diagnosed receiving ART, and 91% of those on ART with VLS. Diagnosis is a persistent challenge, and a critical priority is to diagnose and link to care PLHIV who are unaware of their HIV status. The achievement of these targets is essential, not only to prevent HIV-related illness and AIDS-related deaths, but also to prevent transmission and the occurrence of new HIV infections.
- MPHIA estimated that approximately 28,000 new HIV infections occur annually among adults ages 15-64 years (HIV incidence: 0.37% [95% CI: 0.20%-0.54%]). Increasing coverage of diagnosis, while sustaining high levels of treatment and VLS, are key to reduce HIV incidence. By quantifying national population-level HIV incidence and VLS for the first time in Malawi, MPHIA has contributed to the understanding of the epidemic. The MPHIA estimates of national HIV incidence were in-line with previous UNAIDS modeled estimates. The MPHIA results on VLS also validated promising facility-based data on high rates of VLS at a population level.
- 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. The southern region, densely populated and with high HIV prevalence, requires intensified programmatic efforts, particularly Blantyre City, where close to one-fifth of the adult population is living with HIV (HIV prevalence: 17.7%), while only 59.5% of PLHIV have VLS.
- There are disparities by sex in HIV prevalence, as well as coverage of care. The prevalence of HIV infection in the adult population ages 15-64 years is higher for females (12.5%) compared to males (8.5%). The coverage of key care interventions such as testing, diagnosis, and ART is lower for males than for females. As a consequence, the prevalence of VLS among male PLHIV ages 15-64 years (60.9%) is notably lower compared to female PLHIV of the same age group (73.1%).
- The high HIV prevalence among all five-year age groups over 40 years (12.4%-21.7%) suggests that it is important to assess and prepare to address a potential double burden of HIV and non-communicable diseases in an aging patient population. The country has initiated a response with the inclusion of guidance for the screening and treatment of hypertension in the most recent HIV services guidelines (Malawi MOH, 2016). In the near future, a comprehensive approach for the prevention and early detection of other cardiovascular, metabolic, renal, and neurological conditions is necessary.
- Among adults ages 15-64 years previously diagnosed with HIV but not on ART, the median CD4 count was 326 cells/ $\mu$ l and 78.7% were immunosuppressed (defined as having a CD4 count less than 500 cells/ $\mu$ l). This finding highlights the need to prioritize initiation of treatment among diagnosed PLHIV. Among those adults living with HIV but not previously diagnosed, 68.3% were immunosuppressed, and 17.2% were severely immunosuppressed (defined as having a CD4 count of less than 200 cells/ $\mu$ l). These findings provide further support to the appropriateness of the "Test and Treat" policy introduced in Malawi in 2016.

- While overall progress toward the 90-90-90 goals is strong at 77-91-91 among HIV-positive adults ages 15-64 years, additional programmatic support is needed for key groups, including men and young people. While 81.6% of adult females ages 15-64 years have ever tested for HIV and received their results, only 65.6% of adult males ages 15-64 years have ever tested for HIV. Among adult females ages 15-64 years who are living with HIV, 80.2% had been diagnosed compared to only 71.7% of their male counterparts. Improving coverage of diagnosis and linkage to care is particularly important among people ages 15-34 years. Only 53.7% of PLHIV ages 15-24 years, and 71.6% of those ages 25-34 years, currently know that they are HIV-positive. Awareness is particularly low among males compared to females.
- There are missed opportunities for HIV testing. Among adults ages 15-64 years who ever visited a TB clinic, 42.9% were not tested for HIV although they did not know their HIV status. New testing opportunities are also emerging as 76.5% of males and 68.5% of females ages 15-64 years have reported they would use an HIV self-test kit if it were available in Malawi.
- With a considerable burden of HIV among children ages 0-14 years (HIV prevalence of 1.5%) and slow progress toward the achievement of the UNAIDS 90-90-90 targets in this population (69.3% of children ages 0-14 years living with HIV diagnosed, 86.1% of those diagnosed receiving ART, and 57.9% of those on ART with VLS), Malawi would benefit from reevaluating its programmatic approach to this group. In addition to a major deficit in coverage of diagnosis, the estimates indicate limited VLS among those receiving treatment. This suggests a need to improve diagnosis, linkage to treatment, ART adherence, treatment monitoring, and the availability and use of optimal ART regimens for the pediatric population.
- Although Malawi has achieved high coverage of the key intervention to reduce vertical transmission of HIV (97.9% of HIV-positive women ages 15-49 years who gave birth during the 12 months preceding the survey reported that they received ARVs during pregnancy or labor and delivery), there is an important gap in early diagnosis of HIV infection in infants, which is essential to ensure their survival. The current programmatic target for virological testing of HIV in infants in Malawi is to test at least 85% of children born to HIV-positive women within two months of birth, and again at 12 and 24 months of age. However, MPHIA indicates that only half (49.4%) of children born to HIV-positive mothers had HIV testing performed within two months of birth, and an additional 29.3% had it performed between two and 12 months of age. Hence increasing coverage of virological testing for HIV continues to be a national priority. Several system-level interventions could be useful in facilitating access to testing including adopting POC technologies and identifying additional points of entry to testing, such as immunization clinics. Furthermore, strengthening existing laboratory systems by expediting specimen transport, maximizing lab capacity/efficiency, and improving systems for timely return results back to clinics could also be useful in addressing this gap.
- The high coverage of key interventions to reduce vertical transmission of HIV is reflected in the low prevalence of HIV infection among infants born to HIV-positive women ages 15-49 years; among these infants, 1.2% of those ages 0-11 months and 3.0% of those ages 0-17 months were identified as HIV positive based on virological testing.
- Although coverage of ART is high among adults who have been diagnosed with HIV, there are deficits in other areas of HIV care. Among HIV-positive adults ages 15-64 years, 72% reported that they were not screened for TB symptoms during their last HIV clinic visit, and 81.3% of HIV-positive women ages 30-49 years reported that they had never been screened for cervical cancer (86.4% in rural areas and 66.7% in the urban ones).
- In addition to the prevalence of HIV infection among individuals in a population, an important dimension to understand 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. The MPHIA estimated that 25% of the urban and 16.3% of the rural households in Malawi had at least one HIV-positive member and that 16.4% of the households had an HIV-positive head.

- Condom use was low among sexually active women who reported having sex with a non-marital, non-cohabiting partner in the 12 months preceding the survey, with only 45% having reported using a condom the last time they had intercourse with such a partner. Low condom use in this context was particularly pronounced among women with no education, and also in the high HIV-prevalence zones, South-East and South-West. Although the percentage using a condom with a non-marital, non-cohabiting partner was highest among women ages 15-19 years (60.4%) and ages 20-24 years (46.1%), it is important to increase uptake of condom use, in addition to other prevention interventions targeting adolescent and young women.
- Although overall condom use is low, estimates of condom use at last sexual intercourse in the 12 months preceding the survey among PLHIV suggest that the strategy of prevention with positives is generating changes in behavior. Among both males and females ages 15-64 years, condom use at last sexual intercourse was reported more frequently among people who were aware of their HIV positive status and on ART than among those who were HIV negative (34.4% versus 18.9%, respectively, among males; and 26% versus 11.1% respectively, among females).
- Among HIV positive females ages 15-64 years who were aware of their status, 31.9% reported not having sexual intercourse in the 12 months preceding the survey compared to 16.5% of those who were HIV negative.
- More than one in eight persons (13.7%) ages 15-24 years reported having sexual intercourse before the age of 15 years. Sexual debut before the age of 15 years was especially high among those with no education. Reproductive health and HIV prevention programs could focus on delaying the age of sexual debut, with a special effort to adapt strategies for those in the population with low education levels.
- Malawi should further emphasize HIV education: 53% of adolescents and young adults ages 15-24 years lack correct knowledge about HIV transmission and prevention, with 19% of males and 28% of females not knowing that the risk of sexual acquisition of HIV can be reduced by consistent condom use, and 20% believing that a person can acquire HIV from a mosquito bite.
- The implementation of VMMC has continued to scale up, with higher coverage (9.4%-12.9%) observed among the five year age bands within the target age group of 15-30 years in comparison with older age groups. However, significant further expansion of the program is necessary to reach the national target of 60% coverage of VMMC, especially in areas with high HIV prevalence.

## References

Ministry of Health Malawi (2016). *2016 Clinical management of HIV in children and adults. Malawi integrated guidelines and standard operating procedures for providing HIV services*. Retrieved from Ministry of Health: [https://aidsfree.usaid.gov/sites/default/files/malawi\\_art\\_2016.pdf](https://aidsfree.usaid.gov/sites/default/files/malawi_art_2016.pdf)

# APPENDICES

# APPENDIX A SAMPLE DESIGN AND WEIGHTING

Appendix A provides a high-level overview of sampling and weighting procedures for MPHIA 2015-2016. In-depth details are provided in the MPHIA Technical Report, which may be found on the PHIA Project website.

## A.1 Sample Design

### *Overview*

The sample design for MPHIA is a stratified multistage probability sample design, with strata defined by the seven zones 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 zone, 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 2008 Malawi Census of Population and Housing. The allocation of the sample PSUs to the seven zones was made in a manner designed to achieve specified precision levels for (1) a national estimate of the HIV incidence rate and (2) zonal estimates of VLS.

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

Within the sampled households, all eligible adolescents and adults ages 15-64 years were included in the study sample for data collection. All eligible children ages 0-14 years, in half of the sampled households, were included in the study for data collection.

### *Population of Inference*

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

### *Precision Specifications and Assumptions*

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

- The number of first-stage sampling units (EAs) to be selected was 500, with an average of 30 occupied dwelling units per EA.
- The total sample of 15,000 occupied dwelling units were allocated to the seven strata (health zones) as follows: First, the sample size for each of the three low-prevalence zones of the country was determined so that the expected 95% confidence bounds around the estimated VLS rate among HIV-positive persons ages 15-49 years is approximately  $\pm 8\%$ . The balance of the sample was then allocated to the remaining four zones so that that 95% confidence bounds around the estimated VLS rate among HIV-positive persons ages 15-49 years in each zone is approximately  $\pm 5\%$ .

- The total sample size must also be sufficient to produce a national annual HIV incidence rate with a relative standard error (RSE) of 30% or less for persons aged 15-49. Based on the sample allocation given in (c) above, the RSE of the estimated incidence rate was expected to be approximately 27%.

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

- An overall HIV prevalence rate of 0.106 (10.6%) that varies by zone.<sup>1</sup>
- An annual HIV incidence rate for adults aged 15-49 of  $P_a = 0.0077$  (0.77%).<sup>2</sup>
- A mean duration of recent infections (MDRI) of 130 days, yielding an annualization rate of  $365/130 = 2.8077$ . Hence, the estimated incidence rate for MDRI = 130 days is  $P_m = 0.0077/2.8077 = 0.0027$  (0.27%).
- A VLS rate among HIV-positive adults aged 15-49 in each zone  $h$  of  $P_{vh} = 50\%$ . This conservative assumption overstates the actual variance of the VLS rate.
- An intra-cluster correlation (ICC) of  $\rho = 0.05$  for both prevalence and incidence. The ICC provides an average measure of the homogeneity of responses within the first-stage sampling units. This assumption is conservative.
- An occupancy rate of 92.7% 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. A sample of 16,181 dwelling units will yield a sample of about 15,000 occupied dwelling units (households).<sup>3</sup>
- The average number of persons ages 15-49 years in a household is 1.89.<sup>4</sup>
- The percentage of persons in households who are ages 0-14 years is 49.0%.<sup>5</sup>
- The percentage of persons in households who are ages 50-64 years is 6.2%.<sup>6</sup>
- Among the individuals ages 15-64 years, an overall biomarker RR of 70%, reflecting sample loss due to any of the following reasons: nonparticipation (refusal) of some sample households, nonresponse to the individual interview, refusal to provide a blood sample, or providing a non-analyzable blood sample.
- Among the children in the eligible responding households, an overall biomarker RR of 65% for persons ages 0-14 years. This value is the comparable RR for adults minus 5%.

### *Selection of the Primary Sampling Units*

The PSUs for MPHIA are defined to be the EAs created for the 2008 Malawi Census of Population and Housing. The sampling frame consisted of approximately 12,666 EAs containing an estimated 2,869,933 households and 13,029,498 persons.

A stratified sample of 12,666 EAs was selected from the sampling frame. The seven strata specified for sampling were the seven zones of Malawi. 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 2008 Malawi Census of Population and Housing. Prior to selection, EAs were sorted by strata. Next, within each stratum, the EAs were sorted by the unique 8-digit EA identification code. Such sorting arranges the EAs within a stratum by district (with rural districts followed by urban districts), and then by EA within district. The sorting of the EAs prior to sample selection induces an implicit geographic stratification. To select the sample from a particular stratum, the cumulative MOS was determined for each EA in the ordered list of EAs, and the sample selections were designated using a sampling interval equal to the total MOS of the EAs in the stratum divided by the number of EAs to be selected and a random starting point. The resulting sample has the property that the probability of selecting an EA within a particular stratum is proportional to the MOS of the EA in the stratum.

Details regarding EA substitution and segmentation may be found in MPHIA 2015-2016 Sampling and Weighting Technical Report.

### *Selection of Households*

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

The selection of households for MPHIA involved the following steps: (1) listing the dwelling units/households within the sampled EAs; (2) assigning eligibility codes to the listed dwelling unit/household records; (3) selecting the samples of dwelling units/households; and (4) designating a subsample of households for data collection for children.

A description of the household listing process as well as a summary of household eligibility may be found in MPHIA 2015-2016 Sampling and Weighting Technical Report.

Selection of households utilized an equal probability design. In order to achieve equal probability samples of households within each of the seven zones of Malawi, the sampling rates required to select dwelling units/households within an EA depended on the difference between the MOS used in sampling and the actual number of dwelling units/households found at the time of listing. Thus, application of these within-EA sampling rates could yield more or less than the desired 30 households in EAs where the sampling MOS differed from the actual listing count. The MPHIA 2015-2016 Sampling and Weighting Technical Report provides an in-depth description of the equal probability sample design, as well as a detailed summary of the results of the household selection.



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

| Stratum (Zone) | No. sample PSUs (clusters) | Number of sampled dwelling units/households | Number of dwelling units/households flagged for child data collection | Minimum PSU sample size | Maximum PSU sample size | UEW DEFF for PHIA sample after capping |
|----------------|----------------------------|---|---|-------------------------|-------------------------|--|
| Northern       | 62                         | 2,008                                       | 1,006   | 15                      | 60                      | 1.07                                   |
| Central East   | 78                         | 2,540                                       | 1,265   | 15                      | 60                      | 1.01                                   |
| Central West   | 58                         | 1,855                                       | 930   | 15                      | 60                      | 1.00                                   |
| Lilongwe City  | 72                         | 2,327                                       | 1,165   | 15                      | 60                      | 1.03                                   |
| South East     | 84                         | 2,736                                       | 1,373   | 15                      | 60                      | 1.01                                   |
| South West     | 78                         | 2,531                                       | 1,263   | 15                      | 60                      | 1.00                                   |
| Blantyre City  | 68                         | 2,188                                       | 1,094   | 15                      | 60                      | 1.02                                   |
| Total          | 500                        | 16,185                                      | 8,096   | 15                      | 60                      | 1.25*                                  |

\*Reflects variation in weights within and across strata.

PSU: primary sampling unit

UEW: unequal weighting

DEFF: design effect

### *Reduction of the Household Sample*

After the sample had been selected as described above, it was necessary to reduce the sample size in selected EAs to ensure that data collection could be completed as scheduled. The sample reductions were implemented in those EAs where data collection had not yet started as of late May 2016. These included all of the EAs in the Northern zone, and a subset of EAs in the Central East and South East zones. To achieve the required reductions, 80 percent of original samples were retained in the EAs in the Northern zone, while 55 percent were retained in the not-yet-started EAs of the Central East zone, and 40 percent were retained in the not-yet-started EAs of the South East zone. The subsamples were selected systematically and with equal probability from ordered lists of the originally-sampled dwelling units/households, where the ordering was by stratum, EA, and the child sample flag within EA. Table A.2 summarizes the number of EAs subject to subsampling, the number of originally-selected dwelling units/households in these EAs, and the number retained for data collection. Table A.3 summarizes the number of dwelling units/households in the final reduced sample, the number designated for child data collection, and the minimum and maximum EA sample size by stratum. The last column of the table shows the unequal weighting (UEW) design effects to be expected for the reduced sample. The relatively large design effects for the Central East and South East zones primarily reflect the variation in weights resulting from the subsampling of dwelling units/households in the not-yet-started EAs. The design effect for the Northern zone was not changed by the sample reduction since all EAs in the zone were equally affected.

Table A.2 Original and reduced sample sizes in the primary sampling units where data collection had not yet started

| Stratum (Zone) | Total number of PSUs (clusters) in sample | Number of EAs subject to subsampling | Number of dwelling units/house-holds in original sample | Proportion of dwelling units/house-holds to be retained | Reduced sample size |
|----------------|---|--------------------------------------|---|---|---------------------|
| Northern       | 62  | 62                                   | 2,008   | 0.80  | 1,602               |
| Central East   | 78  | 48                                   | 1,562   | 0.55  | 861                 |
| South East     | 84  | 41                                   | 1,351   | 0.40  | 541                 |
| TOTAL          | 224                                       | 151                                  | 4,921   | -   | 3,004               |

EA: enumeration area

Table A.3 Number of sampled dwelling units/households in final reduced sample, and expected unequal weighting design effects by stratum

| Stratum (Zone) | No. sample PSUs | Number of sampled dwelling units/house-holds | Number of dwelling units/house-holds flagged for child data collection | Minimum PSU sample size | Maximum PSU sample size | UEW DEFF for the reduced sample |
|----------------|-----------------|--|--|-------------------------|-------------------------|---------------------------------|
| Northern       | 62              | 1,602  | 803  | 13                      | 48                      | 1.07                            |
| Central East   | 78              | 1,839  | 916  | 8                       | 60                      | 1.11                            |
| Central West   | 58              | 1,855  | 930  | 15                      | 60                      | 1.00                            |
| Lilongwe City  | 72              | 2,327  | 1,165  | 15                      | 60                      | 1.03                            |
| South East     | 84              | 1,926  | 964  | 6                       | 60                      | 1.23                            |
| South West     | 78              | 2,531  | 1,263  | 15                      | 60                      | 1.00                            |
| Blantyre City  | 68              | 2,188  | 1,094  | 15                      | 60                      | 1.02                            |
| Total          | 500             | 14,268                                       | 7,135  | 6                       | 60                      | 1.35*                           |

\*Reflects variation in weights within and across strata.

PSU: primary sampling unit

UEW: unequal weighting

DEFF: design effect

### *Selection of Individuals*

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

The MPHIA 2015-2016 Sampling and Weighting Technical Report provides a brief description of the process for listing and selecting individuals for participation in MPHIA, 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 that is defined as the reciprocal of the probability of including a household or person in the sample. The base weights are used to inflate the responses of the sampled units to population levels and are generally unbiased (or consistent) if there is no nonresponse or 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 MPHIA, nonresponse could occur at different stages of data collection, for example, (1) before the enumeration of individuals in the household, (2) after household enumeration and selection of persons, but before completion of the individual interview, and (3) after completion of the interview, but before collection of a viable blood sample.

Non-coverage arises when some members of the survey population have no chance for selection 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 MPHIA includes several steps. Methods and results for each of the steps below are detailed in MPHIA 2015-2016 Sampling and Weighting Technical Report.

- **Initial checks:** Checks of the data files are carried out as part of the survey and data QC, and the probabilities of selection for PSUs and households are calculated and checked.
- **Creation of jackknife replicates:** The variables needed to create the jackknife replicates for variance estimation are established at this point. This step can be implemented immediately after the PSU sample has been selected. All of the subsequent weighting steps described below are applied to the full sample, and to each of the jackknife replicates.
- **Calculation of PSU base weights:** The weighting process begins with the calculation and checking of the sample PSU (EA) base weights as the reciprocals of the overall PSU probabilities of selection.
- **Calculation of household weights:** The next step is to calculate household weights. The household base weights are calculated as the PSU weights times the reciprocal of the within-PSU household selection probabilities. The household base weights are adjusted first to account for dwelling units for which it could not be determined whether the dwelling unit contained an eligible household and then the responding households have their weights adjusted to account for nonresponding eligible households. This adjustment is made based on the EA the households are in, and the resulting weight is the final household weight.

- **Calculation of person-level interview weights:** Once the household weights are determined, they are used to calculate the individual base weights. The individual base weights are then adjusted for nonresponse among the eligible individuals, with a final adjustment for the individual weights to compensate for under-coverage in the sampling process by post-stratifying (i.e., weighting up) to 2016 population projections.
- **Calculation of person-level HIV testing weights:** The individual weights adjusted for nonresponse are in turn the initial weights for the HIV testing data sample, with a further adjustment for nonresponse to HIV testing, and a final post-stratification adjustment to compensate for under-coverage.
- **Application of weighting adjustments to jackknife replicates:** All of the adjustment processes are applied to the full sample and the replicate samples so that the final set of full sample and replicate weights can be used for variance estimation that takes into account the complex sample design and every step of the weighting process.

### A.3 References

1. National Statistical Office (2010). *Malawi Demographic and Household Survey (DHS)*. Retrieved from <http://www.mw.one.un.org/wp-content/uploads/2014/04/Malawi-Demographic-and-Health-Survey-2010-Final-Report.pdf>
2. AIDSinfo. (2018, April). Retrieved from <http://aidsinfo.unaids.org/>
3. National Statistical Office (2010). *Malawi Demographic and Household Survey (DHS)*. Retrieved from <http://www.mw.one.un.org/wp-content/uploads/2014/04/Malawi-Demographic-and-Health-Survey-2010-Final-Report.pdf>
4. National Statistical Office (2010). *Malawi Demographic and Household Survey (DHS)*. Retrieved from <http://www.mw.one.un.org/wp-content/uploads/2014/04/Malawi-Demographic-and-Health-Survey-2010-Final-Report.pdf>
5. National Statistical Office (2010). *Malawi Demographic and Household Survey (DHS)*. Retrieved from <http://www.mw.one.un.org/wp-content/uploads/2014/04/Malawi-Demographic-and-Health-Survey-2010-Final-Report.pdf>
6. National Statistical Office (2010). *Malawi Demographic and Household Survey (DHS)*. Retrieved from <http://www.mw.one.un.org/wp-content/uploads/2014/04/Malawi-Demographic-and-Health-Survey-2010-Final-Report.pdf>

# APPENDIX B HIV TESTING METHODOLOGY

## **B.1 Specimen Collection and Handling**

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

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

### *CD4 Testing*

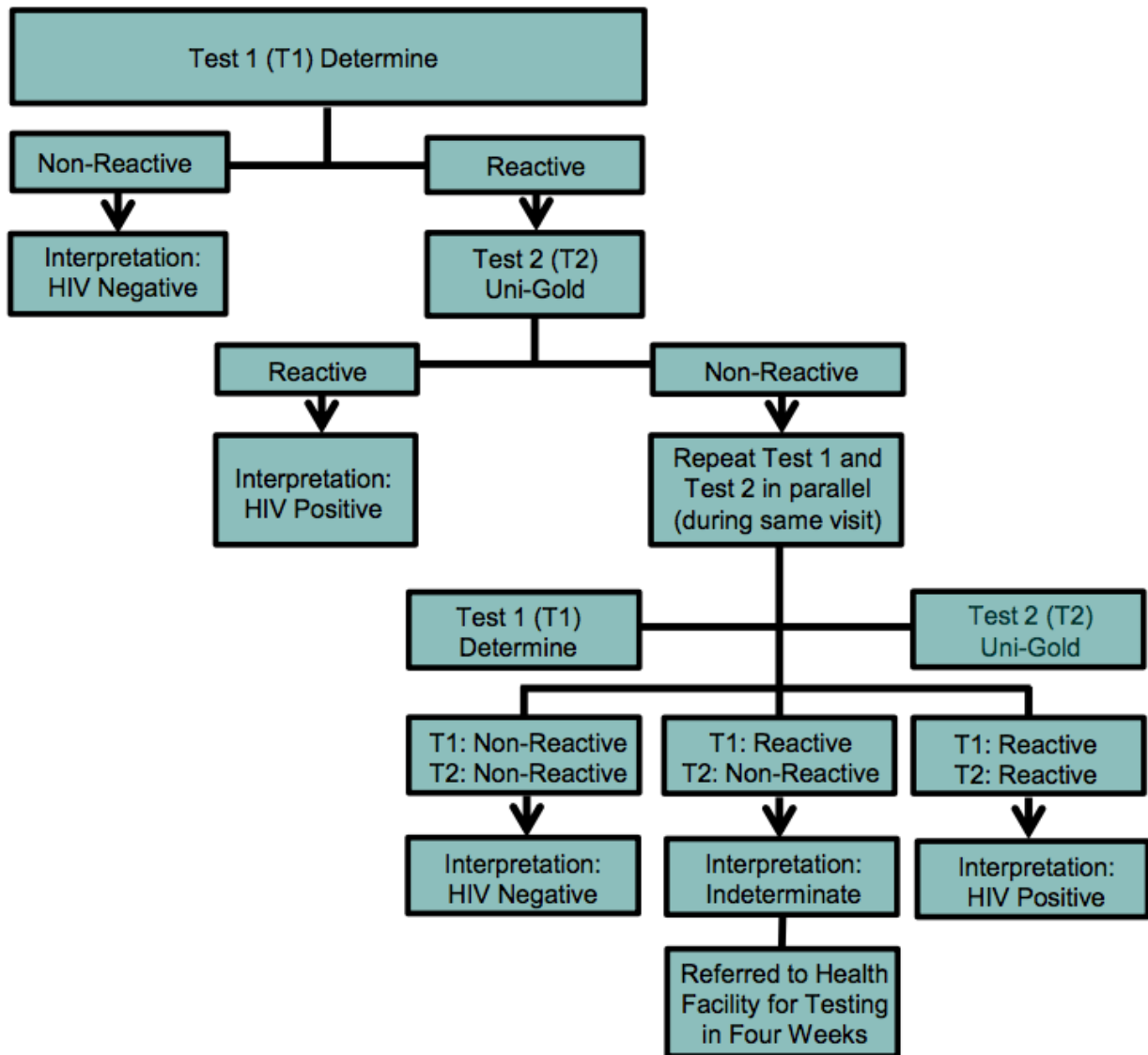
All participants who tested HIV positive and a random sample of 5% of participants who tested HIV negative received a CD4 count measurement in the field by qualified survey staff. The measurement was performed using a Pima™ Analyzer and Pima™ CD4 Cartridge (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere).

### *Counseling, Referral to Care, and Active Linkage to Care*

Pre- and post-test counseling were conducted in each household in accordance with Malawi's national guidelines. For participants ages 18 years and older, results were communicated directly to the participant. For participants ages 15-17 years, results were communicated to the participant and the parent/guardian together, while for participants less than the age of 15 years, results were communicated directly to the parent or guardian. All participants who consented to HIV testing were asked to share contact information and to select a referral health facility prior to testing. Participants with an HIV-positive test result were referred to HIV care and treatment at the health facility of their choice, while participants with an HIV-indeterminate test result were advised to seek repeated testing at the health facility of their choice in four to six weeks. Further, HIV-positive participants were asked to consent for contact by qualified healthcare personnel, in order to facilitate active linkage to HIV care and treatment in Malawi's healthcare system.

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

**Figure B.2.A Household-based HIV testing algorithm, MPHIA 2015-2016**



*Quality Assurance and Control*

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

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

### **B.3 Laboratory-Based Procedures**

Nine survey satellite laboratories were established in existing health facility laboratories across the country. One central laboratory was established at COM-JHP in Blantyre, Malawi.

#### *Geenius Testing*

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

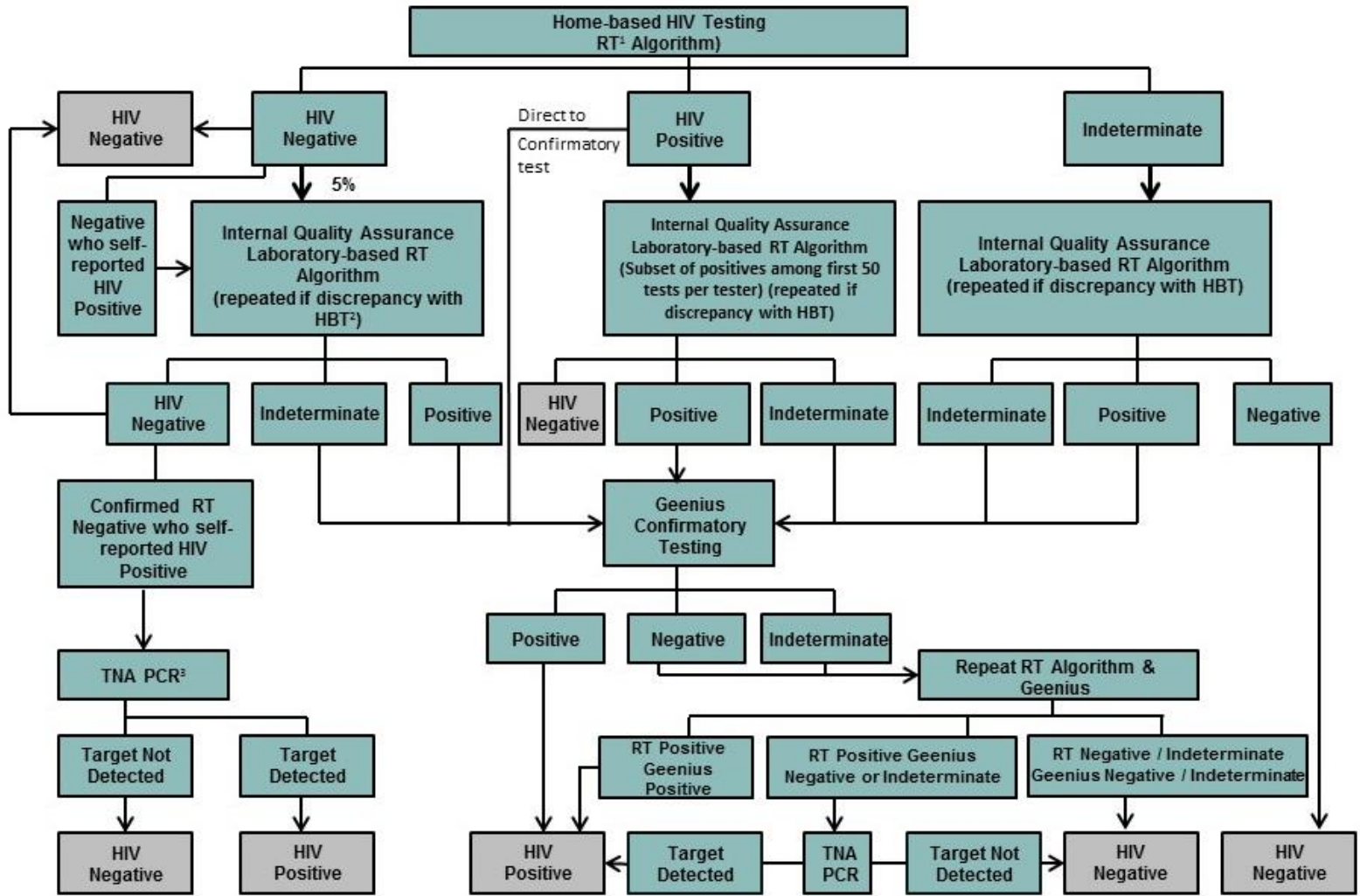
#### *HIV TNA Polymerase Chain Reaction*

For children less than age of 18 months who had a reactive HIV test result during household-based testing, HIV TNA PCR was conducted (Figure B.3.A). Additionally, HIV TNA PCR was evaluated for participants who self-reported an HIV-positive status, but tested HIV negative during the survey, as well as for samples that were HIV positive by the rapid testing algorithm, but were HIV negative or indeterminate by Geenius testing (Figure B.3.B). During MPHIA, HIV TNA PCR was conducted using the Abbott Real Time HIV-1 Qualitative Assay (Abbott Molecular, Wiesbaden, Germany) on the Abbott m2000 system at COM- JHP in accordance with the manufacturer’s protocol.

#### *Classification of Final HIV Status*

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

Figure B.3.A Final HIV status classification algorithm (≥18 months), MPHIA 2015-2016

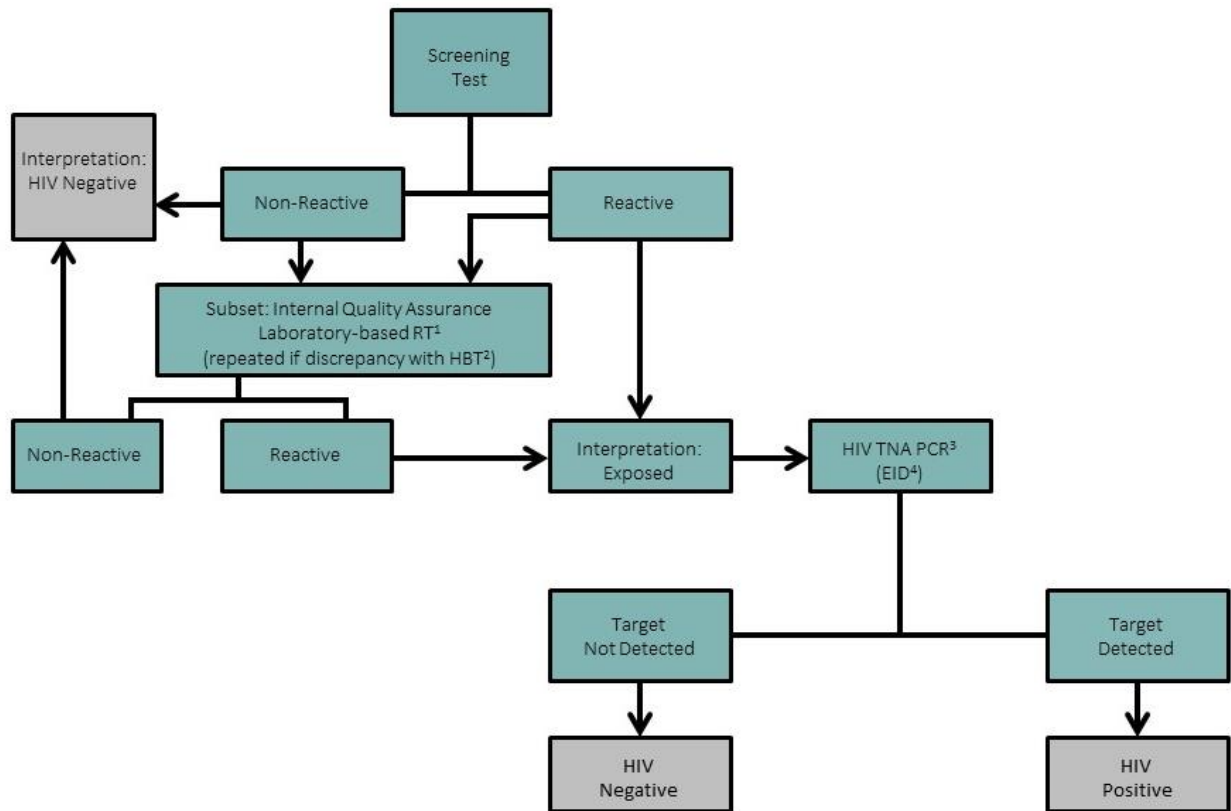


<sup>1</sup>RT: rapid test; <sup>2</sup>HBT: home-based testing; <sup>3</sup>TNA PCR: total nucleic acid polymerase chain reaction

Note: Grey boxes indicate a final HIV-status determination



**Figure B.3.B Final HIV status classification algorithm (<18 months), MPHIA 2015-2016**



<sup>1</sup>RT: rapid testing; <sup>2</sup>HBT: home-based testing; <sup>3</sup>TNA PCR: total nucleic acid polymerase chain reaction; <sup>4</sup>EID: early infant diagnosis  
 Note: Grey boxes indicate a final HIV-status determination

**Viral Load Testing**

The Abbott m2000sp was used to prepare plasma samples from confirmed HIV-positive participants for reverse transcription polymerase chain reaction (RT-PCR), using the Abbott m2000 System (Abbott Molecular Inc., Chicago, Illinois, United States). Next, HIV-1 VL (HIV RNA copies per ml) was measured using the Abbott m2000rt. The open-mode protocol for the Abbott RealTime HIV-1 assay was used to measure VL from DBS samples from children and from adults with insufficient volume of plasma.

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

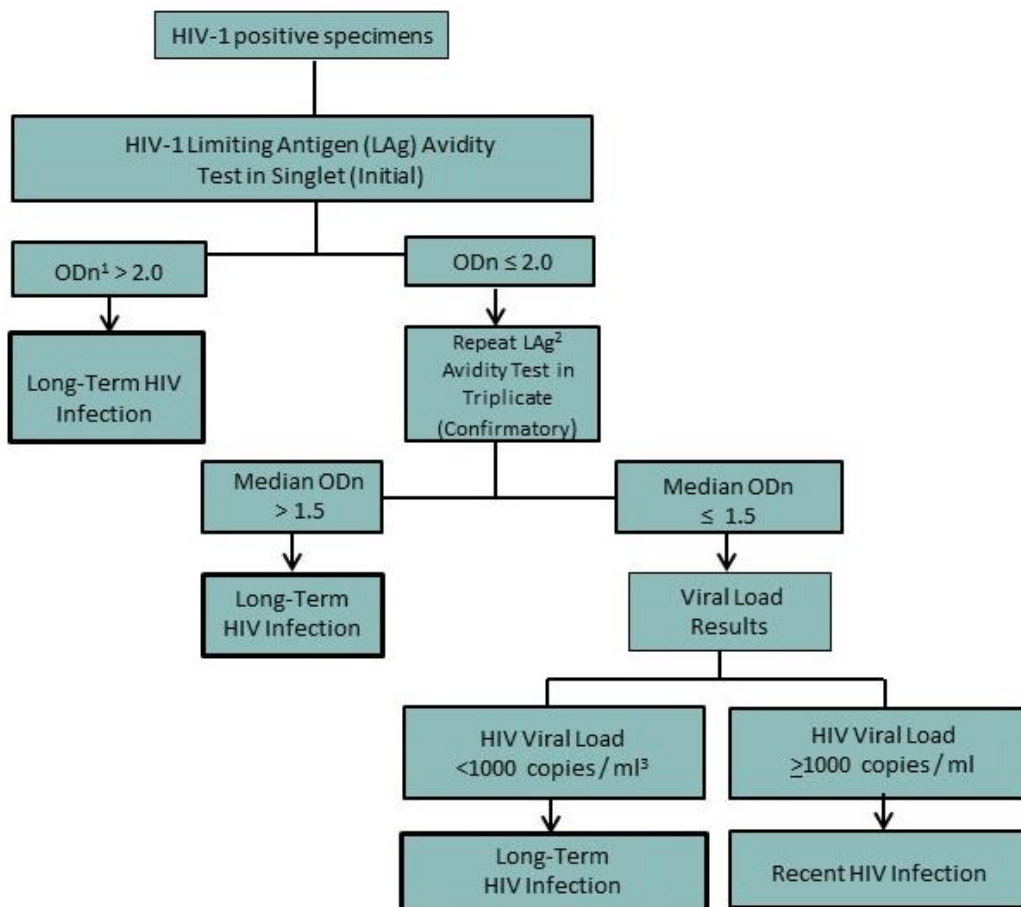
**HIV Recency Testing**

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

Limiting Antigen testing was performed twice, with an initial screening test followed by a confirmatory process: specimens with an  $OD_n > 2.0$  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.

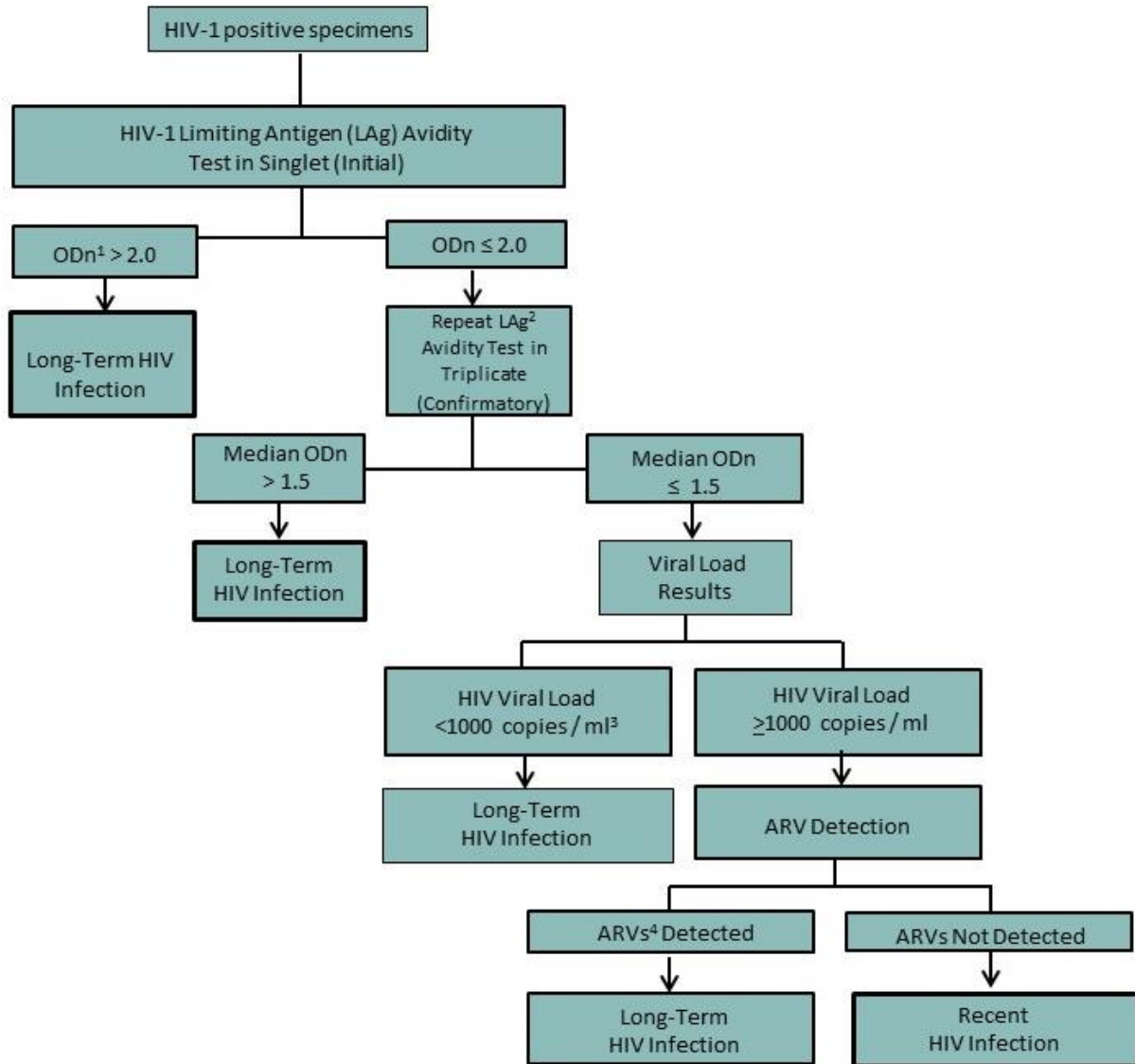
Specimens with median  $OD_n \leq 1.5$  were classified as potential HIV-recent infections, and their viral load results were assessed. For the first incidence testing algorithm, specimens with viral load  $< 1,000$  copies/ml were classified as long-term infections, while those with viral load  $\geq 1,000$  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, atazanavir, lopinavir, and nevirapine were detected were classified as long-term infections and those in which no ARVs were detected remained classified as recent infections.

**Figure B.3.C HIV-1 Recent Infection Testing Algorithm (LAg/VL algorithm), MPHIA 2015-2016**



<sup>1</sup>ODn: normalized optical density; <sup>2</sup>LAg: Limiting Antigen; <sup>3</sup>ml: milliliter

Figure B.3.D HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), MPHIA 2015-2016



<sup>1</sup>ODn: normalized optical density; <sup>2</sup>LAg: Limiting Antigen; <sup>3</sup>ml: milliliter; <sup>4</sup>ARV: antiretroviral

### HIV Incidence Estimation

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

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

Annual incidence of HIV among persons ages 15-49 years and ages 15-64 years, by sex and age, MPHIA 2015-2016

| Age   | Males                                |                                      |   |                                    | Females                              |                                      |   |                                    | Total                                |                                      |   |                                    |
|-------|--------------------------------------|--------------------------------------|---|------------------------------------|--------------------------------------|--------------------------------------|---|------------------------------------|--------------------------------------|--------------------------------------|---|------------------------------------|
|       | Number HIV negative <sup>2</sup> (N) | Number HIV positive <sup>2</sup> (P) | Number tested on LAg assay <sup>2</sup> (Q) | Number HIV recent <sup>2</sup> (R) | Number HIV negative <sup>2</sup> (N) | Number HIV positive <sup>2</sup> (P) | Number tested on LAg assay <sup>2</sup> (Q) | Number HIV recent <sup>2</sup> (R) | Number HIV negative <sup>2</sup> (N) | Number HIV positive <sup>2</sup> (P) | Number tested on LAg assay <sup>2</sup> (Q) | Number HIV recent <sup>2</sup> (R) |
| 15-24 | 2637.01                              | 40.99                                | 39.51                                       | 0.42                               | 3456.75                              | 123.25                               | 123.25                                      | 4.98                               | 6101.09                              | 156.91                               | 155.22                                      | 4.92                               |
| 25-34 | 1662.72                              | 145.28                               | 144.89                                      | 2.36                               | 2484.93                              | 451.07                               | 451.07                                      | 7.76                               | 4183.05                              | 560.95                               | 560.47                                      | 9.47                               |
| 35-49 | 1496.07                              | 323.93                               | 323.93                                      | 2.64                               | 1886.90                              | 546.10                               | 544.38                                      | 0.42                               | 3393.73                              | 859.27                               | 857.71                                      | 3.35                               |
| 15-49 | 5815.97                              | 490.03                               | 488.10                                      | 5.30                               | 7863.99                              | 1085.01                              | 1083.31                                     | 12.92                              | 13727.86                             | 1527.14                              | 1523.39                                     | 17.55                              |
| 15-64 | 6595.05                              | 612.95                               | 610.98                                      | 6.20                               | 8731.01                              | 1247.99                              | 1246.31                                     | 16.24                              | 15370.74                             | 1816.26                              | 1812.49                                     | 21.59                              |

<sup>1</sup> LAg/VL: limiting antigen/viral load

<sup>2</sup> Weighted number

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

Table B.3.B Annual HIV incidence auxiliary data: N, P, Q, R (LAg/VL/ARV<sup>1</sup> algorithm)

Annual incidence of HIV among persons ages 15-49 and ages 15-64 years, by sex and age, using LAg/VL/ARV algorithm, by sex and age, MPHIA 2015-2016

| Age   | Males                                |                                      |   |                                    | Females                              |                                      |   |                                    | Total                                |                                      |   |                                    |
|-------|--------------------------------------|--------------------------------------|---|------------------------------------|--------------------------------------|--------------------------------------|---|------------------------------------|--------------------------------------|--------------------------------------|---|------------------------------------|
|       | Number HIV negative <sup>2</sup> (N) | Number HIV positive <sup>2</sup> (P) | Number tested on LAg assay <sup>2</sup> (Q) | Number HIV recent <sup>2</sup> (R) | Number HIV negative <sup>2</sup> (N) | Number HIV positive <sup>2</sup> (P) | Number tested on LAg assay <sup>2</sup> (Q) | Number HIV recent <sup>2</sup> (R) | Number HIV negative <sup>2</sup> (N) | Number HIV positive <sup>2</sup> (P) | Number tested on LAg assay <sup>2</sup> (Q) | Number HIV recent <sup>2</sup> (R) |
| 15-24 | 2637.01                              | 40.99                                | 39.51                                       | 0.42                               | 3456.75                              | 123.25                               | 123.25                                      | 4.68                               | 6101.09                              | 156.91                               | 155.22                                      | 4.65                               |
| 25-34 | 1662.72                              | 145.28                               | 144.89                                      | 2.36                               | 2484.93                              | 451.07                               | 451.07                                      | 7.38                               | 4183.05                              | 560.95                               | 560.47                                      | 9.15                               |
| 35-49 | 1496.07                              | 323.93                               | 323.53                                      | 1.79                               | 1886.90                              | 546.10                               | 544.38                                      | 0.42                               | 3393.73                              | 859.27                               | 857.26                                      | 2.39                               |
| 15-49 | 5815.97                              | 490.03                               | 487.74                                      | 4.52                               | 7863.99                              | 1085.01                              | 1083.31                                     | 12.24                              | 13727.86                             | 1527.14                              | 1522.97                                     | 16.05                              |
| 15-64 | 6595.05                              | 612.95                               | 610.61                                      | 5.40                               | 8731.01                              | 1247.99                              | 1246.31                                     | 15.57                              | 15370.74                             | 1816.26                              | 1812.06                                     | 20.07                              |

<sup>1</sup> LAg/VL/ARV: Limiting antigen/viral load/antiretroviral

<sup>2</sup> Weighted number

Note: mean duration recent infection (MDRI) = 130 days (95% confidence Interval : 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.<sup>1</sup> Three ARVs, one NNRTI, efavirenz, and two PIs) atazanavir and lopinavir, were used as markers for both first- and second-line regimens, based on the Malawi's national treatment guidelines. Samples from participants who were virally suppressed and/or self-reported on ART, but had no evidence of the first three compounds were tested for an additional NNRTI, nevirapine. The ARVs were selected based on their long half-lives, allowing for longer window period from drug exposure to detection.

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

### *Genotyping for Detection of Antiretroviral Drug Resistance and HIV Subtyping*

To determine the extent of transmitted HIV-1 drug resistance mutations among participants in MPHIA, samples from confirmed HIV-positive participants younger than the age of 18 months and HIV-positive participants ages 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<sup>®</sup> 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<sup>®</sup> easyMAG<sup>®</sup> (bioMérieux, Marcy-L'Etoile, France) platform. The HIV *pol* gene was amplified by one-step RT-PCR, which was followed by nested PCR. Sequencing of the approximately one-kilobase amplicons was performed on the ABI 3730 DNA Analyzer (Applied Biosystems).<sup>2,3,4</sup>

The customized ReCALL software program was used to edit raw sequences and generate consensus sequences.<sup>5</sup> 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.<sup>6</sup> Sequences with >98% homology were flagged for potential cross-contamination or possible epidemiological links. Internal QA measures and in-house QC standards were included in each run to validate results. The assay's sensitivity was established at 1000 copies/ml for plasma and DBS.<sup>7</sup> Sequences were also analyzed for potential cross-contamination by phylogenetic analysis from code 6 of the protease gene to code 251 of the reverse transcriptase gene.

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

#### B.4 References

1. Koal, T., et al. (2005). Quantification of antiretroviral drugs in dried blood spot samples by means of liquid chromatography/tandem mass spectrometry. *Rapid Communications in Mass Spectrometry*, 19(21), 2995-3001.
2. Ruark, A., et al. (2014). Love, lust and the emotional context of multiple and concurrent sexual partnerships among young Swazi adults. *African Journal of AIDS Research*, 13(2), 133-43.
3. Uganda Ministry of Health (2012). *Uganda AIDS Indicator Survey 2011*. Retrieved from [http://health.go.ug/docs/UAIS\\_2011\\_REPORT.pdf](http://health.go.ug/docs/UAIS_2011_REPORT.pdf)
4. UNAIDS (2010). *UNAIDS Report on the global AIDS Epidemic 2010*. Retrieved from [http://www.unaids.org/globalreport/Global\\_report.htm](http://www.unaids.org/globalreport/Global_report.htm)
5. Woods C., et al., (2012). Automating HIV Drug Resistance Genotyping with RECall, a Freely Accessible Sequence Analysis Tool. *Journal of Clinical Microbiology*, 50, 1936-1942.
6. Stanford University HIV Drug Resistance Database. Accessed on July 9, 2017 at: <http://hivdb.stanford.edu>
7. Yang C., et al., (2010). Development and application of a broadly sensitive dried-bloodspot-based genotyping assay for global surveillance of HIV-1 drug resistance. *Journal of Clinical Microbiology*, 48(9), 3158-64.
8. Alcantara LCJ, et al. (2009). A Standardized Framework for Accurate, High-throughput Genotyping of Recombinant and Non-recombinant Viral Sequences. *Nucleic Acids Research*, doi: 10.1093/nar/gkp455.
9. de Oliveira T., et al. (2005). An Automated Genotyping System for Analysis of HIV-1 and other Microbial Sequences. *Bioinformatics*, 21(19), 3797-3800.

## 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 MPHIA 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 MPHIA 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 CI 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.

The MPHIA 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 PLHIV). Each replication considers all but one cluster in the calculation of the estimates. Pseudo-independent replications are thus created. In MPHIA 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 250 variance-estimation strata were created by pairing (or occasionally tripling) the sample clusters in the systematic order in which they had been selected. Hence, 250 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 MPHIA are presented in Tables C.1 through C.8. For each variable, sampling error tables include the weighted estimate, unweighted denominator, standard error, design effect, and lower and upper 95 percent confidence limits.

| Table C.1 Sampling errors: Annual HIV incidence by age, MPHIA 2015-2016 |                       |                |                            |                            |
|---|-----------------------|----------------|----------------------------|----------------------------|
| Age (years)   | Weighted estimate (%) | Design effect* | Lower confidence limit (%) | Upper confidence limit (%) |
| TOTAL   |                       |                |                            |                            |
| 15-24   | 0.23                  | 0.90           | 0.03                       | 0.43                       |
| 25-34   | 0.63                  | 1.17           | 0.23                       | 1.04                       |
| 35-49   | 0.28                  | 0.53           | 0.00                       | 0.57                       |
| 15-49   | 0.36                  | 0.96           | 0.19                       | 0.53                       |
| 15-64   | 0.39                  | 1.05           | 0.23                       | 0.56                       |
| MALES   |                       |                |                            |                            |
| 15-24   | 0.05                  | 0.41           | 0.00                       | 0.19                       |
| 25-34   | 0.40                  | 0.79           | 0.00                       | 0.90                       |
| 35-49   | 0.49                  | 0.49           | 0.00                       | 1.09                       |
| 15-49   | 0.26                  | 0.61           | 0.04                       | 0.47                       |
| 15-64   | 0.26                  | 0.65           | 0.06                       | 0.47                       |
| FEMALES   |                       |                |                            |                            |
| 15-24   | 0.40                  | 1.06           | 0.05                       | 0.75                       |
| 25-34   | 0.87                  | 1.53           | 0.26                       | 1.48                       |
| 35-49   | 0.06                  | 0.42           | 0.00                       | 0.25                       |
| 15-49   | 0.46                  | 1.27           | 0.21                       | 0.71                       |
| 15-64   | 0.52                  | 1.36           | 0.27                       | 0.78                       |

\*where the design effect was less than 1.0, a value of 1.0 was used to calculate CI



Table C.2 Sampling errors: HIV prevalence by age, MPHIA 2015-2016

| Age          | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
|--------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
| TOTAL        |                       |                   |                    |                            |                            |
| 0-17 months  | 0.4                   | 496               | 0.3                | 0.0                        | 0.9                        |
| 18-59 months | 1.4                   | 1371              | 0.4                | 0.5                        | 2.2                        |
| 5-9          | 1.6                   | 2201              | 0.4                | 0.8                        | 2.3                        |
| 10-14        | 2.1                   | 2097              | 0.4                | 1.3                        | 2.9                        |
| Total 0-4    | 1.1                   | 1868              | 0.3                | 0.5                        | 1.7                        |
| Total 0-14   | 1.5                   | 6166              | 0.2                | 1.1                        | 1.9                        |
| 15-19        | 1.5                   | 3143              | 0.2                | 1.0                        | 2.0                        |
| 20-24        | 3.8                   | 3115              | 0.4                | 3.0                        | 4.5                        |
| 25-29        | 9.3                   | 2449              | 0.7                | 7.9                        | 10.7                       |
| 30-34        | 14.9                  | 2295              | 0.9                | 13.1                       | 16.7                       |
| 35-39        | 18.4                  | 1862              | 1.1                | 16.3                       | 20.6                       |
| 40-44        | 21.7                  | 1394              | 1.3                | 19.1                       | 24.3                       |
| 45-49        | 21.2                  | 997               | 1.5                | 18.1                       | 24.2                       |
| 50-54        | 16.9                  | 824               | 1.4                | 14.1                       | 19.8                       |
| 55-59        | 15.4                  | 621               | 1.6                | 12.0                       | 18.7                       |
| 60-64        | 12.4                  | 487               | 1.7                | 8.8                        | 15.9                       |
| Total 15-24  | 2.5                   | 6258              | 0.2                | 2.0                        | 3.0                        |
| Total 15-49  | 10.0                  | 15255             | 0.3                | 9.3                        | 10.7                       |
| Total 15-64  | 10.6                  | 17187             | 0.3                | 9.9                        | 11.2                       |
| MALES        |                       |                   |                    |                            |                            |
| 0-17 months  | 0.0                   | 230               | 0.0                | 0.0                        | 0.0                        |
| 18-59 months | 1.7                   | 664               | 0.6                | 0.4                        | 3.1                        |
| 5-9          | 1.4                   | 1057              | 0.4                | 0.6                        | 2.2                        |
| 10-14        | 2.0                   | 1054              | 0.6                | 0.9                        | 3.2                        |
| Total 0-4    | 1.3                   | 894               | 0.5                | 0.3                        | 2.3                        |
| Total 0-14   | 1.5                   | 3005              | 0.3                | 0.9                        | 2.1                        |
| 15-19        | 0.9                   | 1497              | 0.2                | 0.4                        | 1.4                        |
| 20-24        | 2.3                   | 1181              | 0.5                | 1.3                        | 3.3                        |
| 25-29        | 4.7                   | 938               | 0.7                | 3.3                        | 6.1                        |
| 30-34        | 12.1                  | 870               | 1.3                | 9.4                        | 14.7                       |
| 35-39        | 14.5                  | 765               | 1.5                | 11.4                       | 17.6                       |
| 40-44        | 18.6                  | 609               | 1.7                | 15.2                       | 22.1                       |
| 45-49        | 22.1                  | 446               | 2.1                | 17.7                       | 26.5                       |
| 50-54        | 17.5                  | 355               | 2.2                | 12.9                       | 22.1                       |
| 55-59        | 14.5                  | 295               | 2.1                | 10.1                       | 19.0                       |
| 60-64        | 10.6                  | 252               | 2.1                | 6.3                        | 14.9                       |
| Total 15-24  | 1.5                   | 2678              | 0.3                | 1.0                        | 2.1                        |
| Total 15-49  | 7.8                   | 6306              | 0.4                | 7.0                        | 8.5                        |
| Total 15-64  | 8.5                   | 7208              | 0.4                | 7.8                        | 9.2                        |
| FEMALES      |                       |                   |                    |                            |                            |
| 0-17 months  | 0.7                   | 266               | 0.5                | 0.0                        | 1.8                        |
| 18-59 months | 0.9                   | 707               | 0.4                | 0.2                        | 1.7                        |
| 5-9          | 1.8                   | 1144              | 0.5                | 0.7                        | 2.8                        |
| 10-14        | 2.2                   | 1043              | 0.6                | 1.0                        | 3.3                        |
| Total 0-4*   | 0.9                   | 974               | 0.3                | 0.2                        | 1.5                        |
| Total 0-14   | 1.5                   | 3161              | 0.2                | 1.1                        | 2.0                        |
| 15-19        | 2.0                   | 1646              | 0.4                | 1.2                        | 2.8                        |
| 20-24        | 5.2                   | 1934              | 0.6                | 4.0                        | 6.4                        |
| 25-29        | 13.6                  | 1511              | 1.1                | 11.4                       | 15.8                       |
| 30-34        | 17.5                  | 1425              | 1.2                | 15.0                       | 19.9                       |
| 35-39        | 22.1                  | 1097              | 1.4                | 19.3                       | 24.9                       |
| 40-44        | 24.6                  | 785               | 1.9                | 20.7                       | 28.4                       |
| 45-49        | 20.3                  | 551               | 1.9                | 16.3                       | 24.2                       |
| 50-54        | 16.4                  | 469               | 1.8                | 12.7                       | 20.1                       |
| 55-59        | 16.1                  | 326               | 2.2                | 11.5                       | 20.7                       |
| 60-64        | 13.9                  | 235               | 2.5                | 8.7                        | 19.0                       |
| Total 15-24  | 3.4                   | 3580              | 0.4                | 2.7                        | 4.2                        |
| Total 15-49  | 12.1                  | 8949              | 0.5                | 11.2                       | 13.1                       |
| Total 15-64  | 12.5                  | 9979              | 0.4                | 11.6                       | 13.4                       |

\*One participant's age could not be clearly classified as 17 or 18 months. As a result, this participant is counted among females aged 0-4 years (N=974) but not among either females 0-17 months (N=266) or 18-59 months (N=707)

Table C.3 Sampling errors: HIV prevalence by residence and zone, ages 15-64 years, MPHIA 2015-2016

| Characteristic   | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
|------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
| <b>TOTAL</b>     |                       |                   |                    |                            |                            |
| <b>Residence</b> |                       |                   |                    |                            |                            |
| Urban            | 14.2                  | 6433              | 0.5                | 13.2                       | 15.3                       |
| Rural            | 9.7                   | 10754             | 0.4                | 8.9                        | 10.4                       |
| <b>Zone</b>      |                       |                   |                    |                            |                            |
| North            | 7.4                   | 2318              | 0.7                | 5.8                        | 8.9                        |
| Central-East     | 4.9                   | 2501              | 0.6                | 3.8                        | 6.1                        |
| Central-West     | 6.1                   | 2009              | 0.5                | 5.0                        | 7.1                        |
| Lilongwe City    | 11.5                  | 2994              | 0.7                | 10.1                       | 12.8                       |
| South-East       | 15.3                  | 1952              | 1.0                | 13.1                       | 17.4                       |
| South-West       | 16.0                  | 2732              | 0.9                | 14.1                       | 18.0                       |
| Blantyre City    | 17.7                  | 2681              | 0.9                | 16.0                       | 19.5                       |
| <b>MALES</b>     |                       |                   |                    |                            |                            |
| <b>Residence</b> |                       |                   |                    |                            |                            |
| Urban            | 10.8                  | 2683              | 0.6                | 9.6                        | 12.0                       |
| Rural            | 7.9                   | 4525              | 0.4                | 7.0                        | 8.8                        |
| <b>Zone</b>      |                       |                   |                    |                            |                            |
| North            | 6.0                   | 1017              | 0.6                | 4.8                        | 7.2                        |
| Central-East     | 3.8                   | 1160              | 0.5                | 2.7                        | 4.8                        |
| Central-West     | 5.7                   | 860               | 0.6                | 4.3                        | 7.0                        |
| Lilongwe City    | 8.5                   | 1265              | 0.7                | 7.0                        | 9.9                        |
| South-East       | 12.5                  | 742               | 1.4                | 9.6                        | 15.5                       |
| South-West       | 13.1                  | 1050              | 1.1                | 10.8                       | 15.3                       |
| Blantyre City    | 14.0                  | 1114              | 0.9                | 12.1                       | 15.9                       |
| <b>FEMALES</b>   |                       |                   |                    |                            |                            |
| <b>Residence</b> |                       |                   |                    |                            |                            |
| Urban            | 17.7                  | 3750              | 0.8                | 16.2                       | 19.3                       |
| Rural            | 11.3                  | 6229              | 0.5                | 10.3                       | 12.3                       |
| <b>Zone</b>      |                       |                   |                    |                            |                            |
| North            | 8.7                   | 1301              | 1.2                | 6.3                        | 11.1                       |
| Central-East     | 6.2                   | 1341              | 0.9                | 4.4                        | 8.0                        |
| Central-West     | 6.4                   | 1149              | 0.6                | 5.1                        | 7.7                        |
| Lilongwe City    | 14.8                  | 1729              | 1.0                | 12.8                       | 16.8                       |
| South-East       | 17.4                  | 1210              | 1.1                | 15.1                       | 19.8                       |
| South-West       | 18.4                  | 1682              | 1.4                | 15.7                       | 21.2                       |
| Blantyre City    | 21.8                  | 1567              | 1.1                | 19.4                       | 24.2                       |

Table C.4 Sampling errors: Viral load suppression by age, MPHIA 2015-2016

| Age (years) | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
|-------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
| TOTAL       |                       |                   |                    |                            |                            |
| 0-14        | 42.3                  | 96                | 6.2                | 29.5                       | 55.1                       |
| 15-24       | 46.0                  | 214               | 3.9                | 37.9                       | 54.2                       |
| 25-34       | 62.9                  | 668               | 2.2                | 58.4                       | 67.4                       |
| 35-44       | 71.7                  | 759               | 2.0                | 67.6                       | 75.8                       |
| 45-54       | 77.5                  | 400               | 3.0                | 71.4                       | 83.7                       |
| 55-64       | 78.0                  | 179               | 3.9                | 70.0                       | 86.0                       |
| Total 15-24 | 46.0                  | 214               | 3.9                | 37.9                       | 54.2                       |
| Total 15-49 | 66.6                  | 1880              | 1.2                | 64.1                       | 69.1                       |
| Total 15-64 | 68.3                  | 2220              | 1.2                | 66.0                       | 70.7                       |
| MALES       |                       |                   |                    |                            |                            |
| 0-14        | 38.0                  | 46                | 8.3                | 20.8                       | 55.1                       |
| 15-24       | 37.2                  | 43                | 7.6                | 21.6                       | 52.8                       |
| 25-34       | 48.2                  | 159               | 4.5                | 39.0                       | 57.4                       |
| 35-44       | 62.9                  | 248               | 3.1                | 56.4                       | 69.3                       |
| 45-54       | 74.5                  | 176               | 4.2                | 65.8                       | 83.1                       |
| 55-64       | 69.8                  | 86                | 6.0                | 57.5                       | 82.2                       |
| Total 15-24 | 37.2                  | 43                | 7.6                | 21.6                       | 52.8                       |
| Total 15-49 | 58.1                  | 556               | 2.2                | 53.5                       | 62.6                       |
| Total 15-64 | 60.9                  | 712               | 2.0                | 56.8                       | 65.0                       |
| FEMALES     |                       |                   |                    |                            |                            |
| 0-14        | 46.8                  | 50                | 8.2                | 29.9                       | 63.7                       |
| 15-24       | 49.7                  | 171               | 4.6                | 40.2                       | 59.1                       |
| 25-34       | 70.1                  | 509               | 2.3                | 65.3                       | 74.8                       |
| 35-44       | 77.5                  | 511               | 2.3                | 72.7                       | 82.3                       |
| 45-54       | 80.7                  | 224               | 3.6                | 73.3                       | 88.0                       |
| 55-64       | 84.2                  | 93                | 4.6                | 74.8                       | 93.5                       |
| Total 15-24 | 49.7                  | 171               | 4.6                | 40.2                       | 59.1                       |
| Total 15-49 | 71.7                  | 1324              | 1.4                | 68.8                       | 74.7                       |
| Total 15-64 | 73.1                  | 1508              | 1.3                | 70.3                       | 75.8                       |

Table C.5 Sampling errors: Viral load suppression by residence and zone, ages 15-64 years, MPHIA 2015-2016

| Characteristic   | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
|------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
| <b>TOTAL</b>     |                       |                   |                    |                            |                            |
| <b>Residence</b> |                       |                   |                    |                            |                            |
| Urban            | 62.8                  | 1059              | 1.9                | 59.0                       | 66.6                       |
| Rural            | 70.4                  | 1161              | 1.4                | 67.4                       | 73.3                       |
| <b>Zone</b>      |                       |                   |                    |                            |                            |
| North            | 67.7                  | 181               | 3.0                | 61.5                       | 73.8                       |
| Central-East     | 67.9                  | 129               | 3.9                | 59.9                       | 75.9                       |
| Central-West     | 70.6                  | 138               | 3.7                | 62.9                       | 78.3                       |
| Lilongwe City    | 64.9                  | 398               | 2.7                | 59.3                       | 70.4                       |
| South-East       | 70.7                  | 335               | 2.6                | 65.4                       | 76.1                       |
| South-West       | 69.8                  | 496               | 2.3                | 65.0                       | 74.7                       |
| Blantyre City    | 59.5                  | 543               | 2.7                | 53.9                       | 65.0                       |
| <b>MALES</b>     |                       |                   |                    |                            |                            |
| <b>Residence</b> |                       |                   |                    |                            |                            |
| Urban            | 53.6                  | 325               | 3.3                | 46.8                       | 60.3                       |
| Rural            | 63.6                  | 387               | 2.4                | 58.6                       | 68.6                       |
| <b>Zone</b>      |                       |                   |                    |                            |                            |
| North            | 62.6                  | 67                | 5.2                | 51.9                       | 73.3                       |
| Central-East     | 60.3                  | 45                | 5.4                | 49.2                       | 71.4                       |
| Central-West     | 66.3                  | 56                | 5.3                | 55.3                       | 77.2                       |
| Lilongwe City    | 53.7                  | 119               | 4.7                | 44.0                       | 63.4                       |
| South-East       | 59.8                  | 104               | 5.0                | 49.6                       | 70.0                       |
| South-West       | 63.5                  | 150               | 4.3                | 54.7                       | 72.4                       |
| Blantyre City    | 54.3                  | 171               | 4.2                | 45.6                       | 63.0                       |
| <b>FEMALES</b>   |                       |                   |                    |                            |                            |
| <b>Residence</b> |                       |                   |                    |                            |                            |
| Urban            | 68.6                  | 734               | 1.9                | 64.6                       | 72.6                       |
| Rural            | 74.7                  | 774               | 1.7                | 71.3                       | 78.1                       |
| <b>Zone</b>      |                       |                   |                    |                            |                            |
| North            | 71.2                  | 114               | 3.6                | 63.7                       | 78.7                       |
| Central-East     | 72.7                  | 84                | 4.4                | 63.6                       | 81.9                       |
| Central-West     | 74.3                  | 82                | 4.1                | 65.8                       | 82.7                       |
| Lilongwe City    | 71.9                  | 279               | 3.1                | 65.6                       | 78.3                       |
| South-East       | 77.1                  | 231               | 3.2                | 70.5                       | 83.7                       |
| South-West       | 73.5                  | 346               | 2.3                | 68.6                       | 78.3                       |
| Blantyre City    | 63.1                  | 372               | 3.0                | 56.8                       | 69.3                       |

Table C.6 Sampling errors: ARV-adjusted 90-90-90 by age (conditional percentages), MPHIA 2015-2016

| Age (years) | Diagnosed             |                   |                    |                            |                            | On Treatment          |                   |                    |                            |                            | Virally Suppressed    |                   |                    |                            |                            |
|-------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
|             | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
| TOTAL       |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |
| 15-24       | 53.69                 | 214               | 4.06               | 45.33                      | 62.04                      | 85.65                 | 121               | 3.64               | 78.16                      | 93.15                      | 81.23                 | 106               | 4.82               | 71.32                      | 91.15                      |
| 25-34       | 71.60                 | 668               | 2.14               | 67.18                      | 76.02                      | 87.95                 | 483               | 1.79               | 84.28                      | 91.63                      | 93.49                 | 424               | 1.36               | 90.70                      | 96.28                      |
| 35-49       | 83.28                 | 996               | 1.43               | 80.34                      | 86.23                      | 92.79                 | 833               | 1.13               | 90.46                      | 95.12                      | 90.74                 | 766               | 1.39               | 87.87                      | 93.60                      |
| 15-49       | 75.91                 | 1878              | 1.15               | 73.53                      | 78.28                      | 90.62                 | 1437              | 0.90               | 88.76                      | 92.48                      | 90.94                 | 1296              | 1.06               | 88.75                      | 93.13                      |
| 15-64       | 76.84                 | 2217              | 1.04               | 74.71                      | 78.98                      | 91.38                 | 1720              | 0.78               | 89.77                      | 92.99                      | 91.28                 | 1564              | 0.98               | 89.26                      | 93.30                      |
| MALES       |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |
| 15-24       | 44.57                 | 44                | 8.48               | 27.10                      | 62.04                      | 78.72                 | 20                | 9.78               | 58.58                      | 98.85                      | 80.77                 | 17                | 10.16              | 59.85                      | 100.00                     |
| 25-34       | 60.76                 | 159               | 4.30               | 51.92                      | 69.61                      | 78.40                 | 89                | 4.56               | 69.01                      | 87.79                      | 92.50                 | 66                | 3.19               | 85.92                      | 99.08                      |
| 35-49       | 77.22                 | 354               | 2.53               | 72.00                      | 82.43                      | 91.02                 | 271               | 2.02               | 86.86                      | 95.17                      | 89.10                 | 245               | 2.35               | 84.26                      | 93.93                      |
| 15-49       | 69.32                 | 557               | 2.22               | 64.74                      | 73.89                      | 86.91                 | 380               | 1.85               | 83.11                      | 90.72                      | 89.51                 | 328               | 1.96               | 85.47                      | 93.55                      |
| 15-64       | 71.66                 | 712               | 1.90               | 67.74                      | 75.57                      | 88.74                 | 510               | 1.57               | 85.51                      | 91.96                      | 89.79                 | 454               | 1.76               | 86.16                      | 93.41                      |
| FEMALES     |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |
| 15-24       | 57.58                 | 170               | 4.12               | 49.10                      | 66.05                      | 87.94                 | 101               | 3.72               | 80.29                      | 95.60                      | 81.37                 | 89                | 5.39               | 70.27                      | 92.47                      |
| 25-34       | 76.89                 | 509               | 2.18               | 72.40                      | 81.38                      | 91.64                 | 394               | 1.74               | 88.04                      | 95.23                      | 93.82                 | 358               | 1.40               | 90.93                      | 96.70                      |
| 35-49       | 87.78                 | 642               | 1.58               | 84.52                      | 91.04                      | 93.95                 | 562               | 1.15               | 91.58                      | 96.31                      | 91.77                 | 521               | 1.58               | 88.51                      | 95.04                      |
| 15-49       | 79.90                 | 1321              | 1.23               | 77.37                      | 82.43                      | 92.57                 | 1057              | 0.97               | 90.58                      | 94.55                      | 91.65                 | 968               | 1.16               | 89.25                      | 94.04                      |
| 15-64       | 80.16                 | 1505              | 1.16               | 77.77                      | 82.55                      | 92.89                 | 1210              | 0.85               | 91.15                      | 94.64                      | 92.10                 | 1110              | 1.06               | 89.92                      | 94.27                      |

Table C.7 Sampling errors: ARV-adjusted 90-90-90 by age (unconditional percentages), MPHIA 2015-2016

| Age (years) | Diagnosed             |                   |                    |                            |                            | On Treatment          |                   |                    |                            |                            | Virally Suppressed    |                   |                    |                            |                            |
|-------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
|             | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
| TOTAL       |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |
| 15-24       | 53.7                  | 214               | 4.1                | 45.3                       | 62.0                       | 46.0                  | 214               | 3.9                | 38.0                       | 54.0                       | 37.4                  | 214               | 3.9                | 29.3                       | 45.4                       |
| 25-34       | 71.6                  | 668               | 2.1                | 67.2                       | 76.0                       | 63.0                  | 668               | 2.2                | 58.5                       | 67.5                       | 58.9                  | 668               | 2.3                | 54.2                       | 63.6                       |
| 35-49       | 83.3                  | 996               | 1.4                | 80.3                       | 86.2                       | 77.3                  | 996               | 1.7                | 73.8                       | 80.8                       | 70.1                  | 996               | 2.0                | 66.0                       | 74.2                       |
| 15-49       | 75.9                  | 1878              | 1.2                | 73.5                       | 78.3                       | 68.8                  | 1878              | 1.3                | 66.2                       | 71.4                       | 62.6                  | 1878              | 1.4                | 59.8                       | 65.3                       |
| 15-64       | 76.8                  | 2217              | 1.0                | 74.7                       | 79.0                       | 70.2                  | 2217              | 1.1                | 67.9                       | 72.6                       | 64.1                  | 2217              | 1.2                | 61.6                       | 66.6                       |
| MALES       |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |
| 15-24       | 44.6                  | 44                | 8.5                | 27.1                       | 62.0                       | 35.1                  | 44                | 7.4                | 19.9                       | 50.3                       | 28.3                  | 44                | 7.0                | 14.0                       | 42.7                       |
| 25-34       | 60.8                  | 159               | 4.3                | 51.9                       | 69.6                       | 47.6                  | 159               | 4.6                | 38.2                       | 57.0                       | 44.1                  | 159               | 4.6                | 34.7                       | 53.5                       |
| 35-49       | 77.2                  | 354               | 2.5                | 72.0                       | 82.4                       | 70.3                  | 354               | 3.0                | 64.2                       | 76.4                       | 62.6                  | 354               | 3.1                | 56.2                       | 69.0                       |
| 15-49       | 69.3                  | 557               | 2.2                | 64.7                       | 73.9                       | 60.2                  | 557               | 2.4                | 55.4                       | 65.1                       | 53.9                  | 557               | 2.4                | 49.0                       | 58.9                       |
| 15-64       | 71.7                  | 712               | 1.9                | 67.7                       | 75.6                       | 63.6                  | 712               | 2.0                | 59.4                       | 67.7                       | 57.1                  | 712               | 2.1                | 52.7                       | 61.5                       |
| FEMALES     |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |                       |                   |                    |                            |                            |
| 15-24       | 57.6                  | 170               | 4.1                | 49.1                       | 66.1                       | 50.6                  | 170               | 4.2                | 42.1                       | 59.2                       | 41.2                  | 170               | 4.5                | 31.9                       | 50.5                       |
| 25-34       | 76.9                  | 509               | 2.2                | 72.4                       | 81.4                       | 70.5                  | 509               | 2.1                | 66.0                       | 74.9                       | 66.1                  | 509               | 2.4                | 61.2                       | 71.0                       |
| 35-49       | 87.8                  | 642               | 1.6                | 84.5                       | 91.0                       | 82.5                  | 642               | 1.8                | 78.8                       | 86.1                       | 75.7                  | 642               | 2.1                | 71.5                       | 79.9                       |
| 15-49       | 79.9                  | 1321              | 1.2                | 77.4                       | 82.4                       | 74.0                  | 1321              | 1.4                | 71.2                       | 76.8                       | 67.8                  | 1321              | 1.5                | 64.6                       | 70.9                       |
| 15-64       | 80.2                  | 1505              | 1.2                | 77.8                       | 82.5                       | 74.5                  | 1505              | 1.3                | 71.8                       | 77.1                       | 68.6                  | 1505              | 1.4                | 65.6                       | 71.5                       |

Table C.8 Sampling errors: Number of new infections annually and number of PLHIV, ages 15-64 years, MPHIA 2015-16

|                                   | Weighted estimate | Standard error | Lower confidence limit | Upper confidence limit |
|-----------------------------------|-------------------|----------------|------------------------|------------------------|
| Number of new infections annually | 27973             | 6347           | 14876                  | 41070                  |
| Number of PLHIV                   | 901341            | 26362          | 847048                 | 955634                 |

# APPENDIX D SURVEY PERSONNEL

## **MPHIA Steering Committee**

Charles Mwansambo  
Davie Kalomba  
Masauso Nzima  
Andrew Auld  
Victoria Geresomo  
Maziko Matemba  
Eddie Banda

## **Ministry of Health**

Charles Mwansambo  
Rose Nyirenda  
Thoko Kalua  
Mathews Kagoli  
Andreas Jahn  
Ben Chilima  
George F. Bello  
Bernard Mvula  
Damson Kathyola  
Frank Chimbwandira  
Joseph Kasola  
Khumbo Ngona  
Mavuto Chiwaula  
Michael Eliya  
Nelson Dzinza  
Ruben Mwenda  
Sikhona Chipeta

## **ICAP at Columbia University- New York**

Andrea Low  
Allison George  
Bereket Alemayehu  
Curran Kennedy  
David Hoos  
Elizabeth Radin  
Jessica Justman  
Joanne Mantell  
Joseph Elias  
Hannah Chung  
Karampreet Sachathep

Kiwon Lee  
Larkin Callaghan  
Melissa Metz  
Nahima Ahmed  
Neena Philip  
Noelle Esquire  
Oren Mayer  
Rita Sondengam  
Ruby Fayorsey  
Sally Findley  
Stephen Delgado  
Steven Wynn  
Suzue Saito  
Yen Pottinger

## **ICAP at Columbia University- Malawi**

Chakuya Gondwe  
Christine Chung  
Juliana Cuervo-Rojas  
Dave Namakhwa  
Evince Kalepa  
Evans Nyongopa  
Francis Ogallah  
Gertrude Chipungu  
Grand Silungwe  
Helecks Mtengo  
Huxley Kanyongoloka  
Ibrahim Gamble  
Katanga Msiska  
Khozgani Mzumara  
Lusako Mwalwenje  
Memory Mkandawire  
Neema Kamuyango  
Percy Mwenechanya  
Phillip Mtambo  
Rebecca Tukhuwa  
Richard Ndhlovu  
Ronald Mphande  
Samantha Muwalo  
Sandram Kamwendo

Sifelani Moyo  
Stephen Nkoka  
Sungani Zidana  
Vincent Chidya

## **ICAP at Columbia University- South Africa**

Blanche Pitt  
Bright Phiri  
Charles Wentz  
Herbert Longwe  
Oliver Murangandi  
Pule Mphole  
Takura Kupamupindi

## **CDC Atlanta**

Anindya De  
Avi Hakim  
Chris Murrill  
Bharat Parekh  
Drew Voetsch  
Eddas Bennet  
Hetal Patel  
Janet Burnett  
Kat Sleeman  
Katina Pappas-Deluca  
Kristin Brown  
Laura Porter  
Meade Morgan  
Melissa Cates  
Mervi Detorio  
Naomi Bock  
Paul Stupp  
Sarah Guagliardo  
Sasi Jonnalagadda  
Steve Gutreuter  
Steve Kinchen  
Steve McCracken  
Tom Spira  
Trudy Dobbs  
Wolfgang Hladik



William Levine

**CDC Malawi**

Abdoulaye Sarr  
Andrew Auld  
Christine West  
Danielle Payne  
Evelyn Kim  
Geoffrey Chipungu  
Nellie Wadonda-  
Kabondo  
Sundeept Gupta

**National AIDS Council of  
Malawi**

Davie Kalomba  
Emmanuel Zenengeya  
Blackson Matatiyo  
Jessie Khaki  
Lonjezo Sithole

**UNAIDS**

Masauso Nzima

**National Statistics Office,  
Malawi**

Jameson Ndawala  
Isaac Chirwa

**Centre for Social Research-  
Chancellor College**

**Coordinators**

Alister Munthali  
Blessings Chinsinga  
John Kadzandira  
Maxton Tsoka  
Gowokani Chirwa  
Joseph Chunga

**Field Staff**

Agness Chisenga  
Agness Lakudzala  
Albert Dzikolatha  
Albert Mandala  
Alex Labana  
Alex Mwanyongo  
Alice Duwa  
Alice Kamwamba

Alice Khonje  
Alinafe Bonongwe  
Alinafe Nyambi  
Andrew Mzumara  
Angella Nkhoma  
Annie Kachilika  
Beston Robert  
Blessings Chitsulo  
Brian Kumanda  
Bright Chisale  
Bright Mbeye  
Cedrick Njenjema  
Charles Pumbwa  
Chikondi Kamwendo  
Chikumbutso Kapenda  
Chimwemwe Kana  
Christian Bvumbwe  
Christina Ngulube  
Christopher Manyenje  
Christopher Singoyi  
Claudia Ngoma  
Clement Tembo  
Cornelius Hara  
Davie Sato  
Dickson Thom  
Diston Matchano  
Doreen Chiumia  
Dorica Mughogho  
Dyton Chilewani  
Edgar Thindwa  
Edward Governor  
Effie Bvutula  
Effie Ghambi  
Elishah Phiri  
Ellen Maloto  
Emmanuel Mkandawire  
Emmie Chirwa  
Enoch Maulana  
Enock Chitimbe  
Enock Mkwala  
Enock Phiri  
Ernest Kaundama  
Ernest Moya  
Esther Ngwira  
Euwert Mlanga  
Evelyn Mwangomba  
Felix Simbeye  
Fenton Msukwa

Fidelis Kasiya  
Finias Matenje  
Fiskani Msutu  
Florida Kadzitcha  
Fransiska Zuza  
Frazer Mkawa  
Fred Bequiet  
Gertrude Kumwenda  
Getrude Navaya  
Getson Uladi  
Gift Makata  
Gift Mbwele  
Grace Chaweza  
Grace Mwase  
Grace Mwase  
Grace Nkhata  
Grant Kalua  
Grecium Mataya  
Grey Msiska  
Happiness Kanyamula  
Happy Chawawa  
Henry Bvumbwe  
Henry Howa  
Herbert Nsambula  
Ireen Ndawa  
Jacob Bema  
Jerome Katunga  
Jesse Mwale  
Jickson Chindungwa  
Jimmie Manjombe  
Joe Zonda  
John Chilale  
John Kafere  
Jones Kadewere  
Kennedy Mwalwanda  
Kuleza Chigoneka  
Lapken Saukira  
Lauryn Chingwengwe  
Lazarous Nyondo  
Lillian Majawa  
Linda Chisi  
Linda Kalulu  
Linda Maruwo  
Linly Chinyama  
Lucy Banda  
Lusungu Kaunda  
Mabvuto Tembenuka  
MacDonald Chitekwe

Madalitso Banda  
Margret Nyaika  
Maria Banda  
Maria Ndawala  
Mariana Stima  
Mark Mwalabu  
Martha Kadzakumanja  
Martha Mpamanda  
Mary Machisa  
Mathews Misoya  
Matilda Phiri  
Maureen Kaponya  
Maxton  
Mcperson Simeji  
Mercy Malinda  
Mphatso Zimba  
Mussa Mtayamo  
Naomi Sanga  
Nolia Phiri  
Nwaka Mwambene  
Obed Nkhata  
Olive Mwango  
Patricia Malekano  
Patrick Kalengo  
Paul Makaula  
Pemphero Ndawala  
Penjani Ngwira  
Peter Mzuwala  
Phillip Maiden  
Precious Gomani  
Precious Gumbo  
Precious Ngwira  
Prisca Kasiyamphanje  
Prisca Luwe  
Priscilla Wankhama  
Regina Kamoto  
Richard Bwanali  
Richard Jamester  
Richard Katikafwe  
Rodwayo Ngulube  
Ronald Chawinga  
Salile Nakanga  
Samuel Lunda  
Saul Harawa  
Savya Gondwe  
Shadreck Mughogho  
Shadreck Nyasulu  
Shellie Mwenekisindile

Silvester Sichone  
Simon Tchaka  
Somani Misolo  
Sophie Mtombosola  
Sphiwe Mwalwanda  
Stanley Azizi  
Steven Monteiro  
Susan Msuku  
Suzgo Zimba  
Symon Nyirenda  
Synab Nyerenga  
Tamanda Jumbe  
Tamandani Juma  
Thokozani Banda  
Thokozani Chinomba  
Thokozani Dausi  
Thokozani Kachala  
Tikhala Chunga  
Tobias Maunde  
Victor Nkhalamba  
Victor Phiri  
Victoria Thondoya  
Wiza Msosa  
Yohane Banda  
Zione Mkangadzula

**University of Malawi,  
College of Medicine –  
Johns Hopkins Project**

Abel Maruwo  
Alex Siyasiya  
Arnold Wajomba  
Dalitso Ngwalo  
Dan Ndilipa  
Dean Soko  
Elizabeth Kampira  
Frank Nyirongo  
Ganizani Pidini  
Harrison Dzimbiri  
Isaac Singini  
Jack Anderson  
Janet Chiwaya  
Jossen Munthali  
Melvin Kamanga  
Memory Kapoteza  
Owen Mwapasa  
Ruth Mthunzi  
Sufia Dadabhai

Thomas Gondwe  
Victoria Kaliwo  
Wamba Khonyongwa

**Westat**

Adam Chu  
Amanda Fournier  
Baifan Li  
Bhumika Pakai  
Brandyn Fauble  
Charisse McBride  
Emily J. Hudak  
Graham Kalton  
Harold Bobbitt  
Jackie Varenne  
Jason Ives  
Joy Curvan  
Julia Shpigener  
Jyothi Pabbaraju  
Karin Wilson  
Karla Richie  
Katherine Aronson  
Emmanuel Aluko  
Kenneth Marshall  
Kiersten Johnson  
Laura Alvarez Rojas  
Lesia Houser  
Lisa Bowser  
Lori Andrews  
Malinda Karunaratne  
Mamadou Diallo  
Marie Alexander  
Monica Tolentino  
Ratha Soumphonphakdy  
Rick Mitchell  
Roberto Miglietti  
Ron Klinger  
Sarah Woodruff  
Sean Byrne  
Thuzar Myo Myint  
Vivian Wu  
Weijia Ren

# APPENDIX E HOUSEHOLD QUESTIONNAIRE

ENGLISH

**MINISTRY OF HEALTH  
MALAWI HIV IMPACT ASSESSMENT 2015  
HOUSEHOLD QUESTIONNAIRE**

TICK IF HOUSEHOLD  
SELECTED FOR  
CHILDREN'S SURVEY

**CONFIDENTIAL**

**HOUSEHOLD IDENTIFICATION**

ZONE NAME:

\_\_\_\_\_

ZONE CODE

TRADITIONAL AUTHORITY:

\_\_\_\_\_

TA CODE

ENUMERATION AREA NAME:

\_\_\_\_\_

EA CODE

VILLAGE NAME:

\_\_\_\_\_

HH NUMBER

NAME OF HOUSEHOLD HEAD:

\_\_\_\_\_

TOTAL PERSONS  
IN HOUSEHOLD

TOTAL ELIGIBLE  
WOMEN:

TOTAL ELIGIBLE  
MEN:

TOTAL ELIGIBLE  
CHILDREN:

LINE NO. OF RESPONDENT TO  
HOUSEHOLD QUESTIONNAIRE

LANGUAGE OF INTERVIEW:

NATIVE LANGUAGE OF RESPONDENT:

TRANSLATOR USED? (Y/N)

**LANGUAGE CODES:**

- (01) ENGLISH
- (02) CHICHEWA
- (03) TUMBUKA
- (04) OTHER (SPECIFY)

\_\_\_\_\_

**ZONAL CODES:**

- (01) NORTH
- (02) CENTRAL EAST
- (03) CENTRAL WEST
- (04) SOUTH EAST
- (05) SOUTH WEST
- (06) BLANTYRE CITY
- (06) LILONGWE CITY

SUPERVISOR:

\_\_\_\_\_

SUPERVISOR CODE:

OFFICE EDITOR:

KEYED BY:

DATE:

**\* RESULTS CODES:**

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

**START TIME**

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

## 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.<br><br>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 <b>(NAME)</b> to the head of the household?<br><br>SEE CODES BELOW | Is <b>(NAME)</b> Male or Female? | Does <b>(NAME)</b> usually live here? | Did <b>(NAME)</b> sleep here last night? | IF LESS THAN 2 YEARS, RECORD IN MONTHS. |   |
|          |  |  |                                  |                                       |  | How old is <b>(NAME)</b> ?              | Is age of <b>(NAME)</b> recorded in MONTHS/ YEARS?                |
| (1)      | (2)  | (3)  | (4)                              | (5)                                   | (6)                                      | (7)                                     | (8)   |
| 1        |  | □ □  | M F                              | Y N                                   | Y N                                      | □ □                                     | MONTHS <input type="checkbox"/><br>YEARS <input type="checkbox"/> |
| 2        |  | □ □  | M F                              | Y N                                   | Y N                                      | □ □                                     | MONTHS <input type="checkbox"/><br>YEARS <input type="checkbox"/> |
| 3        |  | □ □  | M F                              | Y N                                   | Y N                                      | □ □                                     | MONTHS <input type="checkbox"/><br>YEARS <input type="checkbox"/> |
| 4        |  | □ □  | M F                              | Y N                                   | Y N                                      | □ □                                     | MONTHS <input type="checkbox"/><br>YEARS <input type="checkbox"/> |
| 5        |  | □ □  | M F                              | Y N                                   | Y N                                      | □ □                                     | MONTHS <input type="checkbox"/><br>YEARS <input type="checkbox"/> |
| 6        |  | □ □  | M F                              | Y N                                   | Y N                                      | □ □                                     | MONTHS <input type="checkbox"/><br>YEARS <input type="checkbox"/> |
| 7        |  | □ □  | M F                              | Y N                                   | Y N                                      | □ □                                     | MONTHS <input type="checkbox"/><br>YEARS <input type="checkbox"/> |
| 8        |  | □ □  | M F                              | Y N                                   | Y N                                      | □ □                                     | MONTHS <input type="checkbox"/><br>YEARS <input type="checkbox"/> |
| 9        |  | □ □  | M F                              | Y N                                   | Y N                                      | □ □                                     | MONTHS <input type="checkbox"/><br>YEARS <input type="checkbox"/> |
| 10       |  | □ □  | M F                              | Y N                                   | Y N                                      | □ □                                     | MONTHS <input type="checkbox"/><br>YEARS <input type="checkbox"/> |

TICK HERE IF CONTINUATION SHEET USED

**2A)** Just to make sure I have a complete listing, are there any other persons such as small children or infants that we have not listed?

YES  NO

**2B)** Are there any other people who may not be members of your household such as domestic servants, lodgers, of friends who usually live here?

YES  NO

**2C)** Are there any guests or temporary visitors staying here, or anyone else who stayed here last night who we have not seen?

YES  NO

ADD TO SCHEDULE

**CODES FOR COLUMN 3: RELATIONSHIP TO HOUSEHOLD HEAD**

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

## HOUSEHOLD SCHEDULE

| LINE NO. | IF (NAME) IS 0-17 YEARS       |   |  | IF (NAME) IS 0-14 YEARS                   |  |   |  |
|----------|-------------------------------|---|--|---|--|---|--|
|          | EMANC STATUS                  | ORPHAN STATUS/PARENT OR GUARDIAN          |  |   |  |   |  |
|          | Is <b>(NAME)</b> emancipated? | Is <b>(NAME)</b> 's natural mother alive? | Does <b>(NAME)</b> 's natural mother usually live in this household or was a guest last night?<br><br>IF YES: RECORD MOTHER'S LINE NUMBER.<br><br>IF NO: RECORD <b>FEMALE</b> GUARDIAN'S LINE NUMBER OR '00' IF FEMALE PARENT OR GUARDIAN NOT PRESENT IN HH. | Is <b>(NAME)</b> 's natural father alive? | Does <b>(NAME)</b> 's natural father usually live in this household or was a guest last night?<br><br>IF YES: RECORD FATHER'S LINE NUMBER.<br><br>IF NO: RECORD <b>MALE</b> 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 <b>(NAME)</b> | DO NOT READ: IS <b>(NAME)</b> ELIGIBLE FOR SURVEY? |
| (1)      | (9)                           | (10)                                      | (11)   | (12)                                      | (13)   | (14)  | (15)   |
| 1        | Y N                           | Y N DK<br>↓<br>12                         | <input style="width: 40px; height: 20px;" type="text"/>  | Y N DK<br>↓<br>14                         | <input style="width: 40px; height: 20px;" type="text"/>  | <input style="width: 40px; height: 20px;" type="text"/>                                     | Y N  |
| 2        | Y N                           | Y N DK<br>↓<br>12                         | <input style="width: 40px; height: 20px;" type="text"/>  | Y N DK<br>↓<br>14                         | <input style="width: 40px; height: 20px;" type="text"/>  | <input style="width: 40px; height: 20px;" type="text"/>                                     | Y N  |
| 3        | Y N                           | Y N DK<br>↓<br>12                         | <input style="width: 40px; height: 20px;" type="text"/>  | Y N DK<br>↓<br>14                         | <input style="width: 40px; height: 20px;" type="text"/>  | <input style="width: 40px; height: 20px;" type="text"/>                                     | Y N  |
| 4        | Y N                           | Y N DK<br>↓<br>12                         | <input style="width: 40px; height: 20px;" type="text"/>  | Y N DK<br>↓<br>14                         | <input style="width: 40px; height: 20px;" type="text"/>  | <input style="width: 40px; height: 20px;" type="text"/>                                     | Y N  |
| 5        | Y N                           | Y N DK<br>↓<br>12                         | <input style="width: 40px; height: 20px;" type="text"/>  | Y N DK<br>↓<br>14                         | <input style="width: 40px; height: 20px;" type="text"/>  | <input style="width: 40px; height: 20px;" type="text"/>                                     | Y N  |
| 6        | Y N                           | Y N DK<br>↓<br>12                         | <input style="width: 40px; height: 20px;" type="text"/>  | Y N DK<br>↓<br>14                         | <input style="width: 40px; height: 20px;" type="text"/>  | <input style="width: 40px; height: 20px;" type="text"/>                                     | Y N  |
| 7        | Y N                           | Y N DK<br>↓<br>12                         | <input style="width: 40px; height: 20px;" type="text"/>  | Y N DK<br>↓<br>14                         | <input style="width: 40px; height: 20px;" type="text"/>  | <input style="width: 40px; height: 20px;" type="text"/>                                     | Y N  |
| 8        | Y N                           | Y N DK<br>↓<br>12                         | <input style="width: 40px; height: 20px;" type="text"/>  | Y N DK<br>↓<br>14                         | <input style="width: 40px; height: 20px;" type="text"/>  | <input style="width: 40px; height: 20px;" type="text"/>                                     | Y N  |
| 9        | Y N                           | Y N DK<br>↓<br>12                         | <input style="width: 40px; height: 20px;" type="text"/>  | Y N DK<br>↓<br>14                         | <input style="width: 40px; height: 20px;" type="text"/>  | <input style="width: 40px; height: 20px;" type="text"/>                                     | Y N  |
| 10       | Y N                           | Y N DK<br>↓<br>12                         | <input style="width: 40px; height: 20px;" type="text"/>  | Y N DK<br>↓<br>14                         | <input style="width: 40px; height: 20px;" type="text"/>  | <input style="width: 40px; height: 20px;" type="text"/>                                     | Y N  |

|  |   |  |  |  |  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|--|--|--|
|  | <p style="text-align: center;">TOTAL ELIGIBLE MEN (ADULTS 15-64 YEARS AND EMANCIPATED MINORS)</p> <p style="text-align: center;">TOTAL ELIGIBLE WOMEN (ADULTS 15 -64 YEARS AND EMANCIPATED MINORS)</p> <p style="text-align: center;">TOTAL ELIGIBLE CHILDREN (10 TO 14 YEARS)</p> <p style="text-align: center;">TOTAL ELIGIBLE CHILDREN (0 MONTHS TO 9 YEARS)</p> | <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: 1px solid black; height: 20px;"></td> <td style="width: 50%; border: 1px solid black; height: 20px;"></td> </tr> <tr> <td style="border: 1px solid black; height: 20px;"></td> <td style="border: 1px solid black; height: 20px;"></td> </tr> <tr> <td style="border: 1px solid black; height: 20px;"></td> <td style="border: 1px solid black; height: 20px;"></td> </tr> <tr> <td style="border: 1px solid black; height: 20px;"></td> <td style="border: 1px solid black; height: 20px;"></td> </tr> </table> |  |  |  |  |  |  |  |  |
|  |   |  |  |  |  |  |  |  |  |  |
|  |   |  |  |  |  |  |  |  |  |  |
|  |   |  |  |  |  |  |  |  |  |  |
|  |   |  |  |  |  |  |  |  |  |  |

## HOUSEHOLD SCHEDULE

| LINE NO. | IF (NAME) is 18-64 years  | IF (NAME) is 0-17 years   |  |  |  |   |   |
|----------|---|---|--|--|--|---|---|
|          | SICK PERSON   | SICKNESS AND RESIDENCE OF BIOLOGICAL PARENTS  |  |  |  | MOTHER DEAD OR SICK   | FATHER DEAD OR SICK   |
|          | <p>CHECK COLUMNS 7 AND 8, IF UNDER 18 → 17</p> <p>IF 18 YEARS OR MORE:</p> <p>Has (NAME) been very sick for at least 3 months during the past 12 months, that is (NAME) was too sick to work or do normal activities?</p> | <p>CHECK COLUMN 10, IF COLUMN 10 'N' OR 'DK' → 21</p> <p>IF COLUMN 10 'Y':</p> <p>Has (NAME)'s natural mother been very sick for at least 3 months during the past 12 months, that is she was too sick to work or do normal activities?</p> | <p>IF MOTHER SICK:</p> <p>Does (NAME)'s natural mother have HIV/AIDS?*</p> | <p>CHECK COLUMN 12, IF COLUMN 12 'N' OR 'DK' → 23</p> <p>IF COLUMN 12 'Y':</p> <p>Has (NAME)'s natural father been very sick for at least 3 months during the past 12 months, that is he was too sick to work or do normal activities?</p> | <p>IF FATHER SICK:</p> <p>Does (NAME)'s natural father have HIV/AIDS?*</p> | <p>IF CHILD'S NATURAL MOTHER HAS DIED (COLUMN 10 'N') OR BEEN SICK (COLUMN 18 'Y'), SELECT Y.</p> | <p>IF CHILD'S NATURAL FATHER HAS DIED (COLUMN 12 'N') OR BEEN SICK (COLUMN 20 'Y'), SELECT Y.</p> |
| (1)      | (16)  | (17)  | (18)   | (19)   | (20)   | (21)  | (22)  |
| 1        | Y N   | Y N DK<br>↓<br>19   | Y N DK   | Y N DK<br>↓<br>21  | Y N DK   | Y N   | Y N   |
| 2        | Y N   | Y N DK<br>↓<br>19   | Y N DK   | Y N DK<br>↓<br>21  | Y N DK   | Y N   | Y N   |
| 3        | Y N   | Y N DK<br>↓<br>19   | Y N DK   | Y N DK<br>↓<br>21  | Y N DK   | Y N   | Y N   |
| 4        | Y N   | Y N DK<br>↓<br>19   | Y N DK   | Y N DK<br>↓<br>21  | Y N DK   | Y N   | Y N   |
| 5        | Y N   | Y N DK<br>↓<br>19   | Y N DK   | Y N DK<br>↓<br>21  | Y N DK   | Y N   | Y N   |
| 6        | Y N   | Y N DK<br>↓<br>19   | Y N DK   | Y N DK<br>↓<br>21  | Y N DK   | Y N   | Y N   |
| 7        | Y N   | Y N DK<br>↓<br>19   | Y N DK   | Y N DK<br>↓<br>21  | Y N DK   | Y N   | Y N   |
| 8        | Y N   | Y N DK<br>↓<br>19   | Y N DK   | Y N DK<br>↓<br>21  | Y N DK   | Y N   | Y N   |
| 9        | Y N   | Y N DK<br>↓<br>19   | Y N DK   | Y N DK<br>↓<br>21  | Y N DK   | Y N   | Y N   |
| 10       | Y N   | Y N DK<br>↓<br>19   | Y N DK   | Y N DK<br>↓<br>21  | Y N DK   | Y N   | Y N   |



## HOUSEHOLD SCHEDULE

| HOUSEHOLD SCHEDULE |   |   |   |   |   |   |
|--------------------|---|---|---|---|---|---|
| LINE NO.           | SPOUSES AND CO-HABITATING PARTNERS  |   |   |   |   |   |
|                    | Record the LINE NUMBER ( <b>NAME</b> )'s of spouse or partner. If no spouse or partner leave blank. | Record the LINE NUMBER ( <b>NAME</b> )'s of spouse or partner. If no spouse or partner leave blank. | Record the LINE NUMBER ( <b>NAME</b> )'s of spouse or partner. If no spouse or partner leave blank. | Record the LINE NUMBER ( <b>NAME</b> )'s of spouse or partner. If no spouse or partner leave blank. | Record the LINE NUMBER ( <b>NAME</b> )'s of spouse or partner. If no spouse or partner leave blank. | Record the LINE NUMBER ( <b>NAME</b> )'s of spouse or partner. If no spouse or partner leave blank. |
| (1)                | (23a)   | (23b)   | (23c)   | (23d)   | (23e)   | (23f)   |
| 1                  | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   |
| 2                  | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   |
| 3                  | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   |
| 4                  | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   |
| 5                  | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   |
| 6                  | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   |
| 7                  | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   |
| 8                  | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   |
| 9                  | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   |
| 10                 | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   | <input style="width: 40px; height: 20px;" type="text"/>   |

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

|  |  |  |  |
|--|--|--|--|
| <b>SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN</b> |  |  |  |
|--|--|--|--|

|     |  |  |              |
|-----|--|--|--------------|
| 101 | DO NOT READ: CHECK COLUMN 7 IN THE HOUSEHOLD SCHEDULE.<br><br><b>ANY CHILD AGE 0-17 YEARS?</b>                         | NUMBER OF CHILDREN 0-17 YRS: <input type="text"/> <input type="text"/> | NONE<br>→114 |
| 102 | DO NOT READ: CHECK COLUMN 16 IN THE HOUSEHOLD SCHEDULE.<br><br><b>ANY SICK ADULT AGE 18-64 YEARS?</b>                  | YES.....1<br>NO.....2  | YES →<br>105 |
| 103 | DO NOT READ: CHECK COLUMN 21 IN THE HOUSEHOLD SCHEDULE.<br><br><b>ANY CHILD WHOSE MOTHER HAS DIED OR IS VERY SICK?</b> | YES.....1<br>NO.....2  | YES →<br>105 |
| 104 | DO NOT READ: CHECK COLUMN 22 IN THE HOUSEHOLD SCHEDULE.<br><br><b>ANY CHILD WHOSE FATHER HAS DIED OR IS VERY SICK?</b> | YES.....1<br>NO.....2  | NO →<br>114  |

| NO.  | QUESTIONS AND INSTRUCTIONS   | CODING CATEGORIES & SKIPS  |  |  |
|--|--|--|--|--|
| 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)  |
|  | <p style="text-align: right;">NAME</p> <hr/> <p style="text-align: center;">—</p> <p style="text-align: center;">LINE NUMER (FROM COLUMN 1)</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> </div> <p style="text-align: center;">AGE (FROM COLUMN 7)</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> </div> | <hr/> <p style="text-align: center;">—</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> </div> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> </div> | <hr/> <p style="text-align: center;">—</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> </div> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> </div> | <hr/> <p style="text-align: center;">—</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> </div> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> <div style="border: 1px solid black; width: 40px; height: 20px;"></div> </div> |
| <p>➤ <b>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.”</b></p> |  |  |  |  |
| 106  | <p>Now I would like to ask you about the support your household received for <b>(NAME)</b>.</p> <p>In the last 12 months, has your household received any medical support for <b>(NAME)</b>, such as medical care, supplies, or medicine, for which you did not have to pay?</p>   | YES.....1<br>NO.....2<br>DON'T KNOW.....8  | YES.....1<br>NO.....2<br>DON'T KNOW.....8  | YES.....1<br>NO.....2<br>DON'T KNOW.....8  |

| NO. | QUESTIONS AND INSTRUCTIONS  | CODING CATEGORIES & SKIPS  |  |  |
|-----|---|--|--|--|
| 107 | <p>In the last 12 months, has your household received any emotional or psychological support for (<b>NAME</b>), such as companionship, counseling from a trained counselor, or spiritual support, which you received at home and for which you did not have to pay?</p> | <p>YES.....1<br/> NO.....2<br/> DON'T KNOW.....8<br/> <br/> NO, DK → 109</p> | <p>YES.....1<br/> NO.....2<br/> DON'T KNOW.....8<br/> <br/> NO, DK → 109</p> | <p>YES.....1<br/> NO.....2<br/> DON'T KNOW.....8<br/> <br/> NO, DK → 109</p> |

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

| NO. | QUESTIONS AND INSTRUCTIONS | CODING CATEGORIES & SKIPS |
|-----|----------------------------|---------------------------|
|-----|----------------------------|---------------------------|

**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.**

|                         |  |  |  |
|-------------------------|--|--|--|
| <b>HOUSEHOLD DEATHS</b> |  |  |  |
|-------------------------|--|--|--|

|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|-------------------------------------|-------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 114  | Now I would like to ask you more questions about your household. Has any usual resident of your household died since 2013? | YES.....1<br>NO.....2  | NO →<br>201                         |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 115  | How many usual household residents died since 2013?  | NUMBER OF DEATHS..... <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>   |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ASK 116-120 AS APPROPRIATE FOR EACH PERSON WHO DIED. IF THERE WERE MORE THAN 3 DEATHS USE ADDITIONAL QUESTIONNAIRES. |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 116  | What was the name of the person who died (most recently/before him/her)?   | NAME 1 <sup>ST</sup> DEATH<br>_____  | NAME 2 <sup>ND</sup> DEATH<br>_____ | NAME 3 <sup>RD</sup> DEATH<br>_____ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 117  | When did (NAME) die? Please give your best guess.  | DAY <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table><br>MONTH <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table><br>YEAR <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> |                                     |                                     |  |  |  |  |  |  |  |  |  |  | DAY <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table><br>MONTH <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table><br>YEAR <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> |  |  |  |  |  |  |  |  |  |  |  |  | DAY <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table><br>MONTH <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table><br>YEAR <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 118  | Was (NAME) male or female?   | MALE .....1<br>FEMALE.....2  | MALE .....1<br>FEMALE.....2         | MALE .....1<br>FEMALE.....2         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

| NO. | QUESTIONS AND INSTRUCTIONS | CODING CATEGORIES & SKIPS |
|-----|----------------------------|---------------------------|
|-----|----------------------------|---------------------------|

|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 119 | <p>How old was (NAME) when (he/she) died?</p> <p>RECORD DAYS IF LESS THAN 1 MONTH, MONTHS IF LESS THAN 1 YEAR, AND COMPLETED YEARS IF 1 YEAR OR MORE.</p> | <p>DAYS <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table></p> <p>MONTHS <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table></p> <p>YEARS <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table></p> |  |  |  |  |  |  |  |  |  |  |  |  | <p>DAYS <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table></p> <p>MONTHS <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table></p> <p>YEARS <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table></p> |  |  |  |  |  |  |  |  |  |  |  |  | <p>DAYS <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table></p> <p>MONTHS <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table></p> <p>YEARS <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table></p> |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
|--|--|
| <p><b>CONTINUE TO NEXT DEATH ACCORDING UP TO THE NUMBER REPORTED FROM 115.</b></p> <p><input type="checkbox"/> <b>TICK IF CONTINUATION SHEET REQUIRED.</b></p> |  |
|--|--|

| HOUSEHOLD CHARACTERISTICS |  |
|---------------------------|--|
|---------------------------|--|

|     |  |   |  |
|-----|--|---|--|
| 201 | <p>What is the <u>main</u> source of drinking water for members of your household?</p> | <p><b>PIPED WATER</b></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><b>DUG WELL</b></p> <p>PROTECTED WELL.....31</p> <p>UNPROTECTED WELL.....32</p> <p><b>WATER FROM SPRING</b></p> <p>PROTECTED SPRING.....41</p> <p>UNPROTECTED SPRING.....42</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>OTHER.....96</p> <p>_____</p> <p>(SPECIFY)</p> |  |
|-----|--|---|--|

|     |   |  |                                   |
|-----|---|--|-----------------------------------|
| 202 | Do you do anything to the water to make it safer to drink?                        | YES ..... 1<br>NO .....2<br>DON'T KNOW .....8  | NO,<br>DK→204                     |
| 203 | What do you do to make your water safe for drinking?<br><br>RECORD ALL MENTIONED. | BOIL.....A<br>ADD BLEACH/CHLORINE .....B<br>STRAIN THROUGH A CLOTH.....C<br>USE A WATER FILTER.....D<br>SOLAR DISINFECTION.....E<br>LET IT STAND AND SETTLE.....F<br>OTHER.....X<br><br>_____<br>(SPECIFY)<br>DON'T KNOW .....Z  |                                   |
| 204 | What kind of toilet facility do members of your household usually use?            | FLUSH OR POUR FLUSH TOILET.....11<br>VENTILATED IMPROVED PIT LATRINE (VIP).....21<br>PIT LATRINE WITH SLAB.....22<br>PIT LATRINE WITHOUT SLAB/<br>OPEN PIT.....23<br>COMPOSTING TOILET.....31<br>BUCKET TOILET .....41<br>HANGING TOILET/<br>HANGING LATRINE.....51<br>NO FACILITY/BUSH/FIELD.....61<br>OTHER.....96<br><br>_____<br>(SPECIFY) | NO<br>FACILITY,<br>OTHER<br>→ 207 |
| 205 | Do you share this toilet facility with other households?                          | YES.....1<br>NO.....2  |                                   |
| 206 | How many households use this toilet facility?                                     | NO. OF HOUSEHOLD IF LESS THAN 10<br>_____<br>10 OR MORE HOUSEHOLDS .....96<br>DON'T KNOW .....98   |                                   |



| PREFACE BEFORE QUESTIONS 207-215:<br>Does your household have: |   |  |  |
|--|---|--|--|
| 207  | Electricity?  | YES.....1<br>NO.....2  |  |
| 208  | Paraffin lamp?  | YES.....1<br>NO.....2  |  |
| 209  | A radio?  | YES.....1<br>NO.....2  |  |
| 210  | A television?   | YES.....1<br>NO.....2  |  |
| 211  | A telephone/mobile telephone?                                 | YES.....1<br>NO.....2  |  |
| 212  | A bed with mattress?  | YES.....1<br>NO.....2  |  |
| 213  | A sofa set?   | YES.....1<br>NO.....2  |  |
| 214  | Table and chair(s)?   | YES.....1<br>NO.....2  |  |
| 215  | A refrigerator?   | YES.....1<br>NO.....2  |  |
| 216  | What type of fuel does your household mainly use for cooking? | ELECTRICITY.....1<br>LPG / NATURAL GAS.....2<br>BIOGAS.....3<br>PARAFFIN / KEROSENE.....4<br>COAL, LIGNITE.....5<br>CHARCOAL FROM WOOD.....6<br>FIREWOOD / STRAW.....7<br>DUNG.....8<br>NO FOOD COOKED IN HOUSEHOLD.....95<br>OTHER.....96<br><br>_____<br>(SPECIFY) |  |

|     |   |  |  |
|-----|---|--|--|
| 217 | <p>MAIN MATERIAL OF FLOOR</p> <p>RECORD OBSERVATION.</p>    | <p><b>NATURAL FLOOR</b></p> <p>EARTH / SAND.....11</p> <p>DUNG.....12</p> <p><b>RUDIMENTARY FLOOR</b></p> <p>WOOD PLANKS.....21</p> <p>PALM / BAMBOO.....22</p> <p>BROKEN BRICKS .....23</p> <p><b>FINISHED FLOOR</b></p> <p>PARQUET OR POLISHED WOOD.....31</p> <p>VINYL OR ASPHALT STRIP.....32</p> <p>CERAMIC TILES.....33</p> <p>CEMENT/TERAZO.....34</p> <p>CARPET.....35</p> <p>OTHER.....96</p> <p>_____</p> <p>(SPECIFY)</p>   |  |
| 218 | <p>MAIN MATERIAL OF THE ROOF</p> <p>RECORD OBSERVATION.</p> | <p><b>NATURAL ROOFING</b></p> <p>NO ROOF.....11</p> <p>THATCH/PALM LEAF.....12</p> <p>SOD.....13</p> <p><b>RUDIMENTARY ROOFING</b></p> <p>RUSTIC MAT.....21</p> <p>PALM/BAMBOO.....22</p> <p>WOOD PLANKS.....23</p> <p>CARDBOARD.....24</p> <p><b>FINISHED ROOFING</b></p> <p>METAL.....31</p> <p>WOOD.....32</p> <p>CALAMINE/CEMENT FIBER.....33</p> <p>CERAMIC TILES .....34</p> <p>CEMENT .....35</p> <p>ROOFING SHINGLES .....36</p> <p>OTHER.....96</p> <p>_____</p> <p>(SPECIFY)</p> |  |

|   |   |  |  |
|---|---|--|--|
| 219   | <p>MAIN MATERIAL OF THE EXTERIOR WALLS</p> <p>RECORD OBSERVATION.</p> | <p><b>NATURAL WALLS</b><br/> NO WALLS.....11<br/> CANE/PALM/TRUNKS.....12<br/> DIRT.....13</p> <p><b>RUDIMENTARY WALLS</b><br/> BAMBOO WITH MUD.....21<br/> STONE WITH MUD.....22<br/> UNCOVERED ADOBE.....23<br/> PLYWOOD.....24<br/> CARDBOARD.....25<br/> REUSED WOOD.....26</p> <p><b>FINISHED WALLS</b><br/> CEMENT.....31<br/> STONE WITH LIME/CEMENT.....32<br/> BRICKS.....33<br/> CEMENT BLOCKS.....34<br/> COVERED ADOBE.....35<br/> WOOD PLANKS/SHINGLES.....36<br/> OTHER.....96</p> <p>_____<br/> (SPECIFY)</p> |  |
| 220   | How many rooms are used for sleeping?                                 | NUMBER OF ROOMS: <input type="text"/> <input type="text"/>   |  |
| <p><b>PREFACE BEFORE QUESTIONS 221-224:</b><br/> Does any member of your household own:</p> |   |  |  |
| 221   | A bicycle?  | YES.....1<br>NO.....2  |  |
| 222   | A motorcycle or motor scooter?  | YES.....1<br>NO.....2  |  |
| 223   | A car or truck?   | YES.....1<br>NO.....2  |  |
| 224   | A watch?  | YES.....1<br>NO.....2  |  |
| <p><b>PREFACE BEFORE QUESTIONS 225-229:</b><br/> Does any member of your household own:</p> |   |  |  |
| 225   | Goats?  | YES.....1<br>NO.....2  |  |
| 226   | Pigs?   | YES.....1<br>NO.....2  |  |

|     |           |                       |  |
|-----|-----------|-----------------------|--|
| 227 | Cattle ?  | YES.....1<br>NO.....2 |  |
| 228 | Sheep?    | YES.....1<br>NO.....2 |  |
| 229 | Chickens? | YES.....1<br>NO.....2 |  |

**ECONOMIC SUPPORT**

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

**END OF HOUSEHOLD INTERVIEW**

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

**END TIME**

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

## 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 | IS THE RESPONDENT MALE OR FEMALE?       | MALE = 1<br>FEMALE = 2   |                       |
| 102 | How old were you at your last birthday? | AGE IN COMPLETED YEARS __<br>DON'T KNOW AGE = -8<br>REFUSED = -9 |                       |
| 103 | Have you ever attended school?          | YES = 1<br>NO = 2<br>DON'T KNOW = -8<br>REFUSED = -9             | NO, DK, REFUSED → 107 |
| 104 | Are you enrolled in school?             | YES = 1<br>NO = 2<br>DON'T KNOW = -8<br>REFUSED = -9             | DK, REFUSED → 107     |

|     |   |  |  |
|-----|---|--|--|
| 105 | What is the highest level of school you attended: primary, secondary, or higher?                          | PRIMARY = 1<br>SECONDARY = 2<br>HIGHER = 3<br>DON'T KNOW = -8<br>REFUSED = -9  |  |
| 106 | What is the highest [class/form/year] you completed at that level?  | CLASS/FORM/YEAR _____<br>DON'T KNOW = -8<br>REFUSED = -9   |  |
| 107 | Have you done any work in the last 12 months for which you received a paycheck, cash or goods as payment? | YES = 1<br>NO = 2<br>DON'T KNOW = -8<br>REFUSED = -9   |  |
| 108 | What is your ethnic group/tribe?  | NKHONDE = 1<br>TUMBUKA= 2<br>TONGA = 3<br>YAO = 4<br>CHEWA = 5<br>SENA = 6<br>LOMWE = 7<br>NGONI = 8<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9                        |  |
| 109 | What is your religion?  | CATHOLIC = 1<br>CCAP = 2<br>ANGLICAN = 3<br>SEVENTH DAY ADVENTIST= 4<br>BAPTIST = 5<br>OTHER CHRISTIAN = 6<br>MUSLIM = 7<br>NO RELIGION = 8<br>OTHER = 96<br>DON'T KNOW = -8 |  |



|     |                             |   |  |
|-----|-----------------------------|---|--|
|     |                             | REFUSED = -9  |  |
| 110 | What country were you born? | MALAWI = 1<br>ZAMBIA = 2<br>TANZANIA = 3<br>MOZAMBIQUE = 4<br>ZIMBABWE = 5<br>NIGERIA = 6<br>RWANDA = 7<br>BURUNDI = 8<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9 |  |

| <b>MODULE 2: MARRIAGE</b>  |  |   |   |
|--|--|---|---|
| <b>Interviewer says: "Now I would like to ask you about your current and previous relationships and/or marriages."</b> |  |   |   |
| 201  | Have you ever been married or lived together with a [man/woman] as if married?   | YES = 1<br>NO = 2<br>DON'T KNOW = -8<br>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 ____<br>DON'T KNOW = -8<br>REFUSED = -9  |   |
| 203  | Have you ever been widowed? That is, did a spouse ever die while you were still married or living with them?                   | YES = 1<br>NO = 2<br>DON'T KNOW = -8<br>REFUSE TO ANSWER = -9   |   |
| 204  | What is your marital status now: are you married, living together with someone as if married, widowed, divorced, or separated? | MARRIED = 1<br>LIVING TOGETHER = 2<br>WIDOWED = 3<br>DIVORCED = 4<br>SEPARATED = 5<br>DON'T KNOW = -8<br>REFUSED = -9 | WIDOWED, DIVORCED, SEPARATED, DK, REFUSED → NEXT MODULE |

**Interviewer says: "The next several questions are about your current spouse or partner(s)."**

|     |   |   |   |
|-----|---|---|---|
| 205 | Do you have more than one wife or woman you live with as if married?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSE TO ANSWER = -9                            | YES →208<br><br>DK, REFUSED →SKIP TO NEXT MODULE<br><br>SKIP IF FEMALE    |
| 206 | Is your wife or partner living with you now or is she staying elsewhere?  | LIVING TOGETHER = 1<br>STAYING ELSEWHERE = 2<br>DON'T KNOW = 8<br>REFUSE TO ANSWER = -9 | STAYING ELSEWHERE, DK, REFUSED →SKIP TO NEXT MODULE<br><br>SKIP IF FEMALE |
| 207 | RECORD THE LINE NUMBER FROM THE HOUSEHOLD SCHEDULE OF THE SPOUSE OR LIVE-IN PARTNER.<br><br>IF THE PERSON IS NOT LISTED IN THE HOUSEHOLD, RECORD '00'.  | LINE NUMBER __ __   | ALL → SKIP TO NEXT MODULE<br><br>SKIP IF FEMALE                           |
| 208 | Altogether, how many wives or partners do you have?   | NUMBER OF WIVES OR PARTNERS _____<br>DON'T KNOW = -8<br>REFUSED = -9                    | DK, REFUSED →SKIP TO NEXT MODULE<br><br>SKIP IF FEMALE                    |
| 209 | Please tell me the name of each of your current wives that <u>live</u> with you and/or of each woman you are living with as if married.<br><br>RECORD THE LINE NUMBER(S) FROM THE HOUSEHOLD QUESTIONNAIRE FOR EACH SPOUSE AND LIVE-IN PARTNER. IF THE PERSON IS NOT LISTED IN THE HOUSEHOLD, RECORD '00'.<br><br>ASK 209 FOR EACH PERSON. | LINE NUMBER __ __   | ALL → SKIP TO NEXT MODULE<br><br>SKIP IF FEMALE                           |
| 210 | Is your husband or partner living with you now or is he staying elsewhere?  | LIVING TOGETHER = 1<br>STAYING ELSEWHERE = 2<br>DON'T KNOW = 8<br>REFUSE TO ANSWER = -9 | STAYING ELSEWHERE, DK, REFUSED →212                                       |

|     |  |   |                                       |
|-----|--|---|---------------------------------------|
| 211 | RECORD THE LINE NUMBER FROM THE HOUSEHOLD SCHEDULE OF THE SPOUSE OR LIVE-IN PARTNER.<br><br>IF THE PERSON IS NOT LISTED IN THE HOUSEHOLD, RECORD '00'. | LINE NUMBER __ __   |                                       |
| 212 | Does your husband or partner have other wives or does he live with other women as if married?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSE TO ANSWER = -9                              | NO, DK, REFUSED → SKIP TO NEXT MODULE |
| 213 | Including yourself, in total, how many wives or live-in partners does your husband or partner have?  | NUMBER OF WIVES OR LIVE-IN PARTNERS __ __<br><br>DON'T KNOW = -8<br>REFUSE TO ANSWER = -9 |                                       |

| <b>MODULE 3: REPRODUCTION</b>  |  |  |                         |
|--|--|--|-------------------------|
| <b>Interviewer says: "Now I would like to ask you questions about your pregnancies and your children."</b> |  |  | IF MALE SKIP TO 356.    |
| 301  | How many times have you been pregnant including a current pregnancy?<br><br>CODE '00' IF NONE.   | NUMBER OF TIME(S) ____<br>DON'T KNOW = -8<br>REFUSED = -9  | NONE, DK, REFUSED → 356 |
| 302  | Have you ever had a pregnancy that resulted in a live birth?<br><br>A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement.  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = -9        | NO, DK, REFUSED → 354   |
| 303  | In total, how many children have you given birth to who were born alive?<br><br>These include children who were born alive but later died. They could have been children who have lived with you or have not lived with you. | NUMBER OF CHILDREN ____<br>DON'T KNOW = -8<br>REFUSED = -9 |                         |

**MODULE 3: REPRODUCTION**

|     |   |  |                        |
|-----|---|--|------------------------|
| 304 | How many children have you given birth to since 2012?<br><br>CODE '00' IF NONE. | NUMBER OF CHILDREN ____<br>DON'T KNOW = -8<br>REFUSED = -9 | NONE, DK, REFUSED →354 |
|-----|---|--|------------------------|

**Interviewer says: "Now I would like to ask you some questions about the last pregnancy that resulted in a live birth since 2012."**

|     |  |   |                              |
|-----|--|---|------------------------------|
| 305 | Did your last pregnancy result in birth to twins or more?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = -9 |                              |
| 306 | What is the name of the child from your last pregnancy that resulted in a live birth?<br><br>A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement.<br><br>IF MULTIPLE BIRTH, LIST ALL NAMES. IF THE CHILD WAS NOT NAMED BEFORE DEATH, INPUT BIRTH 1. | NAME ____   |                              |
| 307 | When you were pregnant with <b>(NAME)</b> , did you plan to get pregnant at that time?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = -9 |                              |
| 308 | When you were pregnant with <b>(NAME)</b> , did you visit a health facility for antenatal care?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = -9 | YES →310<br>DK, REFUSED →327 |
| 309 | What is the <u>main</u> reason you did not visit a clinic for antenatal care   | CLINIC WAS TOO FAR AWAY= 1                          | ALL → 327                    |

|     |   |  |   |
|-----|---|--|---|
|     | when you were pregnant with <b>(NAME)</b> ?   | <p>COULD NOT TAKE TIME OFF WORK/TOO BUSY = 2</p> <p>COULD NOT AFFORD TO PAY FOR THE VISIT = 3</p> <p>DID NOT TRUST THE CLINIC STAFF = 4</p> <p>RECEIVED CARE AT HOME = 5</p> <p>DID NOT WANT AN HIV TEST DONE = 6</p> <p>HUSBAND/FAMILY WOULD NOT LET ME GO = 7</p> <p>USED TRADITIONAL BIRTH ATTENDANT/HEALER = 8</p> <p>COST OF TRANSPORT = 9</p> <p>OTHER = 96</p> <p>DON'T KNOW = -8</p> <p>REFUSED = -9</p> |   |
| 310 | <p>At what months in your pregnancy did you attend the antenatal clinic?</p> <p>SELECT ALL THAT APPLY.</p>  | <p>0-3 MONTHS/1<sup>ST</sup> TRIMESTER = A</p> <p>4-6 MONTHS/2<sup>ND</sup> TRIMESTER = B</p> <p>7-9 MONTHS/3<sup>RD</sup> TRIMESTER = C</p> <p>DON'T KNOW = Y</p> <p>REFUSED = Z</p>  | <p>ELECTRONIC AID IF DON'T KNOW</p> <p>IF 1<sup>ST</sup> TRIMESTER, DON'T KNOW, REFUSED SELECTED SKIP TO 312.</p> |
| 311 | <p>Why did you not attend the antenatal clinic during your first trimester when you were pregnant with <b>(NAME)</b>?</p> <p>SELECT ALL THAT APPLY.</p> | <p>DID NOT NEED TO GO DURING FIRST TRIMESTER = A</p> <p>DID NOT KNOW I WAS PREGNANT = B</p> <p>CLINIC TOO FAR AWAY = C</p> <p>COULD NOT TAKE TIME OFF WORK/TOO BUSY = D</p> <p>COSTS TOO MUCH = E</p> <p>DID NOT WANT HIV TEST DONE = F</p> <p>DID NOT WANT PEOPLE TO KNOW THAT I WAS PREGNANT = G</p> <p>CLINIC STAFF WOULD HAVE TURNED ME AWAY BECAUSE TOO EARLY IN PREGNANCY = H</p>                          |   |

|   |   |  |   |
|---|---|--|---|
|   |   | <p>DID NOT THINK PREGNANCY TEST KITS WOULD BE AVAILABLE = I<br/>         CLINIC TOO BUSY = J<br/>         WANTED TO AVOID MULTIPLE CLINIC VISITS = K<br/>         OTHER = X<br/>         DON'T KNOW = Y<br/>         REFUSED = Z</p> |   |
| 312   | <p>Where did you go to when you received antenatal care when you were pregnant with <b>(NAME)</b>? Did you go to a public facility, CHAM or another private facility?</p> | <p>PUBLIC CLINIC/HOSPITAL= 1<br/>         CHAM HOSPITAL = 2<br/>         OTHER PRIVATE CLINIC/HOSPITAL = 3<br/>         BOTH PUBLIC AND PRIVATE= 4<br/>         DON'T KNOW = 8<br/>         REFUSED = -9</p>                         |   |
| <p><b>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."</b></p> |   |  |   |
| 313   | <p>Have you ever tested for HIV before your pregnancy with <b>(NAME)</b>?</p>   | <p>YES = 1<br/>         NO = 2<br/>         DON'T KNOW = 8<br/>         REFUSED = -9</p>   | <p>NO, DK, REFUSED → 316</p>  |
| 314   | <p>Did you test positive for HIV before your pregnancy with <b>(NAME)</b>?</p>  | <p>YES = 1<br/>         NO = 2<br/>         DON'T KNOW = 8<br/>         REFUSED = -9</p>   | <p>NO, DK, REFUSED → 316</p>  |
| 315   | <p>At the time of your first antenatal care visit when you were pregnant with <b>(NAME)</b>, were you taking ARVs, that is, antiretroviral medications, to treat HIV?</p> | <p>YES = 1<br/>         NO = 2<br/>         DON'T KNOW = 8<br/>         REFUSED = -9</p>   | <p>YES →323<br/>         NO, DK, REFUSED →320<br/>         ELECTRONIC AID IF DON'T KNOW</p> |
| 316   | <p>During any of your visits to the antenatal care clinic when you were pregnant with <b>(NAME)</b>, were you <u>offered</u> an HIV test?</p>                             | <p>YES = 1<br/>         NO = 2<br/>         DON'T KNOW = 8<br/>         REFUSED = -9</p>   |   |

|     |  |   |  |
|-----|--|---|--|
| 317 | Were you <u>tested</u> for HIV during any of your antenatal care clinic visits when you were pregnant with <b>(NAME)</b> ? | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = -9   | YES →319<br>DK, REFUSED →323                                       |
| 318 | What is the <u>main</u> reason you were not tested for HIV during antenatal care with <b>(NAME)</b> ?                      | DID NOT WANT AN HIV TEST DONE / DID NOT WANT TO KNOW MY STATUS = 1<br>DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY = 2<br>AFRAID OTHERS WOULD KNOW ABOUT TEST RESULTS = 3<br>DID NOT NEED TEST/LOW RISK = 4<br>OTHER = 6<br>DON'T KNOW = 8<br>REFUSED = -9 | ALL →SKIP TO 323   |
| 319 | What was the result of your last HIV test during your pregnancy with <b>(NAME)</b> ?                                       | POSITIVE = 1<br>NEGATIVE = 2<br>UNKNOWN/INDETERMINATE = 3<br>DID NOT RECEIVE RESULTS = 4<br>DON'T KNOW = 8<br>REFUSED = -9  | POSITIVE → 320<br>ELSE → 323                                       |
| 320 | Did you take ARVs during your pregnancy with <b>(NAME)</b> to stop <b>(NAME)</b> from getting HIV?                         | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = -9   | YES → 322<br>DK, REFUSED → 323<br><br>ELECTRONIC AID IF DON'T KNOW |
| 321 | What was the <u>main</u> reason you did not take ARVs while you were pregnant with <b>(NAME)</b> ?                         | WAS NOT PRESCRIBED = 1<br>I FELT HEALTHY/NOT SICK = 2<br>COST OF MEDICATIONS = 3<br>COST OF TRANSPORT = 4<br>RELIGIOUS REASONS = 5  | ALL →323   |

|     |   |  |                                  |
|-----|---|--|----------------------------------|
|     |   | <p>WAS TAKING TRADITIONAL MEDICATIONS = 6</p> <p>MEDICATIONS OUT OF STOCK = 7</p> <p>DID NOT WANT PEOPLE TO KNOW HIV STATUS=8</p> <p>DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY =9</p> <p>OTHER = 96</p> <p>DON'T KNOW = -8</p> <p>REFUSED = -9</p> |                                  |
| 322 | How many months pregnant were you when you started taking ARVs?                   | <p>MONTHS 1-3/1<sup>ST</sup> TRIMESTER = 1</p> <p>MONTHS 4-6/2<sup>ND</sup> TRIMESTER = 2</p> <p>MONTHS 7-9/3<sup>RD</sup> TRIMESTER = 3</p> <p>DON'T KNOW = 8</p> <p>REFUSED = -9</p>   | ELECTRONIC AID IF DON'T KNOW     |
| 323 | When you were pregnant with <b>(NAME)</b> , were you offered a test for syphilis? | <p>YES = 1</p> <p>NO = 2</p> <p>DON'T KNOW = 8</p> <p>REFUSED = -9</p>   |                                  |
| 324 | When you were pregnant with <b>(NAME)</b> , were you tested for syphilis?         | <p>YES = 1</p> <p>NO = 2</p> <p>DON'T KNOW = 8</p> <p>REFUSED = -9</p>   | NO, DK, REFUSED → 327            |
| 325 | Did you test positive for syphilis during your pregnancy with <b>(NAME)</b> ?     | <p>YES = 1</p> <p>NO = 2</p> <p>DID NOT GET RESULT = 3</p> <p>DON'T KNOW = 8</p> <p>REFUSED = -9</p>   | NO, NO RESULT, DK, REFUSED → 327 |
| 326 |   | <p>YES = 1</p> <p>NO = 2</p>   |                                  |



|     |   |   |   |
|-----|---|---|---|
|     | Did you get treatment for syphilis during your pregnancy with (NAME)? | DON'T KNOW = 8<br>REFUSED = -9  |   |
| 327 | Where did you give birth to (NAME)?                                   | AT HOME = 1<br>AT A HEALTH FACILITY = 2<br>IN TRANSIT = 3<br>AT TRADITIONAL BIRTH ATTENDANT HOME/CLINIC = 4<br>OTHER = 96<br>DON'T KNOW = 8<br>REFUSED = -9 | HOME, TRANSIT, TBA, OTHER, DK, REFUSED →333                         |
| 328 | Were you offered an HIV test during labor?                            | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = -9   |   |
| 329 | Did you test for HIV during labor?                                    | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = -9   | NO, DK, REFUSED →333<br>SKIP IF HIV POSITIVE                        |
| 330 | What was the result of that test?                                     | POSITIVE = 1<br>NEGATIVE = 2<br>UNKNOWN/INDETERMINATE = 3<br>DID NOT RECEIVE RESULTS = 4<br>DON'T KNOW = 8<br>REFUSED = -9                                  | NEG, UNK/IND, NO SRESULTS, DK, REFUSED →333<br>SKIP IF HIV POSITIVE |
| 331 | During labor, did you take ARVs to protect (NAME) against HIV?        | YES = 1<br>NO, OFFERED BUT DID NOT TAKE = 2<br>NO, NOT OFFERED = 3<br>DON'T KNOW = 8<br>REFUSED = -9  | NO, DK, REFUSED →333<br>ELECTRONIC AID IF DON'T KNOW                |
| 332 |   | YES = 1   |   |

|     |   |   |   |
|-----|---|---|---|
|     | Did you continue to take the ARVs after delivery?   | NO= 2<br>DON'T KNOW =8<br>REFUSED = -9  |   |
| 333 | When did you give birth to <b>(NAME)</b> ? Please give your best guess.                   | DAY ____<br>DON'T KNOW DAY= -8<br>REFUSED DAY= -9<br><br>MONTH ____<br>DON'T KNOW MONTH= -8<br>REFUSED MONTH= -9<br><br>YEAR ____<br>DON'T KNOW YEAR= -8<br>REFUSED YEAR= -9                      |   |
| 334 | Is <b>(NAME)</b> still alive?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSE = 9   | YES, DK, REFUSED→336<br><br>IF MULTIPLE ASK 334-353 FOR EACH CHILD. |
| 335 | When did <b>(NAME)</b> die?   | DAY ____<br>DON'T KNOW DAY = -8<br>REFUSED DAY = -9<br>MONTH ____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH = -9<br>YEAR ____<br>= -8= -9= -8= -9DON'T KNOW<br>YEAR = -998<br>REFUSED YEAR = -999 | ALL→338   |
| 336 | Is <b>(NAME)</b> living with you?   | YES = 1<br>NO = 2   | NO→338  |
| 337 | RECORD HOUSEHOLD LINE NUMBER OF CHILD<br><br>RECORD '00' IF CHILD NOT LISTED IN HOUSEHOLD | HOUSEHOLD LINE NUMBER<br><br>_____  |   |

|     |   |   |  |
|-----|---|---|--|
| 338 | <p>Did <b>(NAME)</b> take any ARVs to stop [him/her] from getting HIV infection? This would be <u>before</u> <b>(NAME)</b>'s first HIV test.</p>  | <p>YES = 1<br/> NO, DID NOT TAKE ARVS = 2<br/> NO, CHILD NOT ALIVE = 3<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>                   | <p>NO, NOT ALIVE, DK, REFUSED → 340<br/> ELECTRONIC AID IF DON'T KNOW<br/> SKIP IF HIV MOTHER IS HIV NEGATIVE.</p> |
| 339 | <p>For how long did <b>(NAME)</b> take the ARVs to stop [him/her] from getting HIV?</p> <p>CODE '00' IF LESS THAN ONE WEEK.</p> <p>ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS OR IN MONTHS.</p>   | <p>WEEKS _____<br/> MONTHS _____<br/> ARVs TAKEN ONCE = 96<br/> STILL TAKING ARVs = 97<br/> DON'T KNOW = -8<br/> REFUSED = -9</p> | <p>SKIP IF MOTHER IS HIV NEGATIVE.</p>   |
| 340 | <p>Did <b>(NAME)</b> take Bactrim or cotrimoxazole? This would be before <b>(NAME)</b>'s first HIV test.</p> <p>Bactrim or cotrimoxazole is a medicine recommended for people with HIV, even if they have not started treatment for HIV. It help prevents certain infections but it is not treatment for HIV.</p> | <p>YES = 1<br/> NO, DID NOT TAKE COTRIM = 2<br/> NO, CHILD NOT ALIVE = 3<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>                 | <p>NO, NOT ALIVE, DK, REFUSED → 342<br/> ELECTRONIC AID IF DON'T KNOW<br/> SKIP IF HIV MOTHER IS HIV NEGATIVE.</p> |
| 341 | <p>For how long did <b>(NAME)</b> take Bactrim or cotrimoxazole?</p> <p>ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS OR IN MONTHS.</p> <p>CODE '00' IF LESS THAN ONE WEEK.</p>  | <p>WEEKS _____<br/> MONTHS _____<br/> STILL TAKING COTRIMOXAZOLE = 97<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>                  | <p>SKIP IF MOTHER IS HIV NEGATIVE.</p>   |
| 342 | <p>Did you ever breastfeed <b>(NAME)</b>?</p>   | <p>YES = 1<br/> NO, NEVER BREASTFED = 2<br/> NO, CHILD NOT ALIVE = 3<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>                     | <p>NO, NOT ALIVE, DK, REFUSED → 347</p>  |

|     |   |  |  |
|-----|---|--|--|
| 343 | Are you still breastfeeding <b>(NAME)</b> ?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | YES →345<br>DK, REFUSED →347   |
| 344 | For how long did you breastfeed <b>(NAME)</b> ?<br><br>ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS OR IN MONTHS.<br><br>CODE '00" WEEKS IF LESS THAN 1 WEEK.   | WEEKS ____<br>MONTHS ____<br>DON'T KNOW = -8<br>REFUSED = -9                                     |  |
| 345 | How old was <b>(NAME)</b> when you started giving <b>(NAME)</b> cow's/goat's milk, powdered milk, water, or any other foods or liquid?<br><br>ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN MONTHS OR IN YEARS.<br><br>CODE '00' IF LESS THAN 1 MONTH. | MONTHS ____<br>YEARS ____<br>NEVER = 96<br>DON'T KNOW = -8<br>REFUSED = -9                       |  |
| 346 | Did you continue taking ARVs while you were breastfeeding <b>(NAME)</b> ?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | SKIP IF ONLY ONE TIME MED.<br>SKIP IF HIV NEGATIVE.<br>SKIP IF NOT TAKING ARVS.  |
| 347 | After <b>(NAME)</b> was born, was he/she tested for HIV?  | YES = 1<br>NO, NOT TESTED FOR HIV = 2<br>NO, CHILD NOT ALIVE= 3<br>DON'T KNOW = 8<br>REFUSED = 9 | YES →349<br>NO, NOT ALIVE, DK, REFUSED →353<br><br>SKIP IF MOTHER IS HIV NEGATIVE.<br>SKIP IF CURRENTLY BREASTFEEDING. |
| 348 | While you were breastfeeding, was <b>(NAME)</b> tested for HIV?   | YES = 1<br>NO, NOT TESTED FOR HIV = 2<br>NO, CHILD NOT ALIVE = 3                                 | NO, NOT ALIVE, DK, REFUSED →351<br><br>SKIP IF MOTHER IS HIV NEGATIVE.   |

|     |   |   |  |
|-----|---|---|--|
|     |   | DON'T KNOW = 8<br>REFUSED = 9   |  |
| 349 | How old was <b>(NAME)</b> when he/she first tested for HIV?<br><br>ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS, MONTHS OR IN YEARS.<br><br>CODE '000' IF LESS THAN 1 WEEK. | WEEKS ____<br>MONTHS ____<br>YEARS ____<br>DON'T KNOW = -8<br>REFUSED = -9  | SKIP IF MOTHER IS HIV NEGATIVE.  |
| 350 | What was the result of <b>(NAME)</b> 's first HIV test?   | POSITIVE, <b>CHILD HAS HIV</b> = 1<br>NEGATIVE, <b>CHILD DOES NOT HAVE HIV</b> = 2<br>UNKNOWN/INDETERMINATE = 3<br>DID NOT RECEIVE RESULTS = 4<br>DON'T KNOW = 8<br>REFUSED = 9 | SKIP IF MOTHER IS HIV NEGATIVE.  |
| 351 | After you stopped breastfeeding, was <b>(NAME)</b> tested for HIV?  | YES = 1<br>NO, NOT TESTED FOR HIV = 2<br>NO, CHILD NOT ALIVE = 3<br>DON'T KNOW = 8<br>REFUSED = 9   | NO, NOT ALIVE, DK, REFUSED → 353<br><br>SKIP IF MOTHER IS HIV NEGATIVE.<br><br>SKIP IF CHILD ALREADY HIV POSITIVE.<br><br>SKIP IF NEVER BREASTFED OR CURRENTLY BREASTFEEDING.. |
| 352 | What was the result of <b>(NAME)</b> 's HIV test?   | POSITIVE, <b>CHILD HAS HIV</b> = 1<br>NEGATIVE, <b>CHILD DOES NOT HAVE HIV</b> = 2<br>UNKNOWN/INDETERMINATE = 3<br>DID NOT RECEIVE RESULTS = 4<br>DON'T KNOW = 8<br>REFUSED = 9 | SKIP IF MOTHER IS HIV NEGATIVE.<br><br>SKIP IF CHILD ALREADY HIV POSITIVE.<br><br>SKIP IF NEVER BREASTFED OR CURRENTLY BREASTFEEDING.  |
| 353 | Thank you for the information regarding <b>(NAME)</b> .   | YES = 1<br>NO = 2   | YES → RETURN TO 334 FOR MULTIPLES  |

|  |   |  |  |
|--|---|--|--|
|  | DID THE RESPONDENT HAVE MORE THAN ONE CHILD (I.E. TWINS, TRIPLETS)? |  |  |
|--|---|--|--|

|  |  |  |                      |
|--|--|--|----------------------|
| <b>Interviewer says: "I will now ask about current pregnancies."</b> |  |  | SKIP TO 356 IF MALE. |
|--|--|--|----------------------|

|     |                       |   |                      |
|-----|-----------------------|---|----------------------|
| 354 | Are you pregnant now? | YES = 1<br>NO = 2<br>DON'T KNOW/UNSURE = 8<br>REFUSED = 9 | NO, DK, REFUSED →356 |
|-----|-----------------------|---|----------------------|

|     |                                   |   |                  |
|-----|-----------------------------------|---|------------------|
| 355 | How many months pregnant are you? | MONTHS __<br><br>DON'T KNOW / UNSURE = -8<br>REFUSED = -9 | ALL →NEXT MODULE |
|-----|-----------------------------------|---|------------------|

|  |  |  |  |
|--|--|--|--|
| <b>Interviewer says: "I will now ask you about family planning."</b> |  |  |  |
|--|--|--|--|

|     |  |  |   |
|-----|--|--|---|
| 356 | Are you or your partner <b>currently</b> doing something or using any method to delay or avoid getting pregnant? | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | NO →358<br>DK, REFUSED →SKIP TO NEXT MODULE |
|-----|--|--|---|

|     |   |  |                          |
|-----|---|--|--------------------------|
| 357 | Which method are you or your partner using?<br><br>SELECT ALL THAT APPLY. | FEMALE STERILIZATION = A<br>MALE STERILIZATION = B<br>PILL = C<br>IUD/"COIL" = D<br>INJECTIONS = E<br>IMPLANT = F<br>CONDOM = G<br>FEMALE CONDOM = H<br>RHYTHM/NATURAL METHODS = I<br>WITHDRAWAL = J<br>NOT HAVING SEX = K<br>OTHER = X<br>DON'T KNOW = Y<br>REFUSED = Z | ALL →SKIP TO NEXT MODULE |
|-----|---|--|--------------------------|

|     |  |   |   |
|-----|--|---|---|
| 358 | <p>Would you like to have a/another child?</p>   | <p>YES = 1<br/> NO, = 2<br/> UNDECIDED/DON'T KNOW = 3<br/> REFUSED = 9</p>  | <p>NO →360<br/> UNDECIDED/DK, REFUSED →SKIP TO NEXT MODULE.</p> |
| 359 | <p>How long would you like to wait before the birth of a/another child?</p> <p>ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN MONTHS OR IN YEARS.</p> <p>CODE '96' IF LESS THAN 1 MONTH.</p> | <p>MONTHS ____<br/> YEARS ____<br/> NOW/SOON = 96<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>  | <p>NOW/SOON, DK, REFUSED →SKIP TO NEXT MODULE</p>               |
| 360 | <p>Can you tell me why you are not using a method to prevent pregnancy?</p> <p>SELECT ALL THAT APPLY.</p>  | <p>NOT MARRIED/NO PARTNER = A<br/> NOT HAVING SEX = B<br/> INFREQUENT SEX = C<br/> MENOPAUSAL/HYSTERECTOMY = D<br/> (PARTNER) CANNOT GET PREGNANT = E<br/> NOT MENSTRUATED SINCE LAST BIRTH = F<br/> BREASTFEEDING = G<br/> UP TO GOD = H<br/> RESPONDENT OPPOSED = I<br/> HUSBAND/PARTNER OPPOSED = J<br/> RELIGION PROHIBITS= K<br/> KNOWS NO METHOD = L<br/> KNOWS NO SOURCE = M<br/> SIDE EFFECTS/HEALTH CONCERNS = N<br/> LACK OF ACCESS/TOO FAR = O<br/> COSTS TOO MUCH = P<br/> PREFERRED METHOD NOT AVAILABLE = Q<br/> NO METHOD AVAILABLE = R<br/> INCONVENIENT TO USE = S<br/> INTERFERES WITH BODY'S NORMAL PROCESSES = T<br/> OTHER = X</p> |   |

|  |  |                               |  |
|--|--|-------------------------------|--|
|  |  | DON'T KNOW = Y<br>REFUSED = Z |  |
|--|--|-------------------------------|--|

**MODULE 3A CHILDREN**

I am going to ask you a number of questions about your child/children regarding their health and where they get their health services. We will ask you about these children:

[LIST OF CHILDREN]  
[LINE NUMBER] [CHILD'S NAME]

|      |   |                        |                             |
|------|---|------------------------|-----------------------------|
| 3001 | CHECK HOUSEHOLD SCHEDULE TO GET NUMBER OF CHILDREN 0-14 YEARS.<br><br>IF NONE RECORD '00' | NUMBER OF CHILDREN ___ | IF 00 → SKIP TO NEXT MODULE |
|------|---|------------------------|-----------------------------|

|      |  |  |  |
|------|--|--|--|
| 3002 | ENTER THE LINE NUMBER OF THE CHILD FROM THE HOUSEHOLD LISTING  | _____  |  |
| 3003 | What is the child's name?  | _____  |  |
| 3004 | How old was <b>(NAME)</b> at his/her last birthday?<br><br>ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN YEARS OR IN MONTHS.<br><br>CODE '00' IF LESS THAN ONE MONTH. | MONTHS ____<br>= -8= -9YEARS ____<br>= -9<br>DON'T KNOW = -8<br>REFUSED = -9 |  |
| 3005 | Is <b>(NAME)</b> a boy or girl?  | BOY = 1<br>GIRL = 2<br>DON'T KNOW = 8<br>REFUSED = 9                         |  |



|      |  |  |  |
|------|--|--|--|
| 3006 | Is <b>(NAME)</b> currently enrolled in school?   | YES = 1<br>NO, CURRENTLY NOT IN SCHOOL = 2<br>NO, TOO YOUNG TO BE IN SCHOOL = 3<br>DON'T KNOW = 8<br>REFUSED = 9 | NO, CURRENTLY NOT IN SCHOOL → 3009<br>NO, TOO YOUNG, DK, REFUSED → 3012                        |
| 3007 | During the last school week, did <b>[NAME]</b> miss any school days for any reason?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   |  |
| 3008 | What class/form/year is <b>[NAME]</b> in now?  | CLASS/FORM/YEAR _____<br>DON'T KNOW = -8<br>REFUSED = -9   | ALL → 3012   |
| 3009 | Was <b>[NAME]</b> enrolled in school during the previous school year?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | NO → 3011<br>DK, REFUSED → 3012  |
| 3010 | What class/form/year was <b>[NAME]</b> during the previous school year?  | CLASS/FORM/YEAR _____<br>DON'T KNOW = -8<br>REFUSED = -9   | ALL → 3012   |
| 3011 | What is the highest class/form/year that <b>[NAME]</b> has completed?  | CLASS/FORM/YEAR _____<br>DON'T KNOW = -8<br>REFUSED = 99   |  |
| 3012 | Is <b>(NAME)</b> circumcised?<br><br>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<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | NO → 3015<br>DK, REFUSED → 3016<br><br>SKIP IF FEMALE CHILD.<br><br>ELECTRIC AID IF DON'T KNOW |

|      |   |   |   |
|------|---|---|---|
| 3013 | <p>How old was <b>(NAME)</b> when he was circumcised? Please give your best guess</p> <p>ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN YEARS OR IN MONTHS.</p> <p>CODE '00' IF LESS THAN ONE MONTH.</p> <p>.</p> | <p>MONTHS ____</p> <p>YEARS ____</p> <p>DON'T KNOW YEAR= -8</p> <p>REFUSED YEAR= -9</p>   | <p>SKIP IF FEMALE CHILD.</p>                  |
| 3014 | <p>Who circumcised <b>(NAME)</b>?</p>   | <p>DOCTOR, CLINICAL OFFICER, OR NURSE = 1</p> <p>TRADITIONAL PRACTITIONER / CIRCUMCISER =2</p> <p>MIDWIFE = 3</p> <p>OTHER = 96</p> <p>DON'T KNOW = 8</p> <p>REFUSE TO ANSWER=9</p> | <p>ALL →3016</p> <p>SKIP IF FEMALE CHILD.</p> |
| 3015 | <p>Are you planning to have <b>(NAME)</b> circumcised in the future?</p>  | <p>YES = 1</p> <p>NO = 2</p> <p>DON'T KNOW = 8</p> <p>REFUSED = 9</p>   | <p>SKIP IF FEMALE CHILD.</p>                  |
| 3016 | <p>Has <b>(NAME)</b> seen a doctor, clinical officer or nurse in a health facility in the last 12 months?</p>   | <p>YES = 1</p> <p>NO = 2</p> <p>DON'T KNOW = 8</p> <p>REFUSED = 9</p>   | <p>NO, DK, REFUSED →3018</p>                  |
| 3017 | <p>During any of <b>(NAME)</b>'s visits to the health facility in the last 12 months, did a doctor, clinical officer or nurse offer <b>(NAME)</b> an HIV test?</p>  | <p>YES = 1</p> <p>NO = 2</p> <p>DON'T KNOW = 8</p> <p>REFUSED = 9</p>   |   |
| 3018 | <p>Has <b>(NAME)</b> ever been tested for HIV?</p>  | <p>YES = 1</p> <p>NO = 2</p> <p>DON'T KNOW = 8</p> <p>REFUSED = 9</p>   | <p>YES →3020</p> <p>DK, REFUSED →3044</p>     |
| 3019 | <p>Why has <b>(NAME)</b> never been tested for HIV?</p> <p>SELECT ALL THAT APPLY.</p>   | <p>DON'T KNOW WHERE TO TEST = A</p> <p>TEST COSTS TOO MUCH = B</p>  | <p>ALL-&gt;3044</p>                           |

|      |   |   |  |
|------|---|---|--|
|      |   | TRANSPORT COSTS TOO MUCH = C<br>TOO FAR AWAY = D<br>AFRAID OTHERS WILL KNOW ABOUT TEST RESULTS = E<br>DON'T NEED TEST/LOW RISK = F<br>DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY = G<br>AFRAID SPOUSE/PARTNER/FAMILY WILL KNOW RESULTS = H<br>DON'T WANT TO KNOW CHILD HAS HIV = I<br>CANNOT GET TREATMENT FOR HIV = J<br>TEST KITS NOT AVAILABLE = K<br>RELIGIOUS REASONS = L<br>OTHER = X<br>DON'T KNOW = Y<br>REFUSED = Z |  |
| 3020 | You said earlier that <b>(NAME)</b> had been tested for HIV. Was that the last time <b>(NAME)</b> was tested for HIV?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  | SKIP IF NOT CHILD FROM REPRO MODULE,<br>SKIP IF NOT TESTED FOR HIV IN REPRO MODULE.                              |
| 3021 | What month and year was <b>(NAME)'s</b> most recent HIV test done?  | MONTH ____ ____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH = -9<br><br>YEAR ____ ____ ____ ____<br>DON'T KNOW YEAR = -998<br>REFUSED YEAR = -999   | SKIP IF NOT CHILD FROM REPRO MODULE,<br>SKIP IF NOT TESTED FOR HIV IN REPRO MODULE.                              |
| 3022 | You mentioned earlier that <b>(NAME)</b> received an HIV positive result.<br><br>What was the month and year of his/her first HIV positive test result?<br>Please give your best guess. | MONTH ____ ____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH = -9<br><br>YEAR ____ ____ ____ ____<br>DON'T KNOW YEAR = -998<br>REFUSED YEAR = -9   | SKIP IF NOT CHILD FROM REPRO MODULE.<br>SKIP IF NOT TESTED FOR HIV IN REPRO MODULE.<br>SKIP IF NOT HIV POSITIVE. |

|      |   |  |   |
|------|---|--|---|
|      | This will be the very first HIV positive test result that (NAME) had received.<br><br>PROBE TO VERIFY DATE. |  |   |
| 3023 | What month and year was (NAME)'s most recent HIV test done?   | MONTH _____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTHS = -9<br><br>YEARS _____<br><br>DON'T KNOW YEAR = -898<br>REFUSED YEAR= -999   |   |
| 3024 | What was (NAME)'s <u>last</u> HIV test result?  | POSITIVE = 1<br>NEGATIVE = 2<br>UNKNOWN/INDETERMINATE = 3<br>DID NOT RECEIVE RESULTS = 4<br>DON'T KNOW = 8<br>REFUSED = 9  | NEG, UNK/INDET, DID NOT RECEIVE, DK, REFUSED → 3044<br><br>SKIP LAST TEST WAS FROM REPRO MODULE.          |
| 3025 | Has (NAME) ever received HIV medical care from a doctor, clinical officer or nurse?                         | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | YES → 3027<br>DK, REFUSED → 3030  |
| 3026 | 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<br>I DON'T KNOW WHERE TO GET HIV<br>MEDICAL CARE FOR CHILD = 2<br>COST OF CARE = 3<br>COST OF TRANSPORT = 4<br>I DON'T THINK CHILD NEEDS IT, HE/SHE IS NOT SICK = 5<br>I FEAR PEOPLE WILL KNOW THAT<br>CHILD HAS HIV IF I TAKE HIM/HER TO A CLINIC = 6<br>RELIGIOUS REASONS = 7<br>CHILD IS TAKING TRADITIONAL MEDICINE = 8 | ALL → 3030<br><br>ADAPT RESPONSES TO LOCAL CONTEXT.<br><br>ADAPT HEALTHCARE TERMS BASED ON LOCAL CONTEXT. |

|      |   |  |  |
|------|---|--|--|
|      |   | OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9  |  |
| 3027 | What month and year did ( <b>NAME</b> ) <u>first</u> see a doctor, clinical officer or nurse for HIV medical care?<br><br>PROBE TO VERIFY DATE. | MONTH _____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH= -9<br>YEAR _____<br>DON'T KNOW YEAR =9998<br>REFUSED = -999   |  |
| 3028 | What month and year did ( <b>NAME</b> ) <u>last</u> see a doctor, clinical officer or nurse for HIV medical care?                               | MONTH _____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH= -9<br>YEAR _____<br>DON'T KNOW YEAR =9998<br>REFUSED = -999   | IF <7 MONTHS, DK, REFUSED, MISSING DATE<br>→3030 |
| 3029 | What is the <u>main</u> reason for ( <b>NAME</b> ) not seeing a doctor, clinical officer or nurse for HIV medical care for more than 6 months?  | FACILITY IS TOO FAR AWAY = 1<br>I DON'T KNOW WHERE TO GET HIV<br>MEDICAL CARE FOR CHILD = 2<br>COST OF CARE = 3<br>COST OF TRANSPORT = 4<br>I DON'T THINK CHILD NEEDS IT,<br>HE/SHE IS NOT SICK = 5<br>I FEAR PEOPLE WILL KNOW THAT<br>CHILD HAS HIV IF I TAKE HIM/HER TO A CLINIC = 6<br>RELIGIOUS REASONS = 7<br><b>CHILD</b> IS TAKING TRADITIONAL MEDICINE = 8<br>NO APPOINTMENT SCHEDULED/DID NOT MISS MOST RECENT APPOINTMENT = 9<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9 |  |

|      |  |   |  |
|------|--|---|--|
| 3030 | <p>Has <b>(NAME)</b> ever had a CD4 count test?<br/>The CD4 count tells you how sick you are with HIV and if you need to take ARVs or other HIV medications.</p> | <p>YES = 1<br/>NO = 2<br/>DON'T KNOW = 8<br/>REFUSED = 9</p>  | <p>NO, DK, REFUSED → 3032<br/><br/>NO, DK, REFUSED &amp; NEVER IN HIV CARE →3044</p> |
| 3031 | <p>What month and year was <b>(NAME)</b> last tested for his/her CD4 count?</p>  | <p>MONTH ____ ____<br/>DON'T KNOW MONTH = -8<br/>REFUSED MONTH = -9<br/><br/>YEAR ____ ____ ____ ____<br/>DON'T KNOW YEAR = -998<br/>REFUSED YEAR = -999</p>  | <p>SKIP TO 3044 IF NEVER IN HIV CARE</p>   |
| 3032 | <p>Has <b>(NAME)</b> ever taken ARVs, that is, antiretroviral medications, to treat his/her HIV infection?</p>   | <p>YES = 1<br/>NO = 2<br/>DON'T KNOW = 8<br/>REFUSED = 9</p>  | <p>YES → 3034<br/>DK, REFUSED → 3039<br/><br/>ELECTRONIC AID IF DON'T KNOW.</p>      |
| 3033 | <p>What is the main reason <b>(NAME)</b> has never taken ARVs?</p>   | <p>CHILD IS NOT ELIGIBLE FOR TREATMENT=1<br/>HEALTH CARE PROVIDER DID NOT PRESCRIBE = 2<br/>HIV MEDICINES NOT AVAILABLE = 3<br/>DO NOT THINK CHILD NEEDS IT, HE/SHE IS NOT SICK = 4<br/>COST OF MEDICATIONS = 5<br/>COST OF TRANSPORT = 6<br/>RELIGIOUS REASONS = 7<br/>CHILD IS TAKING TRADITIONAL MEDICATIONS = 8<br/>OTHER = 96<br/>DON'T KNOW = -8<br/>REFUSED = -9</p> | <p>ALL →SKIP TO 3039</p>   |
| 3034 | <p>What month and year did <b>(NAME)</b> first start taking ARVs?</p>  | <p>MONTH = ____<br/>DON'T KNOW MONTH = -8<br/>REFUSED MONTH = -9</p>  |  |

|      |  |   |                                  |
|------|--|---|----------------------------------|
|      | PROBE TO VERIFY DATE.  | YEAR = ____<br>DON'T KNOW YEAR = -998<br>REFUSED YEAR = -999  |                                  |
| 3035 | What month and year did <b>(NAME)</b> last receive ARVs?   | MONTH = ____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH = -9<br><br>YEAR = ____<br>DON'T KNOW YEAR = -998<br>REFUSED YEAR = -999   |                                  |
| 3036 | Is <b>(NAME)</b> currently taking ARVs, that is, antiretroviral medications?<br><br>By currently, I mean that <b>(NAME)</b> may have missed some doses but <b>(NAME)</b> is still taking ARVs. | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  | YES → 3038<br>DK, REFUSED → 3039 |
| 3037 | Can you tell me the main reason why <b>(NAME)</b> is not currently taking ARVs?  | I HAVE TROUBLE GIVING CHILD A TABLET EVERYDAY = 1<br>CHILD HAD SIDE EFFECTS/RASH = 2<br>FACILITY/PHARMACY TOO FAR AWAY TO GET MEDICATION REGULARLY = 3<br>COST OF MEDICATIONS = 4<br>COST OF TRANSPORT = 5<br>CHILD IS HEALTHY/, HE/SHE IS NOT SICK = 6<br>FACILITY WAS OUT OF STOCK = 7<br>RELIGIOUS REASONS = 8<br>CHILD IS TAKING TRADITIONAL MEDICATIONS = 9<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9 | ALL → SKIP TO 3039               |

|      |  |   |  |
|------|--|---|--|
| 3038 | <p>People sometimes forget to take all of their ARVs everyday. In the last 30 days, how many days has <b>(NAME)</b> missed taking any ARV pills?</p> <p>CODE '00' FOR NONE.</p>  | <p>DAYS ____ ____<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>  |  |
| 3039 | <p>Is <b>(NAME)</b> currently taking Bactrim or cotrimoxazole?</p> <p>Bactrim or cotrimoxazole is a medicine recommended for people with HIV, even if they have not started treatment for HIV. It helps prevent certain infections but it is not treatment for HIV.</p> <p>By currently, I mean that <b>(NAME)</b> may have missed some doses but is still taking Bactrim.</p> | <p>YES = 1<br/> NO = 2<br/> I DON'T KNOW WHAT IT IS = 3<br/> REFUSED = 9</p>  | <p>YES, DK, REFUSED → 3041</p> <p>ELECTRONIC AID IF DON'T KNOW</p> |
| 3040 | <p>Can you tell me the main reason why <b>(NAME)</b> is not <u>currently</u> taking Bactrim or Cotrimoxazole daily?</p>  | <p>NOT PRESCRIBED = 1<br/> I HAVE TROUBLE GIVING CHILD A<br/> TABLET EVERYDAY = 2<br/> CHILD HAD SIDE EFFECTS/RASH = 3<br/> FACILITY/PHARMACY TOO FAR AWAY TO GET BACTRIM OR COTROMOXIAZOLE REGULARLY = 4<br/> CHILD DOES NOT NEED IT, HE/SHE IS NOT SICK = 5<br/> PHARMACY/ FACILITY WAS OUT OF STOCK = 6<br/> COST OF MEDICATIONS = 7<br/> COST OF TRANSPORT =8<br/> DOCTOR SAID NO LONGER NEEDED = 9<br/> OTHER =96<br/> I DON'T KNOW = -8<br/> REFUSED = -9</p> |  |



|      |  |   |  |
|------|--|---|--|
|      |  |   |  |
| 3041 | <p>At the last HIV medical care visit, did a doctor clinical officer or nurse ask if:</p> <ul style="list-style-type: none"> <li>- <b>(NAME)</b> had any of the following tuberculosis or TB symptoms: cough, fever, night sweats, and weight loss <u>OR</u></li> <li>- if <b>(NAME)</b> had contact with someone who had tuberculosis or TB?</li> </ul> | <p>YES = 1<br/> NO = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>   | <p>SKIP IF NOT IN HIV CARE</p>                             |
| 3042 | <p>In the last 12 months, has <b>(NAME)</b> experienced these TB symptoms or had contact with someone with TB?</p>   | <p>YES = 1<br/> NO = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>   | <p>NO, DK, REFUSED → 3044<br/> SKIP IF NOT IN HIV CARE</p> |
| 3043 | <p>In the last 12 months, did <b>(NAME)</b> receive a chest x-ray or sputum test to look for tuberculosis or TB?</p> <p>A sputum test is when the patient has to cough and collect the sample in a cup.</p> <p>SELECT ALL THAT APPLY.</p>  | <p>CHEST X-RAY = A<br/> SPUTUM TEST = B<br/> NONE OF THESE = C<br/> DON'T KNOW = Y<br/> REFUSED = Z</p> | <p>SKIP IF NOT IN HIV CARE</p>                             |
| 3044 | <p>Has <b>(NAME)</b> ever visited a tuberculosis or TB clinic for TB diagnosis or treatment?</p>   | <p>YES = 1<br/> NO = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>   | <p>IF NO, DK, REFUSED → 3050</p>                           |

|      |   |   |                           |
|------|---|---|---------------------------|
| 3045 | Was <b>(NAME)</b> tested for HIV at the TB clinic?  | YES = 1<br>NO, WAS NOT TESTED FOR HIV = 2<br>NO, WAS ALREADY HIV POSITIVE = 3<br>DON'T KNOW = 8<br>REFUSED = 9                                    |                           |
| 3046 | Have you ever been told by a doctor, clinical officer or nurse that <b>(NAME)</b> had TB?   | YES = 1<br>NO=2<br>DON'T KNOW = 8<br>REFUSED = 9  | IF NO,DK, REFUSED → 3050  |
| 3047 | What month and year did a doctor, clinical officer or nurse diagnose <b>(NAME)</b> with TB?<br><br>RECORD THE MOST RECENT TIME IF DIAGNOSED WITH TB MORE THAN ONCE. | MONTH ____ ____<br>DON'T KNOW MONTH = - 8<br>REFUSED MONTH = -9<br><br>YEAR ____ ____ ____ ____<br>DON'T KNOW YEAR = - 998<br>REFUSED YEAR = -999 |                           |
| 3048 | Was <b>(NAME)</b> ever treated for TB?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  | IF NO, DK, REFUSED → 3050 |
| 3049 | The last time <b>(NAME)</b> was treated for TB, did <b>(NAME)</b> complete at least 6 months of treatment?  | YES = 1<br>NO, THE MEDICINE WAS STOPPED IN LESS THAN 6 MONTHS = 2<br>NO, CHILD IS STILL ON TREATMENT = 3<br>DON'T KNOW = 8<br>REFUSED = 9         |                           |
| 3050 | Thank you for the information about <b>(NAME)</b> .   | YES = 1<br>NO = 2   | YES→RETURN TO 3002        |

|  |   |  |  |
|--|---|--|--|
|  | DOES THE RESPONDENT HAVE ANOTHER CHILD AGED 0-14 YEARS? |  |  |
|--|---|--|--|

| <b>MODULE 4: MALE CIRCUMCISION</b>  |  |   |  |
|---|--|---|--|
| <b>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."</b> |  |   |  |
| 401   | Does male circumcision alone reduce the risk, or chance, of a man getting HIV completely, somewhat or not at all?                                    | PROTECTS COMPLETELY = 1<br>PROTECTS SOMEWHAT = 2<br>NOT AT ALL = 3<br>DON'T KNOW = 4<br>REFUSED = 9 |  |
| 402   | Do you agree or disagree with the following statement: Men who are circumcised do not need to use condoms to protect themselves from HIV             | AGREE = 1<br>DISAGREE = 2<br>UNSURE/DON'T KNOW = 3<br>REFUSED = 9                                   |  |
| 403   | Do you agree or disagree with the following statement: Men who are circumcised can have multiple sexual partners and not be at risk for HIV.         | AGREE = 1<br>DISAGREE = 2<br>UNSURE/DON'T KNOW = 3<br>REFUSED = 9                                   | SKIP TO NEXT MODULE IF FEMALE.                 |
| 404   | Many men do not want to talk about circumcision, but it is important for us to have this information. Some men are circumcised. Are you circumcised? | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED=9  | YES → 406<br>DK, REFUSED → SKIP TO NEXT MODULE |
| 405   | Are you planning to get circumcised?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED=9  | ALL → SKIP TO NEXT MODULE                      |
| 406   | How old were you when you were circumcised? Please give your best guess.<br><br>IF LESS THAN ONE YEAR, CODE '00'.                                    | AGE IN YEARS ____<br>DON'T KNOW = -8<br>REFUSED=-9  |  |

|     |                           |   |  |
|-----|---------------------------|---|--|
|     |                           |   |  |
| 407 | Who did the circumcision? | DOCTOR, CLINICAL OFFICER,<br>OR NURSE = 1<br>TRADITIONAL PRACTITIONER<br>/ CIRCUMCISER =2<br>MIDWIFE = 3<br>OTHER = 96<br>DON'T KNOW = 8<br>REFUSED=9 |  |

| <b>MODULE 5: SEXUAL ACTIVITY</b>  |   |   |                        |
|---|---|---|------------------------|
| <p><b>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.</b></p> <p><b>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."</b></p> |   |   |                        |
| 501   | If you wanted a condom, would it be easy for you to get one?              | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  | YES, DK, REFUSED → 503 |
| 502   | Why is it not easy for you to get a condom?<br><br>SELECT ALL THAT APPLY. | CONDOMS NOT AVAILABLE/TOO FAR = A<br>NOT CONVENIENT = B<br>COSTS TOO MUCH = C<br>EMBARRASSED TO GET CONDOMS = D<br>DO NOT WANT OTHERS TO KNOW = E<br>DO NOT KNOW WHERE TO GET CONDOMS = F<br>OTHER = X<br>DON'T KNOW = Y<br>REFUSED = Z |                        |

**MODULE 5: SEXUAL ACTIVITY**

|     |  |  |   |
|-----|--|--|---|
| 503 | <p>How old were you when you had vaginal sex for the very <u>first</u> time?</p> <p>Vaginal sex is when a penis enters a vagina.</p>   | <p>AGE IN YEARS __</p> <p>NEVER HAD VAGINAL SEX = 96</p> <p>DON'T KNOW = -8</p> <p>REFUSED = -9</p>      |   |
| 504 | <p>People have sex in different ways. Some have vaginal sex. Some have anal sex. Anal sex is when a penis enters a person's anus. Have you ever had anal sex?</p>                    | <p>YES = 1</p> <p>NO = 2</p> <p>DON'T KNOW = 8</p> <p>REFUSED = 9</p>                                    | <p>NO, DK, REFUSED →506</p> <p>NEVER VAGINAL OR ANAL SEX →NEXT MODULE</p> |
| 505 | <p>How old were you when you had anal sex for the very <u>first</u> time?</p>  | <p>AGE IN YEARS __</p> <p>DON'T KNOW = -8</p> <p>REFUSED = -9</p>  |   |
| 506 | <p>The <u>first</u> time you had vaginal or anal sex, was a condom used?</p>   | <p>YES = 1</p> <p>NO = 2</p> <p>DON'T KNOW = 8</p> <p>REFUSED = 9</p>                                    |   |
| 507 | <p>The first time you had vaginal or anal sex, was it because you wanted to or because you were forced to?</p>   | <p>WANTED TO = 1</p> <p>FORCED TO = 2</p> <p>DON'T KNOW = 8</p> <p>REFUSED = 9</p>                       | <p>WANTED, DK, REFUSED →509</p>   |
| 508 | <p>The first time you had vaginal or anal sex, were you physically forced or were you pressured into having sex through harassment, threats or tricks?</p>                           | <p>PHYSICALLY FORCED = 1</p> <p>PRESSURED = 2</p> <p>DON'T KNOW = 8</p> <p>REFUSED = 9</p>               |   |
| 509 | <p>People often have sex with different partners over their lifetime. In total, with how many different people have you had sex in the last 12 months?</p> <p>IF NONE CODE '00'.</p> | <p>NUMBER OF SEXUAL PARTNERS IN LAST 12 MONTHS __ __ __</p> <p>DON'T KNOW = -98</p> <p>REFUSED = -99</p> | <p>IF 00 PARTNERS IN LAST 12 MONTHS → 532</p>                             |

**MODULE 5: SEXUAL ACTIVITY**

|  |   |  |  |
|--|---|--|--|
|  | IF NUMBER OF SEXUAL PARTNERS IS GREATER THAN 100, WRITE ' 100'. |  |  |
|--|---|--|--|

**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."**

|     |   |   |  |
|-----|---|---|--|
| 510 | I would like to ask you for the initials of your partner so I can keep track. They do not have to be the actual initials of your partner. | INITIALS<br>____ ____   |  |
| 511 | Does (INITIALS) live in this household?   | YES = 1<br>NO = 2<br><br>NO→513   |  |
| 512 | HOUSEHOLD LINE NO. for (INITIALS)<br><br>CODE '00' IF NOT LISTED IN HOUSEHOLD ROSTER.   | LINE NO _____   |  |
| 513 | What is your relationship with (INITIALS)?  | HUSBAND/WIFE = 1<br>LIVE-IN PARTNER = 2<br>PARTNER, NOT LIVING WITH RESPONDENT = 3<br>EX-SPOUSE/PARTNER = 4<br>FRIEND/ACQUAINTANCE = 5<br>SEX WORKER = 6<br>SEX WORKER CLIENT =7<br>STRANGER = 8<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9 |  |

|     |   |   |  |
|-----|---|---|--|
| 514 | <p>How long has it been since you <u>last</u> had sex with (INITIALS)?</p> <p>IF LESS THAN ONE WEEK RECORD IN DAYS, IF LESS THAN ONE MONTH, RECORD IN WEEKS, OTHERWISE RECORD IN MONTHS.</p>  | <p>DAYS    --<br/> WEEKS   --<br/> MONTHS  --</p> <p>DON'T KNOW = -8<br/> REFUSED = -9</p>  |  |
| 515 | <p>How long has it been since you <u>first</u> had sex with (INITIALS)?</p> <p>IF LESS THAN ONE WEEK RECORD IN DAYS, IF LESS THAN ONE MONTH, RECORD IN WEEKS. IF LESS THAN ONE YEAR, RECORD IN MONTHS. OTHERWISE RECORD IN YEARS.</p> | <p>DAYS =  --<br/> WEEKS =  --<br/> MONTHS =  --<br/> YEARS =  --</p> <p>DON'T KNOW = -8<br/> REFUSED = -9</p>                                    |  |
| 516 | <p>Is (INITIALS) male or female?</p>  | <p>MALE = 1<br/> FEMALE = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>  |  |
| 517 | <p>How old is (INITIALS)? Please give your best guess.</p>  | <p>AGE IN YEARS _____<br/> DON'T KNOW =98<br/> REFUSED = -9</p>   |  |
| 518 | <p>The <u>last</u> time you had sex with (INITIALS) was a condom used?</p>  | <p>YES = 1<br/> NO = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>   |  |
| 519 | <p>The last time you had sex with (INITIALS) did either of you drink alcohol beforehand?</p>  | <p>ONLY I WAS DRINKING = 1<br/> ONLY PARTNER WAS DRINKING= 2<br/> BOTH WERE DRINKING= 3<br/> NEITHER = 4<br/> DON'T KNOW = 8<br/> REFUSED = 9</p> |  |

|     |  |  |  |
|-----|--|--|--|
| 520 | <p>In the last 12 months, how often did you use condoms with (INITIALS) when having vaginal sex? Was it always, most of the time, sometimes, rarely or never?</p>  | <p>ALWAYS = 1<br/> MOST OF THE TIME = 2<br/> SOMETIMES = 3<br/> RARELY = 4<br/> NEVER = 5<br/> NO VAGINAL SEX IN THE LAST 12 MONTHS = 3<br/> DON'T KNOW = 8<br/> REFUSED = 9</p> <p>SKIP IF NEVER HAD VAGINAL SEX.</p> |  |
| 521 | <p>In the last 12 months, how often did you use condoms with (INITIALS) when having anal sex? Was it always, most of the time, sometimes, rarely or never?</p>   | <p>ALWAYS = 1<br/> MOST OF THE TIME = 2<br/> SOMETIMES = 3<br/> RARELY = 4<br/> NEVER = 5<br/> NO ANAL SEX IN THE LAST 12 MONTHS = 6<br/> DON'T KNOW = 8<br/> REFUSED = 9</p> <p>SKIP IF NEVER HAD ANAL SEX.</p>       |  |
| 522 | <p>In the last 12 months, when you had sex with (INITIALS), did the condom you were using ever break, leak or slip off during sex or while pulling out?</p>  | <p>YES = 1<br/> NO = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p> <p>SKIP IF NEVER USED CONDOM</p>   |  |
| 523 | <p>Did you enter into a sexual relationship with (INITIALS) because (INITIALS) provided you with or you expected that (INITIALS) would provide you with material support or help you in other ways?</p> <p>Material support means helping you to pay for things, or giving you</p> | <p>YES = 1<br/> NO = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p> <p>NO, DK, REFUSED → 525,</p>  |  |



|     |  |   |  |
|-----|--|---|--|
|     | gifts or other items you needed or requested.  | SKIP IF SEX WORKER OR CLIENT  |  |
| 524 | In the <u>last 12 months</u> , what all did you receive?<br><br>SELECT ALL THAT APPLY. | DID NOT RECEIVE ANYTHING = A<br>MONEY = B<br>FOOD = C<br>SCHOOL FEES = D<br>EMPLOYMENT = E<br>GIFTS/FAVORS = F<br>TRANSPORT = G<br>SHELTER/RENT = H<br>PROTECTION = I<br>OTHER = X<br>DON'T KNOW = Y<br>REFUSED = Z<br><br>SKIP IF SPOUSE, LIVE-IN PARTNER SEX WORKER OR CLIENT |  |
| 525 | Was (INITIALS) circumcised?  | YES =1<br>NO =2<br>DON'T KNOW = 8<br>REFUSED = 9<br><br>SKIP IF PARTNER NOT MALE.   |  |
| 526 | Do you expect to have sex with (INITIALS) again?                                       | YES =1<br>NO =2<br>DON'T KNOW = 8<br>REFUSED = 9  |  |
| 527 | Have you ever taken an HIV test with (INITIALS)?                                       | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9<br><br>YES, DK, REFUSED → 529  |  |

|     |  |   |  |
|-----|--|---|--|
| 528 | <p>What is the main reason you have never tested for HIV with (INITIALS) as a couple?</p> <p>READ RESPONSES ALOUD.</p> | <p>NOT A PARTNER/COUPLE= 1<br/> NEVER DISCUSSED = 2<br/> WE ARE NOT AT RISK FOR HIV = 3<br/> PARTNER REFUSED = 4<br/> I REFUSED = 5<br/> WE KNOW OUR STATUS = 6<br/> OTHER = 96<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>  |  |
| 529 | <p>Does (INITIALS) know your HIV status? HIV status could mean you are HIV negative or HIV positive.</p>               | <p>YES = 1<br/> NO = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>   |  |
| 530 | <p>What is the HIV status of (INITIALS)?</p> <p>READ RESPONSES ALOUD.</p>  | <p>THINK (INITIALS) IS POSITIVE = 1<br/> (INITIALS) TOLD ME HE/SHE IS POSITIVE = 2<br/> POSITIVE, TESTED TOGETHER = 3<br/> THINK (INITIALS) IS NEGATIVE = 4<br/> (INITIALS) TOLD ME HE/SHE IS NEGATIVE = 5<br/> NEGATIVE, TESTED TOGETHER=6<br/> DON'T KNOW STATUS = 7<br/> REFUSED = 9</p> |  |
| 531 | <p>DOES THE RESPONDENT HAVE ANOTHER PARTNER IN THE LAST 12 MONTHS?</p>   | <p>YES = 1<br/> NO = 2</p> <p>YES → RETURN TO 510</p> <p>I will now ask about your second to last partner.</p>  |  |

**Interviewer says: "Now I am going to ask you some additional questions about your sexual activities. Again, I am asking that you answer these questions honestly. Let me assure you again that your answers are completely confidential and will not be shared with anyone."**

|     |  |  |                               |
|-----|--|--|-------------------------------|
| 532 | Have you ever <u>sold</u> sex for money?                   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | NO, DK, REFUSED → 535         |
| 533 | In the last 12 months, have you <u>sold</u> sex for money? | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | NO, DK, REFUSED → 535         |
| 534 | The last time you sold sex for money, was a condom used?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 |                               |
| 535 | Have you <u>ever</u> paid money for sex?                   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | NO, DK, REFUSED → NEXT MODULE |
| 536 | In the last 12-months, have you paid money for sex?        | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | NO, DK, REFUSED → NEXT MODULE |
| 537 | The last time you paid money for sex, was a condom used?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 |                               |

**MODULE 6: HIV/AIDS KNOWLEDGE AND ATTITUDES**

**Interviewer says: "Now I will ask you questions on your knowledge of HIV."**

|     |   |  |  |
|-----|---|--|--|
| 601 | Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners? | YES = 1<br>NO = 2<br>DON'T KNOW = 3<br>REFUSED = 9 |  |
|-----|---|--|--|

|  |   |   |  |
|--|---|---|--|
| 602  | Can a person get HIV from mosquito bites?   | YES = 1<br>NO = 2<br>DON'T KNOW = 3<br>REFUSED = 9                  |  |
| 603  | Can a person reduce their risk of getting HIV by using a condom every time they have sex?   | YES = 1<br>NO = 2<br>DON'T KNOW = 3<br>REFUSED = 9                  |  |
| 604  | Can a person get HIV by sharing food with someone who has HIV?  | YES = 1<br>NO = 2<br>DON'T KNOW = 3<br>REFUSED = 9                  |  |
| 605  | Can a healthy-looking person have HIV?  | YES = 1<br>NO = 2<br>DON'T KNOW = 3<br>REFUSED = 9                  |  |
| <b>Interviewer says: "Now I would like to ask you some questions about people's attitudes towards people living with HIV."</b> |   |   |  |
| 606  | Would you buy fresh vegetables from a shop keeper or vendor if you knew the person had HIV?   | YES = 1<br>NO = 2<br>DON'T KNOW/NOT SURE/DEPENDS = 8<br>REFUSED = 9 |  |
| 607  | Do you think children living with HIV should be allowed to attend school with children who do not have HIV?                                     | YES = 1<br>NO = 2<br>DON'T KNOW/NOT SURE/DEPENDS = 8<br>REFUSED = 9 |  |
| 608  | Do you think people hesitate to take an HIV test because they are afraid of how other people will react if the test result is positive for HIV? | YES = 1<br>NO = 2<br>DON'T KNOW/NOT SURE/DEPENDS = 8<br>REFUSED = 9 |  |

|     |  |  |  |
|-----|--|--|--|
| 609 | Do people talk badly about people living with HIV, or who are thought to be living with HIV?               | YES = 1<br>NO = 2<br>DON'T KNOW/NOT SURE/DEPENDS = 8<br>REFUSED = 9                        |  |
| 610 | Do people living with HIV, or thought to be living with HIV, lose the respect of other people?             | YES = 1<br>NO = 2<br>DON'T KNOW/NOT SURE/DEPENDS = 8<br>REFUSED = 9                        |  |
| 611 | Do you fear that you could get HIV if you come into contact with the saliva of a person living with HIV?   | YES = 1<br>NO = 2<br>ALREADY HAS HIV = 3<br>DON'T KNOW/NOT SURE/DEPENDS = 8<br>REFUSED = 9 |  |
| 612 | Do you agree or disagree with the following statement: I would be ashamed if someone in my family had HIV. | AGREE = 1<br>DISAGREE = 2<br>DON'T KNOW/NOT SURE/DEPENDS = 8<br>REFUSED = 9                |  |

**MODULE 7: HIV TESTING**

**Interviewer says: "I would now like to ask you some questions about HIV testing."**

|     |  |  |                        |
|-----|--|--|------------------------|
| 701 | Have you seen a doctor, clinical officer or nurse in a health facility in the last 12 months?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | NO, DK, REFUSED → 703  |
| 702 | During any of your visits to the health facility in the last 12 months, did a doctor, clinical officer or nurse offer you an HIV test? | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 |                        |
| 703 | Have you <u>ever</u> tested for HIV?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | YES, DK, REFUSED → 705 |

|     |   |  |   |
|-----|---|--|---|
| 704 | <p>Why have you never been tested for HIV?</p> <p>SELECT ALL THAT APPLY.</p>  | <p>DON'T KNOW WHERE TO TEST = A<br/> TEST COSTS TOO MUCH = B<br/> TRANSPORT COSTS TOO MUCH = C<br/> TOO FAR AWAY = D<br/> AFRAID OTHERS WILL KNOW ABOUT TEST RESULTS = E<br/> DON'T NEED TEST/LOW RISK = F<br/> DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY = G<br/> AFRAID SPOUSE/PARTNER/FAMILY WILL KNOW RESULTS = H<br/> DON'T WANT TO KNOW I HAVE HIV = I<br/> CANNOT GET TREATMENT FOR HIV = J<br/> TEST KITS NOT AVAILABLE = K<br/> RELIGIOUS REASONS = L<br/> OTHER = X<br/> DON'T KNOW = Y<br/> REFUSED = Z</p> |   |
| 705 | <p>If an HIV self-test kit were available in this country, would you use it?</p> <p>With a self-test kit you can test yourself for HIV at home. There are instructions on how to interpret the results.</p> | <p>YES = 1<br/> NO = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>  | <p>IF NEVER TESTED → SKIP TO NEXT MODULE</p>  |
| 706 | <p>Have you had an HIV test since giving birth to <b>(NAME)</b>?</p>  | <p>YES = 1<br/> NO = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>  | <p>YES→709</p> <p>DK, REFUSED →712</p> <p>SKIP IF NO LAST BIRTH IN THE LAST 3 YEARS.</p> <p>SKIP IF NOT TESTED FOR HIV IN REPRO MODULE.</p> |

|     |  |   |  |
|-----|--|---|--|
|     |  |   | SKIP IF MALE.  |
| 707 | <p>What month and year did you last test for HIV while you were pregnant with <b>(NAME)</b>?</p>   | <p>MONTH ____ ____<br/> DON'T KNOW MONTH = -8<br/> REFUSED MONTH = -9</p> <p>YEAR ____ ____ ____ ____<br/> DON'T KNOW YEAR = -8<br/> REFUSED YEAR = -9</p>                | <p>SKIP IF NO LAST BIRTH IN THE LAST 3 YEARS.</p> <p>SKIP IF NOT TESTED FOR HIV IN REPRO MODULE.</p> <p>SKIP IF MALE.</p>                                  |
| 708 | <p>You mentioned earlier you received an HIV positive result while you were pregnant with <b>(NAME)</b>.</p> <p>What was the month and year of your first HIV positive test result? Please give your best guess.</p> <p>This will be the very first HIV positive test result that you have received</p> <p>PROBE TO VERIFY DATE.</p> | <p>MONTH ____ ____<br/> DON'T KNOW MONTH = -8<br/> REFUSED MONTH = -9</p> <p>YEAR ____ ____ ____ ____<br/> DON'T KNOW YEAR = -8<br/> REFUSED YEAR = -9</p>                | <p>ALL RESPONSES →713</p> <p>SKIP IF HIV NEGATIVE DURING PREGNANCY WITH (NAME).</p> <p>SKIP IF NO LAST BIRTH IN THE LAST 3 YEARS.</p> <p>SKIP IF MALE.</p> |
| 709 | <p>What month and year was your last HIV test?</p>   | <p>MONTHS ____ ____<br/> DON'T KNOW MONTH = -8<br/> REFUSED MONTH = -9</p> <p>YEAR ____<br/> DON'T KNOW YEAR= -998<br/> REFUSED YEAR = -999</p>                           |  |
| 710 | <p>Where was the <u>last</u> test done?</p>  | <p>VCT FACILITY = 1<br/> MOBILE VCT = 2<br/> AT HOME = 3<br/> HEALTH CLINIC / FACILITY = 4<br/> HOSPITAL OUTPATIENT CLINIC = 5<br/> TB CLINIC = 6<br/> STI CLINIC = 7</p> |  |

|  |   |   |  |
|--|---|---|--|
|  |   | HOSPITAL INPATIENT WARDS<br>= 8<br>BLOOD DONATING CENTER =<br>9<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9                            |  |
| 711  | What was the result of that HIV test?   | POSITIVE = 1<br>NEGATIVE = 2<br>UNCERTAIN/INDETERMINATE = 3<br>DID NOT RECEIVE THE RESULT = 4<br>DON'T KNOW = 8<br>REFUSED = 9              | NEG, UNCERT/INDET, NO RESULT, DK,<br>REFUSED →SKIP TO NEXT MODULE. |
| 712  | What was the month and year of your first HIV positive test result?<br>Please give your best guess.<br><br>This will be the very first HIV positive test result that you have received<br><br>PROBE TO VERIFY DATE. | MONTH ____ ____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH = -9<br><br>YEAR ____ ____ ____ ____<br>DON'T KNOW YEAR = -8<br>REFUSED YEAR = -9 |  |
| 713  | Of the following people, who have you told that you are HIV positive?<br><br>CHECK ALL THAT APPLY.  | NO ONE = A<br>SPOUSE/SEX PARTNER = B<br>DOCTOR = C<br>FRIEND = D<br>FAMILY MEMBER = E<br>OTHER = X<br>DON'T KNOW = Y<br>REFUSED = Z         | SKIP TO NEXT QUESTION IF NO ONE.<br><br>SKIP IF HIV NEGATIVE.      |
| Interviewer says: "Now I would like to ask you questions about your experiences with health care providers." |   |   |  |



|     |   |   |  |
|-----|---|---|--|
| 714 | In the last 12 months, have health care providers talked badly about you because of your HIV status?  | YES = 1<br>NO = 2<br>NO ONE KNOWS MY STATUS = 3<br>DON'T KNOW = 8<br>REFUSED = 9  |  |
| 715 | 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<br>NO, NO NEED TO HIDE = 2<br>NO, DID NOT ATTEND HEALTH FACILITY IN LAST 12 MONTHS = 3<br>DON'T KNOW = 8<br>REFUSED = 9 |  |
| 716 | In the last 12 months, have you been denied health services including dental care, because of your HIV status?  | YES = 1<br>NO = 2<br>NO ONE KNOWS MY STATUS = 3<br>DON'T KNOW = 8<br>REFUSED = 9  |  |

| <b>MODULE 8: HIV STATUS, CARE AND TREATMENT</b>  |   |  |  |
|--|---|--|--|
| <b>Interviewer says: "Now I'm going to ask you more about your experience with HIV support, care and treatment."</b> |   |  |  |
| 801  | After learning you had HIV, have you <u>ever</u> received HIV medical care from a doctor, clinical officer or nurse?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | YES → 803<br>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<br>I DON'T KNOW WHERE TO GET HIV MEDICAL CARE = 2<br>COST OF CARE = 3<br>COST OF TRANSPORT = 4<br>I DO NOT NEED IT/I FEEL HEALTHY/NOT SICK = 5<br>I FEAR PEOPLE WILL KNOW THAT I HAVE HIV IF I GO TO A CLINIC = 6 | ALL → 808                                      |

|     |   |   |                                |
|-----|---|---|--------------------------------|
|     |   | RELIGIOUS REASONS =7<br>I'M TAKING TRADITIONAL<br>MEDICINE= 8<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9  |                                |
| 803 | What month and year did you <u>first</u><br>see a doctor, clinical officer or nurse<br>for HIV medical care?<br><br>PROBE TO VERIFY DATE. | MONTH ____ ____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH = -9<br><br>YEAR _____<br>DON'T KNOW YEAR = -998<br>REFUSED YEAR = -999   |                                |
| 804 | What month and year did you <u>last</u><br>see a doctor, clinical officer or nurse<br>for HIV medical care?                               | MONTH ____ ____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH= -9<br><br>YEAR _____<br>DON'T KNOW YEAR =9998<br>REFUSED = -999  | IF <7 MONTHS, DK, REFUSED →806 |
| 805 | What is the <u>main</u> reason for not<br>seeing a doctor, clinical officer or<br>nurse for HIV medical care for more<br>than 6 months?   | FACILITY IS TOO FAR AWAY =<br>1<br>I DON'T KNOW WHERE TO<br>GET HIV MEDICAL CARE = 2<br>COST OF CARE = 3<br>COST OF TRANSPORT = 4<br>I DO NOT NEED IT/I FEEL<br>HEALTHY/NOT SICK = 5<br>I FEAR PEOPLE WILL KNOW<br>THAT I HAVE HIV IF I GO TO<br>A CLINIC = 6<br>RELIGIOUS REASONS = 7<br>I'M TAKING TRADITIONAL<br>MEDICINE= 8 |                                |

|     |   |   |  |
|-----|---|---|--|
|     |   | NO APPOINTMENT<br>SCHEDULED/DID NOT MISS<br>MOST RECENT<br>APPOINTMENT = 9<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9       |  |
| 806 | At your last HIV care visit, approximately how long did it take you to travel from your home (or workplace) one way?                                | LESS THAN ONE HOUR = 1<br>ONE TO TWO HOURS = 2<br>MORE THAN TWO HOURS = 3<br>DON'T KNOW = 8<br>REFUSED = 9                        |  |
| 807 | At your last HIV care visit, approximately how much did it cost to travel from your home (or workplace) one way?                                    | COST _____<br>DON'T KNOW = -998<br>REFUSED = -999   |  |
| 808 | Have you ever had a CD4 count test?<br><br>The CD4 count tells you how sick you are with HIV and if you need to take ARVs or other HIV medications. | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  | NO, DK, REFUSED → 810<br><br>NO, DK, REFUSED & NEVER IN HIV CARE → SKIP TO END OF MODULE |
| 809 | What month and year were you last tested for your CD4 count?  | MONTH ____ ____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH = -9<br><br>YEAR _____<br>DON'T KNOW YEAR = -998<br>REFUSED YEAR = -999 | SKIP TO END OF MODULE IF NEVER IN HIV CARE.  |
| 810 | Have you <u>ever</u> taken ARVs, that is, antiretroviral medications to treat HIV infection?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  | YES → 812<br>DK, REFUSED → 817   |

|     |  |   |                                       |
|-----|--|---|---------------------------------------|
| 811 | <p>What is the main reason you have never taken ARVs?</p>  | <p>NOT ELIGIBLE FOR TREATMENT=1<br/> HEALTH CARE PROVIDER DID NOT PRESCRIBE = 2<br/> HIV MEDICINES NOT AVAILABLE = 3<br/> I FEEL HEALTHY/NOT SICK = 3<br/> COST OF MEDICATIONS = 4<br/> COST OF TRANSPORT = 5<br/> RELIGIOUS REASONS = 6<br/> TAKING TRADITIONAL MEDICATIONS = 7<br/> NOT ATTENDING HIV CLINIC = 8<br/> OTHER = 96<br/> DON'T KNOW = -8<br/> REFUSED = -9</p> | ALL→817                               |
| 812 | <p>What month and year did you <u>first</u> start taking ARVs?<br/> PROBE TO VERIFY DATE.</p>  | <p>MONTH _____<br/> DON'T KNOW MONTH = -8<br/> REFUSED MONTH = -9<br/> YEAR _____<br/> DON'T KNOW YEAR = -998<br/> REFUSED YEAR = -999</p>  |                                       |
| 813 | <p>What month and year did you <u>last</u> receive ARVs?</p>   | <p>MONTH _____<br/> DON'T KNOW MONTH = -8<br/> REFUSED MONTH = -9<br/> YEAR _____<br/> DON'T KNOW YEAR = -998<br/> REFUSED YEAR = -999</p>  |                                       |
| 814 | <p>Are you <u>currently</u> taking ARVs, that is, antiretroviral medications?<br/> <br/> By currently, I mean that you may have missed some doses but you are still taking ARVs.</p> | <p>YES = 1<br/> NO=2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>   | <p>YES→816<br/> DK, REFUSED → 817</p> |

|     |   |  |   |
|-----|---|--|---|
| 815 | <p>Can you tell me the <u>main</u> reason why you are <u>not</u> currently taking ARVs?</p>   | <p>I HAVE TROUBLE TAKING A TABLET EVERYDAY = 1<br/> I HAD SIDE EFFECTS = 2<br/> FACILITY TOO FAR AWAY FOR ME TO GET MEDICINE REGULARLY = 3<br/> COST OF MEDICATIONS = 4<br/> COST OF TRANSPORT = 5<br/> I FEEL HEALTHY/NOT SICK =6<br/> FACILITY WAS OUT OF STOCK = 7<br/> RELIGIOUS REASONS = 8<br/> TAKING TRADITIONAL MEDICATIONS = 9<br/> OTHER=96<br/> DON' T KNOW = -8<br/> REFUSED = -9</p> | ALL→817   |
| 816 | <p>People sometimes forget to take all of their ARVs everyday. In the last 30 days, how many days have you missed taking any of your ARV pills ?</p> <p>CODE '00' IF NONE.</p>  | <p>NUMBER OF DAYS _____<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>   |   |
| 817 | <p>Are you <u>currently</u> taking Bactrim or cotrimoxazole?</p> <p>Bactrim or cotrimoxazole is a medicine recommended for people with HIV, even if they have not started treatment for HIV. It helps prevent certain infections but it is not treatment for HIV.</p> <p>By currently, I mean that you may have missed some doses but you are still taking Bactrim/Cotrimoxazole.</p> | <p>YES = 1<br/> NO=2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>  | <p>IF YES, DK, REFUSED → 819</p> <p>ELECTRONIC AID IF DON'T KNOW.</p> |
| 818 | <p>Can you tell me the <u>main</u> reason why you are <u>not currently</u> taking Bactrim or Cotrimoxazole?</p>   | <p>WAS NOT PRESCRIBED= 1<br/> I HAVE TROUBLE TAKING A TABLET EVERYDAY = 2<br/> I HAD SIDE EFFECTS/RASH = 3</p>   |   |

|  |   |   |  |
|--|---|---|--|
|  |   | <p>FACILITY TOO FAR AWAY FOR ME TO GET BACTRIM OR COTRIMOXAZOLE<br/> REGULARLY = 4<br/> DO NOT NEED IT/NOT SICK = 5<br/> PHARMACY/FACILITY WAS OUT OF STOCK = 6<br/> COST OF MEDICATIONS = 7<br/> COST OF TRANSPORT = 8<br/> DOCTOR SAID NO LONGER NEEDED = 9<br/> OTHER=96<br/> DON' T KNOW = -8<br/> REFUSED = -9</p>                 |  |
| 819  | <p>Have you ever attended a support group for people living with HIV?</p>   | <p>YES= 1<br/> NO = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>  | <p>NO, DK, REFUSED → 822</p>                   |
| 820  | <p>In the last 12 months, how many times did you attend a support group?</p> <p>CODE '00' IF NONE.</p>  | <p>NUMBER OF TIMES _____<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>   | <p>NONE, DK, REFUSED →822</p>                  |
| 821  | <p>Which of the following do you receive from the support group related to your HIV infection?</p> <p>READ EACH RESPONSE.</p> <p>SELECT ALL THAT APPLY.</p> | <p>NOTHING = A<br/> COUNSELING/HEALTHY LIVING MESSAGES = B<br/> REMINDED OF IMPORTANCE OF TAKING ARV REGULARLY = C<br/> REMINDED TO KEEP HIV APPOINTMENTS = D<br/> REFILLS OR PICKING UP ARV MEDICATIONS = E<br/> PSYCHOSOCIAL SUPPORT = F<br/> LIVELIHOOD/MATERIAL SUPPORT = G<br/> OTHER = X<br/> DON'T KNOW = Y<br/> REFUSED = Z</p> | <p>IF NOTHING →822</p>                         |
| <p>Now I will ask you about HIV care and tuberculosis or TB.</p> |   |   | <p>SKIP TO NEXT MODULE IF NOT IN HIV CARE.</p> |

|     |   |   |                               |
|-----|---|---|-------------------------------|
| 822 | At your last HIV medical care visit, were you asked if you had any of the following TB symptoms: cough, fever, night sweats and weight loss?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9                                      |                               |
| 823 | In the last 12 months, have you experienced any of the following TB symptoms: cough, fever, night sweats and weight loss?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9                                      | NO, DK, REFUSED → NEXT MODULE |
| 824 | In the last 12 months, did you receive a chest x-ray or sputum test to look for TB?<br><br><i>A sputum test is when the patient has to cough and collect the sample in a cup.</i><br><br>SELECT ALL THAT APPLY. | CHEST X-RAY = A<br>SPUTUM TEST = B<br>NONE OF THESE = C<br>DON'T KNOW = Y<br>REFUSE = Z |                               |

**MODULE 9: TUBERCULOSIS AND OTHER HEALTH ISSUES**

**Interviewer says: "Now I will ask you about tuberculosis or TB."**

|     |  |   |                       |
|-----|--|---|-----------------------|
| 901 | Have you ever visited a tuberculosis or TB clinic for tuberculosis or TB diagnosis or treatment? | YES = 1<br>NO=2<br>DON'T KNOW = 8<br>REFUSED = 9  | NO, DK, REFUSED → 907 |
| 902 | Were you tested for HIV at the TB clinic?  | YES = 1<br>NO, WAS NOT TESTED FOR HIV =2<br>NO, ALREADY HIV POSITIVE = 3<br>DON'T KNOW = 8<br>REFUSED = 9 |                       |

|  |  |  |   |
|--|--|--|---|
| 903  | Have you ever been told by a doctor, clinical officer or nurse that you had TB?  | YES = 1<br>NO=2<br>DON'T KNOW = 8<br>REFUSED = 9   | NO, DK, REFUSED → 907                                     |
| 904  | What month and year did a doctor, clinical officer or nurse tell you that you have (had) TB?<br><br>RECORD THE MOST RECENT TIME IF DIAGNOSED WITH TB MORE THAN ONCE. | MONTH ____ ____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH = -9<br><br>YEAR ____ ____ ____<br>DON'T KNOW YEAR = -998<br>REFUSED YEAR = -999 |   |
| 905  | Were you <u>ever</u> treated for TB?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | NO, DK, REFUSED → 907                                     |
| 906  | The last time you were treated for TB, did you complete at least 6 months of treatment ?   | YES = 1<br>NO, MEDICINE WAS STOPPED IN LESS THAN 6 MONTHS = 2<br>NO, BUT I AM STILL ON TREATMENT = 3<br>DON'T KNOW = 8<br>REFUSED = 9      |   |
| <p><b>Interviewer says: "Now I'm going to ask you about tests a health care provider can do to check for cervical cancer. The cervix connects the uterus to the vagina. The tests a health care provider can do to check for cervical cancer are called a pap smear, HPV test and VIA test.</b></p> <p><b>For a pap smear and HPV test, a health care provider puts a small stick inside the vagina to wipe the cervix and sends the sample to the laboratory. For a VIA test, a healthcare worker puts vinegar on the cervix and looks to see if the cervix changes color."</b></p> <p><b>SKIP IF A MALE.</b></p> |  |  |   |
| 907  | Have you ever been tested for cervical cancer?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | NO, DK, REFUSED → 912<br><br>ELECTRONIC AID IF DON'T KNOW |



|   |  |  |   |
|---|--|--|---|
|   |  |  |   |
| 908   | What month and year was your last test for cervical cancer?  | MONTH ____ ____<br>DON'T KNOW MONTH = -8<br>REFUSED MONTH = -9<br>YEAR ____ ____ ____ ____<br>DON'T KNOW YEAR = -998<br>REFUSED YEAR = -999                    |   |
| 909   | What was the result of your last test for cervical cancer?   | NORMAL/NEGATIVE = 1<br>ABNORMAL/POSITIVE = 2<br>SUSPECT CANCER = 3<br>UNCLEAR/INCONCLUSIVE = 4<br>DID NOT RECEIVE RESULTS = 5<br>DON'T KNOW = 8<br>REFUSED = 9 | NORMAL, UNCLEAR, DID NOT RECEIVE, DK, REFUSED → 912 |
| 910   | Did you receive treatment after your last test for cervical cancer?<br>Did you receive treatment on the same day or on a different day?                          | YES, I WAS TREATED ON THE SAME DAY = 1<br>YES, I RECEIVED TREATMENT ON A DIFFERENT DAY = 2<br>NO = 3<br>REFUSED = 8<br>DON'T KNOW = 9                          |   |
| 911   | Did you have any follow up visits because of your test results?  | YES = 1<br>NO = 2<br>REFUSED = 8<br>DON'T KNOW = 9   |   |
| <b>Interviewer says: "Now I would like to ask you questions about sexual health."</b> |  |  |   |
| 912   | During the last 12 months, have you had an abnormal discharge from your vagina or experienced pelvic pain? This may include an unusual smell, color, or texture. | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | SKIP IF MALE.                                       |

|     |   |  |   |
|-----|---|--|---|
|     |   |  |   |
| 913 | During the last 12 months, have you had an ulcer or sore on or near your vagina?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | SKIP IF MALE.   |
| 914 | During the last 12 months, have you had an abnormal discharge from your penis?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | SKIP IF MALE.   |
| 915 | During the last 12 months, have you had an ulcer or sore on or near your penis?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | SKIP IF FEMALE.   |
| 916 | During the last 12 months, have you had pain on urination?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | SKIP IF FEMALE.   |
| 917 | Did you see a doctor, clinical officer or nurse because of these problems?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | SKIP IF NO TO QUESTIONS ABOVE.                                    |
| 918 | In the last 12 months, did a doctor, clinical officer or nurse tell you that you had a sexually transmitted disease other than HIV? | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 |   |
| 919 | Did you get treatment for these problems?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 | NO, DK, REFUSED → NEXT MODULE<br>ONLY YES TO SYMPTOMS; YES TO STD |

|     |   |   |                                  |
|-----|---|---|----------------------------------|
| 920 | Where did you go to get treatment? Did you go to a public facility, CHAM, another private facility or a pharmacy?<br><br>SELECT ALL THAT APPLY. | PUBLIC CLINIC/HOSPITAL= A<br>CHAM HOSPITAL = B<br>OTHER PRIVATE CLINIC/HOSPITAL = C<br>PHARMACY = D<br>OTHER = X<br>DON'T KNOW = Y<br>REFUSED = Z | ONLY YES TO SYMPTOMS; YES TO STD |
|-----|---|---|----------------------------------|

**MODULE 10: ALCOHOL USE**

**Interviewer says: "The next few questions will be on your use of alcohol. Remember, all the answers you provide will be kept confidential."**

|      |  |   |                                   |
|------|--|---|-----------------------------------|
| 1001 | How often do you have a drink containing alcohol?                | NEVER = 0<br>MONTHLY OR LESS = 1<br>2-4 TIMES A MONTH = 2<br>2-3 TIMES A WEEK = 3<br>4 OR MORE TIMES A WEEK = 4<br>DON'T KNOW=8<br>REFUSED =9 | NEVER, DK, REFUSED → NEXT MODULE. |
| 1002 | How many drinks containing alcohol do you have on a typical day? | 1 OR 2= 0<br>3 OR 4= 1<br>5 OR 6 =2<br>7 TO 9 = 3<br>10 OR MORE = 4<br>DON'T KNOW=8<br>REFUSED =9   |                                   |
| 1003 | How often do you have six or more drinks on one occasion?        | NEVER = 0<br>LESS THAN MONTHLY = 1<br>MONTHLY = 2<br>WEEKLY= 3<br>DAILY OR ALMOST DAILY = 4<br>DON'T KNOW=8<br>REFUSED =9                     |                                   |

**MODULE 11: GENDER NORMS**

**MODULE 11: GENDER NORMS**

Interviewer says: "Now I would like to ask you questions on decision-making in your home."

|      |  |   |                                     |
|------|--|---|-------------------------------------|
| 1101 | Who usually makes decisions about health care for yourself: you, your (spouse/partner), you and your (spouse/partner) together, or someone else?     | I DO = 1<br>SPOUSE/PARTNER = 2<br>WE BOTH DO = 3<br>SOMEONE ELSE = 4<br>DON'T KNOW = 8<br>REFUSED = 9 | SKIP IF NOT MARRIED/LIVING TOGETHER |
| 1102 | Who generally decides about how the money you receive is spent: you, your (spouse/partner), you and your (spouse/partner) together, or someone else? | I DO = 1<br>SPOUSE/PARTNER = 2<br>WE BOTH DO = 3<br>SOMEONE ELSE = 4<br>DON'T KNOW = 8<br>REFUSED = 9 | SKIP IF NOT MARRIED/LIVING TOGETHER |
| 1103 | Do you believe it is right for a man to hit or beat his wife/partner if she goes out without telling him?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  |                                     |
| 1104 | Do you believe it is right for a man to hit or beat his wife/partner if she does not take care of the children?                                      | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  |                                     |
| 1105 | Do you believe it is right for a man to hit or beat his wife/partner if she argues with him?   | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  |                                     |
| 1106 | Do you believe it is right for a man to hit or beat his wife/partner if she refuses to have sex with him?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  |                                     |
| 1107 | Do you believe it is right for a man to have sex with other women if his wife/partner refuses to have sex with him?                                  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  |                                     |

|      |   |  |  |
|------|---|--|--|
| 1108 | Do you believe a person should tolerate violence to keep the family together? | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 |  |
| 1109 | Do you believe women who carry condoms have sex with a lot of men?            | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9 |  |

**MODULE 12: VIOLENCE**

**Interviewer says: "You have been selected to be asked questions on other important aspects of a person's life. I know that some of these questions are very personal. However, your answers are important for helping to understand the condition of men and women in Malawi. 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.**

**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."**

|      |   |   |                       |
|------|---|---|-----------------------|
| 1201 | How many times has anyone ever touched you in a sexual way without your permission, but did not try and force you to have sex?<br><br>Touching in a sexual way without permission includes fondling, pinching, grabbing, or touching you on or around your sexual body parts.<br><br>CODE '00' IF NONE. | NUMBER OF TIMES ____<br>DON'T KNOW = -8<br>REFUSED = -9 | NONE,DK, REFUSED→1203 |
| 1202 | How old were you the <u>first</u> time this happened?   | AGE IN YEARS ____<br>DON'T KNOW = -8<br>REFUSED = -9    |                       |

|      |  |  |                          |
|------|--|--|--------------------------|
| 1203 | <p>How many times in your life has anyone <u>tried</u> to make you have sex against your will but did not succeed? This includes someone using harassment, threats, tricks, or physical force.</p> <p>CODE '00' IF NONE.</p> | <p>NUMBER OF TIMES _____<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>  | NONE, DK, REFUSED → 1205 |
| 1204 | <p>How old were you the <u>first time</u> someone <u>tried</u> to make you have sex against your will but did not succeed?</p>   | <p>AGE IN YEARS _____<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>     |                          |
| 1205 | <p>How many times in your life have you been <u>physically forced</u> to have sex?</p> <p>CODE '00' IF NONE.</p>   | <p>NUMBER OF TIMES _____<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>  | NONE, DK, REFUSED → 1213 |
| 1206 | <p>How old were you the first time someone physically forced you to have sex?</p>  | <p>AGE IN YEARS _____<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>     |                          |
| 1207 | <p>The first time someone physically forced you to have sex, was the person male or female? If it was more than one person, what was the sex of the person you knew the best?</p>  | <p>MALE = 1<br/> FEMALE = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p> |                          |

|      |   |  |                             |
|------|---|--|-----------------------------|
| 1208 | What was this person's relationship to you? If it was more than one person, what was the relationship with the person you knew the best?                                  | BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE = 1<br>EX-BOYFRIEND/GIRLFRIEND/PARTNER/SPOUSE = 2<br>RELATIVE/FAMILY MEMBER = 3<br>CLASSMATE/SCHOOLMATE = 4<br>TEACHER = 5<br>POLICE/SECURITY OFFICER/MILITARY= 6<br>EMPLOYER = 7<br>NEIGHBOR = 8<br>COMMUNITY/RELIGIOUS LEADER = 9<br>FRIEND = 10<br>STRANGER = 11<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9 |                             |
| 1209 | In the last 12 months, did someone physically force you to have sex?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | NO, DK, REFUSED →1213       |
| 1210 | In the last 12 months, did a partner physically force you to have sex?<br><br>By partner, I mean a live-in partner whether or not you were married at the time. .         | YES =1<br>NO, DID NOT FORCE = 2<br>NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS= 3<br>DON'T KNOW = 8<br>REFUSED = 9  |                             |
| 1211 | The last time someone physically forced you to have sex, was the person male or female? If it was more than one person, what was the sex of the person you knew the best? | MALE = 1<br>FEMALE = 2<br>DON'T KNOW = 8<br>REFUSED = 9  | SKIP IF ONLY HAPPENED ONCE. |

|      |   |   |                                    |
|------|---|---|------------------------------------|
| 1212 | <p>What was this person's relationship to you? If it was more than one person, what was the relationship with the person you knew the best?</p>   | <p>BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE = 1<br/> EX-<br/> BOYFRIEND/GIRLFRIEND/PARTNER/SPOUSE = 2<br/> RELATIVE/FAMILY MEMBER = 3<br/> CLASSMATE/SCHOOLMATE = 4<br/> TEACHER = 5<br/> POLICE/SECURITY OFFICER/MILITARY= 6<br/> EMPLOYER = 7<br/> NEIGHBOR = 8<br/> COMMUNITY/RELIGIOUS LEADER = 9<br/> FRIEND = 10<br/> STRANGER = 11<br/> OTHER = 96<br/> DON'T KNOW = -8<br/> REFUSED = -9</p> | <p>SKIP IF ONLY HAPPENED ONCE.</p> |
| 1213 | <p>How many times in your life has someone <u>pressured</u> you to have sex through harassment, threats and tricks and did succeed?</p> <p>CODE '00' IF NONE.</p> <p>Being pressured can include being worn down by someone who repeatedly asks for sex, feeling pressured by being lied to, being told promises that were untrue, having someone threaten to end a relationship or spread rumors or sexual pressure due to someone using their influence or authority.</p> | <p>NUMBER OF TIMES _____<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>   | <p>NONE, D, REFUSED → 1221</p>     |
| 1214 | <p>How old were you the <u>first time</u> someone pressured you to have sex and did succeed?</p>  | <p>AGE IN YEARS _____<br/> DON'T KNOW = -8<br/> REFUSED = -9</p>  |                                    |
| 1215 | <p>The first time someone pressured you to have sex and did succeed, was the person male or female? If it was more than one person, what</p>  | <p>MALE = 1<br/> FEMALE = 2<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>  |                                    |



|      |   |  |                             |
|------|---|--|-----------------------------|
|      | was the sex of the person you knew the best?  |  |                             |
| 1216 | 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<br>EX-BOYFRIEND/GIRLFRIEND/PARTNER/SPOUSE = 2<br>RELATIVE/FAMILY MEMBER = 3<br>CLASSMATE/SCHOOLMATE = 4<br>TEACHER = 5<br>POLICE/SECURITY OFFICER/MILITARY= 6<br>EMPLOYER = 7<br>NEIGHBOR = 8<br>COMMUNITY/RELIGIOUS LEADER = 9<br>FRIEND = 10<br>STRANGER = 11<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9 |                             |
| 1217 | In the last 12 months, did someone pressure you to have sex and did succeed?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | NO, DK, REFUSED → 1221      |
| 1218 | In the last 12 months, did a partner pressure you to have sex and did succeed?<br><br>By partner, I mean a live-in partner whether or not you were married at the time. .         | YES = 1<br>NO, DID NOT PRESSURE ANDUCCEED = 2<br>NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS = 3<br>DON'T KNOW = 8<br>REFUSED = 9   |                             |
| 1219 | The last time someone pressured you to have sex and did succeed, was the person male or female? If it was more than one person, what was the sex of the person you knew the best? | MALE = 1<br>FEMALE = 2<br>DON'T KNOW = 8<br>REFUSED = 9  | SKIP IF ONLY HAPPENED ONCE. |

|      |   |   |  |
|------|---|---|--|
| 1220 | <p>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?</p>                  | <p>BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE = 1<br/> EX-BOYFRIEND/GIRLFRIEND/PARTNER/SPOUSE = 2<br/> RELATIVE/FAMILY MEMBER = 3<br/> CLASSMATE/SCHOOLMATE = 4<br/> TEACHER = 5<br/> POLICE/SECURITY OFFICER/MILITARY= 6<br/> EMPLOYER = 7<br/> NEIGHBOR = 8<br/> COMMUNITY/RELIGIOUS LEADER = 9<br/> FRIEND = 10<br/> STRANGER = 11<br/> OTHER = 96<br/> DON'T KNOW = -8<br/> REFUSED = -9</p> | <p>SKIP IF ONLY HAPPENED ONCE.</p>   |
| 1221 | <p>After any of these unwanted sexual experiences, did you try to seek professional help or services from any of the following?</p> <p>SELECT ALL THAT APPLY.</p> | <p>I DID NOT TRY TO SEEK HELP = A<br/> HEALTHCARE PROFESSIONAL = B<br/> POLICE OR OTHER SECURITY PERSONNEL = C<br/> SOCIAL WORKER, COUNSELOR OR NON-GOVERNMENTAL ORGANIZATION = D<br/> RELIGIOUS LEADER = E<br/> OTHER = X<br/> DON'T KNOW = Y<br/> REFUSED = Z</p>   | <p>DID NOT TRY TO SEEK HELP →1222<br/> ELSE→1223</p> <p>SKIP IF NEVER EXPERIENCED.</p> |
| 1222 | <p>What was the main reason that you did not try to seek professional help or services?</p>   |   | <p>SKIP IF NEVER EXPERIENCED.</p>  |

|      |   |   |                                |
|------|---|---|--------------------------------|
|      |   | DID NOT KNOW SERVICES WERE AVAILABLE = 1<br>SERVICES NOT AVAILABLE = 2<br>AFRAID OF GETTING IN TROUBLE = 3<br>ASHAMED FOR SELF/FAMILY = 4<br>COULD NOT AFFORD SERVICES = 5<br>DID NOT THINK IT WAS A PROBLEM = 6<br>FELT IT WAS MY FAULT = 7<br>AFRAID OF BEING ABANDONED = 8<br>DID NOT NEED/WANT SERVICES = 9<br>AFRAID OF MAKING SITUATION WORSE = 10<br><br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9 |                                |
| 1223 | Has anyone ever done any of these things to you: <ul style="list-style-type: none"> <li>- Punched, kicked, whipped, or beat you with an object</li> <li>- Slapped you, threw something at you that could hurt you, pushed you or shoved you</li> <li>- Choked smothered, tried to drown you, or burned you intentionally</li> <li>- Used or or threatened you with a knife, gun or other weapon?</li> </ul> | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9  | NO, DK, REFUSED →END OF MODULE |
| 1224 | How old were you the first time one of these things happened to you?  | AGE IN YEARS _____<br>DON'T KNOW = -8<br>REFUSED = -9   |                                |

|      |  |   |                                       |
|------|--|---|---------------------------------------|
| 1225 | <p>In the last 12 months, how many times did someone:</p> <ul style="list-style-type: none"> <li>- Punched, kicked, whipped, or beat you with an object</li> <li>- Slapped you, threw something at you that could hurt you, pushed you or shoved you</li> <li>- Choked smothered, tried to drown you, or burned you intentionally</li> <li>- Used or or threatened you with a knife, gun or other weapon?</li> </ul> | <p>NOT IN LAST 12 MONTHS = 1<br/> ONCE = 2<br/> FEW = 3<br/> MANY = 4<br/> DON'T KNOW = 8<br/> REFUSED = 9</p>  | <p>NO, DK, REFUSED →END OF MODULE</p> |
| 1226 | <p>In the last 12 months, did a partner do any of these things to you?</p> <p>By partner, I mean a live-in partner whether or not you were married at the time.</p>  | <p>YES =1<br/> NO, PARTNER DID = 2<br/> NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS PARTNER = 3<br/> DON'T KNOW = 8<br/> REFUSED = 9</p> |                                       |
| 1227 | <p>The last time any of these things happened, was the person male or female? If it was more than one person, what was the sex of the person you knew the best?</p>  | <p>MALE = 1<br/> FEMALE = 2<br/> DON'T KNOW = -8<br/> REFUSED = 9</p>   |                                       |

|      |   |  |   |
|------|---|--|---|
| 1228 | The last time any of these things happened, 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<br>EX-BOYFRIEND/GIRLFRIEND/PARTNER/SPOUSE = 2<br>RELATIVE/FAMILY MEMBER = 3<br>CLASSMATE/SCHOOLMATE = 4<br>TEACHER = 5<br>POLICE/SECURITY OFFICER/MILITARY= 6<br>EMPLOYER = 7<br>NEIGHBOR = 8<br>COMMUNITY/RELIGIOUS LEADER = 9<br>FRIEND = 10<br>STRANGER = 11<br>OTHER = 96<br>DON'T KNOW = -8<br>REFUSED = -9 |   |
| 1229 | For any of the times in the last 12 months that one of these things happened to you, did you receive any injuries?  | YES = 1<br>NO = 2<br>DON'T KNOW = 8<br>REFUSED = 9   | NO, DK, REFUSED →1231   |
| 1230 | Did you experience any of the following?<br>READ EACH RESPONSE.<br>SELECT ALL THAT APPLY  | CUTS, SCRATCHES, BRUISES, ACHES, REDNESS OR SWELLING OR OTHER MINOR MARK = A<br>SPRAINS, DISLOCATIONS, OR BLISTERING = B<br>DEEP WOUNDS, BROKEN BONES, BROKEN TEETH, OR BLACKENED OR CHARRED SKIN =C<br>PERMANENT INJURY OR DISFIGUREMENT =D<br>DON'T KNOW = Y<br>REFUSED = Z  |   |
| 1231 | Thinking about all these experiences that we just discussed, whether someone has done the following:<br>- Punched, kicked whipped or beat you with an object<br>- Choked, smothered, tried to drown you or burned you intentionally | I DID NOT TRY TO SEEK HELP = A<br>HEALTHCARE PROFESSIONAL = B<br>POLICE OR OTHER SECURITY PERSONNEL = C<br>SOCIAL WORKER, COUNSELOR OR NON-GOVERNMENTAL ORGANIZATION = D<br>RELIGIOUS LEADER = E<br>OTHER = X<br>DON'T KNOW = Y  | DID NOT TRY TO SEEK HELP →1232<br>ELSE→END OF MODULE<br><br>SKIP IF NEVER EXPERIENCED |

|      |  |  |   |
|------|--|--|---|
|      | <p>- Used or threatened you with a knife, gun or other weapon</p> <p>Did you try to seek professional help or services for any of these incidents from any of the following?</p> <p>SELECT ALL THAT APPLY.</p>   | REFUSED = Z  |   |
| 1232 | <p>What was the main reason that you did not try to seek professional help or services?</p>  | <p>DID NOT KNOW SERVICES WERE AVAILABLE = 1</p> <p>SERVICES NOT AVAILABLE = 2</p> <p>AFRAID OF GETTING IN TROUBLE = 3</p> <p>ASHAMED FOR SELF/FAMILY = 4</p> <p>COULD NOT AFFORD SERVICES = 5</p> <p>DID NOT THINK IT WAS A PROBLEM = 6</p> <p>FELT IT WAS MY FAULT = 7</p> <p>AFRAID OF BEING ABANDONED = 8</p> <p>DID NOT NEED/WANT SERVICES = 9</p> <p>AFRAID OF MAKING SITUATION WORSE = 10</p> <p>OTHER = 96</p> <p>DON'T KNOW = -8</p> <p>REFUSED = -9</p> |   |
| 1233 | <p>Thank you for sharing your personal experiences with me. I know it may have been difficult for you to talk about your experiences with me. If you would like to talk further about these experiences, I can refer you to a place that can provide you with help.</p> <p>PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS.</p> |  | SKIP IF NEVER EXPERIENCED.                                    |
|      | <p>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>SKIP IF &gt;18 YEARS OLD</p> <p>SKIP IF NEVER SOLD SEX</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. |  |  |
|--|--|--|--|

**Interviewer says: “Thank you for taking the time to participate in this survey. Your responses will be very helpful to the Ministry of Health to better understand how to improve health programs in the country.”**

**PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS, IF NOT ALREADY GIVEN.**

# APPENDIX G SURVEY CONSENT FORMS

## Consent for Household Interview

### Interviewer reads:

#### What language do you prefer for our discussion today?

\_\_\_ English

\_\_\_ Chichewa

\_\_\_ Tumbuka

Hello. My name is \_\_\_\_\_. I would like to invite you to take part in this research study/survey about HIV in Malawi. 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 and the Centre for Social Research (CSR).

#### Title of Survey: Malawi Population-Based HIV Impact Assessment

#### Purpose of survey

This survey will help us know how many people in Malawi have HIV and need health services. It will also tell us about people's risk for HIV. About 15,000 households will join this survey. We would like your household to join the survey too. What you tell us will help the Ministry of Health make HIV services better in the country.

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

#### Survey Procedures

There are two parts to this survey— a household interview and individual interviews. In the household interview, we would like to ask you some questions about the people living in your household. We will ask how many people live here, their relationship to you, their gender, and age. We will also ask you about some of the things you have in your household. The household interview will take up to 30 minutes.

After completing the household interview, we would begin the individual interviews. We would like to invite you and others living in your household to participate in the second part of this survey. We will also offer an HIV test after the interview. We will ask each person to give his or her written permission to participate before



joining the survey.

### **Right to refuse or withdraw**

Your participation in this household interview is entirely voluntary. If you choose to take part in the interview, 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.

### **Risks**

The risks to participating in the household interview 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.

### **Benefits**

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

### **Alternatives to participation**

You do not have to participate in this survey.

### **Confidentiality and Access to Your Health Information**

We will do everything we can to keep your answers private. What we talk about will be kept private. Your name and signed informed consent form will be kept separate from your answers to the questions. Your answers to the questions will be identified only by a number. Your name will not appear when we share survey results. Only people working on the survey will have access to the information we collect during the survey.

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 the National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

The information we collect during the survey will not be released outside of the survey groups listed above unless there is an issue of safety. Your permission to allow us to use and share your information with the groups above will expire three years after the end of the survey. You can leave the study at any time for any reason. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Principal Investigator Dr. George Bello who can be reached at

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:  
+265888892212  
Email: gafbello@yahoo.co.uk

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

### Costs for being in the survey

There is no cost to you for being in the household interview. You should also know that you would not be paid to be in the interview. This survey has received approval from the National Health Sciences Research Committee in Malawi and the Institutional Review Boards at the Centers for Disease Control and Prevention, Columbia University Medical Center and Westat.

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

contact: Dr. Damson Katyola

Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi

Phone: +2651726422/418

Email: dkathyola@gmail.com

Do you want to ask me anything about the survey?

### Consent Statement

I have read this form and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had have been answered satisfactorily. I agree to participate in the household interview. I know that after choosing to be in the interview, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this consent form.

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

\_\_\_\_\_ Yes    \_\_\_\_\_ No

Head of household signature or mark \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of head of household \_\_\_\_\_

Household ID number \_\_\_\_\_

### [For illiterate participants]

Signature of witness \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of witness \_\_\_\_\_

Signature of person obtaining consent \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of person obtaining consent \_\_\_\_\_

Survey staff ID number \_\_\_\_\_

## **Consent for Interview: Adults ages 18-64 years**

**Interviewer reads:**

**What language do you prefer for our discussion today?**

\_\_\_English

\_\_\_Chichewa

\_\_\_Tumbuka

Hello. My name is \_\_\_\_\_. We are doing a research study/survey throughout Malawi 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 and the Centre for Social Research (CSR).

### **Title of Survey: Malawi Population-Based HIV Impact Assessment**

#### **Purpose of the survey**

This survey will help us know how many people in Malawi have HIV and need health services. It will also tell us about people's risk for getting HIV. We expect about 30,000 men, women, and children from 15,000 households throughout Malawi to take part in this survey. We would like to invite you to join the survey too. Your participation will help the Ministry of Health make HIV services better. The United States Government is the sponsor of the survey.

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, what kind of work you do, whether you have had any experience with HIV services, and your sexual behaviors. The interview will take about 40 minutes.

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

#### **Right to refuse or withdraw**

You do not have to be in the survey, and 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.

#### **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. There may be no direct benefit to you but your taking part in this research could help us learn more about HIV in Malawi. It can also help us learn about how HIV prevention and treatment programs are working. Your participation is important.

#### **Confidentiality and Access to Your Health Information**

We will do everything we can to keep your participation in the survey and your answers private. Your name and

signed informed consent forms will be kept separate from your answers to the questions. Your answers to the questions will be identified only by a number. Your name will not appear when we share survey results. Only people working on the survey will have access to the data during the survey.

The following individuals and/or agencies will be able to look at your research records 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 National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

The information we collect during the survey will not be released outside of the survey groups listed above unless there is an issue of safety. Your permission to allow us to use and share your information with the groups above will expire three years after the end of the survey. You can leave the study at any time for any reason. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Principal Investigator Dr. George Bello who can be reached at

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:  
+265888892212  
Email: gafbello@yahoo.co.uk

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

### **Costs for being in the survey**

There is no cost to you for being in the survey. You should also know that you would not be paid to be in the survey.

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

Dr. Damson Katyola  
Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi  
Phone: +2651726422/418  
Email: dkathyola@gmail.com

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

#### **Consent Statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had were answered satisfactorily. I agree to be in this survey. I know that after choosing to be in this survey, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this consent form.

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

2. **FUTURE RESEARCH:** It is possible that you may be eligible to participate in future studies related to health in Malawi. We are asking for your permission to contact you in the next two years if such an opportunity occurs. If we contact you, we will give you details about the new study and ask you to sign a separate consent form at that time. You may decide at that time that you do not want to take part in that study. If you do not wish to be contacted about future studies, it does not affect your involvement in this study. Do you agree to be contacted in the future? 'YES' means that you agree to be contacted in the future if a study opportunity arises. 'NO' means that you will NOT be contacted about future studies.

\_\_\_\_\_YES          \_\_\_\_\_NO

Participant signature or mark \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of participant \_\_\_\_\_

Participant ID number \_\_\_\_\_

**[For illiterate participants]**

Signature of witness \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of witness \_\_\_\_\_

Signature of person obtaining consent \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of person obtaining consent \_\_\_\_\_

Survey staff ID number \_\_\_\_\_

## Consent from Parent/Guardian for Blood Draw for Children, ages 0-5 years

**Interviewer reads:**

**What language do you prefer for our discussion today?**

\_\_\_ English

\_\_\_ Chichewa

\_\_\_ Tumbuka

Now I would like to ask you to let your son/daughter take part in the survey.

**Title of Survey: Malawi Population-Based HIV Impact Assessment**

### **Purpose of the survey**

This research study/survey will help us learn more about the health of children in Malawi. We plan to ask thousands of children like yours to join this survey. We would like to invite your child to join the survey too. Your child's participation will help the Ministry of Health make HIV services better.

### **Survey Procedures**

If you agree to allow your child ages 2-5 to take part in the survey, a trained nurse will take a small amount or about 5 mL 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 and then perform the HIV test here in your home. 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. We will provide counseling about the results and discuss with you how to share the results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.

If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of your immune system that fights HIV infection and other diseases. We will 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 and health. We will also test the CD4 level of some people without HIV.

If your child tests positive for HIV, we will also send his/her blood to a laboratory 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 about six to eight weeks from now. You will be able to talk to a doctor or nurse at the facility about the test result.

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.

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 Malawians, such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your child's name will be on the sample for only three years. We will attempt to tell you about any test results during the three year period that are important for your child's health. Your child's leftover blood will not be sold or used for commercial

reasons. If you do not agree to long-term storage of your child's blood samples, we will destroy your child's blood samples after survey-related testing has been completed.

**[For children ages 0-<18 months only]**

The body makes antibodies to fight HIV. Antibodies from a mother with HIV can enter the baby's blood during pregnancy. The test we perform on your child today will let us know if your child is exposed to HIV. If it is positive, it does not mean your child has the virus in his/her blood. It just confirms that he/she has been exposed to HIV. We will need to send your child's blood to a lab for a special test to confirm if he/she has the HIV infection. If you provide us with the name of a health facility, we can send the result there in about six weeks from now. We will also contact you to inform you that the results have been sent to the facility, if you provide us with your contact information. You will be able to talk to a doctor or nurse at the facility about the test result.

**[For children 0-5 years]**

If your child tests positive for HIV, we will also measure your child's weight and height to track your child's growth and monitor their health. We will also measure weight and height for some children without HIV. The results will be returned to you and you will be able to talk to a doctor or nurse at the facility about the result.

**Right to refuse or withdraw**

It is your decision about whether you will allow your child to join the survey. Your child does not have to be in 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.

**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 he/she may go for care and treatment. Care and treatment provided by the Ministry of Health 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 his/her health today. Some children who participate will test HIV-positive. If this happens to your child, the benefit is that you will learn his/her HIV status and will learn where to take your child for life-saving treatment. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child's taking part in this research could help us learn more about children and HIV in Malawi. It can also help us learn about how HIV prevention and treatment programs are working.

**Confidentiality and Access to Your Health Information**

We will do everything we can to keep your child's participation in the survey confidential. Your child's name and the consent forms will be kept separate from his/her health information. The information we collect from your child will be identified by a number and not by your name or your child's name. Your name and your child's name will not appear when we share survey results. Only people working on the survey will have access to the

data during the survey.

The following individuals and/or agencies will be able to look at your 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 participant. These include the National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your child's rights as a participant in this survey
- Study staff and study monitors

The information we collect from your child will not be released outside of the survey groups listed above unless there is an issue of safety. Your permission to allow us to use and share your child's name and contact information with the groups above will expire three years after the end of the survey. Your child can leave the study at any time for any reason. If you want your child to leave the study, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Principal Investigator Dr. George Bello who can be reached at

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:  
+265888892212  
Email: gafbello@yahoo.co.uk

If you or your child decides that he/she should leave the survey, no more information will be collected from him/her. 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 for your child being in the survey. You should also know that you and your child would not be paid for your child to be in the survey.

If you have any questions about your child's rights as a participant in this survey, you can contact:  
Dr. Damson Katyola

Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi  
Phone: +2651726422/418  
Email: dkathyola@gmail.com

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

### **Consent Statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions I had have been answered satisfactorily. I agree for my child to take part in this survey. I know that after allowing my child to participate, I may change my mind and withdraw him/her from taking part in this survey at any time. I have been offered a copy of this consent form.

1. Do you agree that your child 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 "Yes" proceed to the next question)

2. Do you agree to have your child's leftover blood stored for future research? 'YES' means that you give permission for your child's blood samples to be stored for future research. 'NO' means that your child's blood samples will NOT be stored for future research.

\_\_\_\_\_ Yes          \_\_\_\_\_ No

Parent/guardian signature or mark \_\_\_\_\_

Date: \_\_\_/\_\_\_/\_\_\_

Printed name of parent/guardian \_\_\_\_\_

Parent/guardian 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 \_\_\_\_\_

Child's name (print) \_\_\_\_\_

Child's participant ID number \_\_\_\_\_

## Consent from Parent/Guardian for Blood Draw for Children, ages 6-9 years

**Interviewer reads:**

**What language do you prefer for our discussion today?**

\_\_\_English

\_\_\_Chichewa

\_\_\_Tumbuka

Now I would like to ask you to let your son/daughter take part in the survey.

**Title of Survey: Malawi Population-Based HIV Impact Assessment**

### **Purpose of the survey**

This research study/survey will help us learn more about the health of children in Malawi. We plan to ask thousands of children like yours to join this survey. We would like to invite your child to join the survey too. Your child's participation will help the Ministry of Health make HIV services better.

### **Survey Procedures**

If you agree to allow your child to take part in the survey, a trained nurse will take a small amount or about 5 mL 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 and then perform the HIV test here in your home. We will give you the results today. We will provide counseling about the results and discuss with you how to share the results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.

If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of your immune system that fights HIV infection and other diseases. We will 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 and health. We will also test the CD4 level of some people without HIV.

If your child tests positive for HIV, we will also send his/her blood to a laboratory 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 about six to eight weeks from now. You will be able to talk to a doctor or nurse at the facility about the test result.

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.

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 Malawians, such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your child's name will be on the sample for only three years. We will attempt to tell you about any test results during the three year period that are important for your child's health. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your child's blood samples, we will destroy your child's

blood samples after survey-related testing has been completed.

### **Right to refuse or withdraw**

It is your decision about whether you will allow your child to join the survey. Your child does not have to be in 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.

### **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 he/she may go for care and treatment. Care and treatment provided by the Ministry of Health 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 his/her health today. Some children who participate will test HIV-positive. If this happens to your child, the benefit is that you will learn his/her HIV status and will learn where to take your child for life-saving treatment. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child's taking part in this research could help us learn more about children and HIV in Malawi. It can also help us learn about how HIV prevention and treatment programs are working.

### **Confidentiality and Access to Your Health Information**

We will do everything we can to keep your child's participation in the survey confidential. Your child's name and the consent forms will be kept separate from his/her health information. The information we collect from your child will be identified by a number and not by your name or your child's name. Your name and your child's name will not appear when we share survey results. Only people working on the survey will have access to the data during the survey.

The following individuals and/or agencies will be able to look at your 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 participant. These include the National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your child's rights as a participant in this survey
- Study staff and study monitors

The information we collect from your child will not be released outside of the survey groups listed above unless

there is an issue of safety. Your permission to allow us to use and share your child's name and contact information with the groups above will expire three years after the end of the survey. Your child can leave the study at any time for any reason. If you want your child to leave the study, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Principal Investigator Dr. George Bello who can be reached at

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:  
+265888892212  
Email: gafbello@yahoo.co.uk

If you or your child decides that he/she should leave the survey, no more information will be collected from him/her. 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 for your child being in the survey. You should also know that you and your child would not be paid for your child to be in the survey.

If you have any questions about your child's rights as a participant in this survey, you can contact:  
Dr. Damson Katyola  
Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi  
Phone: +2651726422/418  
Email: dkathyola@gmail.com

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

**Consent Statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions I had have been answered satisfactorily. I agree for my child to take part in this survey. I know that after allowing my child to participate, I may change my mind and withdraw him/her from taking part in this survey at any time. I have been offered a copy of this consent form.

1. Do you agree that your child 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 "Yes" proceed to the next question)

2. Do you agree to have your child's leftover blood stored for future research? 'YES' means that you give permission for your child's blood samples to be stored for future research. 'NO' means that your child's blood samples will NOT be stored for future research.  
\_\_\_\_\_Yes          \_\_\_\_\_No

Parent/guardian signature or mark \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of parent/guardian \_\_\_\_\_

Parent/guardian 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 \_\_\_\_\_

Child's name (print) \_\_\_\_\_

Child's participant ID number \_\_\_\_\_

## Permission from Parent/Guardian for Blood Draw for Children, ages 10-14 years

Interviewer reads:

What language do you prefer for our discussion today?

\_\_\_ English

\_\_\_ Chichewa

\_\_\_ Tumbuka

Now I would like to ask you to give us permission to invite your son/daughter to take part in the survey.

### Title of Survey: Malawi Population-Based HIV Impact Assessment

#### Purpose of the survey

This research study/survey will help us learn more about the health of children in Malawi. We plan to ask thousands of children like yours to join this survey. We would like to invite your child to join the survey too. Your child's participation will help the Ministry of Health make HIV services better.

#### Survey Procedures

If you agree to allow us to invite your child to take part in the survey, we will invite him/her to participate and a trained nurse will take a small amount or about 5 mL 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 and then perform the HIV test here in your home. We will give you the results today. We will provide counseling about the results and discuss with you how to share the results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.

If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of your immune system that fights HIV infection and other diseases. We will 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 and health. We will also test the CD4 level of some people without HIV.

If your child tests positive for HIV, we will also send his/her blood to a laboratory 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 about six to eight weeks from now. You will be able to talk to a doctor or nurse at the facility about the test result.

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.

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 Malawians, such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your child's name will be on the sample for only three years. We will attempt to tell you about any test results during the three year period that are important for your child's health. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your child's blood samples, we will destroy your child's

blood samples after survey-related testing has been completed.

If you agree to allow us to invite your child to participate, we would inform him/her about the survey and ask his/her assent to participate in the survey. We would tell you the results of the tests we conduct here today. You will decide when your child should be told of the test results. If you would like, we can discuss the test results together with your child.

### **Right to refuse or 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. 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 agree to allow us to invite your child to participate, you will have the option for your child to test for HIV and CD4 counts and the option to have his/her blood stored for future research.

### **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 he/she may go for care and treatment. Care and treatment provided by the Ministry of Health 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 his/her health today. Some children who participate will test HIV-positive. If this happens to your child, the benefit is that you will learn his/her HIV status and will learn where to take your child for life-saving treatment. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child's taking part in this research could help us learn more about children and HIV in Malawi. It can also help us learn about how HIV prevention and treatment programs are working.

### **Confidentiality and Access to Your Health Information**

We will do everything we can to keep your child's participation in the survey confidential. Your child's name and the permission and assent forms will be kept separate from his/her health information. The information we collect from your child will be identified by a number and not by your name or your child's name. Your name and your child's name will not appear when we share survey results. Only people working on the survey will have access to the data during the survey.

The following individuals and/or agencies will be able to look at your 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 participant. These include the National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)

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

The information we collect from your child will not be released outside of the study partners listed above unless there is an issue of safety. Your permission to allow us to use and share your child's name and contact information with the groups above will expire three years after the end of the survey. Your child can leave the study at any time for any reason. If you want your child to leave the study, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Principal Investigator Dr. George Bello who can be reached at

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:  
+265888892212  
Email: gafbello@yahoo.co.uk

If you or your child decides that he/she should leave the survey, no more information will be collected from him/her. 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 for your child being in the survey. You should also know that you and your child would not be paid for your child to be in the survey.

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

Dr. Damson Katyola

Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi

Phone: +2651726422/418

Email: dkathyola@gmail.com

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

### **Permission Statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions I had have been answered satisfactorily. I agree for my child to take part in this survey. I know that after allowing my child to participate, I may change my mind and withdraw him/her from taking part in this survey at any time.

I agree to allow you to ask my child to be in this survey. I know that after allowing my child to decide whether he/she wants to be in this survey, he/she may withdraw at any time. His/her participation is voluntary. I have been offered a copy of this permission form.

1. Do you agree for us to ask your child to give blood for HIV testing and related testing? 'YES' means that you give your permission for us to ask your child to have the nurse collect a sample of your child's blood for HIV testing and related testing. 'NO' means that we will NOT ask your child to give blood for HIV testing and related testing.

\_\_\_\_\_ Yes      \_\_\_\_\_ No

(if "Yes" proceed to the next question)

2. Do you agree for us to ask your child to have your child's leftover blood stored for future research?



'YES' means that you give permission for us to ask your child to store your child's blood samples for future research. 'NO' means that you do NOT give us permission to ask your child to store his/her blood samples for future research.

\_\_\_\_\_ Yes          \_\_\_\_\_ No

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 for Interview and Blood Draw from Parent/Guardian for Children, ages 15-17 years

Interviewer reads:

What language do you prefer for our discussion today?

\_\_\_English

\_\_\_Chichewa

\_\_\_Tumbuka

Now I would like to ask you to give us permission to invite your son/daughter to take part in the survey.

### Title of Survey: Malawi Population-Based HIV Impact Assessment

#### Purpose of the survey

This research study/survey will help us learn more about the health of children in Malawi. We plan to ask thousands of children like yours to join this survey. We would like to invite your child to join the survey too. Your child's participation will help the Ministry of Health make HIV services better.

#### Survey Procedures

If you agree to allow us to invite your child to participate in this survey, we will invite him/her to participate and ask your child some questions. The questions are the same as the ones we will ask adults who agree to participate in the survey. It will take about 45 minutes.

If you and your child agree, a trained nurse will take a small amount or about 14 mL of blood from your child's arm 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 today. 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.

If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of your immune system that fights HIV infection and other diseases. We will 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 test the CD4 level of some people without HIV.

If your child tests positive for HIV, we will also send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. If you or your child provide us with the name of a health facility, we can send your child's viral load results there about six to eight weeks from now.

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.

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 issues important for the health of Malawians, such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your child's name will be on the sample for only three

years. We will attempt to tell you about any test results during the three year period that are important for your child's health. Your child's leftover blood 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, we will destroy your child's blood samples after survey-related testing has been completed.

It is also possible that your child may be eligible to participate in future studies related to health in Malawi. We will also ask your child for permission to contact them in the next two years if such an opportunity occurs.

### **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. You or your child may stop participation 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, it will not affect your child's healthcare in any way. If you agree to allow us to invite your child to participate, you and your child will have the option for your child to test for HIV and CD4 counts and the option to have his/her blood stored for future research.

### **Risks**

We will do everything we can to keep your child's information private. However, we cannot promise complete confidentiality. Your child may feel uncomfortable answering some of the questions. We do not wish this to happen, and they do not need to answer any question(s) if they feel the question(s) are too personal or if it makes them feel uncomfortable.

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. 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 he/she may go for care and treatment. Care and treatment provided by the Ministry of Health is free. However, learning that your child has HIV may cause some emotional discomfort. 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.

### **Benefits**

There may be no direct benefit to your child for participating in the interview. The main benefit for your child to be in the survey is the chance to learn more about his/her health today. Some children who participate will test HIV-positive. If this happens to your child, the benefit is that you will learn his/her HIV status and you will learn where to take your child for life-saving treatment. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child's taking part in this research could help us learn more about children and HIV in Malawi. It can also help us learn about how HIV prevention and treatment programs are working.

### **Confidentiality and Access to Your Health Information**

We will do everything we can to keep your child's participation in the survey confidential. Your child's name and the permission and assent forms will be kept separate from his/her health information. The information we collect from your child will be identified by a number and not by your name or your child's name. Your name and your child's name will not appear when we share survey results. Only people working on the survey will have access to the data during the survey. Your child may choose to tell you about the interview but she/he 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 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 participant. These include the National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your child’s rights as a participant in this survey
- Study staff and study monitors

The information we collect from your child will not be released outside of the survey groups listed above unless there is an issue of safety. Your permission to allow us to use and share your child’s name and contact information with the groups above will expire three years after the end of the survey. Your child can leave the study at any time for any reason. If you want your child to leave the study, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Principal Investigator Dr. George Bello who can be reached at

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:  
+265888892212  
Email: gafbello@yahoo.co.uk

If you or your child decides that he/she should leave the survey, no more information will be collected from him/her. 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 for your child for being in the survey. You should also know that you and your child would not be paid for your child to be in the survey. If you have any questions about your child’s rights as a participant in this survey, you can contact:

Dr. Damson Katyola  
Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi  
Phone: +2651726422/418  
Email: dkathyola@gmail.com

Do you want to ask me anything about the survey?

### **Permission Statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had have been answered satisfactorily. I agree for my child to take part in this survey. I know that after allowing my child to participate, I may change my mind and withdraw him/her from taking part in this survey at any time.

I agree to allow you to ask my child to be in this survey. I know that after allowing my child to decide whether he/she wants to be in this survey, he/she may withdraw at any time. His/her participation is voluntary. I have been offered a copy of this permission form.

1. Do you agree for us to ask your child to do the interview? YES’ means that you give your permission to have the survey staff ask your child to do the interview. ‘NO’ means that you will NOT give permission for us to ask your child to be interviewed.

\_\_\_\_\_ Yes          \_\_\_\_\_ No

(if "Yes" proceed to the next question)

2. Do you agree for us to ask your child to give blood for HIV testing and related testing? 'YES' means that you give your permission for us to ask your child to have the nurse collect a sample of your child's blood for HIV and related testing. 'NO' means that we will NOT ask your child to give blood for HIV testing and related testing.

\_\_\_\_\_ Yes          \_\_\_\_\_ No

(if "Yes" proceed to the next question)

3. Do you agree for us to ask your child to have your child's leftover blood stored for future research. 'YES' means that you give permission for us to ask your child to store your child's leftover blood samples for future research. 'NO' means that you do NOT give us permission to ask your child to store his/her blood samples for future research.

\_\_\_\_\_ Yes          \_\_\_\_\_ No

Parent/guardian signature or mark \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of parent/guardian \_\_\_\_\_

Parent/guardian ID number \_\_\_\_\_

**[For illiterate participants]**

Signature of witness \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of witness \_\_\_\_\_

Signature of person obtaining permission \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of person obtaining permission \_\_\_\_\_

Survey staff ID number \_\_\_\_\_

Child's name (print) \_\_\_\_\_

Child's participant ID number \_\_\_\_\_

## Assent for Interview: children, ages 15-17 years

Interviewer reads:

What language do you prefer to use for this discussion?

\_\_\_English

\_\_\_Chichewa

\_\_\_Tumbuka

Hello. My name is \_\_\_\_\_. I would like to invite you to take part in a survey of Malawi to learn more about HIV in the country.

### Title of Survey: Malawi Population-Based HIV Impact Assessment

#### Purpose of the survey

This research study/survey will help us learn more about the health of children in Malawi. We plan to ask thousands of children like you to join this survey. A survey is a way to learn new information about something by interviewing and testing many people. We would like to invite you to join this survey. Your parent/guardian said it was okay for us to ask you to join the survey.

This form might have some words in it that 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 whether you experienced any behaviors that may increase your risk of HIV. We will ask you to answer these questions without having others present. The interview will take about 40 minutes.

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

#### Right to refuse or to withdraw

You do not have to be in the survey, and 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.

#### Risks and benefits

The risks to 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. You may not get anything by being in the survey but your taking part in this research could help us learn more about HIV in Malawi. It can also help us learn about how HIV prevention and treatment programs are working. Your participation is important.

#### Confidentiality

We will do everything we can to keep your participation in the survey and your answers private. Your name and signed assent form will be kept separate from your answers to the questions. Your answers to the questions will

be identified only by the number. Your name will not appear when we share survey results. Only people working on the survey will have access to the data during the survey. You can choose to tell your parent/guardian about the interview. However, we will not share your responses with your parent or guardian.

The following individuals and/or agencies will be able to look at your research records:

- 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 National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections that may examine the study records to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

**Costs for being in the survey**

There is no cost to you or to your parent/guardian if you take part in this survey. You should also know that you and your parent/guardian would not be paid to be in the survey.

If you have any questions about the survey, feel you have been harmed by taking part, or no longer want to participate in the survey, you can contact:

Dr. George Bello  
Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:  
+265888892212  
Email: gafbello@yahoo.co.uk

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

Dr. Damson Katyola  
Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi  
Phone: +2651726422/418  
Email: dkathyola@gmail.com

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

**Assent statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had were answered satisfactorily. I agree to be in this survey. I know that after choosing to be in this survey, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this assent form.

1. Do you agree to do the interview? ‘YES’ means that you agree to do the interview. ‘NO’ means that you will NOT do the interview.  
 Yes       No

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

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

\_\_\_\_\_ YES                      \_\_\_\_\_ NO

Participant signature or mark \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of participant \_\_\_\_\_

Participant ID number \_\_\_\_\_

Printed name of parent/guardian \_\_\_\_\_

**[For illiterate child]**

Signature of witness \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of witness \_\_\_\_\_

Signature of person obtaining assent \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of person obtaining assent \_\_\_\_\_

Survey staff ID number \_\_\_\_\_



## **Consent for Interview: Emancipated minors, ages 15-17 years**

**Interviewer reads:**

**What language do you prefer to use for this discussion?**

\_\_\_ English

\_\_\_ Chichewa

\_\_\_ Tumbuka

Hello. My name is \_\_\_\_\_. I would like to invite you to take part in a survey of Malawi to learn more about HIV in the country.

### **Title of Survey: Malawi Population-Based HIV Impact Assessment**

#### **Purpose of the survey**

This research study/survey will help us learn more about the health of children in Malawi. We plan to ask thousands of children like you to join this survey. A survey is a way to learn new information about something by interviewing and testing many people. We would like to invite you to join this survey.

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 whether you experienced any behaviors that may increase your risk of HIV. We will ask you to answer these questions without having others present. The interview will take about 40 minutes.

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

#### **Right to refuse or to withdraw**

You do not have to be in the survey, and 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.

#### **Risks and benefits**

The risks to 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. You may not get anything by being in the survey but your taking part in this research could help us learn more about HIV in Malawi. It can also help us learn about how HIV prevention and treatment programs are working. Your participation is important.

#### **Confidentiality**

We will do everything we can to keep your participation in the survey and your answers private. Your name and signed consent form will be kept separate from your answers to the questions. Your answers to the questions will be identified only by the number. Your name will not appear when we share survey results. Only people working on the survey will have access to the data during the survey.

The following individuals and/or agencies will be able to look at your research records:

- 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 National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections that may examine the study records to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

The information we collect during the survey will not be released outside of the survey groups listed above unless there is an issue of safety. Your permission to allow us to use and share your information with the groups above will expire three years after the end of the survey. You can leave the study at any time for any reason. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Principal Investigator Dr. George Bello who can be reached at

Dr. George Bello

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:

+265888892212

Email: gafbello@yahoo.co.uk

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

### **Costs for being in the survey**

There is no cost to you for being in the survey. You should also know that you would not be paid to be in the survey.

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

contact: Dr. Damson Katyola

Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi

Phone: +2651726422/418

Email: dkathyola@gmail.com

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

#### **Consent statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had were answered satisfactorily. I agree to be in this survey. I know that after choosing to be in this survey, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this consent form.

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

\_\_\_\_\_Yes

\_\_\_\_\_No

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

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

\_\_\_\_\_YES                      \_\_\_\_\_NO

Participant signature or mark \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of participant \_\_\_\_\_

Participant ID number \_\_\_\_\_

**[For illiterate participants]**

Signature of witness \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of witness \_\_\_\_\_

Signature of person obtaining consent \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of person obtaining consent \_\_\_\_\_

Survey staff ID number \_\_\_\_\_

## Consent for Blood Draw: Adults ages 18-64 years

Nurse counselor/interviewer reads:

What language do you prefer to use for this discussion?

\_\_\_English

\_\_\_Chichewa

\_\_\_Tumbuka

Hello. My name is\_\_\_\_\_. I will give you information about testing options in this research study/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, a trained nurse will take a small amount or about 14 mL of blood from your arm. If it is not possible to take blood from your arm, then we will try to take a few drops of blood from your finger. We will give you the results 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. CD4 cells are the part of your immune system that fights HIV infection and other diseases. We will give you the result today and a referral form and information so that you can consult with a nurse or doctor to learn more about the test result and your health.

If you test positive for HIV, we will send your blood to a laboratory to measure your viral load. Viral load is the amount of HIV in your blood. If you provide us with the name of a health facility, we can send your viral load result to the health facility in about six to eight weeks from now. You will be able to talk to a nurse or doctor at the facility about your viral load.

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 HIV or other health issues important for the health of Malawians, such as nutrition or immunization. This will help the Ministry of Health improve the health of Malawians. This sample will be stored for an indefinite amount of time but your name will be on the sample for only three years. We will attempt to tell you about any test results during the three year period that are important to your health. 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. You may agree to let us test your blood for HIV and CD4 counts and other lab testing and not agree to have your blood stored for future research tests. If you don't want to give blood, please tell us. If you decide not to take part, it will not affect your healthcare in any way.

### **Risks**

The risks in drawing blood are very small. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. The nurse who will take your blood has received training on how to draw blood. If you have any discomfort, bleeding or swelling at the site, please let us know. You may learn that you are infected with HIV. If you find out that you are HIV-positive, we will tell you where you may go for care and treatment. Care and treatment provided by the Ministry of Health is free. However, learning that you have HIV may cause some emotional discomfort. You will receive counseling on how to cope with learning that you have HIV. We will do everything we can to keep your information private.

However, we cannot promise complete confidentiality.

### **Benefits**

The main benefit for you to be in the survey is the chance to learn more about your health today. Some people who participate will test HIV-positive. If you test HIV-positive, the benefit is that you will learn your HIV status and where to go for life-saving 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. If you test HIV-negative, you will learn about what you can do to stay HIV-negative. Your taking part in this research could help us learn more about HIV in Malawi. It can also help us learn about how HIV prevention and treatment programs are working. Your taking part is important.

### **Confidentiality and Access to Your Health Information**

We will do everything we can to keep your answers and test results confidential. The blood we collect from you will be identified by a number and not by your name. Your name and signed informed consent forms will be kept separate from your blood sample and results. Besides you, no one else will know your test results except the people working on the survey.

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 National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

The information we collect during the survey will not be released outside of the survey groups listed above unless there is an issue of safety. Your permission to allow us to use and share your name and contact information with the groups above will expire three years after the end of the survey. You can leave the study at any time for any reason. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Principal Investigator Dr. George Bello who can be reached at

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:

+265888892212

Email: [gafbello@yahoo.co.uk](mailto:gafbello@yahoo.co.uk)

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

**Costs for being in the survey**

There is no cost to you for being in the survey. You should also know that you would not be paid to be in the survey.

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

Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi

Phone: +2651726422/418

Email: dkathyola@gmail.com

Do you want to ask me anything about:

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

**Consent Statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had were answered satisfactorily. I agree to be in this survey. I know that after choosing to be in this survey, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this consent form.

1. Do you agree to give blood for HIV testing and related testing? ‘YES’ means that you agree to give blood for HIV testing and related testing. ‘NO’ means that you will NOT give blood for HIV testing and related testing.

\_\_\_\_\_ Yes          \_\_\_\_\_ No

(if “Yes” proceed to the next question)

2. Do you agree to have your leftover blood stored for future research? ‘YES’ means that you agree to have these blood samples stored for future testing. ‘NO’ means that these blood samples will NOT be stored for future research.

\_\_\_\_\_ Yes          \_\_\_\_\_ No

Participant signature or mark \_\_\_\_\_ Date: \_\_/\_\_/\_\_

Printed name of participant \_\_\_\_\_

Participant ID number \_\_\_\_\_

**[For illiterate participants]**

Signature of witness \_\_\_\_\_ Date: \_\_/\_\_/\_\_

Printed name of witness \_\_\_\_\_

Signature of person obtaining consent \_\_\_\_\_ Date: \_\_/\_\_/\_\_

Printed name of person obtaining consent \_\_\_\_\_

Survey staff ID number \_\_\_\_\_

## Assent to Blood Draw from Children, ages 10-14

**Nurse counselor/Interviewer reads:**

**What language do you prefer for our discussion today?**

\_\_\_English

\_\_\_Chichewa

\_\_\_Tumbuka

Hello. My name is\_\_\_\_\_. I would like to invite you to take part in a research study. Research studies help us learn new things.

This form talks about our research 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 research?**

We are doing this research to help us learn more about the health of children in Malawi. We plan to ask thousands of children like you to join this research. Research is a way to learn new information about something by interviewing and testing many people. We would like to invite you to join this survey. Your parent/guardian said it was okay for us to ask you to join the survey.

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

### **What would happen if I join this research?**

If you decide to join the research, here is what would happen:

- We will use a needle to take some of your blood from your arm and then we would test your blood for HIV today in your home.
- If you test positive for HIV, we will do another test here at home on the blood we have already collected to measure some cells in your blood that fight HIV and other infections. We will also measure these cells from some children without HIV.
- We will ask you if we can use some of your blood for future research tests. These tests may be about HIV or other health issues important for the health of Malawians, such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your name will be on it for only three years. We will try to tell your parents/guardians about any test results during the three year period that are important to your health. Your leftover blood will not be sold or used for commercial reasons. If you do not agree to future storage and testing of your blood, we will destroy your blood after survey-related testing has finished.

### **Will any part of the survey hurt or have any risks?**

The needle may hurt when it is put into and taken out of your arm. This will go away after a while. 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. We will do everything we can to keep your information private. However, we cannot promise complete confidentiality.

You can say 'no' to what we ask you to do for the research at any time and we will stop.

**Could the research help me?**

This research might help you. If you are HIV-positive, we will tell your parent/guardian where to get help. The treatment for HIV is free. We also hope to learn something from this research to help other children in Malawi.

**What else should I know about this research?**

If you don't want to be in the study, you don't have to be. Nobody will get upset if you do not want to be in the study. You can say 'yes' and change your mind later. You can stop being in the research at any time. If you want to stop, please tell us.

We will not tell other people that you are in this research and will not share information about you to anyone who does not work in the research study. Any information about you will have a number on it instead of your name.

We will not share your results with anyone else besides your parent/guardian. We would give your results to your parent/guardian and they would decide on the best time to tell you the result. If your parent wants us to tell you about your test results, we would talk with you about any questions or worries that you might have about the results.

The following individuals and/or agencies will be able to look at your research records:

- Study staff and study monitors
- Staff members from groups that protect your rights as a survey participant to ensure that we are protecting your rights as a participant

**Costs for being in the survey**

There is no cost to you or your parent/guardian for you being in the survey. You should also know that you and your parent/guardian will not be paid for you to be in the survey.

If you have any questions about the survey, feel that you have been harmed by taking part, or no longer want to participate in the survey, you can contact:

Dr. George Bello

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:

+265888892212

Email: gafbello@yahoo.co.uk

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

Dr. Damson Katyola

Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi

Phone: +2651726422/418

Email: dkathyola@gmail.com

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?****Is there anything else?**

If you want to get an HIV test and give your blood for research after we talk, please write your name below. We will write our name too. This shows we talked about the research and that you want to take part.



1. Do you agree to give blood for HIV testing and related testing? 'YES' means you want HIV testing and related testing. 'NO' means you do not want HIV testing and related testing.

\_\_\_\_\_ Yes          \_\_\_\_\_ No

(if "Yes" proceed to the next question)

2. Do you agree to give your blood for future research? 'YES' means we can use some of your blood for future research. 'NO' means we cannot use some of your blood 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 child]**

Signature of witness \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of witness \_\_\_\_\_

Signature of person obtaining assent \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of person obtaining assent \_\_\_\_\_

Survey staff ID number \_\_\_\_\_

## **Blood Draw Consent for emancipated minors, ages 10-14**

**Nurse counselor/Interviewer reads:**

**What language do you prefer for our discussion today?**

\_\_\_English

\_\_\_Chichewa

\_\_\_Tumbuka

Hello. My name is\_\_\_\_\_. I would like to invite you to take part in a research study. Research studies help us learn new things.

This form talks about our research 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 research?**

We are doing this research to help us learn more about the health of children in Malawi. We plan to ask thousands of children like you to join this research. Research is a way to learn new information about something by interviewing and testing many people. We would like to invite you to join this survey.

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

### **What would happen if I join this research?**

If you decide to join the research, here is what would happen:

- We will use a needle to take some of your blood from your arm and then we would test your blood for HIV today in your home.
- If you test positive for HIV, we will do another test here at home on the blood we have already collected to measure some cells in your blood that fight HIV and other infections. We will also measure these cells from some children without HIV.
- We will ask you if we can use some of your blood for future research tests. These tests may be about HIV or other health issues important for the health of Malawians, such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your name will be on it for only three years. We will attempt to tell you about any test results during the three year period that are important to your health. Your leftover blood will not be sold or used for commercial reasons. If you do not agree to future storage and testing of your blood, we will destroy your blood after survey-related testing has finished.

### **Will any part of the survey hurt or have any risks?**

The needle may hurt when it is put into and taken out of your arm. This will go away after a while. 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. We will do everything we can to keep your information private. However, we cannot promise complete confidentiality.

You can say 'no' to what we ask you to do for the research at any time and we will stop.

### **Could the research help me?**

This research might help you. If you are HIV-positive, we will tell you where to get help. The treatment for HIV is free. We also hope to learn something from this research to help other children in Malawi.

### **What else should I know about this research?**

If you don't want to be in the study, you don't have to be. Nobody will get upset if you do not want to be in the study. You can say 'yes' and change your mind later. You can stop being in the research at any time. If you want to stop, please tell us.

We will not tell other people that you are in this research and will not share information about you to anyone who does not work in the research study. Any information about you will have a number on it instead of your name.

We will give you your results and we will not share them with anyone else. 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:

- Study staff and study monitors
- Staff members from groups that protect your rights as a survey participant to ensure that we are protecting your rights as a participant

The information we collect during the survey will not be released outside of the survey groups listed above unless there is an issue of safety. Your permission to allow us to use and share your information with the groups above will expire three years after the end of the survey. You can leave the study at any time for any reason. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Principal Investigator Dr. George Bello who can be reached at

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:

+265888892212

Email: gafbello@yahoo.co.uk

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

### **Costs for being in the survey**

There is no cost to you for being in the survey. You should also know that you would not be paid to be in the study.

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

contact: Dr. Damson Katyola

Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi

Phone: +2651726422/418

Email: dkathyola@gmail.com

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?**

#### **Is there anything else?**

If you want to get an HIV test and give your blood for research after we talk, please write your name below. We

will write our name too. This shows we talked about the research and that you want to take part.

1. Do you agree to give blood for HIV testing and related testing? 'YES' means you want HIV testing and related testing. 'NO' means you do not want HIV testing and related testing.

\_\_\_\_\_Yes          \_\_\_\_\_No

(if "Yes" proceed to the next question)

2. Do you agree to give your blood for future research? 'YES' means we can use some of your blood for future research. 'NO' means we cannot use some of your blood for future research.

\_\_\_\_\_Yes          \_\_\_\_\_No

Participant signature or mark \_\_\_\_\_ Date: \_\_/\_\_/\_\_

Printed name of participant \_\_\_\_\_

Participant ID number \_\_\_\_\_

**[For illiterate participant]**

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: Children, ages 15-17 years

Nurse counselor/Interviewer reads:

What language do you prefer to use for this discussion?

\_\_\_ English

\_\_\_ Chichewa

\_\_\_ Tumbuka

Hello. My name is \_\_\_\_\_. I will give you information about testing options in this research study/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, a trained nurse will take a small amount or about 14 mL of 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. We will give your results and provide counseling to your parent/guardian today, and to you if your parent/guardian agrees. 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. CD4 cells are the part of your immune system that fights HIV infection and other diseases. We will give you and your parent/guardian the result today and a referral form and information so that you can consult with a doctor or nurse to learn more about the test result and your health. We will also test the CD4 level of some people without HIV.

If you test positive for HIV, we will send your blood to a laboratory to measure your viral load. Viral load is the amount of HIV in your blood. If you or your parent/guardian provide us with the name of a health facility, we can send your viral load result there in about six to eight weeks from now. You and your parent/guardian will be able to talk to a doctor or nurse at a treatment facility about your viral load.

We will also do additional tests related to HIV. If we have test results that might help guide your care or treatment, we will contact your parent to tell them 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 HIV or other health issues important for the health of Malawians, such as nutrition or immunization. This will help the Ministry of Health improve the health of Malawians. This sample will be stored for an indefinite amount of time but your name will be on it for only three years. We will try to tell your parents/guardians about any test results during the three year period that are important to your health. Your leftover blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your blood samples, we will destroy your blood samples after survey-related testing has been completed.

### Right to refuse and 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. You may agree to let us test your blood for HIV and CD4 counts and other lab testing and not agree to have your blood stored for future research tests. If you don't want to give blood, please tell us. If you decide not to take part, it will not affect your healthcare in any way.

**Risks**

The risks in drawing blood are very small. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. The nurse who will take your blood has received training on how to draw blood. If you have any discomfort, bleeding or swelling at the site, please let us know. You may learn that you are infected with HIV. If you find out that you are HIV-positive, we will tell you where you may go for care and treatment. Care and treatment provided by the Ministry of Health is free. However, learning that you have HIV may cause you to feel worried. We will talk to you about how to feel less worried. We will do everything we can to keep your information private. However, we cannot promise complete confidentiality.

**Benefits**

The main benefit for you to be in the survey is the chance to learn more about your health today. Some people who participate will test HIV-positive. If you test HIV-positive, the benefit is that you will learn your HIV status and where to go for life-saving 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 doctor or nurse judge how well your treatment is working. If you test HIV-negative, you will learn about what you can do to stay HIV-negative. Your taking part in this research could help us learn more about HIV in Malawi. It can also help us learn about how HIV prevention and treatment programs are working. Your taking part is important.

**Confidentiality**

We will do everything we can to keep your test results confidential. The blood we collect from you will be identified by a number, not by your name. Your name and signed assent forms will be kept separate from your blood sample and results. Besides you and your guardian/parent, no one else will know your test results except the people working on the survey.

People from some organizations will be able to look at your research records. They do this in order to check that this survey is being carried out the right way. These organizations are:

- 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 National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections that may examine the study records to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

**Costs for being in the survey**

There is no cost to you or your parent/guardian for you being in the survey. You should also know that you and your parent/guardian will not be paid for you to be in the survey.

If you have any questions about the survey, feel that you have been harmed by taking part, or no longer want to participate in the survey, you can contact:

Dr. George Bello

Address: Ministry of Health, PO Box 30377, Lilongwe, Malawi Phone:

+265888892212

Email: gafbello@yahoo.co.uk

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

Dr. Damson Katyola

Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe, Malawi

Phone: +2651726422/418

Email: dkathyola@gmail.com

Do you want to ask me anything about:

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

**Assent statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had have been answered satisfactorily. I agree to be in this survey. I know that after choosing to be in this survey, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this assent form.

1. Do you agree to give blood for HIV testing and related testing? 'YES' means that you agree to give blood for HIV testing and related testing. 'NO' means that you will NOT give blood for HIV testing and related testing.

\_\_\_\_\_ Yes          \_\_\_\_\_ No

(if "Yes" proceed to the next question)

2. Do you agree to have your leftover blood stored for future research.? 'YES' means that you agree to have these blood samples stored for future research. '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 \_\_\_\_\_

Printed name of parent/guardian \_\_\_\_\_

**[For illiterate child]**

Signature of witness \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of witness \_\_\_\_\_

Signature of person obtaining assent \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Printed name of person obtaining assent \_\_\_\_\_

Survey staff ID number \_\_\_\_\_

## Consent for Blood draw for Emancipated minors, ages 15-17 years

**Nurse counselor/Interviewer reads:**

**What language do you prefer to use for this discussion?**

\_\_\_English

\_\_\_Chichewa

\_\_\_Tumbuka

Hello. My name is \_\_\_\_\_. I will give you information about testing options in this research study/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, a trained nurse will take a small amount or about 14 mL of 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. We will give you the results today 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. CD4 cells are the part of your immune system that fights HIV infection and other diseases. We will give you the result today and a referral form and information so that you can consult with a doctor or nurse to learn more about the test result and your health. We will also test the CD4 level of some people without HIV.

If you test positive for HIV, we will also send your blood to a laboratory to measure your viral load. Viral load is the amount of HIV in your blood. If you provide us with the name of a health facility, we can send your viral load result there in about six to eight weeks from now. You will be able to talk to a doctor or nurse at a treatment facility about your viral load.

We will also do 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 HIV or other health issues important for the health of Malawians, such as nutrition or immunization. This will help the Ministry of Health improve the health of Malawians. This sample will be stored for an indefinite amount of time but your name will be on it for only three years. We will attempt to tell you about any test results during the three year period that are important to your health. 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 and 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. You may agree to let us test your blood for HIV and CD4 counts and other lab testing and not agree to have your blood stored for future research tests. If you don't want to give blood, please tell us. If you decide to not take part, it will not affect your healthcare in any way.

**Risks**

The risks in drawing blood are very small. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. The nurse who will take your blood has received training on how to draw blood. If you have any discomfort, bleeding or swelling at the site, please let us know. You may learn that you are infected with HIV. If you find out that you are HIV-positive, we will tell you where you may go for care and treatment. Care and treatment provided by the Ministry of Health is free. However, learning that you have HIV may cause you to feel worried. We will talk to you about how to feel less worried. We will do everything we can to keep your information private. However, we cannot promise complete confidentiality.

**Benefits**

The main benefit for you to be in the survey is the chance to learn more about your health today. Some people who participate will test HIV-positive. If you test HIV-positive, the benefit is that you will learn your HIV status and where to go for life-saving 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 doctor or nurse judge how well your treatment is working. If you test HIV-negative, you will learn about what you can do to stay HIV-negative. Your taking part in this research could help us learn more about HIV in Malawi. It can also help us learn about how HIV prevention and treatment programs are working. Your taking part is important.

**Confidentiality**

We will do everything we can to keep your test results confidential. The blood we collect from you will be identified by a number, not by your name. Your name and signed consent forms will be kept separate from your blood sample and results. Besides you, no one else will know your test results except the people working on the survey.

People from some organizations will be able to look at your research records. They do this in order to check that this survey is being carried out the right way. These organizations are:

- 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 National Health Sciences Research Committee in Malawi (NHSRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections that may examine the study records to ensure we are protecting your rights as a participant in this survey
- Study staff and study monitors

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

the study at any time for any reason. If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Principal Investigator Dr. George Bello who can be reached at

Address: Ministry of Health, PO Box 30377, Lilongwe,  
Malawi Phone: +265888892212  
Email: gafbello@yahoo.co.uk

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

### **Costs for being in the survey**

There is no cost to you for being in the survey. You should also know that you would not be paid to be in the survey.

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

Address: Ministry of Health, National Science Research Council, P.O Box 30337, Lilongwe,  
Malawi Phone: +2651726422/418  
Email: dkathyola@gmail.com

Do you want to ask me anything about:

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

### **Consent statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had have been answered satisfactorily. I agree to be in this survey. I know that after choosing to be in this survey, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this consent form.

1. Do you agree to give blood for HIV testing and related testing? 'YES' means that you agree to give blood for HIV testing and related testing. 'NO' means that you will NOT give blood for HIV testing and related testing.

\_\_\_\_\_Yes          \_\_\_\_\_No

(if "Yes" proceed to the next question)

2. Do you agree to have your leftover blood stored for future research? 'YES' means that you agree to have these blood samples stored for future research. '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 \_\_\_\_\_

