Angola

Malaria Indicator Survey

2011

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ICF International
Calverton, Maryland, USA

April 2012

Republic of Angola
Ministry of Health
National Directorate of Public Health
National Program for Malaria Control

This report presents the results of the 2011 Malaria Indicator Survey in Angola (2011 AMIS), conducted by Cosep Consultoria, Consaúde Lda., and the Programa Nacional de Controle da Malária, with technical assistance from ICF Macro. Fieldwork took place from January 2011 through May 2011. The Angola Malara Indicator Survey (AMIS) is part of the Demographic and Health Surveys (MEASURE DHS) program and the Malaria Indicator Surveys (MIS) programs, implemented by ICF International under contract with USAID-Washington. The purpose of the programs is to support governments and private institutions in developing countries in the implementation of national sample surveys in the areas of population and health. The main objectives of the surveys are:

- To support the formulation of policies and the implementation of programs in the areas of health and population;
- To increase the international database on population and health required for monitoring and evaluation;
- To improve the methodology for sample surveys; and
- To consolidate, in the survey area, the technical capacity of the implementing agencies in the countries participating in the DHS program.

The DHS program started in 1984, and since then surveys have been carried out in more than 70 countries in Latin America, the Caribbean, Africa, Asia, and East Europe.

Additional information about the 2011 AMIS can be obtained from Dr. André Nlando Mia Veta, Cosep Consultoria, CP 5169, Rua Custodio Bento de Azevedo Nº 71/73, Bairro Valódia, Luanda, Angola.

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Recommended citation:

Cosep Consultoria, Consaúde, and ICF International. 2011. *Angola Malaria Indicator Survey 2011*. Calverton, Maryland: Cosep Consultoria, Consaúde, and ICF International.

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FOREWORD

It is with great satisfaction that the Ministry of Health presents this report on the 2011 Angola Malaria Indicator Survey (2011 AMIS), which follows an earlier survey conducted in 2006/2007. The intent of the survey, representative at the national level, was to determine the prevalence of malaria and the behaviors used to prevent it, such as the use of mosquito nets, the treatment of children with fever, and the intermittent preventive treatment of pregnant women.

It should be recognized that the work was complex, difficult, and challenging given the situation in Angola and the context in which the survey occurred, but in the end the work was also rewarding, given its reach and social impact.

Within the framework of the National Strategic Plan for the Control of Malaria in Angola, the National Malaria Control Program (NMCP) implemented important interventions throughout the country that were intended to reduce the prevalence of malaria in Angola.

One of the fundamental tools used to better manage efforts to fight malaria was the production of valid and reliable indicators, which guided the implementation of this second malaria indicator survey.

As a result of the survey, significant improvements in all of the basic malaria indicators have been confirmed, including a 13 to 20 percent reduction in the prevalence of malaria among children and a 2.6 to 3.6 percent reduction in the proportion of children with acute anemia. At the same time, the data show that the under-5 mortality rate declined, from 118 deaths per thousand births to 91 deaths per thousand births in the past five years.

The survey was implemented in partnership with COSEP and CONSAÚDE, with supervision provided by the National Malaria Control Program (NMCP) and technical assistance provided by ICF Macro. The government of the United States provided financial support for the project through the President's Malaria Initiative (PMI) and the United States Agency for International Development (USAID).

The success in the implementation of the 2011 AMIS is due, to great extent, to the collaboration and availability of the Angolan population. The level of response rates and the willingness to provide blood samples for testing in the field and in the laboratory met initial expectations. This ensures that the results presented in this report reflect the general situation in the country regarding the illness.

Supervision of the survey work resulting in this report—which shows a sustained reduction in the presence of malaria in Angola—reflects both the extent of the survey and also the quality of the information collected.

My thanks go to the various institutions that contributed to the survey, including the National Statistical Institute, the National Public Health Institute, COSEP, and CONSAÚDE, for their diligence during the preparation and implementation of the survey.

I also thank ICF Macro and the counselors from PMI for their technical support. Special thanks goes to the government of the United States for its financial support.

I strongly urge increased efforts to continue the fight against malaria and to progressively strengthen the commitment of individuals, families, communities, and the government in efforts to free Angola from this scourge.

Dr. José Vieira Dias Van-Dúnem
Minister

ACKNOWLEDGMENTS

COSEP Consultoria and Consaúde, Lda., would like to recognize the organizations and individuals who contributed to the successful implementation of the 2011 AMIS.

This survey would not have been possible without the commitment of the different team members—interviewers, lab technicians, field and lab supervisors, drivers, and cartographers—and without the logistical support provided by local institutions and administrators, particularly in isolated, dangerous areas and during the rainy season.

Our thanks go to the National Malaria Control Program (NMCP) at the Ministry of Health for highlighting the survey needs and for donating Coartem for treatment of affected individuals; to the Angola National Laboratory for its involvement in the training and microscopic analysis of blood samples; and to the National Statistical Institute for its collaboration during the preparation of the cartographic base.

We are particularly grateful to the United States Agency for International Development (USAID) and the President's Malaria Initiative (PMI) for financial and technical support; to the Centers for Disease Prevention and Control (CDC) for contributions to the conceptualization of the survey; and to ICF International for its invaluable technical support.

We also thank household members for being available and giving the responses that are part of the database used for analysis and reporting.

In particular, we would like to highlight the valuable collaboration provided by Doctor Filomeno Fortes, who reviewed the chapters included in this report.

COSEP Consultoria **CONSAÚDE, Lda.**

ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AMIS	Angola Malaria Indicator Survey
ASFR	Age-specific fertility rates
CBR	Crude birth rate
CDC	Centers for Disease Control and Prevention
CONSAÙDE	Consultoria de Gestão e Administração em Saúde
COSEP	Consultoria de Estudos, Estatística, Serviços e Pesquisa
CS	Census section
DEFT	Design effect
DFID	Department for International Development (United Kingdom)
DHS	Demographic and Health Surveys
DPT3	Diphtheria, pertussis, and tetanus (third dose)
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GFR	General fertility rate
IEC	Information, education, and communication
INE	National Statistical Institute (Instituto Nacional de Estatística)
INSP	National Public Health Institute (Instituto Nacional de Saúde Pública)
IPT	Intermittent preventive treatment (with sulfadoxine-pyrimethamine)
IRB	Institutional review board
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
JICA	Japan International Cooperation Agency
MINSA	Ministry of Health (Ministério da Saúde)
NGO	Nongovernmental organization
NMCP	National Malaria Control Program (Programa Nacional de Controlo da Malária)
LLITN	Long-lasting insecticide-treated mosquito net
PIS	Program for Indoor Spraying
PMI	President's Malaria Initiative
PVO	Private voluntary organization
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
RE	Relative error
TFR	Total fertility rate
SADC	South Africa Development Community
SP	Sulfadoxine-pyrimethamine
SE	Standard error
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

SUMMARY OF FINDINGS

Malaria is a major public health problem in Angola and is the primary cause of mortality, illness, and absence from school and work. It represents close to 35 percent of the demand for curative care, 20 percent of hospital admissions, 40 percent of perinatal deaths, and 25 percent of maternal deaths. Approximately 3.7 million cases of malaria were estimated to occur in 2010. The 2011 Angola Malaria Indicator Survey (2011 AMIS) is the second survey of this type in the country and is conducted as part of the third phase of the MEASURE DHS project. The objectives of the 2011 AMIS are (1) to evaluate behavior related to the prevention and treatment of malaria and (2) to estimate the prevalence of malaria among children under age 5. Additional questions were included to facilitate the estimation of fertility and infant mortality.

Fieldwork for the 2011 AMIS took place between January 2011 and May 2011, amidst heavy rains and floods typical of the period of high transmission of malaria. The survey collected data from 8,030 households and 8,589 women age 15-49. The sample was designed to represent populations at the national level, at urban and rural levels, and in four recognized malaria epidemiological regions: Hyperendemic, Mesoendemic Stable, Mesoendemic Unstable, and the Province of Luanda.

POPULATION AND HOUSEHOLD COMPOSITION

The population of Angola is very young. Almost half of the population (48 percent) is under age 15, and only 2 percent is over age 65, typical of a demographic pattern of high fertility and mortality. Three quarters of all households are headed by men, and one quarter are headed by women.

HOUSEHOLD CHARACTERISTICS

Almost half (48 percent) of the households obtain drinking water from an improved source. Households in urban areas have better access to improved sources of water than those in rural areas (74 percent compared with 33 percent). In urban areas, 87 percent of households have an improved sanitation facility, compared with only 15 percent in rural areas. Only 4 percent of urban households have no toilet facility at all; this compares with 62 percent of households in rural areas.

The socioeconomic status of a household is reflected in household possessions, which are used to construct a wealth index as an indicator of household socioeconomic status. Eighty-six percent of urban households and 47 percent of rural households possess a radio. A television is more common in urban than in rural households (89 percent and 16 percent, respectively). Over half of all households have at least one member with a mobile telephone—91 percent in urban areas and 28 percent in rural areas. The proportion of households with a refrigerator is 52 percent in urban areas and 2 percent in rural areas.

WOMEN'S EDUCATIONAL ATTAINMENT

Among women age 15-49, 25 percent have never been to school, 57 percent have had some primary education, and 19 percent have had secondary or higher education. There are large differences between rural and urban areas: 40 percent of urban women have completed secondary school or higher, yet only 2 percent of rural women have attained a similar level. Five percent of women in urban areas and 40 percent of women in rural areas have had no education.

FERTILITY

The fertility level in Angola is among the highest in Africa. The total fertility rate (TFR) is 6.3 in the country as a whole, 4.6 in urban areas, and 7.7 in rural areas. Fertility is much higher among women with no education, who have a TFR of 8.0, compared with a TFR of 6.6 among those who received primary education and 3.3 among those who obtained secondary education or higher.

MALARIA PREVENTION

Only 7 percent of households were sprayed with a residual insecticide. Fewer than 1 percent of households in the lowest wealth quintile were sprayed compared with 12 percent in the highest quintile. Almost 40 percent of households own an insecticide-treated net (ITN) or a net treated within the last 12 months, while 15 percent of the poorest households and 50 percent of the wealthiest own an ITN. Most treatment of nets was done by state health workers.

Regarding the use of ITNs, 27 percent of children under agea 5 and 26 percent of pregnant women slept under an ITN during the night before the survey. The percentages are similar accross the four regions.

Although 36 percent of women took a drug during their last pregnancy to prevent malaria, only 18 percent received at least two doses of SP/Fansidar or at least one dose during antenatal care visits, as recommended for intermittent preventive treatment (IPT) of malaria. This represents an improvement since the 2006-07 survey, when only 2 percent of pregnant women received this type of preventive treatment.

TREATMENT OF FEVER

Thirty-four percent of children under age 5 had a fever in the two weeks preceding the survey; 28 percent of them were given antimalarial drugs and 16 percent received the drugs on the same day the fever started or the day after. In Luanda, 26 percent of children with fever were promptly treated with antimalarial drugs, compared with 8 percent in the Hyperendemic region and 9 percent in the Mesoendemic Unstable region. The vast majority of children who received antimalarial drugs for fever were given Artemisinin-based combination therapy (ACT).

PREVALENCE OF MALARIA

At the national level, 10 percent of the children who were tested had results that were positive for malaria, based on the mircroscopic reading of thick-blood smears. The prevalence of malaria tends to increase with the age of the child, from 8 percent among children age 6-23 months to 11 percent among children age 36-59 months. The prevalence of malaria is much higher in rural areas (14 percent) than in urban areas (1 percent) and is also higher in the Hyperendemic region (16 percent) than in Luanda (2 percent). The prevalence is between 15 percent and 20 percent in the two lowest wealth quintiles, compared with 5 percent and 3 percent in the two wealthiest quintiles. Comparison of the prevalence obtained in the 2011 AMIS survey with the prevalence observed in the previous survey confirms that the percentage of children who tested positive decreased 40 percent between 2006-07 and 2011.

INFANT AND CHILD MORTALITY

The infant mortality rate (${}_1Q_0$) and the child mortality rate (${}_5Q_0$) are 50 and 91 deaths per one thousand births, respectively. The rates were estimated from the histories of birth and deaths during the five years preceding the survey. The infant mortality rate dropped from 67 deaths per 1,000 births for the period 2001-2006 to 50 deaths per 1,000 births for the period 2006-2011. The child mortality rate dropped from 118 to 91 over the same two periods.

INTRODUCTION 1

1.1 GEOGRAPHY, HISTORY, AND POPULATION

1.1.1 Geography

The republic of Angola, the sixth largest country in Africa, has a land area of around 1,246,700 square kilometers. Its coastline is 1,650 kilometers along the South Atlantic, and the land border is 4,837 kilometers. Angola is located on the west coast of Southern Africa, south of the equator, and between the parallel latitudes of 4º 22´and 18º 02´. It borders the Republic of the Congo and Brazzaville, its capital city, to the north and also the neighboring Democratic Republic of the Congo to the northeast, Zambia to the east, and Namibia to the south. Angola also includes the province of Cabinda, located to the north between Congo-Brazzaville and the Democratic Republic of the Congo. The capital is the city of Luanda. The name *Angola* derives from the bantu word N'gola, the title of the rulers during the sixteenth century when Portugal started to colonize the region.

The country is divided into an arid coastal strip that extends from Namibia to Luanda; a humid interior plateau; a dry savannah in the South and Southeast; and a tropical forest in the North and in the province of Cabinda. The Zambezi River and several tributaries of the Congo River originate in Angola. The coastal strip is tempered by the cold Benguela current. The highlands in the interior have a mild climate, with a rainy season from September to April, followed by a cold, dry season from May to August. Rain is common throughout the year in the regions of the North and in Cabinda.

Angola is a country rich in resources, especially diamonds, iron ores and oil; it also posesses copper, manganese, phosphates, salt, mica, lead, tin, gold, silver, and platinum. Diamond mines are located near Dondo, in Lunda North province. Natural resources include large oil deposits discovered in 1966 in Cabinda, ensuring self-sufficiency for the country. Uranium deposits were discovered in 1975, close to Angola's southern border with Namíbia.

Administratively, Angola is divided into 18 provinces: Bengo, Benguela, Bié, Cabinda, Kuando Kubango, Kwanza Norte, Kwanza Sul, Cunene, Huambo, Huíla, Luanda, Lunda North, Lunda South, Malanje, Moxico, Namibe, Uige, Zaire. There are 164 municipalities and 532 towns.

In addition to numerous dialects, Angola has over 20 national languages. After Portuguese, the most common language is Umbundo, spoken in the Center and South regions and in many urban centers. Although the national languages are the mother tongues for the majority of the population, Portuguese is the only official language in Angola.

The epidemiological picture in Angola is characterized by transmissible and parasitic diseases which are mostly endemic, such as malaria, HIV/AIDS, and tuberculosis, and also by some uncommon diseases, such as Human African trypanosomiasis, filariases, and helminthiases. Preventable diseases such as measles, acute respiratory illness, and acute diarrhea are also present. Malnutrition is another significant health problem, related to issues of food safety and infectious diseases. Noninfectious chronic diseases are beginning to appear as an important issue in the nosological profile of the country, as is trauma resulting from traffic accidents. Malaria is still the main cause of morbidity and mortality in Angola, and it is responsible for close to 35 percent of the demand for curative care and 20 percent of hospital admissions. An important reduction in its impact on maternal mortality has been confirmed. Malaria's contribution to maternal mortality was estimated at 25 percent in 2005.

1.1.2 Population

Because Angola has not had a population census in decades, there is no exact count of the country's population. The President's Malaria Initiative (PMI) gave an estimated population of 13 million inhabitants in 2011 (President's Malaria Initiative, 2011), but according to the United Nations' estimates using Human Development Indicators, the population is closer to 19.6 million (United Nations, 2011). It is estimated that close to one third of that population is concentrated in Luanda. The Angolan population is fairly young—two thirds of the population is under age 25—as a result of a demographic regime of high fertility and high mortality. The World Health Organization (WHO) estimated in 2007 a life expectancy at birth of 51 years for men and 55 years for women. The probability of death per thousand population age 15-60 was estimated at 347 (World Health Organization, 2007).

1.2 MALARIA IN ANGOLA

Malaria, in Angola continues to be the primary cause of mortality, illness, and absence from school and work. It represents close to 35 percent of the demand for curative care, 20 percent of hospital admissions, 40 percent of perinatal deaths, and 25 percent of maternal mortality (Programa Nacional do Controlo da Malária, 2010). Malaria has had a negative impact not only on the health of the population but also on its social development because it has worsened poverty.

Malaria is endemic in the 18 provinces of the country, with the highest transmission registered in the northern provinces (Cabinda, Uíge, Malange, Kuanza Norte, Lunda Norte, and Lunda Sul). Epidemic outbreaks occur in the southern provinces (Namibe, Cunene, Huíla, and Kuando Kubango). An increase in transmission, which ocurs during the rainy season, peaks between January and May. The transmission is intense in the hyperendemic areas and moderate in the mesoendemic areas (see map).

Given the heterogeneity of the transmission of malaria in the country, population groups exhibit different levels of infection. *Plasmodium falciparum* is responsible for about 92 percent of cases, including the most serious and complex cases. *Plasmodium vivax* is responsible for about 5 to 7 percent of cases.

Since 2002, a notable strengthening of the institutional capacity of the NMCP has been registered in terms of administration, management, and coordination. Currently, NMCP's main partners are United Nations agencies such as UNICEF and WHO; organizations such as the Global Fund; USAID-PMI, Japan International Cooperation Agency (JICA), the HIV/AIDS, Malaria, and Tuberculosis Control Project (HAMSET), and the World Bank; and in the private sector, Exxon/Mobil and Chevron. The reinforcement of partnerships in the private and public sectors has had obvious and encouraging results for similar partnerships starting up under the auspices of the National Forum of Malaria Partners (Fórum Nacional de Parceiros da Malária), which is supported by the Journalists on Malaria in Angola (Jornalistas para a Malária em Angola) network.

1.3 MORBIDITY AND MORTALITY RELATED TO MALARIA

According to official data from the National Malaria Control Program (Ministério da Saúde, 2011), morbidity from malaria reached a high of 3.68 million people in 2010. The increase in the number of reported cases in the last few years results, on the one hand, from the addition of health services during the post-war reconstruction and, on the other hand, from the introduction of artemisinin-based combination therapy on (ACT) for treating simple cases, thereby increasing their effectiveness and gaining the confidence of the population.

The trend in the reduction of malaria-related mortality can be attributed to malaria control interventions, as well as to the stabilization of populations due to the end of the war, to improvements in the nutritional status of the population and to improvements in lab-based diagnostics. However, attention should still be given to the adequate management of cases and to the diagnosis of the cause of intra-hospital mortality attributed to malaria, because the lack of expertise among some technicians may lead to an overestimation of the number of malaria-related intra-hospital deaths. The introduction of new control measures such as the use of ACTs, promotion of insecticide-treated mosquito nets (ITNs), and expansion of Indoor Residual Spraying (IRS) have also played a role in the mortality reduction.

1.4 Objectives and Goals of the National Program for the Control of Malaria in Angola

Angola adhered to the Roll Back Malaria (RBM) initiative launched in 1998 by several United Nations agencies, including the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), and the World Bank. Since then, policies and strategies have been defined and adopted in line with the technical components of the Amsterdam Declaration and the goals of the Abuja Declaration, as well as the national strategy to combat poverty and revitalize the national health system.

Rounds 3 and 7 of the Global Fund reinforced the strategic components that were started with previous support, such as the President's Malaria Initiative (PMI), which has increased its financial and technical contribution to the efforts to control malaria in Angola. The strategic plan of the National Malaria Control Program (NMCP) 2011-2015, which is being finalized, aims to achieve the following vision, goal, and objectives:

Vision: Angola as a malaria-free country.

Goal: An 80 percent reduction in the impact of malaria in the country by 2015, compared with the baseline in 2006, through improved interventions to control malaria. This will reduce morbidity and mortality, as well as socioeconomic consequences of the disease.

Objectives:

- One hundred percent of provinces will have a mechanism to coordinate and manage interventions to prevent and control malaria.
- Eighty percent of the population with simple cases of malaria will have access to health services and to ACTs within 24 hours of the start of symptoms, as stipulated in the national policy on treatment.
- Each household will have access to one insecticide-treated mosquito net for every two people.
- Eighty percent of children's caretakers will have knowledge of the causes and symptoms of malaria, at least one method of prevention, and effective treatment.
- The 16 municipalities at risk of an epidemic will be able to detect epidemic outbreaks in less than two weeks and will respond adequately.
- One hundred percent of provinces in the country will have an efficient monitoring and evaluation system.
- One hundred percent of pregnant women eligible for intermittent preventive treatment (IPT) who have access to prenatal care will also have access to IPT with sulfadoxine-pyrimethamine (SP).

To reach these objectives, the NMCP defined six strategic components, as follows:

1. Program administration and system development
2. Diagnosis, treatment, and supply of medicines
3. Integrated vector control and individual protection
4. Health promotion, community mobilization, and advocacy
5. Anticipation, prevention, detection, and control of epidemics
6. Monitoring and evaluation: epidemiological surveillance, data-gathering and research

1.5 OBJECTIVES OF THE MALARIA INDICATOR SURVEY

The first Malaria Indicator Survey in Angola (2006-07 AMIS) provided the NMCP and its partners with the necessary indicators to improve interventions in the fight against malaria. The 2011 AMIS was designed to determine the evolution of malaria by providing specific malaria indicators, including the use of insecticide-treated mosquito nets and the use of intermittent preventive treatment for malaria (IPT) by pregnant women.

The specific objectives of the 2011 AMIS were as follows:

- To gather information on socioeconomic characteristics of the population under study
- To evaluate the possession of regular mosquito nets and insecticide-treated mosquito nets in the households
- To evaluate the use of insecticide-treated mosquito nets by children under age 5 and pregnant women
- To evaluate the type and duration of treatment received by children under age 5 with fever
- To evaluate the prevalence of malaria and anemia among children age 6-59 months;
- To Evaluate knowledge, attitudes, and practices regarding malaria by women of fertile age
- To evaluate the coverage of the program for indoor spraying (PIS)
- To evaluate the use of intermittent preventive treatment (IPT) for malaria among pregnant women
- To obtain infant mortality estimates and mortality trends for recent five-year periods

1.6 SURVEY METHODOLOGY

The 2011 AMIS was implemented from mid-January 2011 through May 2011, using a nationally representative sample of 8,800 households. In the selected households, all women age 15-49 were eligible for interviews, including usual residents and persons who stayed in the household the night before the interview. Questions on the prevention of malaria during pregnancy and on the treatment of fever in children under age 5 were included in the survey. In one-third of the households, all children age 6-59 months and all visitors who spent the previous night were tested for both anemia and malaria.

1.6.1 Survey Organization

Under supervision from the National Malaria Control Program (NMCP), the 2011 AMIS was implemented by two nongovernmental organizations: COSEP-Consultoria, and CONSAÚDE, Lda. The NMCP was responsible for the general technical coordination of the survey, assuring approval of the protocol for the survey by the Ethical Committee at the Ministry of Health and supplying the medicines required for the treatment of children who tested positive for malaria during the survey. The National Institute of Public Health (INSP) supported the survey by making the laboratory available and by analyzing the thick-film blood smears collected in the field. COSEP and CONSAÚDE participated in the recruitment and training of field personnel, data processing, report preparation, and dissemination of results. Technical assistance was provided by ICF International through the MEASURE DHS program and by the President's Malaria Inititative (PMI) in Angola through USAID/Angola.

1.6.2 Sampling Design

The sample for the 2011 AMIS was designed to produce the majority of key indicators for the country as a whole, for urban and rural areas, for Luanda, and for each of the three malaria epidemiologic regions in Angola. The regional domains under study are as follows:

1. Hyperendemic region: Cabinda, Kuanza Norte, Lunda Norte, Lunda Sul, Malanje, and Uige
2. Mesoendemic Stable region: Bengo, Benguela, Bié, Kuanza Sul, Huambo, and Zaire
3. Mesoendemic Unstable region: Cuando Cubango, Cunene, Huíla, Moxico, and Namibe
4. Luanda province

The sample for the 2011 AMIS was selected in three stages using a stratified design (see Appendix A for details). The sample was not distributed in proportion to the population of major regions, although this was done to select clusters at the domain level. In total, 60 clusters were selected per domain, for a total of 240 clusters, 96 in urban areas and 144 in rural areas.

In the first stage, communes in each province were stratified by urban-rural designation, and then communes within each domain were selected with a probability proportional to the population size in each domain. In the second stage, after the communes were selected and identified as urban or rural, clusters were selected with a probability proportional to their size.

In the third stage, a random sample was drawn from the household listing to identify an approximately equal number of households to be interviewed in each cluster. In the selected households, all women age 15-49 were selected for individual interviews, including both usual residents and visitors who stayed in the household the night before the interview. In addition, all children in the household that were age 6-59 months were eligible for malaria and anemia testing.

1.6.3 Questionnaires

Two types of questionnaires were used for the 2011 AMIS: a household questionnaire and another questionnaire for women age 15-49 in the households selected for the survey. The questionnaires were developed from the ones used for the 2006-07 malaria indicator survey, which followed the methodology of the Roll Back Malaria and MEASURE DHS programs.

The Household Questionnaire was used to list all the usual members and visitors who stayed in the selected households the night before the survey. It also identified women eligible for interviewing and children age 6-59 months eligible for anemia and malaria tests.

Basic information collected on the characteristics of each person included age, sex, and relationship to head of household. The Household Questionnaire was also used to collect information on characteristics of the household dwelling, such as the water source; type of toilet facilities; materials used for the roof, floors, and walls; possession of durable goods; and possession and use of mosquito nets.

The Woman's Questionnaire, used to collect information for all women age 15-49, covered the following topics:

- Sociodemographic characteristics of the respondent
- Birth history
- Prenatal care and intermittent preventive treatment (IPT) of malaria during pregnancy for the most recent birth
- Treatment of malaria symptoms in children
- Malaria knowledge

The survey protocol was submitted to and approved by the National Ethical Review Committee of the National Malaria Control Program and by the Institutional Review Board (IRB) of ICF Macro.

1.6.4 Collection of Biomarkers

As part of the AMIS survey, one third of the households were selected for malaria and anemia testing in children. All children age 6-59 months residing in the households and all visitors that spent the night prior to the survey in the household were tested for malaria and anemia. The prevalence data presented in this report are based on the de facto population, that is, only those children and visitors who slept in the household the night before the interview.

To identify anemia, the levels of hemoglobin in the blood were measured using HemoCue Hb, which reveals the levels of hemoglobin within minutes of when capillary blood is collected. The field teams had nurses who shared the tests results for children with their mothers. For purposes of the 2011 AMIS, levels of hemoglobin below 8.0 g/dl were considered indicative of severe anemia. In these cases, the nurses counseled mothers and referred the children to the closest health center for immediate medical assistance; they were given a reference note on which the results of the test were registered.

Two types of malaria tests were used for children: a rapid diagnostic test (RDT) and a test that used thick blood-smear slides to be read by microscope. The SD Bioline Malaria Ag P.f/P.v, a test with high sensitivity and specificity that detects the presence of malaria antigens in drops of capillary blood, was used as the RDT.[1] The reading of thick blood-smear slides was done in the laboratory at the National Institute of Public Health in Luanda. The results of the rapid test were given to the mothers or child caregivers; the teams also included nurses who offered *Coartem* at no cost to the mothers of children for whom the result of the test was positive. *Coartem* is an antimalarial drug used in combination with artemisinin; it includes 20 mg of artemether and 120 mg of lumefantrine. The patients received information on contraindications and potential side effects during treatment and were offered the option to reject treatment without repercussion, if so desired.

1.7 Survey Activities

1.7.1 Pretest

After adapting the questionnaires to ensure they took into account the local situation, interviewers and health technicians were hired to implement the pretest as well as the main training on the use of questionnaires and procedures in the field. The pretest took place in December 2010.

1.7.2 Fieldwork

Fieldwork started in January 2011, after training. Twelve teams were designated to carry out the fieldwork. Each team consisted of three interviewers, one supervisor, one editor, and one health technician. Fieldwork started in Luanda first, and other regions were visited afterward. Although fieldwork was initially planned to last three months, it was delayed by accessibility problems generated by heavy rains between January 2011 and April 2011, and lasted through May 2011.

1.7.3 Data Processing

Data entry started two weeks after the beginning of fieldwork. Twelve data entry operators were used, six in the morning and six in the afternoon. They were supervised by the data processing manager, the questionnaire organizer, and the questionnaire editor. Control tables with data on interviewer and team performance were assessed periodically, especially during the first two weeks of fieldwork. The tables helped identify mistakes some teams made at the beginning of fieldwork; these mistakes resulted in extra supervisory field visits. Once the data entry was finalized, a consultant verified completeness of the questionnaires and consistency betwen data entry and the initial results.

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[1] The sensitivity is estimated at 99.7 percent for *P. Falciparum* and at 95.5 percent for non-*P. Falciparum*. The specificity is estimated at 99.5 percent. (http://www.pantech.co.za/products/details/sd_bioline_malaria_antigen_pf_pan_test)

1.7.4 Response Rates

A total of 8,806 households were selected, of which 8,493 were occupied. The total number of households interviewed was 8,030, yielding a household response rate of 95 percent, as can be seen in Table 1.1.

Table 1.1 Response rates

Number of households selected, occupied, and interviewed; number of eligible women in the households and number of women interviewed; and response rates, according to residence (unweighted), Angola 2011

Result	Residence		Total
	Urban	Rural	
Household interviews			
Households selected	3,552	5,254	8,806
Households occupied	3,401	5,092	8,493
Households interviewed	3,293	4,737	8,030
Household response rate[1]	96.8	93.0	94.5
Interviews with women age 15-49			
Number of eligible women	4,156	4,590	8,746
Number of eligible women interviewed	4,038	4,551	8,589
Eligible women response rate[2]	97.2	99.2	98.2

[1] Households interviewed/households occupied
[2] Respondents interviewed/eligible respondents

A total of 8,746 eligible women were identified in these households, and interviews were completed for 8,589 women, yielding a response rate of 98 percent. Household response rates were 97 percent in urban areas and 93 percent in rural areas, and response rates for eligible women were 97 percent in urban areas and 99 percent in rural areas.

CHARACTERISTICS OF HOUSEHOLDS AND WOMEN INTERVIEWED 2

This chapter describes the demographic and socioeconomic characteristics of the population in the sampled households. The survey collected information from all usual residents of a selected household and also from persons who stayed in the selected household the night before the interview.

A household is defined as a person or group of related and unrelated persons who live together in the same dwelling unit and share common facilities and meals. Members who were absent six months or longer or who lived in institutions were not included. The head of the household is the person whom the the other members of the household acknowledge as such. The tables summarize some characteristics of the population under study, such as sex, age, socioeconomic characteristics, and housing characteristics.

2.1 HOUSEHOLD POPULATION BY AGE AND SEX

Table 2.1 shows the population distribution by age and sex, according to urban and rural residence. The survey enumerated a total of 40,063 persons in the selected households, 16,392 in the urban area and 23,671 in the rural area, with women slightly outnumbering men (51 percent for women and 49 percent for men). Almost half of the population (48 percent) was under age 15, and 21 percent was under age 5. Persons age 65 and over accounted for just 2 percent of the total household population.

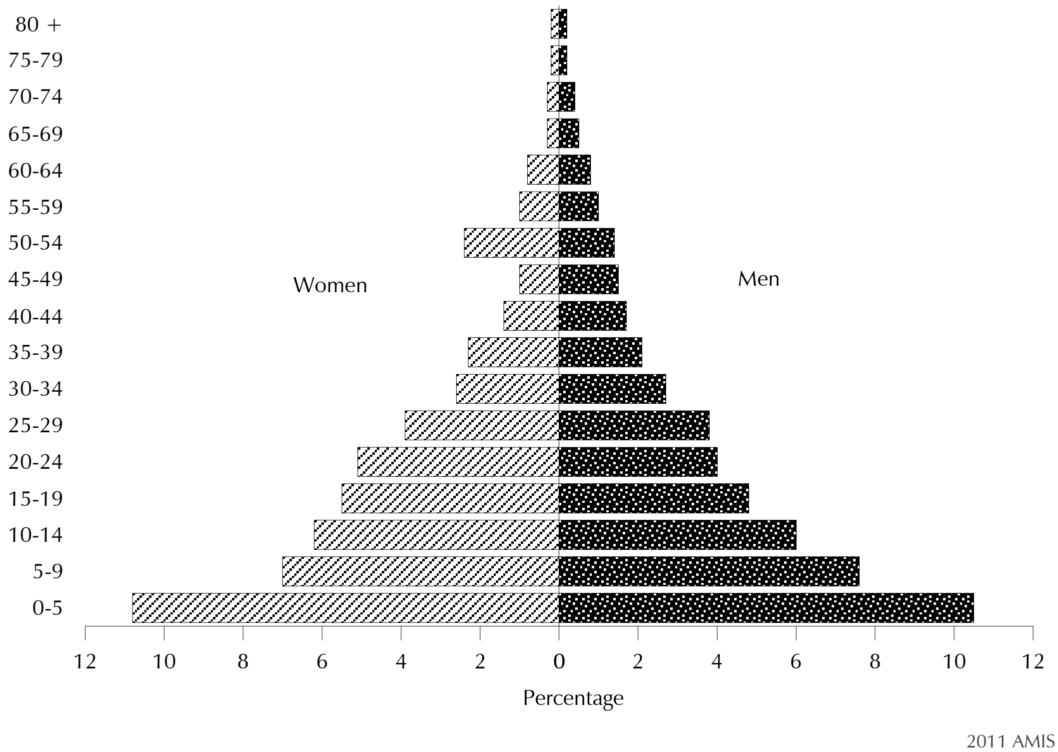
Table 2.1 Household population by age, sex, and residence

Percent distribution of the de facto household population by five-year age groups, according to sex and residence, Angola 2011

	Urban			Rural			Total		
Age	Male	Female	Total	Male	Female	Total	Male	Female	Total
<5	17.0	17.2	17.1	24.2	24.1	24.2	21.3	21.3	21.3
5-9	14.4	12.9	13.7	16.2	14.3	15.2	15.5	13.7	14.6
10-14	12.6	14.2	13.4	11.8	10.6	11.2	12.2	12.1	12.1
15-19	11.3	11.3	11.3	8.6	10.7	9.7	9.7	10.9	10.3
20-24	10.2	11.5	10.9	6.6	9.1	7.9	8.1	10.1	9.1
25-29	9.5	8.8	9.1	6.7	6.9	6.8	7.8	7.7	7.7
30-34	6.2	5.5	5.8	5.0	4.7	4.9	5.5	5.0	5.3
35-39	4.6	4.5	4.5	4.2	4.5	4.4	4.4	4.5	4.4
40-44	3.5	3.0	3.3	3.4	2.6	3.0	3.4	2.8	3.1
45-49	3.1	2.0	2.5	3.1	2.0	2.5	3.1	2.0	2.5
50-54	2.9	4.9	3.9	2.8	4.5	3.7	2.9	4.7	3.8
55-59	1.8	1.6	1.7	2.1	2.1	2.1	2.0	1.9	1.9
60-64	1.3	1.0	1.1	1.8	1.9	1.9	1.6	1.5	1.6
65-69	0.9	0.7	0.8	1.1	0.7	0.9	1.0	0.7	0.8
70-74	0.3	0.5	0.4	1.0	0.6	0.8	0.8	0.5	0.6
75-79	0.2	0.3	0.2	0.5	0.3	0.4	0.4	0.3	0.3
80 +	0.1	0.3	0.2	0.5	0.4	0.5	0.4	0.3	0.4
Don't know/missing	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	8,062	8,330	16,392	11,645	12,026	23,671	19,707	20,356	40,063

Figure 2.1 shows the population pyramid for the households interviewed. The pyramid shows a very wide base and a reduced dome, which is typical of a demographic pattern with high fertility and high mortality. This is the situation in Angola. There is an excess in the age group 50-54 and a deficit in the age group 44-49. This was also observed in the 2006-07 AMIS and can be attributed to the fact that some interviewers may change the age of women age 48 or 49 to 50 or 51 to reduce the workload.

***Figure 2.1* Population Pyramid**



2.2 HOUSING CHARACTERISTICS

To assess the socioeconomic conditions of household members, information was collected regarding access to electricity, source of drinking water, type of sanitation facility, and physical charecteristics of the house. Table 2.2 presents information on the distribution of the households by availability of electricity, source of drinking water, and type of sanitation facilities. The data show that little more than one in three households in Angola have access to electricity (35 percent) and there is great disparity by urban-rural residence. In urban areas, 83 percent of households have electricity compared with only 6 percent of households in rural areas.

Regarding source of drinking water, almost half (48 percent) of the households obtain drinking water from an improved source. By residence, households in urban areas have better access to an improved water source than households in rural areas (74 percent compared with 33 percent). Carts and tanker trucks are the most common unimproved source of drinking water, supplying more than one-fifth of urban households. Half of the households in rural areas use another unimproved source—surface water such as streams, lakes, and channels.

Regarding sanitation facilities, 42 percent of households in urban areas have an improved sanitation facility compared with 15 percent in rural areas. Many households in rural areas have no sanitation facility at all—62 percent compared with 4 percent of households in the urban areas.

Table 2.2 Housing characteristics

Percent distribution of households and de jure population by main housing characteristics, according to residence, Angola 2011

Characteristic	Households Urban	Households Rural	Households Total	Population Urban	Population Rural	Population Total
Electricity						
Yes	82.5	5.5	34.6	83.0	6.3	37.8
No	17.5	94.5	65.4	17.0	93.7	62.2
Source of drinking water						
Improved source	**73.9**	**33.0**	**48.4**	**73.7**	**35.2**	**51.0**
Piped water into dwelling/yard/plot	32.8	0.5	12.7	33.9	0.6	14.3
Public tap/standpipe	29.2	9.6	17.0	28.1	10.2	17.6
Tube well or borehole	2.2	3.8	3.2	1.9	4.8	3.6
Protected dug well/protected spring	9.6	19.0	15.4	9.6	19.5	15.5
Rain water	0.1	0.1	0.1	0.2	0.1	0.1
Non-improved source	**24.8**	**67.0**	**51.0**	**25.3**	**64.7**	**48.5**
Unprotected dug well or spring	1.3	10.7	7.1	1.4	10.4	6.7
Tanker truck/cart with small tank	20.8	3.7	10.2	21.6	3.6	11.0
Surface water (river, lake, etc.)	2.7	52.6	33.7	2.2	50.8	30.8
Other source	1.3	0.0	0.5	1.0	0.0	0.4
Type of sanitation facility						
Improved facility	**87.2**	**15.0**	**42.2**	**88.0**	**16.4**	**45.8**
Piped sewage system	19.2	0.5	7.6	19.4	0.5	8.2
Septic tank	22.6	3.2	10.5	23.7	3.4	11.7
Slit latrine	6.5	4.9	5.5	6.2	5.3	5.7
Other place	0.5	0.4	0.4	0.5	0.3	0.5
Ventilated improved pit (VIP) latrine	38.4	6.0	18.2	38.2	6.9	19.7
Non-improved facility	**13.0**	**84.8**	**57.6**	**12.2**	**83.5**	**54.2**
Pit latrine without slab	6.0	16.8	12.7	5.9	17.5	12.7
Other	3.0	5.7	4.6	2.9	6.3	4.9
No facility/bush/field	4.0	62.3	40.3	3.4	59.7	36.6
Number	3,035	4,995	8,030	16,408	23,559	39,967

2.3 HOUSEHOLD DURABLE GOODS

Ownership of durable goods is a good indicator of the socioeconomic conditions of the household. The possession of certain durable goods such as radios and televisions indicates access to a means of communication. Ownership of a refrigerator prolongs the wholesomeness of foods, and the availability of transportation provides greater access to services that may not be available locally.

Table 2.3 shows the percentages of households that own various durable goods and means of transportation. About 62 percent of households own a radio, and 44 percent have television. The table also shows that radio (86 percent), television (89 percent), and mobile telephones (91 percent) are durable goods found of urban households. Half of the households (52 percent) in urban areas have a refrigerator. Radio is the most common durable good in households in rural areas (47 percent), and mobile phones are most common in urban areas (92 percent). Regarding ownership of means of transportation, motorcycle ownership is the same in urban and in rural areas. (15 percent of urban households and 14 percent of rural households), while the possession of a car or truck is more common in urban areas than in rural areas (30 percent versus 1 percent, respectively).

Table 2.3 Household durable goods

Percentage of households and de jure population possessing various household effects and means of transportation, by residence, Angola 2011

	Households			Population		
Durable good	Urban	Rural	Total	Urban	Rural	Total
Radio	85.8	47.4	61.9	86.7	50.8	65.5
Television	88.5	16.4	43.6	90.4	19.6	48.7
Mobile phone	91.2	27.6	51.7	92.8	31.4	56.6
Refrigerator	51.9	2.3	21.0	53.6	2.8	23.6
Bicycle	11.2	14.2	13.1	12.5	15.1	14.0
Motocycle/scooter	15.0	14.4	14.6	15.7	16.9	16.4
Car/truck	29.8	1.4	12.2	32.6	1.8	14.4
Boat/canoe	1.1	0.9	1.0	1.2	1.0	1.1
Number	3,035	4,995	8,030	16,408	23,559	39,967

2.4 CHARACTERISTICS OF WOMEN AGE 15-49 YEARS

This section provides a descriptive summary of women who were interviewed in the 2011 AMIS. Table 2.4 presents the percent distribution of women age 15-49 according to main sociodemographic characteristics. Almost half (49 percent) are under age 25, reflecting the young age of the Angolan population, as previously observed in Figure 2.1.

Table 2.4 Characteristics of women age 15-49

Percent distribution of women age 15-49 by selected demographic and socioeconomic characteristics, Angola 2011

Characteristic	Weighted percent	Unweighted number	Weighted number
Age			
15-19	25.3	2,175	2,154
20-24	23.6	2,029	2,031
25-29	17.8	1,533	1,540
30-34	11.8	1,017	1,021
35-39	10.5	898	907
40-44	6.3	543	542
45-49	4.6	394	394
Residence			
Urban	44.4	3,813	4,038
Rural	55.6	4,776	4,551
Region			
Hyperendemic	19.4	1,664	1,865
Mesoendemic Stable	36.5	3,139	2,035
Mesoendemic Unstable	18.0	1,546	2,210
Luanda	26.1	2,240	2,479
Education			
No education	24.6	2,111	2,126
Primary	56.7	4,866	4,832
Secondary or higher	18.8	1,612	1,631
Religion			
Catholic	46.1	3,955	4,020
Christian/Protestant	44.1	3,786	3,707
Other religion	0.4	39	44
No religion	5.4	462	466
Wealth quintile			
Lowest	11.3	970	1,068
Second	11.0	948	963
Middle	15.7	1,346	1,299
Fourth	28.6	2,456	2,552
Highest	33.3	2,863	2,699
Total 15-49	100.0	8,589	8,589

The spatial distribution of women who are of reproductive age reflects the distribution of the population as a whole. Forty-four percent of women reside in urban areas, and 56 percent live in rural areas. The majority of women (56 percent) reside in the high malaria prevalence regions, the Hyperendemic and Mesoendemic Stable regions, where 19 and 37 percent live, respectively. One in four women resides in Luanda province, and 18 percent reside in the Mesoendemic Unstable region.

One in four women has no education, but 19 percent reached or went beyond secondary education. The majority only reached the primary level.

With respect to religion, results show that the majority of women interviewed profess they are Christian (90 percent), and 46 percent are Catholic and 44 percent are Protestant. Only five percent of women reported having no religion.

2.5 EDUCATIONAL ATTAINMENT

Educational attainment has a noticeable effect on health behavior and attitudes. In general, as the educational level of a woman increases, so does her use of health facilities and services for herself, her children, and her family.

The educational system in Angola has three levels. The first level is primary school, which spans first through sixth grades. The second level, or secondary school, has two sequential cycles, which extend six or seven years after primary school. The first cycle includes general and professional education classes (grades 7, 8, and 9), which correspond each to an extra school year. During the second cycle, there is general school for grades 10, 11, and 12 for normal middle education. For students who wish a technical middle school education, there are grades 10, 11, 12, and 13 instead. The third level corresponds to higher education.

Table 2.5 shows the percent distribution of women age 15-49 by highest level of schooling and the median number of school years completed, according to selected demographic and socioeconomic characteristics. A little more than half of the women in urban areas (55 percent) attended or completed primary education, and 40 percent reached or went beyond secondary education. The level of schooling is much lower in rural areas: 40 percent of women did not attend school at all, and only 2 percent completed secondary school or higher.

There is an obvious correlation between the availability of material resources, as indicated by the wealth quintiles, and the level of schooling. Sixty percent of women in the lowest wealth quintile never attended school, and few attended secondary school or higher. On the other hand, only 6 percent of women in the highest wealth quintile had no education, while 41 percent attended secondary school or higher.

Table 2.5 Educational attainment of women

Percent distribution of women age 15-49 by highest level of schooling attended or completed, and median years of schooling completed, according to selected demographic and socioeconomic characteristics, Angola 2011

Characteristic	Highest level of schooling: No education	Primary education	Secondary education or higher	Total	Median years completed	Number of women
Age						
15-19	14.3	72.3	13.4	100.0	4.9	2,175
20-24	22.3	52.2	25.5	100.0	4.9	2,029
25-29	27.5	48.6	23.9	100.0	4.8	1,533
30-34	31.9	49.8	18.2	100.0	3.8	1,017
35-39	30.8	55.9	13.3	100.0	3.2	898
40-44	32.1	52.4	15.6	100.0	2.9	543
45-49	37.9	49.7	12.4	100.0	3.0	394
Residence						
Urban	5.3	54.5	40.2	100.0	7.6	3,813
Rural	39.9	58.4	1.7	100.0	1.9	4,776
Region						
Hyperendemic	40.9	51.6	7.5	100.0	2.0	1,664
Mesoendemic Stable	28.3	60.6	11.1	100.0	3.3	3,139
Mesoendemic Unstable	28.0	57.7	14.3	100.0	3.3	1,546
Luanda	4.8	54.2	41.0	100.0	7.7	2,240
Wealth quintile						
Lowest	59.7	40.1	0.2	100.0	a	970
Second	47.9	51.9	0.2	100.0	0.8	948
Middle	36.4	61.8	1.7	100.0	2.2	1,346
Fourth	16.4	66.4	17.2	100.0	4.9	2,456
Highest	6.4	53.0	40.6	100.0	7.5	2,863
Total	24.6	56.7	18.8	100.0	3.9	8,589

a = Ommited because less than 50 percent of women had any education.

FERTILITY 3

This chapter discusses current fertility estimated from general and specific fertility rates. At the same time, fertility measurements are correlated with some of their determinants, according to selected characteristics of the women interviewed, such as residence, region, level of education, and wealth quintile. The fertility estimates presented in this chapter are based on the reproductive histories of women age 15-49 who were interviewed for the survey. Birth histories were used to estimate retrospective fertility, based on number of children ever born, and current fertility, based on fertility rates by age.

3.1 CURRENT FERTILITY

Current fertility can be studied through the age-specific fertility rates (ASFR), the total fertility rate (TFR), the general fertility rate (GFR), and the crude birth rate (CBR). Age-specific fertility rates provide the pattern of fertility by age, while total fertility rate refers to the hypothetical mean number of children per woman of reproductive age, assuming that the age-specific fertility rates observed at the time of the survey remain constant.

The measures of fertility presented in this chapter refer to the three-year period prior to the survey, covering approximately the calendar years 2009-2011, and as a result, the estimates are centered in the year 2010.[1] This reference period generates a sufficient number of births to provide robust and current estimates.

Table 3.1 Current fertility

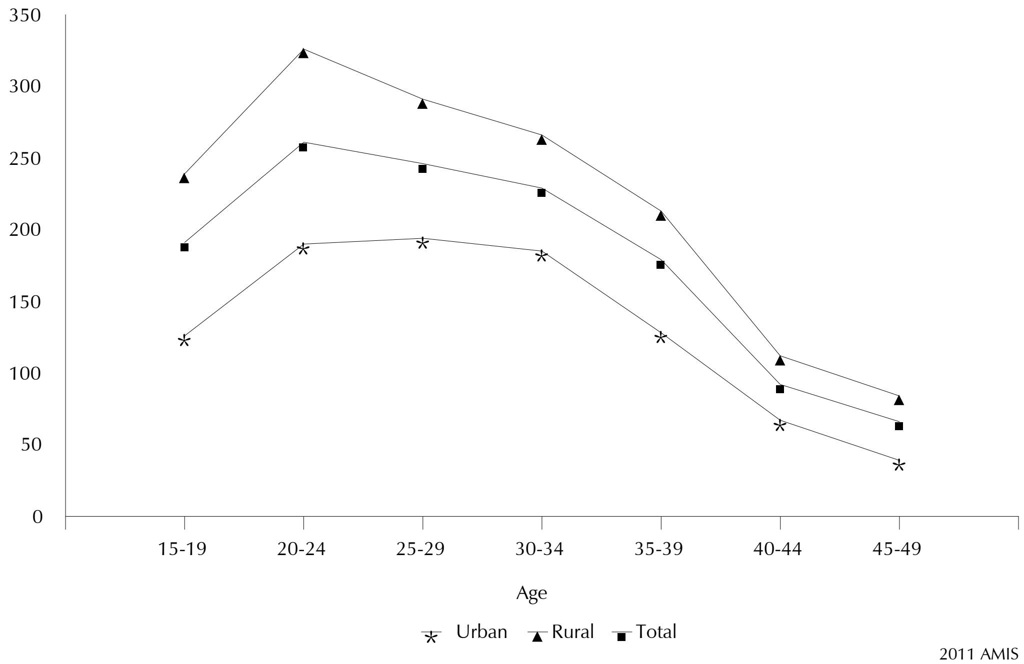
Age-specific fertility rates, the total fertility rate, the general fertility rate, and the crude birth rate for the three years preceding the survey, by residence, Angola 2011

	Residence		
Age group	Urban	Rural	Total
15-19	126	239	191
20-24	190	326	261
25-29	194	291	246
30-34	185	266	229
35-39	128	213	179
40-44	67	112	92
45-49	39	84	66
TFR	4.6	7.7	6.3
GFR	161	264	218
CBR	36.5	51.8	45.5

Note: The age-specific fertility rates are expressed per 1,000 women. Rates for age group 45-49 may be slightly biased due to truncation.
TFR: total fertility rate expressed per woman.
GFR: the general fertility rate expressed per 1,000 women.
CBR: the crude birth rate expressed per 1,000 population.

Table 3.1 presents age-specific fertility rates according to urban-rural residence. The results, shown in Figure 3.1, confirm a demographic pattern of high fertility. The TFR for the country is 6.3, which can be interpreted as the average number of children that Angolan women will have at the end of the reproductive period if current fertility levels by age remain constant. The TFR in rural areas (7.7) is much higher than the TFR in urban areas (4.6). This implies that women in rural areas have on average three children more than women in urban areas.

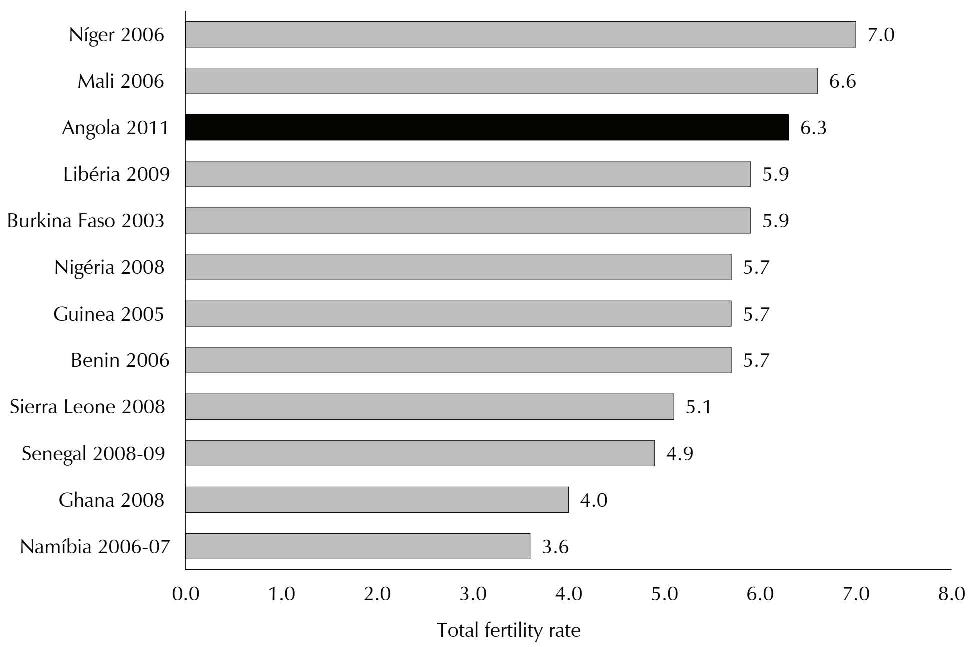
Figure 3.1 Age-Specific Fertility Rates by Urban-Rural Residence



A second characteristic of the Angola fertility pattern is the very high fertility among women initiating their fertility, especially in the rural areas, where there were 239 births per 1,000 women age 15-19 in the three years preceding the survey. In the urban areas, where fertility is lower, the number of births per 1,000 women in that age group was 126 per 1,000. The peak in fertility in the rural area occurs between 20 and 24 years, when the fertility rate reaches 326 per thousand. In the urban areas, the peak occurs between 25 and 29 years when fertility reaches 194 per thousand.

When compared with other countries in Western Africa, Angola is one of the countries with highest fertility. Only two countries in the region, Níger and Mali, have higher fertility rates than Angola. The total fertility rate in Angola is 75 percent higher than in Namibia, one of the countries with the lowest levels of fertility in the region.

Figure 3.2 Recent Total Fertility Rates in Western Africa



3.2 FERTILITY TRENDS

Table 3.2 presents the age-specific fertility rates for the four five-year periods preceding the survey, estimated from the birth histories of women interviewed. In general, fertility has increasied over time among younger women. The fertility rate for the group age 15-19 was 155 per thousand women for the period 1992-1996, 15 to 19 years before the survey. Between 2007 and 2011, i.e., 0 to 4 years before the survey, the fertility rate for women age 15-19 was 188 per thousand. In the age groups between 20 and 34 years, the age-specific fertility rates have remained fairly constant in recent decades.

Table 3.2 Trends in age-specific fertility rates

Age-specific fertility rates for five-year periods preceding the survey, by mother's age at the time of the birth, Angola 2011

Mother's age at birth	Number of years preceding the survey			
	0-4	5-9	10-14	15-19
15-19	188	151	162	155
20-24	274	258	274	258
25-29	261	263	268	270
30-34	244	242	263	[273]
35-39	194	196	[234]	
40-44	96	[175]		
45-49	[68]			

Note: Age-specific fertility rates are per 1,000 women. Estimates in brackets are truncated. Rates exclude the month of interview.

3.3 FERTILITY DIFFERENTIALS

Table 3.3 shows the total fertility rate, the percentage of currently pregnant women, and the mean number of children ever born to women age 40-49. The table shows these differentials by residence, region, level of education, and socioeconomic status of women. The group of indicators describes different aspects of the reproductive behavior of the Angolan women. The mean number of children ever born to women age 40-49 indicates the cumulative fertility of a cohort that is endeing its reproductive period. As previously explained, the total fertility rate (TFR) is a summary indicator of current fertility.

The regional differences observed in Table 3.3 reveal the existence of two demographic patterns: Luanda and the rest of the country. The three regions outside Luanda show total fertility rates around 7.0. The highest fertility is observed in the Hyperendemic region, with a TFR of 7.5, while in Luanda the rate is 4.4. Also, 11 percent of women of reproductive age in Luanda were pregnant at the time of the survey compared with 20 percent, 18 percent, and 17 percent in the Mesoendemic Unstable, Mesoendemic Stable, and Hyperendemic regions, respectively.

The results presented in Table 3.3 show that the mean number of children ever born per woman age 40-49 is lower than the TFR in all regions with the exception of Luanda. This suggests that fertility outside the capital in Angola has increased, because as explained, the first indicator shows past fertility, that is, the complete fertility of the cohort that is close to the end of its reproductive life. The TFR is a summary indicator of current fertility patterns that shows the number of children women of fertile age will have at the end of their reproductive life. In the Hyperendemic region, the mean number of children ever born to women 40-48 is 5.8, compared with a total fertility rate of 7.5. This suggests fertility in that region has increased by 30 percent.

Trends observed generally suggest the level of education of women is negatively associated with fertility levels; in other words, fertility decreases when the level of education increases. Accordingly, the TFR for women with no education is 8.0 compared with 3.3 for women with secondary or higher education. This means that women with no education have, on average, almost five more children than women with secondary or higher-level education. Following this line of thought, 17 percent of women with no education or with primary school education were pregnant at the time of the survey compared with 12 percent of women with secondary or higher education.

The socioeconomic status of women is also associated with fertility. The TFR for women in the lowest wealth quintile is 8.0 compared with a TFR of 4.5 among women in the highest wealth quintile.

Table 3.3 Fertility by selected characteristics

Total fertility rate (TFR) for the three years preceding the survey, percentage of women age 15-49 who are currently pregnant, and mean number of children ever born to women age 40-49, by selected characteristics, Angola 2011

Characteristic	Total fertility rate	Percentage of women currently pregnant	Mean number of children ever born to women age 40-49
Residence			
Urban	4.6	11.5	5.5
Rural	7.7	19.7	6.3
Region			
Hyperendemic	7.5	16.7	5.8
Mesoendemic Stable	6.7	17.7	6.1
Mesoendemic Unstable	7.0	19.9	6.6
Luanda	4.4	10.6	5.4
Education			
No education	8.0	17.2	6.0
Primary	6.6	16.8	6.1
Secundary or higher	3.3	12.4	5.0
Wealth quintile			
Lowest	8.0	18.4	6.2
Second	7.3	19.5	6.3
Middle	7.6	17.5	6.0
Fourth	6.7	15.3	6.0
Highest	4.5	14.1	5.6
Total	6.3	16.1	5.9

Note: Total fertility rates are for the period 1 to 36 months preceding the interview.

MALARIA 4

The 2011 AMIS collected information on procedures to prevent malaria by use of indoor residual spraying, ownership and use of mosquito nets, use of intermittent preventive treatment (IPT) during pregnancy, and treatment of fever among children under age 5. To evaluate the prevalence of malaria and anemia among children age 6-59 months, fieldworkers collected blood samples, which were tested by rapid diagnostic testing (RDT) and the reading of thick-film blood smears. Hemoglobin levels in capillary blood were measured with HemoCue Hb to detect anemia. The test results are reported in this chapter.

4.1 INDOOR RESIDUAL SPRAYING (IRS)

Indoor spraying with indoor residual spraying (IRS), refers to the spraying of the internal walls of the dwelling to interrupt the transmission of malaria kill female adult mosquitoes. Only female mosquitoes feed on blood, which is required for egg maturation. Normally mosquitoes rest on the walls after they feed, and killing them with insecticides prevents then their offspring from infecting other people. Experience in many African countries has demonstrated the efficiency of this method (Guyatt et al., 2002; Lengeler, 2004; UNICEF and the Roll Back Malaria Partnership, 2007).

The NMCP recommends the use of IRS in the areas of epidemic risk in the provinces in the south of the country (Huila, Namibe, Cunene, and K. Kubango) and in Luanda. Given the high cost, this is done in a selective and limited way. If financial resources were available, it could be extended to the hyperendemic areas. In the meantime, some provincial governments, on their own initiative, complement the NMCP work by implementing IRS programs in selected areas. Synthetic pyrethroids are the preferred insecticides. DDT is not used in Angola, contrary to the practices of other countries in the Southern Africa Development Community (SADC), which adopted DDT as the insecticide of choice on a large scale.

According to the National Malaria Control Program (NMCP) (Ministério da Saúde/PNCM, 2011), the experience with IRS in the country started in 2004 when limited interventions were carried out in Benguela and Cabinda with support from some NGOs. Since the end of 2005, two large scale campaigns of IRS have been implemented. One in the provinces of Huíla and Cunene—with support from the President's Malaria Initiative (PMI) and the Global Fund and in collaboration with NMCP—covered a population of more than half a million people in more than 100,000 households. Another one in the province of Namibe, with support from the World Health Organization (WHO) and the Global Fund, covered a population of almost 200,000 people in 25,000 households. Since then, the PMI has established an annual IRS program in these areas.

To obtain information on the extent of the use of this program, questions were asked in the households that were visited to learn if specialized technicians had sprayed the dwellings against mosquitoes in the period 12 months preceding the survey. Table 4.1 shows the percentage of households that had rooms sprayed and the percentage of households sprayed or with at least one insecticide-treated net (ITN). This last column provides evidence of households with some form of protection against mosquitoes that transmit malaria.

At the national level, indoor spraying was used in only 7 percent of household rooms during the 12 months preceding the survey. The percentage of households with indoor spraying is 8 percent in urban areas and 6 percent percent in rural areas. Indoor spraying was widespread in the Mesoendemic Unstable region where 10 percent of the households were sprayed. In Luanda, only 4 percent of the households were sprayed.

The indoor spraying and the level of protection against malaria directly relates to the socioeconomic status of the household. Less than 1 percent of households in the lowest wealth quintile were sprayed compared with 12 percent of households in the highest quintile. Only 15 percent of households in the lowest quintile used prevention against malaria, either through spraying or through the use of mosquito nets, compared with 50 percent of households in the highest quintile, as seen in Figure 4.1.

Table 4.1 Indoor residual spraying (IRS)

Percentage of households that had the interior walls of the dwelling sprayed against mosqutoes (IRS) during the last 12 months and percentage of households with at least one insecticide-treated net (ITN and/or sprayed in the last 12 months, according to socioeconomic and demographic characteristics, Angola 2011

Characteristic	Percentage of households with IRS the last 12 months	Percentage of households with IRS in the last 12 months or having at least one ITN	Number of households
Residence			
Urban	8.0	42.9	3,035
Rural	6.4	35.5	4,995
Region			
Hyperendemic	7.7	35.2	1,794
Mesoendemic Stable	7.2	39.1	3,050
Mesoendemic Unstable	10.1	42.4	1,369
Luanda	3.6	36.8	1,817
Wealth quintile			
Lowest	0.5	15.3	1,138
Second	3.0	25.8	1,096
Middle	6.6	37.0	1,350
Fourth	7.6	45.4	2,219
Highest	11.9	50.0	2,221
Total	7.0	38.3	8,030

Figure 4.1 Percentage of households with rooms sprayed or having at least one ITN

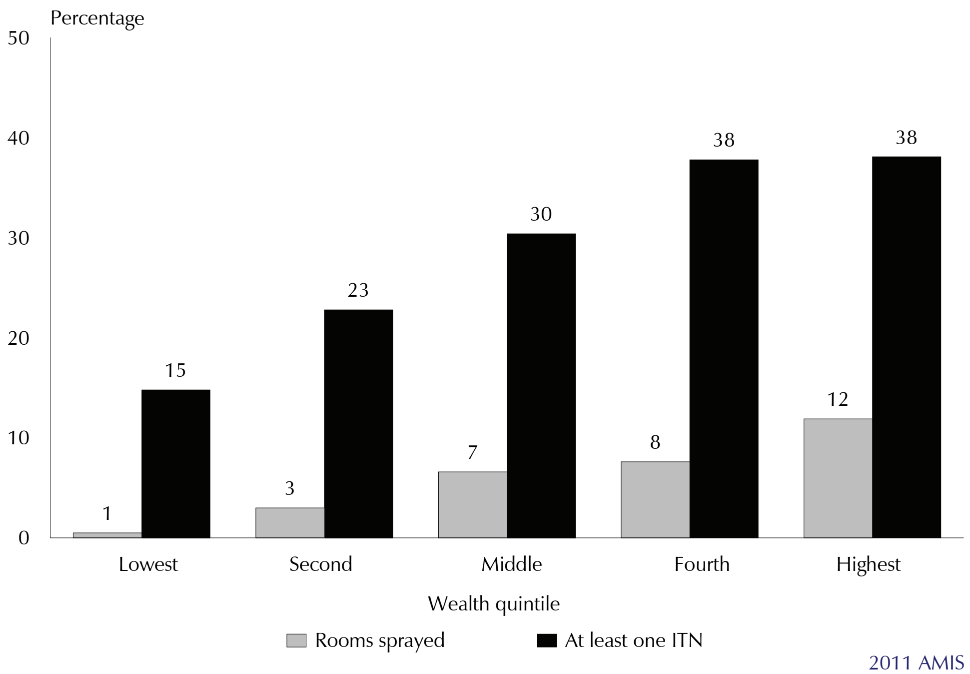


Table 4.2 indicates that in the large majority of cases (82 percent) the houses were sprayed by state agencies, while 10 percent were sprayed by nongovernmental organizations (NGOs). Nevertheless, the assistance of the government is even more important in the Hyperendemic region and in the rural areas where 99 percent and 95 percent of dwellings, respectively, were sprayed by government agencies. The dwelling was sprayed by a private company in only 2 percent of the households, which shows the reduced role of the private sector in activities related to indoor spraying.

Tabla 4.2 Source of indoor spraying

Among the households in which the interior walls were sprayed, the percent distribution by source of the spraying, according to socioeconomic and demographic characteristics, Angola 2011

Characteristic	Health worker/ state	Non-govern-mental organiza-tion	Private company	Other	Don't know	Total	Number of households with interior walls sprayed in the last 12 months
Residence							
Urban	63.9	22.6	3.3	1.0	8.8	100.0	243
Rural	95.2	0.5	1.2	0.5	2.6	100.0	318
Region							
Hyperendemic	99.3	0.0	0.0	0.0	0.0	100.0	138
Mesoendemic Stable	90.8	1.6	3.4	0.7	3.4	100.0	220
Mesoendemic Unstable	64.5	27.4	0.4	0.4	7.2	100.0	138
Luanda	50.0	23.0	5.4	2.7	18.9	100.0	65
Wealth quintile							
Lowest	*	*	*	*	*	100.0	6
Second	(100.0)	0.0	0.0	0.0	0.0	100.0	32
Middle	95.5	0.2	1.4	0.0	3.0	100.0	90
Fourth	76.9	15.0	2.0	0.0	6.1	100.0	169
Highest	77.7	11.8	2.7	1.5	6.4	100.0	264
Total	81.7	10.1	2.1	0.7	5.3	100.0	561

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

4.2 OWNERSHIP OF MOSQUITO NETS

Numerous studies confirm that the use of insecticide-treated mosquito nets (ITNs) is one of the most effective ways to prevent malaria where the infection is commonplace (Alonso et al., 1991; Nevill et al., 1996). According to some estimates, the regular use of ITNs can reduce the mortality of children under age 5 by 20 percent (Lengeler, 2004). Insecticide-treated mosquito nets (ITNs) can be regular mosquito nets impregnated with insecticide or mosquito nets whose fiber is saturated with insecticide at the time of manufacturing. The effectiveness of mosquito nets treated after manufacturing is estimated to be one year, depending on the frequency of washing. Mosquito nets whose fiber is saturated with insecticide at the time of manufacturing are effective for about five years, which is why they are called long-lasting insecticide-treated mosquito nets (LLITNs).

According to the National Malaria Control Programme (NMCP), the promotion of the use of mosquito nets started in 1999 with support from UNICEF. For several years, NMCP gave priority to the distribution and promotion of the use of ITNs for children under age 5 and pregnant women, given that they are more vulnerable to infection. In 2010 the strategy was modified to cover the entire population and to declare that for every two citizens there should be at least one insecticide-treated mosquito net (Ministério da Saúde/PNCM, 2011).

In urban centers the population generally can buy ITNs from the commercial sector, while in rural areas the strategy is to hold a sale subsidized by nongovernmental organizations (NGOs), community-based organizations, and local associations. Distribution is free during mass campaigns.

The distribution of ITNs to pregnant women is also carried out routinely in health facilities during visits for prenatal care. These are given to mothers of children under age 1 when vaccinated for DPT3 and to mothers of children under age 5 during vaccination campaigns. The Ministry of Health and its partners chose the implementation, at the national level, of a package of integrated interventions through the campaign “Viva a Vida com Saúde” (Live Life with Health), which started in 2006.

The Household Questionnaire for the 2011 AMIS included a series of questions related to the possession, type, brand, and status of mosquito nets as well as questions regarding their use during the night preceding the survey. The interviewers also verified the presence of mosquito nets in the dwelling in order to examine them, register the brand, and check to see if they had any holes. The brand and the treatment history obtained from the respondents were used to classify the mosquito nets as treated or untreated.

Table 4.3 presents the percentage of households with at least one mosquito net of any type, an ever-treated mosquito net, and an insecticide-treated mosquito net. The results show that 37 percent of households own at least one mosquito net, whether treated or untreated, and 12 percent own two or more. A little more than one third of households (35 percent) have at least one ITN and 12 percent own more than one ITN.

The table also reveals that 39 percent of households in urban areas own at least one ITN and 16 percent own two or more, compared with 32 percent and 9 percent, respectively, in rural areas. The difference by epidemiological regions in the country is not very large, ranging from 30 percent in the Hyperendemic region to 37 percent in the Mesoendemic Unstable region. It is also observed in Table 4.3 that the percentage of households with more than one ITN is higher in Luanda province, where 15 percent of households have two or more ITNs, than in the Hyperendemnic region where 9 percent do.

Ownership of a mosquito net is closely linked to the socioeconomic status of the household. Only 15 percent of households in the lowest wealth quintile have at least one ITN, compared with 45 percent in the highest quintile. Household ownership of ITNs in the highest wealth quintile is 10 times higher than ownership in the lowest quintile, 20 percent and 2 percent, respectively.

In general terms, almost all households with mosquito nets own nets treated with insecticide: the difference in the percentage of households that own any type of mosquito net and the percentage that own ITNs is only two percentage points (37 percent compared with 35 percent), and the difference remains small by region and area of residence.

Table 4.3 Household ownership of mosquito nets

Percentage of households with one and more than one mosquito net (treated or untreated), ever treated mosquito net, and insecticide-treated net (ITN), and the average number of nets per household, by socioeconomic and demographic characteristics, Angola 2011

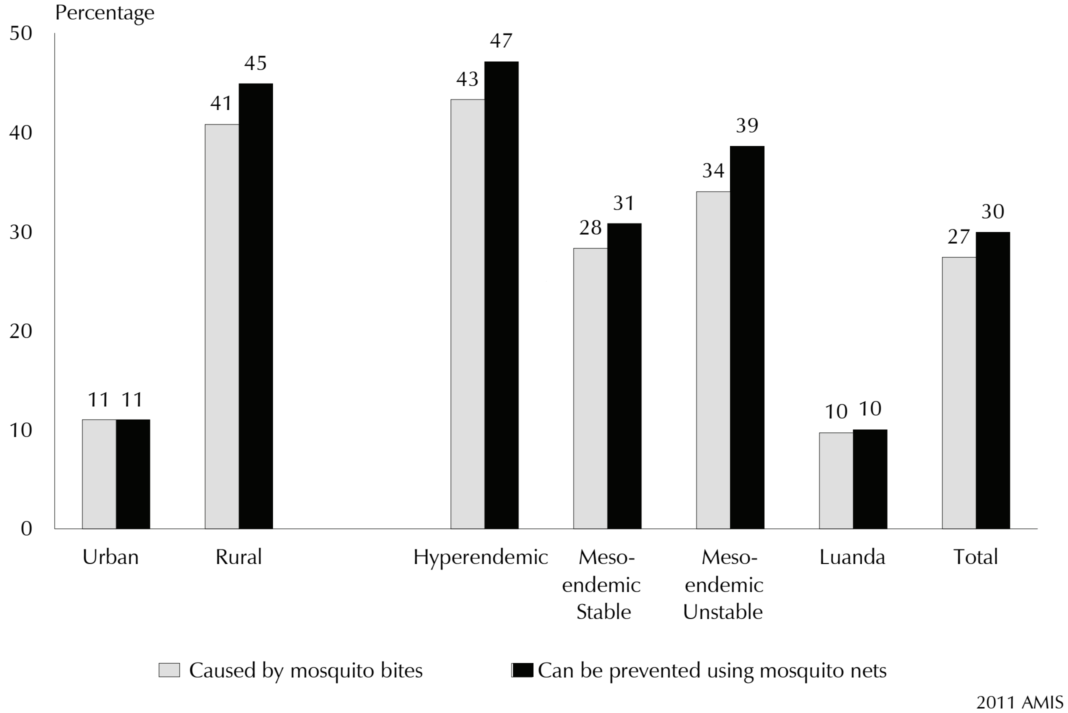
	Any type of mosquito net			Ever-treated mosquito net[1]			Insectice-treated mosquito net (ITN)[2]			
Characteristic	Percentage with at least one net	Percentage with more than one net	Average number of nets per household	Percentage with at least one net	Percentage with more than one net	Average number of nets per household	Percentage with at least one net	Percentage with more than one net	Average number of ITNs per household	Number of households
Residence										
Urban	41.5	17.3	0.6	39.7	16.6	0.6	39.0	16.1	0.6	3,035
Rural	33.5	9.1	0.4	32.2	8.7	0.4	31.8	8.6	0.4	4,995
Region										
Hyperendemic	31.5	9.1	0.4	30.7	8.9	0.4	29.9	8.6	0.4	1,795
Mesoendemic Stable	38.1	12.4	0.5	35.8	11.6	0.5	35.5	11.5	0.5	3,050
Mesoendemic Unstable	38.5	11.5	0.5	37.7	11.2	0.5	37.4	11.0	0.5	1,369
Luanda	37.3	15.4	0.6	35.9	15.0	0.6	35.3	14.6	0.5	1,816
Wealth quintile										
Lowest	16.3	2.2	0.2	15.0	1.9	0.2	14.8	1.8	0.2	1,138
Second	25.4	3.7	0.3	23.6	3.6	0.3	22.8	3.3	0.3	1,097
Middle	34.2	9.7	0.5	33.0	9.2	0.4	32.6	9.2	0.4	1,350
Fourth	43.3	14.1	0.6	42.4	13.6	0.6	41.8	13.4	0.6	2,219
Highest	47.0	21.2	0.7	44.8	20.3	0.7	44.4	19.9	0.7	2,221
Total	36.5	12.2	0.5	35.0	11.7	0.5	34.5	11.5	0.5	8,030

[1] An ever-treated net is a pretreated net or a non-pretreated net that has subsequently been soaked with insecticide at any time.
[2] An insecticide-treated net (ITN) is (1) a factory treated net that does not require any further treatment; (2) a pretreated net obtained within the past 12 months (LLITN); or (3) a net that has been soaked with insecticide within the past 12 months.

4.3 USE OF MOSQUITO NETS

Even though malaria is a very common disease in African countries, knowledge of the causes of malaria is limited among the general population. People frequently see mosquitoes as a source of discomfort but not of infection. Often, malaria is attributed to innocuous causes, such as walking in dirty water or eating a lot of certain fruits (Aikins et al., 1994). In the case of Angola, the data in Figure 4.2 show that in spite of the high prevalence of malaria, 27 percent of women do not recognize mosquitoes as the transmission agents for this disease. This percentage is 34 percent in the Mesoendemic Unstable region and reaches 43 percent in the Hyperendemic region. The figure also shows that 30 percent of women interviewed do not know that mosquito nets help protect against malaria. Sometimes families do not use mosquito nets—even though they are available in the household—because they lack the knowledge that in addition to being irritating, mosquitoes can cause disease.

Figure 4.2 Percentage of Interviewed Women with No Knowledge of What Causes Malaria or How It Can Be Prevented



To determine the utilization rate of mosquito nets, the 2011 AMIS asked about the use of mosquito nets during the night before the survey. The results, presented in Tables 4.4 and 4.5, are used to assess the use of mosquito nets among the groups that are most vulnerable to the effects of malaria: children under age 5 and pregnant women.

4.3.1 Children Under Age 5

Small children are much more vulnerable to malaria than adults or older children. A recent study, based on the analysis of several pieces of research and epidemiological studies proved that the most serious consequences of malaria *P. falciparum* occur among the youngest age groups (Carneiro et al., 2010). For this reason, it is believed that strategies to prevent the transmission of malaria in children can produce tangible results in the reduction of morbidity and mortality caused by malaria.

One of the most important interventions in the fight against malaria in Angolia in the last five years has been the promotion and distribution of ITNs in the majority of provinces in the country. This distribution was accompanied by communication and education programs aimed at motivating families to allow small children to sleep under mosquito nets. Table 4.4 shows the percentage of children under age 5 who slept under a mosquito net during the night preceding the survey, by type of mosquito net. Overall, 27 percent of children slept under some kind of net, and 26 percent slept under an ITN.

The results in Table 4.4 show smaller percentages of children sleep under mosquito nets as age increases. So, 38 percent of children under age 1 slept under an ITN, but only 17 percent of children age 4 slept under one. A possible explanation for this can be that adults assume that vulnerability is greater among children under age 2 and that the risk of malaria decreases with age.

There are no significant differences in the use of ITNs by sex, place of residence, or epidemic region. In general, one in four children under age 5 (26 percent) sleeps under an insecticide-treated mosquito net.

In households with at least one ITN, the majority of children sleep under an ITN. For the country as a whole, 68 percent of children living in households with ITNs use mosquito nets. At the regional level, the proportions vary between 61 percent in Luanda and 71 percent in the Mesoendemic Stable region.

Table 4.4 Use of mosquito nets by children

Percentage of children under age 5 who slept under any mosquito net, an ever-treated mosquito net, and an insecticide-treated net (ITN) the night before the survey; and among children in households with at least one ITN, the percentage who slept under an ITN the night before the survey, according to socioeconomic and demographic characteristics, Angola 2011

	Children under age 5 in the households				Children under age 5 in households with at least an ITN[2]	
Characteristic	Percentage who slept under any type of mosquito net the night preceding the survey	Percentage who slept under an ever-treated mosquito net the night preceding the survey[1]	Percentage who slept under an ITN the night preceding the survey[2]	Number of children	Percentage who slept under an ITN the night preceding the survey[2]	Number of children
Age in years						
<1	39.4	38.2	37.7	1,573	75.5	786
1	30.9	30.0	29.6	1,700	68.8	731
2	27.6	26.9	26.5	1,800	62.8	760
3	20.9	20.4	20.0	1,718	50.3	684
4	17.4	17.0	16.7	1,721	45.4	632
Sex						
Male	26.5	25.7	25.4	4,187	60.2	1,768
Female	27.5	26.8	26.4	4,326	62.5	1,827
Residence						
Urban	30.7	29.5	28.9	2,811	59.9	1,358
Rural	25.2	24.7	24.4	5,702	62.3	2,237
Region						
Hyperendemic	24.8	24.5	23.8	1,898	61.5	735
Mesoendemic Stable	28.1	27.0	26.8	3,426	65.1	1,412
Mesoendemic Unstable	27.5	27.1	26.9	1,626	58.9	741
Luanda	26.9	26.0	25.5	1,562	56.4	707
Wealth quintile						
Lowest	12.4	11.9	11.7	1,196	57.2	245
Second	18.8	18.4	17.9	1,150	62.1	331
Middle	24.6	23.6	23.4	1,590	59.7	623
Fourth	32.1	31.6	31.0	2,400	61.4	1,211
Highest	35.7	34.4	34.2	2,173	62.8	1,184
Total	27.0	26.3	25.9	8,512	61.4	3,595

Note: The table is based on children who slept in the household the night before the survey.
[1] An ever-treated net is a pretreated net or a non-pretreated net that has subsequently been soaked with insecticide at any time.
[2] An insecticide-treated net (ITN) is (1) a factory treated net that does not require any further treatment (LLITN), (2) a pretreated net obtained within the past 12 months, or (3) a net that has been soaked with insecticide within the past 12 months.

4.3.2 Pregnant Women

During pregnancy, malaria is more frequent and more severe. The risk of contracting malaria among pregnant women is two or three times higher than the risk for nonpregnant women, and anemia associated with malaria is common. Pregnant women and their children can suffer a variety of harmful consequences as a result of malaria, including anemia, prematurity, and low birth weight; late intrauterine development; and high mortality risk (Steketee, 2001). During pregnancy, malaria can change from an asymptomatic infection to a state that puts women at risk of death. In the

Mesoendemic Stable region, the majority of women have developed sufficient natural immunity that the infection does not produce symptoms. The same applies to pregnant women. In this region, the larger impact caused by malaria is anemia and the presence of parasites in the placenta, which contribute to low birth weight. On the other hand, in the Mesoendemic Unstable region, women do not acquire enough immunity, and infection in pregnant women can produce serious symptoms as well as death (UNICEF and the Roll Back Malaria Partnership, 2007).

Given the severity that malaria displays during pregnancy, in 2005, the NMCP adopted the WHO strategies that aim to reduce the effects of malaria on pregnancy. These effects include maternal morbidity and mortality, inflammation of the placenta, spontaneous abortion, and low birth weight. The WHO strategies include intermittent preventive treatment (IPT), use of insecticede-treated mosquito nets (ITNs), and adequate case management, as well as information, education, and communication (IEC) to educate the population on the prevention and treatment of malaria. Currently, a coordinated effort is being made with the Reproductive Health Program, which has been introduced by a record-keeping ledger that includes IPT.

Table 4.5 shows the percentage of pregnant women who slept under any mosquito net, an ever-treated mosquito net, and an insecticide-treated net (ITN) the night before the survey. One in four pregnant women reported having slept under an ITN on the night before the survey, and there are no differences by region or place of residence. In households with at least one ITN, a little over two-thirds of pregnant women (68 percent) reported having slept under an ITN. Again, there is little variation by residence. Among households with ITNs in Luanda, 61 percent of pregnant women slept under a mosquito net, compared with 71 percent in the Mesoendemic Stable region.

The socioeconomic status of the household is a determinant factor for the use of ITNs among pregnant women. Thus 14 percent of pregnant women in the lowest wealth quintile slept under an ITN the night preceding the survey, compared with 33 percent of women in the highest quintile.

Table 4.5 Use of mosquito nets by pregnant women

Percentage of pregnant women age 15-49 who slept under any mosquito net, an ever-treated mosquito net, and an insecticide-treated net (ITN) the night before the survey; and among women in households with at least one ITN, the percentage who slept under an ITN the night before the survey, according to socioeconomic and demographic characteristics, Angola 2011

	Pregnant women age 15-49 in the households				Pegnant women age 15-49 in households with at least one ITN[2]	
Characteristic	Percentage who slept under any type of mosquito net the night preceding the survey	Percentage who slept under an ever-treated mosquito net the night preceding the survey[1]	Percentage who slept under an ITN the night preceding the survey[2]	Number of women	Percentage who slept under an ITN[2] the night preceding the survey	Number of women
Residence						
Urban	29.5	28.3	28.1	436	64.8	189
Rural	24.9	24.5	24.5	948	69.5	334
Region						
Hyperendemic	24.1	23.2	23.2	281	67.3	97
Mesoendemic Stable	27.4	26.8	26.8	560	70.7	213
Mesoendemic Unstable	25.3	25.3	25.1	310	69.4	112
Luanda	27.7	26.6	26.2	233	60.5	101
Education						
No education	22.9	22.7	22.5	366	79.6	103
Primary	27.6	26.7	26.6	821	64.4	339
Secondary or higher	27.5	27.0	27.0	198	66.7	80
Wealth quintile						
Lowest	14.3	13.9	13.9	181	(63.4)	40
Second	20.5	20.5	20.2	187	(76.4)	49
Middle	21.5	21.1	21.1	237	69.3	72
Fourth	30.0	28.8	28.5	376	66.5	162
Highest	33.8	33.2	33.2	404	67.1	200
Total	26.3	25.7	25.6	1,384	67.8	523

Note: The table is based on pregnant women age 15-49 who slept in the household the night before the survey.
[1] An ever-treated net is a pretreated net or a non-pretreated net that has subsequently been soaked with insecticide at any time.
[2] An insecticide-treated net (ITN) is (1) a factory treated net that does not require any further treatment (LLITN); (2) a pretreated net obtained within the past 12 months; or (3) a net that has been soaked with insecticide within the past 12 months.

4.4 USE OF ANTIMALARIAL DRUGS DURING PREGNANCY

The importantance of preventing malaria during pregnancy was already mentioned in section 4.3.2. Prophylaxis or intermittent preventive treatment (IPT) with sulfadoxine-pyrimethamine (SP) can relieve the harmful consequences of malaria for women infected during pregnancy (Newman et al., 2003). Therefore,the World Health Organization (WHO) recommends IPT in regions that still have a high prevalence of malaria. The treatment is effective and applicable in Angola. The Ministry of Health recommends that pregnant women be given intermittent preventive treatment (IPT) with SP/Fansidar at least twice, once during the second trimester of pregnancy (16 to 18 weeks) and a second time during the third trimester (28 to 36 weeks).

To obtain information about the use of antimalarial drugs during pregnancy, women who gave birth in the five years preceding the survey were asked if they took any medications during their pregnancies to keep them from getting malaria, and if so, which ones. They were also asked whether they received the drugs as part of an antenatal care (ANC) visit. Women who received SP/Fansidar during an antenatal visit are considered to have received IPT.

Table 4.6 shows the percentage of women who took any antimalarial drugs for prevention, who took SP/Fansidar, and who received IPT during the pregnancy for their last live birth in the two years preceding the survey. It should be noted that obtaining information about drugs can be difficult in some cases because respondents may not have known or remembered the name or even the type of drug they received. However, in the case of the 2011 AMIS it was confirmed that the majority of women interviewed were able to spontaneously recall the drugs received. Only 3 percent of respondents did not remember the name of the drug they took, which suggests that the data included in the table are sufficiently reliable.

Table 4.6 Prophylactic use of antimalarial drugs and intermittent preventive treatment (IPT) during pregnancy

Among women who had a live birth in the two years preceding the survey, percentage who took any antimalarial drugs for prevention and percentage who took SP/Fansidar for intermittent preventive treatment (IPT) during a pregnancy, according to socioeconomic and demographic characteristics, Angola 2011

		Intermittent preventive treatment (IPT)[1]				
Characteristic	Percentage who took any antimalarial drug	Percentage who took any SP/Fansidar	Percentage who took at least two doses of SP/Fansidar	Percentage who received any SP/Fansidar during an ANC visit	Percentage who received at least two doses of SP/Fansidar, at least one during an ANC visit	Number of women with at least one birth in the last two years
Residence						
Urban	58.2	50.9	31.7	47.7	29.9	1,042
Rural	24.4	19.5	11.9	18.4	11.2	2,052
Region						
Hyperendemic	19.7	16.4	12.0	15.3	11.1	714
Mesoendemic Stable	33.3	26.9	13.9	25.1	12.6	1,172
Mesoendemic Unstable	42.3	38.9	23.7	37.6	23.4	595
Luanda	53.1	43.6	30.2	40.5	28.7	613
Education						
No education	19.6	16.2	11.3	15.4	10.7	988
Primary	39.3	32.2	19.6	30.1	18.3	1,780
Secondary or higher	66.0	61.0	35.0	57.4	33.9	326
Wealth quintile						
Lowest	18.1	15.5	8.4	14.9	7.8	420
Second	19.9	17.2	12.7	15.8	11.3	402
Middle	25.6	21.3	13.7	20.5	13.2	590
Fourth	44.8	37.3	22.7	35.3	22.0	929
Highest	51.2	43.1	26.1	39.8	24.2	752
Total	35.8	30.1	18.6	28.3	17.5	3,094

ANC = Antenatal care visit
[1] Intermittent preventive treatment (IPT) consists of two or more doses of SP/Fansidar

Overall, just over one third of women (36 percent) who gave birth in the two years preceding the survey took antimalarial drugs during pregnancy. Eighteen percent received at least two doses of SP/Fansidar, with at least one dose during an antenatal care visit.

The differentials by residence, education, and region are substantial. Thirty percent of women in urban areas received at least two doses of SP/Fansidar, of which at least one was received during a prenatal visit, compared with only 11 percent in rural areas. Similarly, 34 percent of women with secondary education received at least two doses of SP/Fansidar, of which at least one was received during a prenatal visit, compared with only 11 percent among women with no education. Regarding socioconomic status, 8 percent of women in the lowest wealth quintile received IPT compared with 24 percent of women in the highest quintile.

The analysis by region shows equally substantial differences: 29 percent of women in Luanda received at least two doses of SP/Fansidar, with at least one received during a prenatal visit, compared with 11 percent of women in the Hyperendemic region. The corresponding percentages for the Mesoendemic Stable and Mesoendemic Unstable regions were 13 percent and 23 percent, respectively.

4.5 Prevalence and Prompt Treatment of Fever Among Young Children

Fever is the major manifestation of malaria in children under age 5, although it also accompanies many other illnesses. The World Health Organization recommends treatment based on a confirmed diagnosis. However, WHO also recommends in regions where the risk of malaria is high and resources are limited that the clinical diagnosis of malaria be based on the fever history for the last 24 hours. Delays in treatment can have fatal consequences, particularly if the infection is severe. This is why it is recommended that treatment start within 24 hours after the fever appears. Antimalarial drugs in combination with artemisinin are recommended (World Health Organization, 2010).

According to the NMCP, the resistance of *P. falciparum* to chloroquine was detected in Angola for the first time in 1984. Between 2002 and 2004, studies were conducted regarding the therapeutic efficiency of chloroquine, amodiaquine, sulfadoxine-pyrimethamine, and the artemisinin-based combinations (amodiaquine and artemisinin, lumefantrine and artemether). The WHO guidelines to use antimalarials combined with artemisinin were adopted in 2010 by the NMCP (Ministério da Saúde/PNCM, 2011).

In the 2011 AMIS, mothers were asked whether each child under age 5 had had a fever in the two weeks preceding the survey and, if so, whether care was sought, what measures were taken to treat the fever, and how long after onset of the fever a drug was given. Table 4.7 shows the percentage of children under age 5 who had fever in the two weeks preceding the survey, the percentage who had fever and took antimalarial drugs, and the percentage who received treatment soon after the beginning of the illness. Slightly over one-third of children (34 percent) had a fever during the two weeks preceding the survey. In the Mesoendemic Unstable region, 40 percent of children had a fever compared with 31 percent in the Hyperendemic region.

The prevalence of fever remains at about one-third and does not vary greatly by place of residence, mother’s education, or socioeconomic situation of the household, but it does vary with age of the child. Among children age 12-23 months, 46 percent percent, i.e., almost half, had a fever in the previous two weeks. The prevalence of fever is lower among children 36 months or older: one in four children had a fever in the previous two weeks.

Table 4.7 Prevalence and prompt treatment of fever among children

Percentage of children under age 5 with a fever in the two weeks preceding the survey, and among children with a fever, the percentage who received antimalarial drugs and the percentage who received the drugs the same or next day following the onset of fever, by socioeconomic and demographic characteristics, Angola 2011

Characteristic	Among children under 5: Percentage with a fever in the two weeks preceding the survey	Among children under 5: Number of children	Among children under age 5 with a fever in the two weeks preceding the survey: Percentage who received antimalarial drugs	Percentage who received antimalarial drugs the same or the next day	Number of children
Age in months					
<12	35.8	1,492	27.4	15.7	534
12-23	45.7	1,569	29.0	17.0	717
24-35	37.9	1,639	27.9	16.8	621
36-47	25.0	1,563	26.8	15.6	390
48-59	25.7	1,519	30.3	16.3	390
Sex					
Male	34.2	3,867	27.6	15.9	1,322
Female	34.0	3,915	29.0	16.8	1,330
Residence					
Urban	33.2	2,573	43.6	27.3	855
Rural	34.5	5,209	21.0	11.2	1,797
Region					
Hyperendemic	31.2	1,768	16.7	8.4	552
Mesoendemic Stable	33.0	3,120	30.4	20.5	1,029
Mesoendemic Unstable	40.1	1,477	20.1	9.1	593
Luanda	33.8	1,417	47.3	25.6	479
Mother's education					
No education	31.7	1,768	16.7	8.6	819
Primary	35.6	3,120	30.4	16.7	1,551
Secondary or higher	33.4	848	54.2	37.0	283
Wealth quintile					
Lowest	34.2	1,104	16.8	11.3	378
Second	35.3	1,040	18.2	10.6	367
Middle	35.5	1,472	21.6	10.5	523
Fourth	34.3	2,213	32.7	17.8	760
Highest	32.0	1,950	41.5	25.9	625
Total	34.1	7,782	28.3	16.4	2,652

In spite of the similarity regarding the prevalence of fever, treatment given to sick children clearly differs depending on the region and the socioeconomic status of the mother. In urban areas, 27 percent of children with a fever received antimalarials the same or the following day after the onset of the fever, compared with only 11 percent of children in rural areas. Twenty-six percent of children with a fever in Luanda received antimalarials the same or the following day after the onset of the fever, compared with only 8 percent in the Hyperendemic region. Among children of women with no education, the proportion is 9 percent, compared with 37 percent among children of women with secondary education or higher. In the lowest wealth quintile, 11 percent of children received antimalarials the same or the following day after the onset of a fever, compared with 26 percent of children in the highest quintile.

Table 4.8 shows the types of antimalarial drugs given to children with a fever in the two weeks preceding the survey and the percentage of those with a fever who received antimalarial drugs on the same day or the day after the onset of the fever. The table shows that 22 percent of children received artemisinin-based combination therapy (ACT), and 12 percent percent received ACT the same day or the day after the onset of the fever, as recommended by the Ministry of Health. There are big differences by level of education and socioeconomic status of the mother. Only 5 percent of children of mothers with no education received ACT the same day or the day after the onset of the fever compared with 30 percent of children whose mothers had secondary or higher education. The percentages among children in the lowest and highest wealth quintiles are 3 percent and 22 percent, respectively.

Small proportions of children received other drugs such as SP/Fansidar, chloroquine, or quinine the same day or the day after the onset of a fever (1 percent, 2 percent and 2 percent, respectively).

Table 4.8 Type and timing of antimalarial drugs for children with fever

Among children under age 5 with fever in the two weeks preceding the survey, percentage who received specific antimalarial drugs and percentage who received each type of drug the same or next day after the onset of the fever, according to background characteristics, Angola 2011

	Percentage of children who received antimalarial drugs					Percentage of children who received the drug the same or next day after the onset of the fever					
Characteristic	SP/ Fansidar	Chloro-quine	Quinine	ACT[1]	Other anti-malarial	SP/ Fansidar	Chloro-quine	Quinine	ACT[1]	Other anti-malarial	Number of children
Age in months											
<12	0.8	1.7	4.9	17.2	4.1	0.6	1.7	2.4	9.2	2.5	534
12-23	1.1	2.5	1.9	23.0	2.2	0.8	2.0	1.2	12.6	0.9	717
24-35	1.2	2.6	1.5	22.3	2.3	0.8	1.5	1.1	12.8	1.5	621
36-47	0.8	2.6	3.8	20.8	1.2	0.5	1.3	2.7	11.3	0.6	390
48-59	0.5	3.7	1.8	25.3	0.7	0.0	2.4	1.1	13.2	0.2	390
Sex											
Male	1.1	2.3	2.9	20.8	2.2	0.7	1.6	1.7	11.7	1.2	1,322
Female	0.8	2.8	2.4	22.5	2.2	0.6	2.0	1.5	12.0	1.3	1,330
Residence											
Urban	1.6	0.8	5.0	35.2	4.6	1.2	0.4	3.6	21.3	2.8	855
Rural	0.6	3.4	1.5	15.2	1.1	0.3	2.4	0.7	7.4	0.5	1,797
Region											
Hyperendemic	0.6	0.1	2.9	12.9	1.6	0.2	0.1	1.8	5.7	0.8	552
Mesoendemic Stable	1.0	5.5	2.7	21.3	1.3	0.7	3.9	1.8	14.1	0.8	1,029
Mesoendemic Unstable	0.2	0.4	1.4	17.4	1.7	0.2	0.4	0.6	7.6	0.6	592
Luanda	2.1	1.5	3.8	37.9	5.7	1.5	0.8	2.5	19.4	3.4	479
Mother's education											
No education	0.4	3.3	1.2	11.6	1.4	0.1	2.3	0.7	5.3	0.6	819
Primary	1.1	2.4	2.6	22.7	2.1	0.7	1.7	1.5	12.1	1.1	1,551
Secondary or higher	1.6	1.0	6.9	45.5	5.1	1.3	0.6	5.1	29.7	3.6	283
Wealth quintile											
Lowest	0.0	9.4	1.0	6.1	1.0	0.0	7.2	0.8	3.1	0.3	378
Second	0.0	4.3	1.8	12.0	1.6	0.0	2.5	0.5	6.4	1.2	367
Middle	1.3	1.5	2.5	15.9	1.2	0.7	1.1	1.2	6.9	0.6	523
Fourth	0.7	0.7	3.2	26.3	4.2	0.6	0.4	2.1	13.9	2.0	760
Highest	2.1	0.6	3.6	36.0	1.9	1.3	0.3	2.7	22.0	1.3	625
Total	0.9	2.5	2.7	21.7	2.2	0.6	1.8	1.6	11.8	1.2	2,652

[1] ACT = Artemisinin-based combination therapy

4.6 Prevalence of Malaria and Anemia among Children Under Age 5

The results presented in this section are based on the reading of thick-film blood smears done at the National Public Health Institute (INSP). At the national level, the result was positive for 10 percent of children tested for malaria. The prevalence increases with age of the child, from 8 percent among children age 6-23 months to 12 percent among children age 36-59. This can be explained by the fact that older children sleep under mosquito nets less frequently than younger children, as noted in section 4.3.1.

The geographic differentials are very large. The prevalence of malaria is much higher in rural areas (14 percent) than in urban areas (1 percent), and it is also much higher in the Hyperendemic region (16 percent) than in Luanda (2 percent). Regarding the socioeconomic level, large differences are observed between the lowest and highest wealth quintiles. The prevalence of malaria is 15 percent and 20 percent in the lowest and second quintiles, respectively, compared with 5 percent and 3 percent in the fourth and highest quintiles. This difference can be explained by the fact that the poorest children usually reside in rural areas where exposure to malaria is higher.

Although malaria is not the only cause of anemia, children infected with malaria have a higher risk of anemia. This is confirmed by the results in Table 4.9, which indicate that the places with a higher malaria prevalence also show a higher proportion of severe anemia cases. Thus, 1.5

percent of children in urban areas showed hemoglobin levels under 8 grams per deciliter (8.0 g/dl) compared with 3.1 percent of children in rural areas. The same table reveals that 4 percent of children in the Hyperendemic region showed hemoglobin levels under 8.0 g/dl, compared with 2 percent of children in Luanda. As expected, anemia is more frequent in the lowest social strata: 5 percent of children in the lowest wealth quintile have severe anemia, compared with 2 percent of children in the highest quintile.

Table 4.9 Prevalencia of malaria and anemia in children

Among children age 6-59 months, percentage positive for malaria using thick-film blood smears, average hemoglobin levels and percentage with hemoglobin levels below 8.0 g/dl, according to socioeconomic and demographic characteristics, Angola 2011

Characteristic	Percentage of cases positive for malaria[1]	Number of children tested	Average level of hemoglobin	Percentage with hemoglobin <8.0 g/dl[1]	Number of children tested
Age in months					
6–11	8.3	414	10.2	5.2	412
12–23	8.0	795	10.5	3.2	794
24–35	10.2	783	11.0	2.1	780
36-47	11.5	724	11.2	2.1	725
48-59	11.8	777	11.3	1.6	774
Sex					
Male	10.6	1,695	10.8	3.3	1,690
Female	9.6	1,798	11.0	2.0	1,794
Residence					
Urban	1.4	1,078	10.8	1.5	1,073
Rural	14.0	2,415	10.9	3.1	2,412
Region					
Hyperendemic	15.8	735	10.9	3.6	739
Mesoendemic Stable	10.6	1,484	10.9	2.5	1,476
Mesoendemic Unstable	9.7	719	11.2	2.6	720
Luanda	1.8	555	10.5	1.6	550
Wealth quintile					
Lowest	15.4	554	10.9	4.6	551
Second	19.5	485	10.8	3.5	479
Middle	14.5	662	10.9	2.6	660
Fourth	5.4	947	10.9	1.8	947
Highest	3.1	846	11.0	1.8	848
Total	10.1	3,493	10.9	2.6	3,485

[1] Testing for malaria and anemia was done in a subsample of 33 percent of households. Only de facto children who were tested are included. The malaria results are based on the reading of thick-film blood smears. The prevalence of anemia is based on the hemoglobin levels, measured as grams per deciliter (g/dl).

EVOLUTION OF MALARIA INDICATORS IN THE PAST FOUR YEARS

5

5.1 INDOOR SPRAYING WITH INSECTICIDE OF RESIDUAL ACTION

Table 5.1 shows the percentage of households that had rooms sprayed in the 12 months preceding the survey based on information from the two surveys. The proportion of households with IRS tripled from 2 percent to 7 percent for the country as a whole, although the change was different at the regional level. The proportion of households sprayed increased tenfold in the Mesoendemic Stable region, from 0.7 percent to 7.2 percent, with no change in the Mesoendemic Unstable region.

Table 5.1 Indoor residual spraying (IRS)

Percentage of households that had rooms sprayed with insecticide of residual action (IRS) during the 12 months preceding the survey, according to residence and region, Angola 2006-07, 2011

	Percentage of households that had rooms sprayed in the last 12 months			
Characteristic	2006-07	Number	2011	Number
Residence				
Urban	3.6	1,301	8.0	3,035
Rural	1.0	1,298	6.4	4,995
Region				
Hyperendemic	1.4	498	7.7	1,794
Mesoendemic Stable	0.7	928	7.2	3,050
Mesoendemic Unstable	10.0	360	10.1	1,369
Luanda	1.3	813	3.6	1,817
Total	2.3	2,599	7.0	8,030

5.2 OWNERSHIP OF LONG-LASTING INSECTICIDE-TREATED MOSQUITO NETS

Overall, the proportion of households with at least one insecticide-treated mosquito net has increased from 28 percent to 35 percent, although the regional trends differ greatly. The possession of ITNs decreased visibly in the Hyperendemic region, from 51 percent to 30 percent, which represents a 41 percent drop. On the other hand, ownership of ITNs increased in the other regions, from 20 percent to 36 percent in the Mesoendemic Stable region, from 23 percent to 37 percent in the Mesoendemic Unstable region, and from 23 percent to 35 percent in Luanda.

Table 5.2 Household ownership of insecticide-treated mosquito nets

Percentage of households with insecticide-treated mosquito nets, either ITNs or LLITNs, according to residence and region, Angola 2006-07, 2011

Characteristic	2006-07 Percentage of households with at least one treated mosquito net	2006-07 Percentage of households with more than one treated mosquito net	2006-07 Number	2011 Percentage of households with at least one treated mosquito net	2011 Percentage of households with more than one treated mosquito net	2011 Number
Residence						
Urban	29.1	12.5	1,301	39.0	16.1	3,035
Rural	25.9	9.3	1,298	31.8	8.6	4,995
Region						
Hyperendemic	51.0	21.4	498	29.9	8.6	1,795
Mesoendemic Stable	20.4	7.3	928	35.5	11.5	3,050
Mesoendemic Unstable	22.6	10.1	360	37.4	11.0	1,369
Luanda	23.4	9.0	813	35.3	14.6	1,816
Total	27.5	10.9	2,599	34.5	11.5	8,030

5.3 USE OF MOSQUITO NETS BY CHILDREN

The proportion of children under age 5 who slept under a mosquito net on the night preceding the survey increased visibly in the country as a whole, with the exception of the Hyperendemic region. In this region, the percentage of children who slept under a mosquito net decreased from 34 percent to 24 percent. On the other hand, in the Mesoendemic Stable region, the proportion of children protected by mosquito nets tripled—increasing from 9 percent in 2006-07 to 27 percent in 2011—while in Luanda the proportion doubled, from 13 percent to 26 percent.

Table 5.2 Household ownership of insecticide-treated mosquito nets

Percentage of children under age 5 who slept the night before the survey under any mosquito net and under an insecticide-treated net, either ITN or LLITN, by residence and region, Angola 2006-07, 2011

Characteristic	2006-07 Percentage who slept under any type of mosquito net	2006-07 Percentage who slept under a treated mosquito net	2006-07 Number	2011 Percentage who slept under any type of mosquito net	2011 Percentage who slept under a treated mosquito net	2011 Number
Sexo						
Male	20.5	18.0	1,372	26.5	25.4	4,187
Female	20.8	17.5	1,368	27.5	26.4	4,326
Residence						
Urban	19.2	16.7	1,287	30.7	28.9	2,811
Rural	22.0	18.7	1,452	25.2	24.4	5,702
Region						
Hyperendemic	36.5	33.8	577	24.8	23.8	1,898
Mesoendemic Stable	17.8	15.6	950	28.1	26.8	3,426
Mesoendemic Unstable	14.6	9.4	456	27.5	26.9	1,626
Luanda	16.0	13.2	756	26.9	25.5	1,562
Total	20.7	17.2	2,739	27.0	25.9	8,512

5.4 USE OF MOSQUITO NETS BY PREGNANT WOMEN

At the national level, the use of mosquito nets by women remained almost constant: 25 percent in 2006-07 and 26 percent in 2011. However, the changes at the regional level were substantial. The proportion of pregnant women who slept under an ITN in the night preceding the survey decreased from 39 percent to 23 percent in the Hyperendemic region while it increased from 12 percent to 25 percent in the Mesoendemic Stable region and from 9 percent to 26 percent in Luanda.

Table 5.4 Use of mosquito nets by pregnant women

Percentage of pregnant women who slept the night before the survey under any mosquito net and an insecticide-treated net, either ITN or LLIT, by residence and region, Angola 2006-07 and 2011

	2006-07			2011		
Characteristic	Percentagew ho slept under any type of mosquito net	Percentage who slept under a treated mosquito net	Number	Percentage who slept under any type of mosquito net	Percentagew ho slept under a treated mosquito net	Number
Residence						
Urban	17.9	14.8	101	29.5	28.1	436
Rural	28.7	26.4	168	24.9	24.5	948
Region						
Hyperendemic	41.8	38.8	62	24.1	23.2	281
Mesoendemic Stable	24.1	23.5	101	27.4	26.8	560
Mesoendemic Unstable	16.5	11.7	52	25.3	25.1	310
Luanda	13.6	9.9	54	27.7	26.2	233
Total	24.6	22.0	269	26.3	25.6	1,384

5.5 USE OF ANTIMALARIAL DRUGS DURING PREGNANCY

The use of intermittent preventive treatment increased considerably during the four years between the two surveys, from 3 percent in 2006-07 to 18 percent in 2011. The increase was sizeable across the country, particularly in the Mesoendemic Unstable region where the proportion of women who received at least two doses of SP/Fansidar (at least one of them during a visit for prenatal care) increased from 1 percent in 2006-07 to 23 percent in 2011. In Luanda, the increase during the period was from 2 percent to 29 percent.

Table 5.5 Prophylactic use of antimalarial drugs and use of intermittent preventive treatment (IPT) during pregnancy

Among women age 15-49 who had a live birth in the two years preceding the survey, percentage who took SP/Fansidar during an ANC visit and percentage who received at least two doses of SP/Fansidar, at least one during a visit for prenatal care (ANC) by residence and region, Angola 2006-07 e 2011

	2006-07			2011		
Characteristic	Percentage who received SP/Fansidar during an ANC visit	Percentage who received at least two doses of SP/Fansidar, at least one during an ANC visit	Number	Percentage who received SP/Fansidar during an ANC visit	Percentage who received at least two doses of SP/Fansidar, at least one during an ANC visit	Number
Residence						
Urban	5.6	3.9	438	47.7	29.9	1,042
Rural	3.0	1.4	543	18.4	11.2	2,052
Region						
Hyperendemic	6.1	5.3	203	15.3	11.1	714
Mesoendemic Stable	2.7	1.9	374	25.1	12.6	1,172
Mesoendemic Unstable	3.7	1.1	162	37.6	23.4	595
Luanda	5.2	2.2	242	40.5	28.7	613
Total	4.2	2.5	981	28.3	17.5	3,094

5.6 PROMPT TREATMENT OF FEVER

In general, the levels of treatment given to children with a fever did not change significantly between 2006-07 and 2011. The percentages of mothers who stated that their children received an antimalarial during the last episode of a fever were 29 percent and 28 percent in 2006-07 and 2011, respectively. However, the percentages of mothers who stated that their children received artemisinin-based combination therapy (ACT) the same day or the day after the fever started increased visibly, from 2 percent in 2006-07 to 12 percent in 2011. The change was especially great in the Mesoendemic Stable region, where in 2006-07 no children had received ACT the same day or the day after the fever started, while 14 percent received that type of treatment in 2011. The change is equally sizeable in Luanda where the proportions rose from 1 percent to 19 percent in the four years of the reference period.

Table 5.6 Prompt treatment of children with a fever

Among children with fever in the two weeks preceding the survey, the percentage who were given anti-malarial drugs, the percentage who received the drugs the same or next day following the onset of a fever, and the percentage who received ACT the same or next day following the onset of the fever, according to residence and region, Angola 2006-07 and 2011

	2006-07				2011			
Characteristic	Percentage who received anti-malarial drugs	Percentage who received anti-malarial drugs the same or the next day the fever started	Percentage who received ACT the same or the next day the fever started	Number	Percentage who received anti-malarial drugs	Percentage who received anti-malarial drugs the same or the next day the fever started	Percentage who received ACT the same or the next day the fever started	Number
Residence								
Urban	38.0	26.9	2.0	231	43.6	27.3	21.3	855
Rural	22.5	11.5	1.0	299	21.0	11.2	7.4	1,797
Region								
Hyperendemic	24.7	17.4	3.6	95	16.7	8.4	5.7	552
Mesoendemic Stable	21.0	11.7	0.0	205	30.4	20.5	14.1	1,029
Mesoendemic Unstable	27.3	13.0	2.5	89	20.1	9.1	7.6	593
Luanda	45.6	31.6	1.4	141	47.3	25.6	19.4	479
Total	29.3	18.2	1.5	530	28.3	16.4	11.8	2,652

ACT = Artemisinin-based combination therapy

5.7 PREVALENCE OF MALARIA AMONG CHILDREN UNDER AGE 5

As previously explained in section 1.6.4, children age 6-59 months were tested using rapid diagnostic tests (RDTs) in the field to determine if they were infected with malaria. The same procedure was used in 2006-07, but the RDTs used in the two surveys were different. The RDT used in the 2006-07 AMIS was *Paracheck Pf®* and the one used in the 2011 AMIS was *SD Bioline Malaria Ag P.f./P.v®*. Several studies have demonstrated that the sensitivity of *Paracheck Pf* is over 90 percent (Proux et al. 2001; Nguisse et al. 2008). The sensitivity estimated for *SD Bioline Malaria Ag P.f./P.v*, according to information provided by SD Bio Standard Diagnostics India, is 99.7 percent for *P. falciparum* and 95.5 percent for other parasites The high sensitivity of the two products makes the estimates of prevalence in the two surveys reliable. In this section of the report, the results based on the RDTs are used, given that the estimates of prevalence from the 2006-07 survey are based entirely on use of RDTs, and it is necessary to compare data based on comparable methodologies. It is important to emphasize that the rapid diagnostic tests usually identify a larger number of positive cases compared with the microscopic reading because RDTs can detect antigens of the parasite in individuals who are not infected any more. This explains the differences in the percentages of positive cases presented in Table 4.9 and Table 5.7.

At the national level, the prevalence of malaria in children decreased from 21 percent to 13 percent between the two surveys, which represents a reduction of almost 40 percent. This reduction is not uniform when comparing the regions. In the Hyperendemic region, the prevalence decreased from 31 percent to 23 percent. On the other hand, in Luanda, which in 2006-07 already had the lowest prevalence in the country, the prevalence decreased from 6 percent to 2 percent, which means that the current prevalence is one-third the level it was four years ago. In the Mesoendemic Unstable region, the prevalence of parasitemia decreased by more than half, from 21 percent to 8 percent between 2006-07 and 2011.

A downward trend is also observed in the prevalence of severe anemia. The percentage of children suffering from severe anemia decreased from 4 percent to 3 percent for the country as a whole, and the prevalence of severe anemia declined in all regions except in the Hyperendemic region. In this region, the prevalence increased from 3 percent to 4 percent.

Table 5.7 Prevalence of malaria and anemia in children

Percentage of positive cases for malaria based on rapid diagnostic tests (RDT)[1] and percentage with hemoglobin levels below 8.0 g/dl, among children age 6-59 months, according to residence and region, Angola 2006-07 and 2011

	2006-07			2011		
Characteristic	Percentage of positive cases for malaria[2]	Percentage of children with severe anemia (<8gm/dL)	Number	Percentage of positive cases for malaria	Percentage of children with severe anemia (<8gm/dL)	Number
Residence						
Urban	7.8	2.5	1,099	1.7	1.6	1,079
Rural	32.7	4.6	1,248	18.7	3.0	2,419
Region						
Hyperendemic	30.6	2.6	487	24.7	3.5	736
Mesoendemic Stable	26.4	4.1	861	14.6	2.4	1,487
Mesoendemic Unstable	21.1	4.9	375	8.6	2.6	720
Luanda	6.2	3.1	624	1.8	1.8	555
Total	21.1	3.6	2,347	13.5	2.6	3,498

[1] The RDT used in 2006-07 was *Paracheck* e and the RDT used in 2011 was *SD Bioline Malaria Ag P.f/P.v*
[2] These percentages are different from the ones published in the report for the 2006-07 AMIS (Cosep, Consaúde and Macro International, 2007, Table 4.10)

INFANT AND CHILD MORTALITY 6

6.1 INTRODUCTION

Infant and child mortality rates are considered good indicators of health status and socioeconomic development because they correlate intrinsincally with the demographic, economic, cultural, environmental, and health conditions of a country. In this context, knowledge of infant and child mortality is indispensable in decision-making for the implementation of policies and programs in the health area. Likewise, analyzing how rates have evolved in the last few years helps us draw conclusions about improvements in the control of infectious diseases that are responsible for the majority of deaths among Angolan children.

This chapter presents a brief analysis of the levels, trends, and differentials in infant and child mortality. The information can be used as a guide to identify the population sectors exposed to high mortality risks. An analysis of trends in mortality levels over the last five-year period is also presented.

6.2 METHODOLOGY

The analysis of levels and trends in infant and child mortality presented here is based on complete birth histories for women age 15-49 interviewed in the 2011 AMIS. Each woman was asked about the number of children she had ever had, i.e., the number of children living with her, the number living elsewhere, and the number who have died. In addition, women were asked the details of all of their births, including information on the birth date, age and sex; if it was a single or multiple birth; survival status of each birth; and current age for each live birth. For deceased children, the age at death was asked. The information collected allows the calculation of the following indicators for given periods:

- *Neonatal mortality (NN):* the probability of dying within the first month of life or between 0 and 30 days;
- *Post-neonatal mortality (PNN):* the probability of dying after the first month of life but before the first anniversary, or between 1 and 11 months;
- *Infant mortality* (${}_1q_0$)*:* the probability of dying during the first year of life, or between 0 and 11 months;
- *Child mortality* (${}_4q_1$)*:* the probability of dying between the first and fifth birthday, or between 12 and 59 months;
- *Under-5 mortality* (${}_5q_0$)*:* the probability of dying before the fifth birthday, or between 0 and 59 months.

6.3 DATA QUALITY

The quality of the calculation of mortality rates depends on the precision in the collection of the data. Information based on birth histories can have different types of errors that can create problems during analysis. The first problem related to the data is the fact that the information is only provided by surviving women, meaning that there is no information on children whose mothers have died. If the mortality of children whose mothers are dead were different from the rest of children and if it represented a sizeable proportion of deaths, then mortality rates calculated using this information could be affected by omission.

Another problem that can affect the mortality estimates has to do with errors in the declaration of events, mainly regarding the birth date, age at which a death occurred, and the complete listing of deceased children. In this context, the omission of births and deaths directly affects the mortality estimates. Therefore, the wrong declaration of dates at which deaths occurred will affect the monitoring of mortality trends, and the wrong declaration of age at death will affect the mortality patterns.

In similar surveys, a pattern has been observed in which mothers round the age at death of the child to one year, although the child did not die at exactly 12 months of age but in the months close to that age. Rounding up to the 12th month tends to produce a concentration of deaths at age 12 that can result in an underestimation of infant mortality ($_1q_0$) and an overestimation of child mortality ($_4q_1$) if some of the deaths reported ocurring at "1 year" actually ocurred between 9 and 11 months. These problems are inherent to the calculation of infant and child mortality from birth histories, although some authors have shown that the probability of introducing serious errors with this methodology is insignificant, particularly when it has to do with recent events (Sullivan et al., 1990).

Since data collection took place between January 2011 and May 2011, the mortality rates were calculated for five-year periods corresponding to calendar years 1996-2001, 2001-2006, and 2006-2011, based on the complete birth histories of women interviewed.

6.4 MORTALITY LEVELS AND TRENDS

Table 6.1 presents neonatal, post-neonatl, infant, child and under-5 mortality rates for the three five-year periods preceding the survey, which allows to see the trends retrospectively over the last 15 years. Between the periods 1996-2001 and 2001-2006, infant and under-5 mortality have remained the same. The infant mortality rate for these periods was 65‰ and 67‰, respectively; and the under-five mortality rates were 117 percent and 118 percent. However, a reduction in the mortality levels is observed in the last five years. Infant mortality declined from 67percent in the period 2001–2006 to 50 percent in the period 2006-2011. Between these two periods, under-5 mortality declined from 118 percent to 91percent, respectively, which represents reduction of 23 percent.

Because malaria is one of the main causes of death in children, the reduction in mortality can be attributed to actions in the control, diagnosis, and treatment of malaria, jointly with stabilization as a result of the end of the war and the improvement in the nutritional status of the population.

Table 6.1 Early childhood mortality rates

Neonatal, postneonatal, infant, child and under-five mortality rates for five-year periods preceding the survey, Angola 2011

Years preceding the survey	Calendar years	Neonatal mortality (NN)	Post-neonatal mortality[1] (PNN)	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
0-4	2006-2011	23	26	50	43	91
5-9	2001-2006	32	34	67	55	118
10-14	1996-2001	29	37	65	56	117

[1] Computed as the difference between the infant and neonatal mortality rates

6.5 MORTALITY DIFFERENTIALS

For the analysis of mortality differentials, it is necessary to increase the reference period to ten years before the survey (2001-2011) given that the sample size can be insufficient to provide reliable estimates for a five-year period when the sample is broken down by some of the characteristics under study. The results by socioeconomic characteristics are presented in Table 6.2, and the results by demographic characteristics are presented in Table 6.3.

Mortality rates are related to the level of socioeconomic development. Thus, mortality rates in rural areas are higher than in urban areas. Infant mortality is 52 deaths per 1,000 births in urban areas and 59 deaths per 1,000 births in rural areas. Child mortality in these areas is 81 and 113, respectively.

The lowest mortality rates are observed in Luanda, where the socioeconomic and nutritional conditions and the availability of health services are more developed. Besides, as already shown in Table 4.9, the prevalence of malaria and anemia are significantly lower in Luanda than in the other regions in the country.

Table 6.2 Early childhood mortality rates by socioeconomic characteristics

Neonatal, postneonatal, infant, child and under-five mortality rates for the ten-year period preceding the survey, by socioeconomic characteristics, Angola 2011

Characteristic	Neonatal mortality (NN)	Post-neonatal mortality[1] (PNN)	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
Residence					
Urban	25	27	52	31	81
Rural	28	31	59	57	113
Region					
Hyperendemic	28	31	59	32	88
Mesoendemic Stable	26	31	58	65	119
Mesoendemic Unstable	27	33	60	54	111
Luanda	28	22	50	27	76
Education					
No education	30	32	62	56	115
Primary	27	31	57	48	102
Secondary or higher	23	21	44	22	65
Wealth quintile					
Lowest	26	27	53	58	107
Second	30	30	60	54	111
Middle	21	39	61	63	120
Fourth	31	31	61	43	102
Highest	26	23	50	35	83
Total	27	30	57	48	102

[1] Computed as the difference between the infant and neonatal mortality rates

Although a clear relationship is not observed, the data show a trend in the reduction of mortality with increasing socioeconomic status of children. Under-5 mortality for the lowest, second, and middle wealth quintile is between 107 percent and 120 percent compared with 83 percent for the highest quintile. Mother's education is closely related to the probability of dying. Under-5 mortality is 115 among children whose mothers have no education, compared with 65 percent among children whose mothers have secondary or higher education.

Table 6.3 Early childhood mortality rates by demographic characteristics

Neonatal, postneonatal, infant, child and under-five mortality rates for the ten-year period preceding the survey, by demographic characteristics, Angola 2011

Characteristic	Neonatal mortality (NN)	Post-neonatal mortality[1] (PNN)	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
Sex of child					
Male	30	30	60	53	111
Female	24	29	53	42	93
Mother's age at birth					
<20	27	36	63	43	103
20–29	24	29	53	50	100
30–39	30	23	53	46	97
40–49	61	35	96	70	159
Birth order					
1	23	35	58	38	94
2-3	24	26	50	43	91
4-6	27	29	56	58	111
7+	48	35	83	64	142
Previous birth interval[2]					
<2 years	40	47	87	67	147
2 years	22	23	45	47	89
3 years	32	22	55	60	112
4+ years	19	19	38	29	66
Total	27	30	57	48	102

[1] Computed as the difference between the infant and neonatal mortality rates
[2] Excludes first-order births

As expected, male children have a higher probability of dying in infancy than female children. Sixty male children per thousand births die before reaching their first anniversary, compared with 53 per thousand for females. The under-5 mortality rates are 111 and 93 deaths per 1,000 births, respectively. The results confirm the importance of limiting the number of children and spacing births. The under-5 mortality for births of order 3 or lower is under 95 compared with a rate of 142 among children of order 7 or higher. The probability of dying before reaching the fifth anniversary is twice as high among children born within two years of the previous birth, compared with children born with an interval of four years or more, i.e., the mortality of the first group is 147 deaths per 1,000 births compared with 66 deaths per 1,000 births for the second group.

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SAMPLE DESIGN AND IMPLEMENTATION *Appendix* A

A.1 INTRODUCTION

Angola is one of the countries selected by the President's Malaria Initiative (PMI) for immediate intervention. A decision was made to implement a national survey to obtain estimates of the levels of malaria prevalence as well as baseline figures for some of the Roll Back Malaria (RBM) indicators. Survey results will provide much-needed data regarding bednet coverage and use practices, treatment of fever in children, and prevalence of malaria and anemia among children age 6-59 months. The purpose of this document is to provide recommendations for the sample design of the 2011 AMIS and for the corresponding selection procedures prior to its implementation.

A.2 OBJECTIVES OF THE SAMPLING DESIGN

(1) The 2011 AMIS survey was designed to determine reliable malaria prevalence estimates among children under age 5 at the various domains of interest (when feasible) and mortality estimates for children under age 5.

(2) The major domains to be distinguished in the tabulation of key indicators are

- Angola at the national level
- The majority of indicators for each of the four domains defined for Angola and classified as the following regions:
  1) Hyperendemic region, high malaria prevalence
  2) Mesoendemic Stable region, medium malaria prevalence
  3) Mesoendemic Unstable region, medium malaria prevalence, though prevalence is affected by the amount of rain
  4) Luanda province

- Urban and rural areas of Angola (each as a separate domain)
- Any contiguous group of provinces with an adequate sample size of at least 1,500 households

(3) The primary objective of the 2011 AMIS is to provide estimates with acceptable precision for important population indicators associated with each domain, such as

a. Ownership and use of mosquito bednets.
b. Practices to treat malaria among children under age 5 and the use of specific antimalarial drugs
c. Prevalence of malaria and anemia among children age 6-59 months
d. Knowledge, attitudes, and practices regarding malaria in the general population

A.3 SAMPLE FRAME

Administratively, Angola is divided into 18 provinces, which can be grouped into eight sub-regions depending on how they share some common factors.[2] In turn, each province is subdivided into municipalities (164 in total), and each municipality is divided into communes (532 in total). Each

[2] In commercial maps these sub-regions are known as: Luanda-Bengo, Cabinda, Northwest (Zaire, Uige, and Kwanza N), Northeast (Malange, Lunda N, and Lunda S), Central Litoral (Benguela and Kwanza S), Central High Plains (Huambo and Bié), Southwest (Huila, Namibe, and Kunene), and East/Southeast (Moxico and Kuando Kubango).

commune is classified as either urban or rural. In addition to these administrative units, in preparation for the last population census, each urban commune was subdivided into segments named census sections (CSs) that were equivalent to enumeration areas. The National Statistical Institute (INE) had been preparing cartographic materials, including a count of rooms and dwellings, for each CS in the urban areas. This material became an appropriate sampling frame for the 2011 AMIS. However, INE does not have updated cartographic material for the rural areas. To compensate for this lack, INE uses its regional offices to collect a list of villages, with estimated populations in each village, for most of the rural communes,. To develop the sample frame for the 2011 AMIS, the list of CSs was used for the urban communes and the list of villages was used for the rural communes.

A.4 STRATIFICATION

The communes were grouped by major region, by rural or urban location, by sub-region, and by province as a way to identify homogeneous sampling units. In addition, within each urban commune, several CSs were grouped, taking advantage of the existing neighborhoods (sub-districts) for stratification of the sample.

A.5 SAMPLE SIZE

The following table includes different scenarios used to select a sample size in a population-based survey. In the absence of domains, the numbers are valid for the entire population; however, if analyses are expected for more than one domain, then the numbers should be interpreted as required for each domain.

Table A.1 Sample size by prevalence/indicator value and relative error

Relative error	Prevalence/indicator level (p) at the level of domain								
	45%	40%	35%	30%	25%	20%	15%	10%	5%
5.0%	1,956	2,400	2,971	3,733	4,800	6,400	9,067	14,400	30,400
7.5%	869	1,067	1,321	1,659	2,133	2,844	4,030	6,400	13,511
10%	489	600	743	933	1,200	1,600	2,267	3,600	7,600
15%	217	267	330	415	533	711	1,007	1,600	3,378
20%	122	150	186	233	300	400	567	900	1,900
25%	78	96	119	149	192	256	363	576	1,216
30%	54	67	83	104	133	178	252	400	844
35%	40	49	61	76	98	131	185	294	620

Note: Sample size calculated from formula RE = 100*DEFT*sqrt { (1-p)/(np) } by prevalence value p (in %) and relative error with DEFT = 2

A.6 SAMPLE SIZES FOR DIFFERENT LEVELS OF PREVALENCE AND PRECISION

Table A.1 presents different sample size requirements based on various percentages of expected coverage or prevalence rates for any indicator and on alternative desired relative errors (REs). The assumption throughout is that the value of the design effect (DEFT) is a typical 2.0. A smaller design effect will produce lower figures and, conversely, a larger design effect will render larger figures.

The table describes the minimum sample sizes that are needed to measure variables with a certain prevalence and a desired level of relative error. For example, an indicator with an estimated prevalence of 30 percent, to be measured with a relative error of 15 percent, requires a minimum sample size of 415 cases. Similarly, an indicator with an estimated prevalence of 10 percent and a desired relative error of 15 percent requires a sample of 1,600 cases. Minimum sample sizes can be read directly from the table by finding the points where the prevalence and the desired level of precision intersect.

A.7 DECISIONS ON SAMPLE SIZE

If the malaria parasite prevalence in children under 5 is 30 percent and the desired relative error is 15 percent, it can be seen in Table A.1 that a minimum sample of 415 children under age 5 is required. The actual number of children under age 5 in a sample of 1,000 selected households is 850, so this is a sample size big enough to measure parasite prevalence in children under 5 in a sample of 1,000 selected households for each domain.

If the prevalence of children under age 5 sleeping under an ITN is 15 percent and the desired relative error is 15 percent, it can be seen in Table A.1 that a minimum sample of 1,007 children under age 5 is required (per domain). This means a sample of about 1,200 households should be selected for each domain.

If the infant mortality rate is 100 per thousand births, similar to what the rate is in Mozambique, and a relative error of 15 percent is desired for the indicator, the minimum required number of births is 1,600. In the Mozambique 2003 DHS, for the infant mortality rate in the past five years preceding the survey, a total of 10,326 births were observed in a sample of 12,418 women age 15-49. Extrapolating these conditions, for the estimated 1,600 births for Angola, about 2,000 women age 15-49 will be necessary. After taking into consideration a response rate of 0.9, the required sample size is about 2,200 per domain.

A.8 OTHER CONSIDERATIONS

The number of births in the five years preceding the survey, children under age 5, and pregnant women are the effective denominators for the calculation of the relevant sampling errors described previously. If any of these denominators are further divided into sub-groups, such as urban-rural, then a sample twice the minimum size will be needed because, in effect, two domains have been created: urban and rural. If information is desired for more than one domain, the minimum total sample is the minimum sample size needed from Table A.1 multiplied by the number of domains. Thus for four domains and for the previous example on infant mortality, the minimum sample size of women age 15-49 would be 4 x 2,200 = 8,800 women age 15-49 to be selected. Thus, the total sample size is strongly affected by the number of domains of study to be used in the analysis.

A.9 THE 2011 AMIS

The 2001 AMIS covered four domains: the three epidemiologic areas determined by the level of malaria prevalence and Luanda province. The four domains were covered through a selected sample of 8,800 households and their members, with a subsample of 2,200 selected in each domain under equal sampling procedures.

In each of these domains, malaria prevalence in children—estimated at 30 percent—can be measured without difficulty, because only a minimum of 415 children are needed for this measurement, as shown in Table A.1, and a sample of 750 households per domain renders 638 children.

However, the estimated proportion of children under age 5 sleeping under a mosquito net and estimated at 15 percent can be measured with a relative error of 15 percent from an initial sample of 2,200 households per domain, because 1,007 children are needed for that according to Table A.1 and a sample of 2,200 selected households will render more than the required minimum number of children under 5.

Thus, an initial sample of 3,000 selected households will allow precise estimation at the level of each of the four domains for parasite prevalence in children under age 5 with a relative error of 15 percent or more. For children under age 5 sleeping under mosquito nets, the sample for each domain will only allow estimation at a relative error level of 20 percent, and for the estimation of anemia in pregnant women, the estimates at the domain level will have a relative error much greater than 20 percent.

For all the reasons explained here, the desired overall sample size should be at least 2,200 selected households in each of the four domains.

A.10 SAMPLE ALLOCATION

The clusters for the implementation of the 2011 AMIS are defined on the basis of census sections (CSs) for urban communes and on the basis of villages for rural communes. The 240 clusters considered for the 2011 AMIS were equally allocated at 60 clusters in each domain. The target for the 2011 AMIS was to select about 8,800 households. Therefore, the sample take is on average 36 selected households per cluster (i.e., 8,800/240). Clusters are distributed as 96 in the urban areas and 144 in the rural areas. The following tables show the distribution of selected clusters by urban and rural areas in each major region (Table A.2) and each province (Table A.3).

Under the final sample allocation, it is expected that each of the four major malaria regions in Angola will provide a minimum of about 2,200 completed women interviews, 2,100 children under age 5, and 2,000 births in the last five years. Neither the distribution of the 240 clusters among major regions nor the distribution of households in the sample is proportional to the estimated population distribution. This is due to the disproportional number of CSs among major regions. As a result, the sample for the 2011 AMIS is not a self-weighted household sample. Therefore, the 2011 AMIS sample is unbalanced for residence areas and regions and will require the design of a final weighting adjustment procedure to provide representative estimates for all the study domains.

Table A.2 Distribution of number of clusters selected, according to endemic malaria region, by residence, Angola 2011

Main region	Urban	Rural	Total
Hyperendemic	10	50	60
Mesoendemic Stable	12	48	60
Mesoendemic Unstable	14	46	60
Luanda	60	0	60
Total	96	144	240

Table A.3 Distribution of clusters according to province, by residence, Angola 2011

Province	Urban	Rural	Total
Bengo	2	4	6
Benguela	6	8	14
Bie	0	10	10
Cabinda	2	2	4
Cunene	2	8	10
Huambo	2	14	16
Huila	8	16	24
Kuando Kubango	0	10	10
Kwanza North	2	6	8
Kwanza South	2	8	10
Lunda South	0	6	6
Luanda	60	0	60
Lunda North	0	8	8
Malange	2	14	16
Moxico	0	8	8
Namibe	4	4	8
Uige	4	14	18
Zaire	0	4	4
Total	96	144	240

A.11 SAMPLE SELECTION

The sample for the 2011 AMIS was selected using a stratified three-stage cluster design consisting of 240 clusters, with 96 in urban areas and 144 in rural areas. In each urban or rural area in a given region, clusters are selected systematically with probability proportional to size. The selection is done using the following formulas at different stages.

In the first stage, after communes were stratified by urban-rural category and by province, the selection of communes was done with probability proportional to size (estimated population) within each major region using the following formula:

$$P_{1i} = (60 * m_i / \Sigma\, m_i)$$

where:

60:	number of clusters to be selected in a given region
m_i:	measure of size of i^{th} commune according to estimated population
Σm_i:	estimated size for the total major regions

In the second stage, after the selected commune has been identified as urban or rural, then clusters (based on census sections in urban communes and villages in rural ones) were selected with probability proportional to size using the following formula

$$P_{2ji} = (a_i * m_{ji} / \Sigma_j m_{ji})$$

where:

a_i:	number of CSs (or villages) to be selected in the i^{th} commune in a given residence area and province
m_{ji}:	measure of size of the j^{th} CS (or village), within the i^{th} commune, according to the estimated population in the sample frame
$\Sigma_j\, m_{ji}$:	measure of size for the entire commune in the given residence area and province in the sample frame

Before the third stage of household selection was carried out, a household listing operation was done in each selected cluster; subsequently, households were selected to achieve a fixed sample take per cluster.

Then, the final selection of households in a given cluster and given commune was done as follows: if "c" is the fixed number of households to be selected out of the total number of households (L_{ji})—found in the listing process—for the ji^{th} cluster, then the household probability in the selected cluster can be expressed as follows:

$$P_{3ji} = (c / L_{ji})$$

The household overall probability of selection in the ji^{th} cluster can be calculated as follows:

$$f_{ji} = P_{1i} * P_{2ji} * P_{3ji}$$

and the sampling design weight for the ji^{th} cluster is given as:

$$1/f_{ji} = 1 / (P_{1i} * P_{2ji} * P_{3ji}).$$

Table A.4 Sample implementation

Percent distribution of households and eligible women by result of the interviews, and response rates for households and women, according to residence and region, Angola 2011

	Residence		Region				
Result	Urban	Rural	Hyper-endemic	Meso-endemic Stable	Meso-endemic Unstable	Luanda	Total
Selected households							
Complete (C)	92.7	90.2	89.4	90.0	92.9	92.5	91.2
Household present but no competent respondent at home (HP)	0.3	0.1	0.0	0.3	0.4	0.0	0.2
Refused (R)	2.0	0.2	0.2	0.4	0.1	2.9	0.9
Dwelling not found (DNF)	0.8	6.5	8.0	4.3	4.2	0.2	4.2
Household absent (HA)	1.2	1.0	0.9	1.2	1.1	1.1	1.1
Dwelling vacant/address not a dwelling (DV)	2.3	1.2	0.4	2.7	0.8	2.7	1.7
Dwelling destroyed (DD)	0.3	0.5	0.5	0.9	0.2	0.1	0.4
Other (O)	0.4	0.4	0.6	0.3	0.2	0.5	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of sampled households	3,552	5,254	2,220	2,220	2,146	2,220	8,806
Household response rate (HRR)	96.8	93.0	91.6	94.8	95.1	96.7	94.5
Eligible women							
Completed (EWC)	97.2	99.2	99.3	98.5	99.2	96.2	98.2
Not at home (EWNH)	0.4	0.1	0.2	0.2	0.0	0.6	0.3
Refused (WR)	1.9	0.1	0.3	0.3	0.1	2.6	1.0
Partially completed (EWPC)	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Incapacitated (EWI)	0.4	0.5	0.2	0.7	0.4	0.4	0.4
Other (EWO)	0.1	0.1	0.0	0.1	0.2	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of women	4,156	4,590	1,878	2,065	2,227	2,576	8,746
Eligible women response rate (EWRR)	97.2	99.2	99.3	98.5	99.2	96.2	98.2
Overall women response rate (OWRR)	94.1	92.2	91.0	93.5	94.4	93.1	92.9

[1] The household response rate (HHR) is calculated as follows:

$$\frac{100 * C}{C + HP + R + DNF}$$

[2] The eligible women response rate (EWRR) is equivalent to the percentage of interviews completed (EWC)
[3] The overall women response rate (OWRR) is calculated as: OWRR = HRR * EWRR / 100

ESTIMATES OF SAMPLING ERRORS *Appendix* B

The estimates from a sample survey are affected by two types of errors: sampling and non-sampling errors. Non-sampling errors occur during implementation of data collection and data processing, and include failures on the coverage of households selected, errors in the formulation of questions or the registration of the responses by the interviewer, misunderstanding of questions on the part of the respondent, and coding and data processing errors. Sampling errors, on the other hand, can be evaluated statistically. Although numerous efforts were made during the implementation of the 2011 AMIS to minimize non-sampling errors, they are impossible to avoid and difficult to evaluate statistically.

The sample of respondents selected in the 2011 AMIS is only one of many samples that could have been selected from the same population, using the same sample design and expected size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. The variability that would be observed between all possible samples constitutes the sampling error. Although the degree of variability is not known exactly, it can be estimated from the sample actually selected.

A sampling error is usually measured in terms of the standard error (SE). The standard error for a mean, percentage, difference, or any other statistic calculated from the data in the sample can be defined as the square root of the variance, which is a measure of the variation in all possible samples. For example, for any given statistic calculated from the sample, the value of that statistic will fall within a range of plus or minus two times the standard error of that statistic in 95 percent of all possible samples of identical size and design.

If the sample of households had been selected as a simple random sample, it would have been possible to use straightforward formulas for calculating sampling errors and the limits for the confidence intervals. However, as has been mentioned, the 2011 AMIS sample is the result of a complex, multi-stage stratified design, and, consequently, it was necessary to use more complex formulas that take the effects of stratification and clustering into consideration. It was possible to calculate the sampling errors for the 2011 AMIS using a computer program known as Module for Sampling Errors, included in the computer package ISSA (Integrated System for Survey Analysis). This program processes percentages or medians as a ratio estimate $r = y/x$ where both the numerator y and the denominator x are random variables. The variance for r is calculated using the Taylor linearization method of variance estimation using the formula given below, with the standard error being the square root of the variance:

$$SE^2(r) = var(r) = \frac{1-f}{x^2} \sum_{h=1}^{H} \left[\frac{m_h}{m_{h-1}} \left(\sum_{i=1}^{m_h} z_{hi}^2 - \frac{z_h^2}{m_h} \right) \right]$$

in which $z_{hi} = y_{hi} - rx_{hi}$, and $z_h = y_h - rx_h$

where h represents the stratum which varies from *1* to *H*,
- m_h is the total number of clusters selected in the h^{th} stratum,
- y_{hi} is the sum of the weighted values of the variable y in the i^{th} cluster in the h^{th} stratum,
- x_{hi} is the sum of the weighted number of cases in the i^{th} cluster in the h^{th} stratum, and
- f represents the overall sampling fraction, which is so small that it is ignored.

In addition to the standard error, the design effect (DEFT) for each estimate is also calculated. The design effect is defined as the ratio between the standard error (SE) using the given sample design and the standard error that would result if a simple random sample (SEsrs) had been used.

$$DEFT = SE / SEsrs$$

A DEFT value 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. Relative errors and confidence limits for the estimates are also computed.

Sampling errors for the 2011 AMIS are calculated for selected variables considered to be of primary interest. The results are presented in this appendix for the country as a whole, for urban and rural areas, and for each endemic region. For each variable, the tables present the value of the statistic (R), its standard error (SE), the number of unweighted (N) and weighted (WN) cases, the design effect (DEFT), the relative standard error (SE/R), and the 95 percent confidence limits, i.e., the values R+2SE and R-2SE. The DEFT is considered undefined when the standard error for a simple random sample is zero (when the estimate is close to 0 or 1).

The confidence interval (for example, the one calculated for the variable "households with at least one ITN") can be interpreted the following way: the overall proportion from the national sample is 0.345 and the standard error is 0.014. To obtain the 95 percent confidence limits, one adds and subtracts twice the standard error to the sample estimate, i.e., $0.345 \pm 2 \times 0.014$. There is a high probability (95 percent) that the true average proportion of households with at least one ITN lies between 0.318 and 0.373.

For the total sample, the value of the design effect (DEFT), averaged over all variables, is 1.95**.** This means that, due to multi-stage clustering of the sample, the average standard error is increased by a factor of 1.95 over the value observed for a corresponding simple random sample. The actual precision differs from the precision expected during the design of the sample due to several factors: the final size of the sample versus the sample selected; the actual size of DEFT versus the expected; and the actual value of the estimate versus the expected estimate. In addition, the actual precision is different from the expected precision, separately, for each indicator.

Table B.1 List of variables selected for the calculation of sampling errors, Angola 2011

Variable	Estimate	Base population
Households with at least one mosquito net of any type	Proportion	All households
Mosquito nets per household	Mean	All households
Households with at least one ever-treated mosquito net	Proportion	All households
Ever-treated mosquito nets per household	Mean	All households
Households with at least one insecticide-treated net (ITN)	Proportion	All households
Insecticide-treated net (ITN) per household	Mean	All households
Children who slept under any net last night	Proportion	All children under 5
Children who slept under treated net last night	Proportion	All children under 5
Children who slept under an ITN last night	Proportion	All children under 5
Pregnant women who slept under any net last night	Proportion	All pregnant women age 15-49
Pregnant women who slept under treated net last night	Proportion	All pregnant women age 15-49
Pregnant women who slept under an ITN last night	Proportion	All pregnant women age 15-49
Pregnant women who took any antimalarials	Proportion	All women age 15-49
Pregnant women who took any SP/Fansidar during ANC visit	Proportion	All women age 15-49
Children with fever in the two weeks preceding the survey	Proportion	All children under 5
Children with a fever who received antimalarials	Proportion	All children under 5
Neonatal mortality	Rate	Births in 5 and 10 years preceding the survey
Postneonatal mortality	Rate	Births in 5 and 10 years preceding the survey
Infant mortality ($_1q_0$)	Rate	Births in 5 and 10 years preceding the survey
Child mortality ($_4q_1$)	Rate	Births in 5 and 10 years preceding the survey
Under-5 mortality ($_5q_0$)	Rate	Births in 5 and 10 years preceding the survey
Children who tested positive for malaria	Proportion	Children age 6-59 months

Table B.2 Estimates of sampling errors for the total sample, Angola 2011

Variable	Value (V)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: R-2SE	Confidence intervals: R+2SE
Households with at least one mosquito net of any type	0.365	0.015	8,030	8,030	2.713	0.040	0.336	0.394
Number of mosquito nets per household	0.521	0.023	8,030	8,030	2.574	0.044	0.475	0.567
Households with at least one ever-treated mosquito net	0.350	0.014	8,030	8,030	2.602	0.040	0.322	0.378
Number of ever-treated mosquito nets per household	0.499	0.022	8,030	8,030	2.471	0.043	0.455	0.542
Households with at least one insecticide treated net (ITN)	0.345	0.014	8,030	8,030	2.598	0.040	0.318	0.373
Insecticide-treated net (ITN) per household	0.491	0.022	8,030	8,030	2.474	0.044	0.447	0.534
Children who slept under any net last night	0.270	0.013	8,414	8,512	2.122	0.047	0.245	0.296
Children who slept under treated net last night	0.263	0.012	8,414	8,512	2.092	0.047	0.238	0.287
Children who slept under an ITN last night	0.259	0.012	8,414	8,512	2.093	0.047	0.235	0.284
Pregnant women who slept under any net last night	0.263	0.018	1,390	1,385	1.519	0.069	0.227	0.300
Pregnant women who slept under treated net last night	0.257	0.018	1,390	1,385	1.522	0.070	0.221	0.293
Pregnant women who slept under an ITN last night	0.256	0.018	1,390	1,385	1.519	0.070	0.220	0.292
Pregnant women who took any antimalarials	0.358	0.020	3,118	3,094	2.372	0.057	0.317	0.399
Pregnant women who took any SP/Fansidar during ANC visit	0.283	0.019	3,118	3,094	2.302	0.066	0.246	0.320
Children with a fever in the two weeks preceding the survey	0.341	0.011	7,714	7,782	1.992	0.032	0.319	0.363
Children with fever who received antimalarials	0.283	0.018	2,645	2,652	1.964	0.064	0.247	0.319
Neonatal mortality	27.045	1.937	14,051	14,178	1.212	0.072	23.171	30.920
Postneonatal mortality	29.740	1.835	14,066	14,194	1.207	0.062	26.070	33.409
Infant mortality ($_1q_0$)	56.785	2.680	14,068	14,196	1.202	0.047	51.425	62.145
Child mortality ($_4q_1$)	47.850	3.373	14,147	14,289	1.447	0.070	41.104	54.596
Under-5 mortality ($_5q_0$)	101.918	4.654	14,166	14,309	1.429	0.046	92.610	111.225
Children who tested positive for malaria	0.101	0.015	3,424	3,494	2.935	0.150	0.071	0.131

Table B.3 Estimates of sampling errors for the Hypendemic region sample, Angola 2011

Variable	Value (V)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: R-2SE	Confidence intervals: R+2SE
Households with at least one mosquito net of any type	0.315	0.026	1,984	1,794	2.449	0.081	0.264	0.366
Number of mosquito nets per household	0.435	0.045	1,984	1,794	2.671	0.103	0.345	0.524
Households with at least one ever-treated mosquito net	0.307	0.025	1,984	1,794	2.402	0.081	0.257	0.357
Number of ever-treated mosquito nets per household	0.424	0.044	1,984	1,794	2.627	0.103	0.336	0.511
Households with at least one insecticide treated net (ITN)	0.299	0.024	1,984	1,794	2.358	0.081	0.251	0.348
Insecticide-treated net (ITN) per household	0.412	0.042	1,984	1,794	2.572	0.103	0.327	0.497
Children who slept under any net last night	0.248	0.021	2,106	1,898	1.804	0.087	0.205	0.291
Children who slept under treated net last night	0.245	0.021	2,106	1,898	1.789	0.087	0.203	0.288
Children who slept under an ITN last night	0.238	0.021	2,106	1,898	1.754	0.087	0.197	0.279
Pregnant women who slept under any net last night	0.241	0.026	315	282	1.057	0.107	0.189	0.293
Pregnant women who slept under treated net last night	0.232	0.025	315	282	1.040	0.108	0.181	0.282
Pregnant women who slept under an ITN last night	0.232	0.025	315	282	1.040	0.108	0.181	0.282
Pregnant women who took any antimalarials	0.197	0.029	798	714	2.067	0.148	0.139	0.255
Pregnant women who took any SP/Fansidar during ANC visit	0.153	0.026	798	714	2.027	0.169	0.101	0.204
Children with a fever in the two weeks preceding the survey	0.312	0.018	1,984	1,768	1.606	0.057	0.277	0.347
Children with fever who received antimalarials	0.167	0.023	630	552	1.470	0.137	0.122	0.213
Neonatal mortality	27.990	3.140	3,533	3,154	0.953	0.112	21.709	34.270
Postneonatal mortality	30.743	4.026	3,538	3,159	1.273	0.131	22.690	38.795
Infant mortality ($_1q_0$)	58.732	5.548	3,538	3,159	1.173	0.094	47.636	69.829
Child mortality ($_4q_1$)	31.604	4.226	3,546	3,165	1.180	0.134	23.152	40.057
Under-5 mortality ($_5q_0$)	88.481	7.262	3,551	3,170	1.233	0.082	73.956	103.005
Children who tested positive for malaria	0.158	0.031	812	735	2.407	0.195	0.097	0.220

Table B.4 Estimates of sampling errors for the Mesoendemic Stable region sample, Angola 2011								
		Standard	Number of cases		Design	Relative	Confidence intervals	
Variable	Value (V)	error (SE)	Unweighted (N)	Weighted (WN)	effect (DEFT)	error (SE/R)	R-2SE	R+2SE
Households with at least one mosquito net of any type	0.381	0.031	1,999	3,050	2.823	0.081	0.320	0.442
Number of mosquito nets per household	0.529	0.047	1,999	3,050	2.703	0.088	0.436	0.622
Households with at least one ever-treated mosquito net	0.358	0.029	1,999	3,050	2.673	0.080	0.301	0.416
Number of ever-treated mosquito nets per household	0.494	0.043	1,999	3,050	2.559	0.087	0.408	0.580
Households with at least one insecticide treated net (ITN)	0.355	0.029	1,999	3,050	2.676	0.081	0.298	0.412
Insecticide-treated net (ITN) per household	0.490	0.043	1,999	3,050	2.569	0.088	0.404	0.575
Children who slept under any net last night	0.281	0.025	2,244	3,426	2.184	0.091	0.230	0.332
Children who slept under treated net last night	0.270	0.025	2,244	3,426	2.151	0.092	0.220	0.319
Children who slept under an ITN last night	0.268	0.025	2,244	3,426	2.152	0.092	0.219	0.318
Pregnant women who slept under any net last night	0.274	0.035	360	560	1.523	0.129	0.203	0.345
Pregnant women who slept under treated net last night	0.268	0.035	360	560	1.525	0.131	0.198	0.339
Pregnant women who slept under an ITN last night	0.268	0.035	360	560	1.525	0.131	0.198	0.339
Pregnant women who took any antimalarials	0.333	0.044	780	1,172	2.601	0.132	0.245	0.421
Pregnant women who took any SP/Fansidar during ANC visit	0.251	0.038	780	1,172	2.474	0.153	0.174	0.328
Children with a fever in the two weeks preceding the survey	0.330	0.023	2,043	3,120	2.119	0.069	0.284	0.375
Children with fever who received antimalarials	0.304	0.040	664	1,029	2.121	0.132	0.224	0.384
Neonatal mortality	26.423	3.906	3,696	5,643	1.247	0.148	18.612	34.234
Postneonatal mortality	31.296	3.533	3,699	5,648	1.172	0.113	24.230	38.363
Infant mortality ($_1q_0$)	57.72	4.872	3,700	5,650	1.122	0.084	47.976	67.463
Child mortality ($_4q_1$)	64.565	6.701	3,738	5,711	1.221	0.104	51.164	77.967
Under-5 mortality ($_5q_0$)	118.558	9.136	3,743	5,719	1.306	0.077	100.286	136.830
Children who tested positive for malaria	0.106	0.028	974	1,484	2.838	0.264	0.050	0.162

Table B.5 Estimates of sampling errors for the Mesoendemic Unstable region sample, Angola 2011								
		Standard	Number of cases		Design	Relative	Confidence intervals	
Variable	Value (V)	error (SE)	Unweighted (N)	Weighted (WN)	effect (DEFT)	error (SE/R)	R-2SE	R+2SE
Households with at least one mosquito net of any type	0.385	0.030	1,994	1,369	2.738	0.077	0.325	0.445
Number of mosquito nets per household	0.536	0.047	1,994	1,369	2.634	0.088	0.442	0.630
Households with at least one ever-treated mosquito net	0.377	0.029	1,994	1,369	2.712	0.078	0.318	0.436
Number of ever-treated mosquito nets per household	0.526	0.047	1,994	1,369	2.626	0.089	0.432	0.619
Households with at least one insecticide treated net (ITN)	0.374	0.029	1,994	1,369	2.693	0.078	0.315	0.432
Insecticide-treated net (ITN) per household	0.520	0.046	1,994	1,369	2.620	0.089	0.427	0.613
Children who slept under any net last night	0.275	0.024	2,298	1,626	2.084	0.088	0.226	0.323
Children who slept under treated net last night	0.271	0.024	2,298	1,626	2.090	0.089	0.223	0.319
Children who slept under an ITN last night	0.269	0.024	2,298	1,626	2.071	0.089	0.221	0.316
Pregnant women who slept under any net last night	0.253	0.034	452	310	1.620	0.133	0.186	0.320
Pregnant women who slept under treated net last night	0.253	0.034	452	310	1.620	0.133	0.186	0.320
Pregnant women who slept under an ITN last night	0.251	0.034	452	310	1.632	0.134	0.184	0.319
Pregnant women who took any antimalarials	0.423	0.051	861	595	3.055	0.122	0.320	0.525
Pregnant women who took any SP/Fansidar during ANC visit	0.376	0.052	861	595	3.154	0.139	0.272	0.480
Children with a fever in the two weeks preceding the survey	0.401	0.019	2,117	1,477	1.737	0.047	0.363	0.439
Children with fever who received antimalarials	0.201	0.021	820	593	1.460	0.106	0.158	0.243
Neonatal mortality	26.776	3.271	3,812	2,665	1.114	0.122	20.234	33.318
Postneonatal mortality	32.784	3.094	3,818	2,669	0.988	0.094	26.597	38.971
Infant mortality ($_1q_0$)	59.560	5.257	3,818	2,669	1.210	0.088	49.047	70.074
Child mortality ($_4q_1$)	54.488	6.034	3,838	2,683	1.357	0.111	42.420	66.557
Under-5 mortality ($_5q_0$)	110.803	8.454	3,844	2,688	1.408	0.076	93.895	127.712
Children who tested positive for malaria	0.097	0.029	1,011	720	3.161	0.303	0.038	0.156

Table B.6 Estimates of sampling errors for the Luanda province sample, Angola 2011

Variable	Value (V)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: R-2SE	Confidence intervals: R+2SE
Households with at least one mosquito net of any type	0.373	0.019	2,053	1,816	1.763	0.050	0.336	0.411
Number of mosquito nets per household	0.582	0.036	2,053	1,816	1.859	0.062	0.510	0.654
Households with at least one ever-treated mosquito net	0.359	0.019	2,053	1,816	1.772	0.052	0.321	0.396
Number of ever-treated mosquito nets per household	0.561	0.035	2,053	1,816	1.839	0.063	0.490	0.632
Households with at least one insecticide treated net (ITN)	0.353	0.018	2,053	1,816	1.752	0.052	0.316	0.390
Insecticide-treated net (ITN) per household	0.547	0.035	2,053	1,816	1.819	0.063	0.478	0.616
Children who slept under any net last night	0.269	0.017	1,766	1,562	1.361	0.063	0.235	0.303
Children who slept under treated net last night	0.260	0.017	1,766	1,562	1.343	0.064	0.227	0.294
Children who slept under an ITN last night	0.255	0.017	1,766	1,562	1.354	0.065	0.222	0.289
Pregnant women who slept under any net last night	0.277	0.035	263	233	1.271	0.128	0.207	0.348
Pregnant women who slept under treated net last night	0.266	0.035	263	233	1.285	0.133	0.195	0.337
Pregnant women who slept under an ITN last night	0.262	0.034	263	233	1.234	0.129	0.195	0.330
Pregnant women who took any antimalarials	0.531	0.029	679	613	1.505	0.054	0.474	0.589
Pregnant women who took any SP/Fansidar during ANC visit	0.405	0.027	679	613	1.414	0.066	0.351	0.458
Children with a fever in the two weeks preceding the survey	0.338	0.014	1,570	1,417	1.148	0.041	0.310	0.366
Children with fever who received antimalarials	0.473	0.023	531	479	1.030	0.049	0.427	0.519
Neonatal mortality	27.509	3.835	3,010	2,716	1.097	0.139	19.839	35.178
Postneonatal mortality	22.442	2.648	3,011	2,717	0.934	0.118	17.146	27.737
Infant mortality ($_1q_0$)	49.950	5.233	3,012	2,718	1.150	0.105	39.485	60.416
Child mortality ($_4q_1$)	27.423	3.541	3,025	2,730	0.979	0.129	20.341	34.505
Under-5 mortality ($_5q_0$)	76.004	6.813	3,028	2,733	1.173	0.090	62.378	89.629
Children who tested positive for malaria	0.017	0.006	627	555	1.101	0.330	0.006	0.029

Table B.7 Estimates of sampling errors for the urban area sample, Angola 2011

Variable	Value (V)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: R-2SE	Confidence intervals: R+2SE
Households with at least one mosquito net of any type	0.415	0.015	3,293	3,035	1.781	0.037	0.384	0.445
Number of mosquito nets per household	0.648	0.030	3,293	3,035	1.906	0.047	0.588	0.709
Households with at least one ever-treated mosquito net	0.397	0.015	3,293	3,035	1.769	0.038	0.366	0.427
Number of ever-treated mosquito nets per household	0.619	0.029	3,293	3,035	1.866	0.047	0.560	0.677
Households with at least one insecticide treated net (ITN)	0.390	0.015	3,293	3,035	1.776	0.039	0.359	0.420
Insecticide-treated net (ITN) per household	0.604	0.029	3,293	3,035	1.872	0.048	0.546	0.663
Children who slept under any net last night	0.307	0.016	3,060	2,811	1.542	0.051	0.276	0.338
Children who slept under treated net last night	0.295	0.016	3,060	2,811	1.596	0.054	0.263	0.327
Children who slept under an ITN last night	0.289	0.016	3,060	2,811	1.586	0.055	0.258	0.321
Pregnant women who slept under any net last night	0.295	0.029	475	436	1.354	0.097	0.238	0.353
Pregnant women who slept under treated net last night	0.283	0.028	475	436	1.367	0.101	0.226	0.340
Pregnant women who slept under an ITN last night	0.281	0.028	475	436	1.343	0.099	0.225	0.337
Pregnant women who took any antimalarials	0.582	0.031	1,130	1,043	2.134	0.054	0.520	0.645
Pregnant women who took any SP/Fansidar during ANC visit	0.477	0.032	1,130	1,043	2.141	0.067	0.413	0.541
Children with a fever in the two weeks preceding the survey	0.332	0.013	2,764	2,573	1.440	0.039	0.306	0.358
Children with fever who received antimalarials	0.436	0.020	931	855	1.176	0.046	0.396	0.476
Neonatal mortality	25.248	2.806	5,126	4,779	1.155	0.111	19.636	30.860
Postneonatal mortality	26.582	2.611	5,129	4,782	1.128	0.098	21.361	31.804
Infant mortality ($_1q_0$)	51.830	4.044	5,130	4,782	1.213	0.078	43.742	59.918
Child mortality ($_4q_1$)	31.199	3.645	5,150	4,803	1.196	0.117	23.909	38.490
Under-5 mortality ($_5q_0$)	81.413	6.225	5,155	4,807	1.395	0.076	68.963	93.862
Children who tested positive for malaria	0.014	0.003	1,169	1,078	1.028	0.256	0.007	0.021

Table B.8 Estimates of sampling errors for the rural area sample, Angola 2011								
		Standard error	Number of cases		Design effect	Relative error	Confidence intervals	
Variable	Value (V)	(SE)	Unweighted (N)	Weighted (WN)	(DEFT)	(SE/R)	R-2SE	R+2SE
Households with at least one mosquito net of any type	0.335	0.021	4,737	4,995	3.126	0.064	0.292	0.378
Number of mosquito nets per household	0.444	0.032	4,737	4,995	3.072	0.071	0.381	0.507
Households with at least one ever-treated mosquito net	0.322	0.020	4,737	4,995	2.985	0.063	0.281	0.362
Number of ever-treated mosquito nets per household	0.426	0.030	4,737	4,995	2.939	0.070	0.366	0.486
Households with at least one insecticide treated net (ITN)	0.318	0.020	4,737	4,995	2.977	0.063	0.278	0.359
Insecticide-treated net (ITN) per household	0.421	0.030	4,737	4,995	2.935	0.070	0.362	0.481
Children who slept under any net last night	0.252	0.017	5,354	5,702	2.344	0.068	0.218	0.287
Children who slept under treated net last night	0.247	0.017	5,354	5,702	2.284	0.068	0.213	0.280
Children who slept under an ITN last night	0.244	0.017	5,354	5,702	2.287	0.068	0.211	0.278
Pregnant women who slept under any net last night	0.249	0.023	915	948	1.589	0.093	0.203	0.295
Pregnant women who slept under treated net last night	0.245	0.023	915	948	1.587	0.093	0.199	0.291
Pregnant women who slept under an ITN last night	0.245	0.023	915	948	1.591	0.094	0.199	0.291
Pregnant women who took any antimalarials	0.244	0.027	1,988	2,052	2.762	0.109	0.191	0.298
Pregnant women who took any SP/Fansidar during ANC visit	0.184	0.023	1,988	2,052	2.610	0.123	0.139	0.230
Children with a fever in the two weeks preceding the survey	0.345	0.015	4,950	5,210	2.149	0.044	0.315	0.375
Children with fever who received antimalarials	0.210	0.027	1,714	1,797	2.563	0.128	0.157	0.264
Neonatal mortality	27.961	2.559	8,925	9,399	1.220	0.092	22.844	33.079
Postneonatal mortality	31.364	2.450	8,937	9,412	1.227	0.078	26.464	36.263
Infant mortality ($_1q_0$)	59.325	3.496	8,938	9,414	1.186	0.059	52.332	66.318
Child mortality ($_4q_1$)	56.964	4.547	8,997	9,486	1.422	0.080	47.869	66.058
Under-5 mortality ($_5q_0$)	112.909	6.084	9,011	9,502	1.385	0.054	100.742	125.076
Children who tested positive for malaria	0.140	0.021	2,255	2,416	2.845	0.148	0.099	0.182

DATA QUALITY TABLES *Appendix* C

Table C.1 Age distribution of the household population

Weighted distribution of the de facto household population by age and sex, Angola 2011

	Women		Men			Women		Men	
Age	Number	Percentage	Number	Percentage	Age	Number	Percentage	Number	Percentage
0	785	3.9	809	4.1	36	176	0.9	158	0.8
1	840	4.1	840	4.3	37	160	0.8	163	0.8
2	921	4.5	888	4.5	38	219	1.1	186	0.9
3	887	4.4	822	4.2	39	127	0.6	135	0.7
4	903	4.4	829	4.2	40	184	0.9	230	1.2
5	536	2.6	653	3.3	41	88	0.4	87	0.4
6	710	3.5	760	3.9	42	127	0.6	169	0.9
7	565	2.8	603	3.1	43	89	0.4	112	0.6
8	541	2.7	582	3.0	44	76	0.4	80	0.4
9	440	2.2	453	2.3	45	97	0.5	166	0.8
10	576	2.8	593	3.0	46	88	0.4	93	0.5
11	373	1.8	436	2.2	47	59	0.3	91	0.5
12	469	2.3	520	2.6	48	92	0.5	150	0.8
13	513	2.5	381	1.9	49	69	0.3	108	0.5
14	534	2.6	468	2.4	50	317	1.6	166	0.8
15	456	2.2	414	2.1	51	174	0.9	67	0.3
16	426	2.1	418	2.1	52	204	1.0	134	0.7
17	393	1.9	347	1.8	53	143	0.7	111	0.6
18	525	2.6	444	2.3	54	111	0.5	87	0.4
19	423	2.1	287	1.5	55	97	0.5	86	0.4
20	561	2.8	398	2.0	56	100	0.5	85	0.4
21	310	1.5	239	1.2	57	47	0.2	81	0.4
22	401	2.0	327	1.7	58	85	0.4	72	0.4
23	380	1.9	310	1.6	59	53	0.3	72	0.4
24	399	2.0	317	1.6	60	122	0.6	113	0.6
25	364	1.8	405	2.1	61	44	0.2	66	0.3
26	323	1.6	308	1.6	62	69	0.3	62	0.3
27	291	1.4	318	1.6	63	39	0.2	34	0.2
28	352	1.7	319	1.6	64	37	0.2	44	0.2
29	231	1.1	187	1.0	65	36	0.2	52	0.3
30	321	1.6	378	1.9	66	18	0.1	33	0.2
31	138	0.7	150	0.8	67	23	0.1	32	0.2
32	233	1.1	257	1.3	68	39	0.2	48	0.2
33	171	0.8	166	0.8	69	20	0.1	38	0.2
34	162	0.8	132	0.7	70+	239	1.2	298	1.5
35	232	1.1	219	1.1	Missing	5	0.0	23	0.1
					Total	20,356	100.0	19,707	100.0

Note: The de facto population includes all residents and nonresidents who stayed in the household the night before the interview.

Table C.2 Age distribution of eligible and interviewed women

De facto household population of women age 10-54, and of interviewed women age 15-49, and weighted percentage of eligible women who were interviewed, by five-year age groups, Angola 2011

Age group	Household population of women age 10-49	Interviewed women age 15-49		Percentage of eligible women interviewed
		Number	Percent	
10-14	2,464	-	-	-
15-19	2,223	2,188	25.5	98.4
20-24	2,051	2,023	23.6	98.6
25-29	1,561	1,533	17.8	98.2
30-34	1,024	1,010	11.8	98.6
35-39	914	898	10.5	98.2
40-44	564	544	6.3	96.6
45-49	404	390	4.5	96.5
50-54	950	-	-	-
15-49	8,741	8,586	100.0	98.2

Note: The de facto population includes all residents and nonresidents who stayed in the household the night before the interview. Weights for both household population of women and interviewed women are household weights. Age is based on the household schedule.
- = Not applicable

Table C.3 Completeness of reporting

Weighted percentage of observations missing information for selected variables, Angola 2011

Variable	Percentage with missing information	Number
Month only (births in the last 15 years)	0.09	18,399
Month and year (births in the last 15 years)	0.14	18,399
Age at death (deceased children born in the last 15 years)	0.00	1,824
Level of education (all interviewed women)	0.00	8,589
Anemia (living children age 6-59 months from the household questionnaire)	4.54	3,648

Table C.4 Births by calendar year

Number of births, weighted percentage with complete birth date, sex ratio at birth, and calendar year ratio, by calendar year, according to surviving status (weighted), Angola 2011

Years preceding the survey	Number of births			Percentage with complete birth date[1]			Sex ratio at birth[2]			Calendar year ratio[3]		
	Living	Dead	Total	Living	Dead	Total	Living	Dead	Total	Living	Dead	Total
0	1,476	140	1,616	100.0	100.0	100.0	99.0	93.5	98.5	na	na	na
1	1,453	112	1,565	99.9	98.1	99.8	100.3	111.2	101.0	na	na	na
2	1,199	147	1,345	99.9	100.0	99.9	117.3	131.1	118.7	89.5	112.3	91.5
3	1,225	150	1,375	100.0	100.0	100.0	109.9	97.8	108.5	110.0	106.3	109.6
4	1,028	135	1,163	99.9	97.5	99.6	104.5	127.3	106.9	94.6	94.0	94.5
5	947	138	1,085	99.9	98.7	99.7	102.3	110.7	103.3	108.0	110.7	108.4
6	726	114	840	100.0	98.4	99.8	108.5	97.2	106.9	76.5	76.9	76.5
7	952	158	1,110	99.8	98.0	99.5	107.4	134.3	110.9	143.8	150.0	144.7
8	597	97	694	99.9	99.1	99.8	128.3	156.8	131.9	70.6	67.8	70.2
9	741	128	869	99.8	97.6	99.5	111.9	109.4	111.5	122.6	129.3	123.6
0-4	6,381	683	7,063	100.0	99.2	99.9	105.5	111.0	106.0	na	na	na
5-9	3,964	635	4,599	99.9	98.3	99.7	110.1	119.3	111.3	na	na	na
10-14	2,743	469	3,211	99.7	97.6	99.4	105.0	123.7	107.5	na	na	na
15-19	1,501	358	1,859	99.7	98.8	99.5	106.1	107.2	106.3	na	na	na
20+	725	222	947	98.6	94.7	97.7	109.4	125.1	112.9	na	na	na
All	15,313	2,367	17,679	99.8	98.2	99.6	106.8	116.3	108.0	na	na	na

na = Not applicable
[1] Both year and month of birth given
[2] $(B_m/B_f)*100$, where B_m and B_f are the numbers of male and female births, respectively
[3] $[2B_x/(B_{x-1}+B_{x+1})]*100$, where B_x is the number births in calendar year x

Table C.5 Reporting of age at death in days

Distribution of reported deaths under 1 month of age by age at death in days and the percentage of neonatal deaths reported to occur at age 0-6 days, for births occurring in five-year periods preceding the survey (weighted), Angola 2011

Age at death in days	Number of years preceding the survey 0-4	5-9	10-14	15-19	Total 0-19
<1	28	35	25	26	115
1	35	30	18	20	103
2	19	20	11	12	63
3	9	8	7	6	30
4	8	3	3	7	21
5	12	13	10	3	38
6	2	3	4	2	12
7	19	19	12	3	53
8	6	5	3	2	16
9	11	5	3	2	21
10	9	8	5	2	24
11	2	1	1	0	4
12	3	5	0	2	9
13	0	0	1	1	2
14	8	6	3	4	21
15	7	8	4	1	19
16	2	0	2	0	5
17	0	2	2	0	4
18	0	0	1	1	2
19	0	0	0	1	1
20	3	2	1	1	6
21	3	2	1	0	6
22	2	0	2	1	4
23	0	2	1	0	2
24	0	1	2	0	3
25	1	0	0	1	2
26	1	0	2	0	3
27	0	1	1	1	2
28	0	1	1	1	3
29	2	2	2	2	8
30	2	0	2	0	3
Total 0-30 days	195	182	128	100	605
Percentage early neonatal (0-6 days[1])	58.0	62.4	61.2	76.4	63.0

[1] Deaths 0-6 days / Deaths 0-30 days

Table C.6 Reporting of age at death in months

Distribution of reported deaths under age 2 at death in months and the percentage of infant deaths reported to occur at age under 1 month, for births occurring in five-year periods preceding the survey (weighted), Angola 2011

Age at death in months	Number of years preceding the survey 0-4	5-9	10-14	15-19	Total 0-19
<1 month[1]	195	182	128	100	605
1	17	12	7	10	46
2	28	23	14	11	76
3	30	28	19	14	91
4	20	16	12	3	50
5	11	14	11	9	45
6	24	35	16	10	85
7	18	10	13	12	53
8	13	29	25	9	76
9	13	19	12	12	57
10	10	5	10	5	30
11	9	6	9	5	29
12	20	23	16	15	74
13	8	13	13	5	39
14	8	17	8	7	40
15	4	4	1	1	10
16	4	7	6	4	21
17	3	1	1	0	5
18	10	15	7	8	40
19	3	3	1	1	8
20	2	8	4	4	19
21	2	2	5	0	8
22	0	0	0	0	0
23	0	3	1	0	4
24+	0	1	0	0	1
1 year	12	7	10	2	31
Total 0-11 months	388	379	278	198	1,243
Percentage neonatal[2]	50.2	48.2	46.1	50.4	48.7

[1] Includes deaths under 1 month reported in days
[2] Deaths < 1 month / Deaths < 1 year

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QUESTIONNAIRES

Appendix **E**

MALARIA INDICATOR SURVEY IN ANGOLA

COSEP CONSULTORIA - CONSAUDE

HOUSEHOLD QUESTIONNAIRE

IDENTIFICATION

NAME OF LOCALITY ______________________

REGION ______________________

PROVINCE ______________________

MUNICIPALITY ______________________

CLUSTED NUMBER IN AMIS . . . .

URBAN / RURAL (URBAN =1 / RURAL = 2) . . . .

HOUSEHOLD NUMBER . . . .

NAME OF HOUSEHOLD HEAD ______________________

MARK "X" IN CIRCLE IF HOUSEHOLD WAS SELECTED FOR MALARIA TESTING . . . .

INTERVIEWER VISITS

	1	2	3	LAST VISIT
DATE	________	________	________	DAY MONTH YEAR 2 0 1 1
INTERVIEWER'S NAME	________	________	________	CODE
RESULT*	________	________	________	RESULT
NEXT VISIT DATE	________	________		NUMBER OF VISITS
TIME	________	________		

*RESULT CODES:
1 COMPLETED
2 NO HOUSEHOLD MEMBER HOME/NO COMPETENT RESPONDENT 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 OTHER ______________________
(SPECIFY)

TOTAL PERSONS IN HOUSEHOLD

TOTAL WOMEN 15-49

LINE NUMBER OF RESPONDENT TO HOUSEHOLD QUESTIONNAIRE

SUPERVISOR	FIELD EDITOR	KEYED BY
NAME ________ DATE ________		

INTRODUCTION AND CONSENT

Hello, my name is __ and I'm from the Ministry of Health. We are doing a survey all over the country about malaria. I would like to ask you some questions. I hope you will agree. The information you give will help the government to plan health services. The survey usually takes about 15 to 20 minutes to complete.

The information you give will be kept confidential and will not be shared with anyone other than members of the survey team. You do not have to participate in the survey. If I ask any question you don't want to answer, just let me know and I will go on to the next question; or you can stop the interview at any time. However, we hope you will participate in the survey since your views are important.

Do you want to ask me anything about the survey? May I begin the interview now?

Signature of interviewer: ______________________ Date: ______________

RESPONDENT AGREES TO BE INTERVIEWED. . . 1 ↓ **RESPONDENT DOES NOT AGREE TO BE INTERVIEWED** . . . 2 → END

HOUSEHOLD SCHEDULE

LINE NO.	USUAL RESIDENTS AND VISITORS	RELA-TION-SHIP	SEX	RESIDENCE		AGE	WOMEN AGE 15-49		CHILD-REN < 5
	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household. AFTER LISTING THE NAMES, RELATIONSHIP AND SEX FOR EACH PERSON, ASK QUESTIONS 2A-2C TO BE SURE THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-14 FOR EACH PERSON.	What is the relation-ship of (NAME) to the head of the house-hold? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)?	CIRCLE LINE NUM-BER OF ALL WOMEN AGE 15-49	Is (NAME) currently pregnant?	CIRCLE LINE NUM-BER OF ALL CHILD-REN AGE 0-5
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	10
			M F	YES NO	YES NO	IN YEARS		YES NO/DK	
01			1 2	1 2	1 2		01	1 2	01
02			1 2	1 2	1 2		02	1 2	02
03			1 2	1 2	1 2		03	1 2	03
04			1 2	1 2	1 2		04	1 2	04
05			1 2	1 2	1 2		05	1 2	05
06			1 2	1 2	1 2		06	1 2	06
07			1 2	1 2	1 2		07	1 2	07
08			1 2	1 2	1 2		08	1 2	08
09			1 2	1 2	1 2		09	1 2	09
10			1 2	1 2	1 2		10	1 2	10

CODES FOR Q. 3: RELATIONSHIP TO HEAD OF HOUSEHOLD

01 = HEAD
02 = WIFE OR HUSBAND
03 = SON OR DAUGHTER
04 = ADOPTED CHILD
05 = SON-IN-LAW OR DAUGHTER-IN-LAW
06 = GRANDCHILD
07 = PARENT
08 = PARENT-IN-LAW
09 = BROTHER OR SISTER
10 = NIECE/NEPHEW BY BLOOD
11 = NIECE/NEPHEW BY MARRIAGE
12 = OTHER RELATIVE
13 = STEPCHILD
14 = NOT RELATED
98 = DON'T KNOW

HOUSEHOLD SCHEDULE

LINE NO.	USUAL RESIDENTS AND VISITORS	RELA-TION-SHIP	SEX	RESIDENCE		AGE	WOMEN AGE 15-49		CHILD-REN < 5
	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household. AFTER LISTING THE NAMES, RELATIONSHIP AND SEX FOR EACH PERSON, ASK QUESTIONS 2A-2C TO BE SURE THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-14 FOR EACH PERSON.	What is the relation-ship of (NAME) to the head of the house-hold? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)?	CIRCLE LINE NUM-BER OF ALL WOMEN AGE 15-49	Is (NAME) currently pregnant?	CIRCLE LINE NUM-BER OF ALL CHILD-REN AGE 0-5
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			M F	YES NO	YES NO	IN YEARS		YES NO/DK	
11			1 2	1 2	1 2		11	1 2	11
12			1 2	1 2	1 2		12	1 2	12
13			1 2	1 2	1 2		13	1 2	13
14			1 2	1 2	1 2		14	1 2	14
15			1 2	1 2	1 2		15	1 2	15
16			1 2	1 2	1 2		16	1 2	16
17			1 2	1 2	1 2		17	1 2	17
18			1 2	1 2	1 2		18	1 2	18
19			1 2	1 2	1 2		19	1 2	19
20			1 2	1 2	1 2		20	1 2	20

TICK HERE IF CONTINUATION SHEET USED ☐

2A) Just to make sure that I have a complete listing, are there any other persons such as small children or infants that we have not listed? YES ☐ → ADD TO TABLE NÃO ☐

2B) Are there any other people who may not be members of your family, like domestic servants, lodgers, or friends who usually live here? YES ☐ → ADD TO TABLE NÃO ☐

2C) Are there any guests or temporary visitors staying here, or anyone else who stayed here last night, who have not been listed? YES ☐ → ADD TO TABLE NÃO ☐

HOUSEHOLD CHARACTERISTICS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	What is the main source of drinking water for members of your household?	**PIPED WATER** PIPED INTO DWELLING . . . . 11 PIPED TO YARD/PLOT . . . . 12 PUBLIC TAP/STANDPIPE . . . . 13 **TUBE WELL OR BOREHOLE** . . . . 21 **DUG WELL** HAND PUMP, PROTECTED WELL . . . 31 UNPROTECTED WELL . . . . 32 **WATER FROM SPRING** PROTECTED SPRING . . . . 41 UNPROTECTED SPRING . . . . 42 RAINWATER . . . . 51 TANKER TRUCK . . . . 61 CART WITH SMALL TANK . . . . 71 SURFACE WATER (RIVER/LAKE/STREAM/PIPE) . . . . 81 BOTTLED WATER . . . . 91 OTHER ______________________ 96 (SPECIFY)	
102	What kind of toilet facility do members of your household usually use?	**FLUSH OR POUR FLUSH TOILET** FLUSH TO PIPED SEWER SYSTEM . . . 11 FLUSH TO SEPTIC TANK . . . . 12 FLUSH TO PIT LATRINE . . . . 13 FLUSH TO SOMEWHERE ELSE . . . . . . 14 FLUSH, DON'T KNOW WHERE . . . . . . 15 **PIT LATRINE** VENTILATED IMPROVED PIT LATRINE 21 PIT LATRINE WITH SLAB . . . . 22 PIT LATRINE WITHOUT SLAB/OPEN PIT 23 COMPOSTING TOILET . . . . 31 BUCKET TOILET . . . . 41 HANGING TOILET/HANGING LATRINE . . . 51 NO FACILITY/BUSH/FIELD . . . . 61 OTHER ______________________ 96 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	YES	NO	SKIP
103	Does your household have:		**YES**	**NO**	
	Electricity from public network?	ELECTRICITY	1	2	
	A generator?	GENERATOR	1	2	
	A radio?	RADIO	1	2	
	A refrigerator?	REFRIGERATOR	1	2	
	A sewing machine?	SEWING MACHINE	1	2	
	A television?	TELEVISION	1	2	
104	Does any member of this household own:		**YES**	**NO**	
	A watch?	WRIST WATCH	1	2	
	A mobile telephone?	MOBILE TELEPHONE	1	2	
	A bicycle?	BICYCLE	1	2	
	A motorcycle?	MOTORCYCLE	1	2	
	A car or truck?	CAR/TRUCK	1	2	
	A boat or canoe?	BOAT/CANOE	1	2	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
105	What type of fuel does your household mainly use for cooking?	ELECTRICITY . . . . 01 LPG/NATURAL GAS . . . . 02 OIL . . . . 03 COAL . . . . 04 WOOD . . . . 05 STRAW . . . . 06 DUNG/MANURI . . . . 07 NO FOOD COOKED IN HOUSEHOLD . . . . . . 95 OTHER ______________ 96 (SPECIFY)	
106	MAIN MATERIAL OF THE FLOOR RECORD OBSERVATION.	**NATURAL FLOOR** EARTH/SAND . . . . 11 DUNG . . . . 12 **RUDIMENTARY FLOOR** BOARD/WOOD PLANKS . . . . 21 PALM/BAMBOO . . . . 22 **FINISHED FLOOR** PARQUET/POLISHED WOOD . . . . 31 VINYL/ASPHALT STRIPS . . . . 32 CERAMIC TILES/MOSAIC/BRICK . . . . 33 CEMENT . . . . 34 CARPET . . . . 35 OTHER ______________ 96 (SPECIFY)	
107	MAIN MATERIAL OF THE **ROOF** OF THE HOUSEHOLD. RECORD OBSERVATION.	**RUDIMENTARY ROOFING** PALM/BAMBOO/MATS . . . . 21 WOOD PLANKS . . . . 22 TARPAULIN/PLASTIC . . . . 23 **FINISHED ROOFING** ZINC/METAL . . . . 31 ASBESTOS SHEETS, SHINGLES . . . 32 CERAMIC TILES . . . . 33 CONCRETE/CEMENT . . . . 34 OTHER ______________ 96 (SPECIFY)	
108	MAIN MATERIAL OF THE OUTSIDE **WALLS** OF THE HOUSEHOLD. RECORD OBSERVATION.	**RUDIMENTARY WALLS** STRAW/THATCH MATS . . . . 13 CARDBOARD/PLASTIC . . . . 14 MUD AND STICKS . . . . 15 MUD BLOCKS . . . . 16 CANE/PALM/TRUNKS . . . . 17 REUSED WOOD . . . . 18 **FINISHED WALLS** CEMENT/STONE BLOCKS . . . . . . 31 BRICKS . . . . 32 WOOD PLANKS/SHINGLES . . . . 33 OTHER ______________ 96 (SPECIFY)	
109	How many rooms in this household are used for sleeping?	ROOMS . . . . [ ][ ]	
109A	At any time in the past 12 months, has anyone come into your dwelling to spray the interior walls against mosquitoes?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	2, 8 → 110
109B	How many months ago was the dwelling sprayed? IF LESS THAN ONE MONTH, RECORD "0"	MONTHS AGO . . . . [ ][ ]	
109C	Who sprayed the dwelling?	HEALTH WORKER/GOVERNMENT . . . . A NON-GOVERNMENTAL ORGANIZATION . . . . B PRIVATE COMPANY . . . . C OTHER ______________ X (SPECIFY) DON'T KNOW . . . . Y	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
110	Does your household have any mosquito nets that can be used while sleeping?	YES . . . . 1 NO 2	 → 112
111	How many mosquito nets does your household have? IF 7 OR MORE NETS, RECORD '7'.	NÚMERO DE MOSQUITEIROS	→ 113
112	Why doesn't your household have any mosquito nets? CIRCLE ALL MENTIONED.	NO MOSQUITOES . . . . A NETS NOT AVAILAB . . . . B DON'T LIKE TO USE NETS . . . . C TOO EXPENSIVE . . . . D OTHER ______________________ X (SPECIFY)	200

		NET #1	NET #2	NET #3
113	ASK RESPONDENT TO SHOW YOU THE NETS. IF MORE THAN 3, USE ADDITIONAL QUESTIONNAIRE(S).	OBSERVED, BUT HAS HOLES . . . . . 1 OBSERVED, DOES NOT HAVE HOLES 2 NOT OBSERVED 3	OBSERVED, BUT HAS HOLES . . . . . 1 OBSERVED, DOES NOT HAVE HOLES 2 NOT OBSERVED 3	OBSERVED, BUT HAS HOLES . . . . . 1 OBSERVED, DOES NOT HAVE HOLES 2 NOT OBSERVED 3
114	How many months ago did your household obtain the mosquito net? IF LESS THAN ONE MONTH, WRITE '00' IF YEARS, CONVERT TO MONTHS	MONTHS AGO . . . . [ ][ ] MORE THAN 36 MONTHS AGO . . . . . 95 NOT SURE 98	MONTHS AGO . . . . [ ][ ] MORE THAN 36 MONTHS AGO . . . . . 95 NOT SURE 98	MONTHS AGO . . . . [ ][ ] MORE THAN 36 MONTHS AGO . . . . . 95 NOT SURE 98
115	Did you buy the net or was it given to you free?	BOUGHT . . . . 1 FREE . . . . 2 (SKIP TO 117) DON'T KNOW 8	BOUGHT . . . . 1 FREE . . . . 2 (SKIP TO 117) DON'T KNOW 8	BOUGHT . . . . 1 FREE . . . . 2 (SKIP TO 117) DON'T KNOW 8
116	How much did you pay for the net? IF DK, WRITE '9998'.	Akz [ ][ ][ ][ ]	Akz [ ][ ][ ][ ]	Akz [ ][ ][ ][ ]
117	OBSERVE OR ASK THE BRAND/ TYPE OF MOSQUITO NET.	JOIA . . . . 11 OLYSET . . . . 12 PERMANET . . . . 13 SEGURO E SALVO 14 OTHER BRAND 15 PERMANENT . . . 16 (SKIP TO 121) OTHER BRAND TREATED . . . . . 46 OTHER BRAND DK IF TREATED . 96 DK BRAND 98	JOIA . . . . 11 OLYSET . . . . 12 PERMANET . . . . 13 SEGURO E SALVO 14 OTHER BRAND 15 PERMANENT . . . 16 (SKIP TO 121) OTHER BRAND TREATED . . . . . 46 OTHER BRAND DK IF TREATED . 96 DK BRAND 98	JOIA . . . . 11 OLYSET . . . . 12 PERMANET . . . . 13 SEGURO E SALVO 14 OTHER BRAND 15 PERMANENT . . . 16 (SKIP TO 121) OTHER BRAND TREATED . . . . . 46 OTHER BRAND DK IF TREATED . 96 DK BRAND 98
118	When you got the net, was it already treated with an insecticide to kill or repel mosquitos?	YES . . . . 1 NO . . . . 2 NOT SURE 8	YES . . . . 1 NO . . . . 2 NOT SURE 8	YES . . . . 1 NO . . . . 2 NOT SURE 8
119	Since you got the mosquito net, was it ever soaked or dipped in a liquid to kill or repel mosquitos?	YES . . . . 1 NO . . . . 2 (SKIP TO 121) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 121) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 121) NOT SURE 8
120	How many months ago was the net last soaked or dipped? IF LESS THAN ONE MONTH, WRITE '00'	MONTHS AGO . . . . [ ][ ] MORE THAN 24 MONTHS AGO . . . . . . 95 NOT SURE 98	MONTHS AGO . . . . [ ][ ] MORE THAN 24 MONTHS AGO . . . . . . 95 NOT SURE 98	MONTHS AGO . . . . [ ][ ] MORE THAN 24 MONTHS AGO . . . . . . 95 NOT SURE 98
121	Did anyone sleep under this mosquito net last night?	YES . . . . 1 NO . . . . 2 (SKIP TO 123) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 123) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 123) NOT SURE 8

		NET #1	NET #2	NET #3
122	Who slept under this mosquito net last night? RECORD THE PERSON'S LINE NUMBER FROM THE HOUSEHOLD SCHEDULE.	NAME_________________ LINE NO. . . . . NAME_________________ LINE NO. . . . . NAME_________________ LINE NO. . . . . NAME_________________ LINE NO. . . . . NAME_________________ LINE NO.	NAME_________________ LINE NO. . . . . NAME_________________ LINE NO. . . . . NAME_________________ LINE NO. . . . . NAME_________________ LINE NO. . . . . NAME_________________ LINE NO.	NAME_________________ LINE NO. . . . . NAME_________________ LINE NO. . . . . NAME_________________ LINE NO. . . . . NAME_________________ LINE NO. . . . . NAME_________________ LINE NO. . . . .
123		GO BACK TO 113 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO BACK TO 113 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO TO 113 IN FIRST COL. OF A NEW QUESTIONRE.; OR, IF NO MORE NETS, TO 201

ANEMIA AND MALARIA TESTING FOR CHILDREN AGE 0-5

201	CHECK COLUMN 10. WRITE THE LINE NUMBER AND NAME FOR ALL CHILDREN 0-5 YEARS IN Q. 202 IN ORDER BY LINE NUMBER. IF MORE THAN 6 CHILDREN, USE ADDITIONAL QUESTIONNAIRES. **BE SURE TO FILL Qs. 209 AND 211.**			
		CHILD 1	**CHILD 2**	**CHILD 3**
202	LINE NUMBER FROM COLUMN 10 NAME FROM COLUMN 2	LINE NUMBER . . . . . NAME ______	LINE NUMBER . . . . . NAME ______	LINE NUMBER . . . . . NAME ______
203	IF MOTHER INTERVIEWED, COPY CHILD'S MONTH AND YEAR FROM BIRTH HISTORY AND ASK DAY; IF MOTHER NOT INTERVIEWED, ASK: What is (NAME'S) birth date?	DAY . . . . MONTH . . . . . . YEAR	DAY . . . . MONTH . . . . . . YEAR	DAY . . . . MONTH . . . . . . YEAR
204	CHECK 203: CHILD BORN IN JANUARY 2006 OR LATER?	YES . . . . 1 NO . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215)	YES . . . . 1 NO . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215)	YES . . . . 1 NO . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215)
205	CHECK 203: IS CHILD AGE 0-5 MONTHS, I.E., WAS CHILD BORN IN MONTH OF INTERVIEW OR FIVE PREVIOUS MONTHS?	0-5 MONTHS . . . . 1 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215) 6 MONTHS OR OLDER... 2	0-5 MONTHS . . . . 1 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215) 6 MONTHS OR OLDER... 2	0-5 MONTHS . . . . 1 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215) 6 MONTHS OR OLDER... 2
206	LINE NUMBER OF PARENT OR ADULT RESPONSIBLE FOR CHILD (COL. 1 IN HOUSEHOLD QUESTIONNAIRE). RECORD '00' IF NOT LISTED.	LINE NUMBER	LINE NUMBER	LINE NUMBER . . . . .
207	READ **ANEMIA** CONSENT STATEMENT TO PARENT OR OTHER ADULT IDENTIFIED IN 206 AS RESPONSIBLE FOR CHILD.	GRANTED . . . . 1 ______ (SIGN) REFUSED 2	GRANTED . . . . 1 ______ (SIGN) REFUSED 2	GRANTED . . . . 1 ______ (SIGN) REFUSED 2
208	READ **MALARIA** CONSENT STATEMENT TO PARENT OR OTHER ADULT IDENTIFIED IN 206 AS RESPONSIBLE FOR CHILD.	GRANTED . . . . 1 ______ (SIGN) REFUSED 2	GRANTED . . . . 1 ______ (SIGN) REFUSED 2	GRANTED . . . . 1 ______ (SIGN) REFUSED 2
CONDUCT TESTS FOR WHICH CONSENT IS GRANTED AND CONTINUE TO 209				
209	RECORD RESULT CODE OF **ANEMIA** TEST.	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 211)	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 211)	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 211)
210	RECORD HEMOGLOBIN LEVEL HERE AND IN THE ANEMIA PAMPHLET.	G/DL .	G/DL .	G/DL .
211	RECORD RESULT CODE OF **MALARIA** TEST	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 215)	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 215)	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 215)
212	BAR CODE LABEL PASTE BAR CODE HERE AND ON SLIDE AND ON TRANSMITTAL FORM.			
213	RESULT OF **MALARIA** TEST	POSITIVE . . . . 1 NEGATIVE . . . . 2 (SKIP TO 215) OTHER 6	POSITIVE . . . . 1 NEGATIVE . . . . 2 (SKIP TO 215) OTHER 6	POSITIVE . . . . 1 NEGATIVE . . . . 2 (SKIP TO 215) OTHER 6
214	READ INFORMATION FOR MALARIA TREATMENT FOR CHILDREN WHO TESTED POSITIVE FOR MALARIA	ACCEPTED MEDICINE . 1 ______ (SIGN) REFUSED . . . . 2 ALREADY HAS **ACT** . . . 3 NOT ELIGIBLE . . . . 4 OTHER 6	ACCEPTED MEDICINE . 1 ______ (SIGN) REFUSED . . . . 2 ALREADY HAS **ACT** . . . 3 NOT ELIGIBLE . . . . 4 OTHER 6	ACCEPTED MEDICINE . 1 ______ (SIGN) REFUSED . . . . 2 ALREADY HAS **ACT** . . . 3 NOT ELIGIBLE . . . . 4 OTHER 6
215		GO BACK TO 203 IN NEXT COLUMN IN THIS QUESTIONNAIRE OR IN THE FIRST COLUMN OF THE ADDITIONAL QUESTIONNAIRE(S); IF NO MORE CHILDREN, END INTERVIEW.		

		CHILD 4	CHILD 5	CHILD 6
202	LINE NUMBER FROM COLUMN 10 NAME FROM COLUMN 2	LINE NUMBER . . . . . [ ][ ] NAME ______	LINE NUMBER . . . . . [ ][ ] NAME ______	LINE NUMBER . . . . . [ ][ ] NAME ______
203	IF MOTHER INTERVIEWED, COPY CHILD'S MONTH AND YEAR FROM BIRTH HISTORY AND ASK DAY; IF MOTHER NOT INTERVIEWED, ASK: What is (NAME'S) birth date?	DAY . . . . [ ][ ] MONTH . . . . . . [ ][ ] YEAR [ ][ ][ ][ ]	DAY . . . . [ ][ ] MONTH . . . . . . [ ][ ] YEAR [ ][ ][ ][ ]	DAY . . . . [ ][ ] MONTH . . . . . . [ ][ ] YEAR [ ][ ][ ][ ]
204	CHECK 203: CHILD BORN IN JANUARY 2006 OR LATER?	YES . . . . 1 NO . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215)	YES . . . . 1 NO . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215)	YES . . . . 1 NO . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215)
205	CHECK 203: IS CHILD AGE 0-5 MONTHS, I.E., WAS CHILD BORN IN MONTH OF INTERVIEW OR FIVE PREVIOUS MONTHS?	0-5 MONTHS . . . . 1 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215) 6 MONTHS OR OLDER... 2	0-5 MONTHS . . . . 1 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215) 6 MONTHS OR OLDER... 2	0-5 MONTHS . . . . 1 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE, GO TO 215) 6 MONTHS OR OLDER... 2
206	LINE NUMBER OF PARENT OR ADULT RESPONSIBLE FOR CHILD (COL. 1 IN HOUSEHOLD QUESTIONNAIRE). RECORD '00' IF NOT LISTED.	LINE NUMBER . . . . . [ ][ ]	LINE NUMBER . . . . . [ ][ ]	LINE NUMBER . . . . . [ ][ ]
207	READ **ANEMIA** CONSENT STATEMENT TO PARENT OR OTHER ADULT IDENTIFIED IN 206 AS RESPONSIBLE FOR CHILD.	GRANTED . . . . 1 ______ (SIGN) REFUSED 2	GRANTED . . . . 1 ______ (SIGN) REFUSED 2	GRANTED . . . . 1 ______ (SIGN) REFUSED 2
208	READ **MALARIA** CONSENT STATEMENT TO PARENT OR OTHER ADULT IDENTIFIED IN 206 AS RESPONSIBLE FOR CHILD.	GRANTED 1 ______ (SIGN) REFUSED 2	GRANTED 1 ______ (SIGN) REFUSED 2	GRANTED 1 ______ (SIGN) REFUSED 2
	CONDUCT TESTS FOR WHICH CONSENT IS GRANTED AND CONTINUE TO 209			
209	RECORD RESULT CODE OF **ANEMIA** TEST.	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 211)	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 211)	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 211)
210	RECORD HEMOGLOBIN LEVEL HERE AND IN THE ANEMIA PAMPHLET.	G/DL [ ][ ] . [ ]	G/DL [ ][ ] . [ ]	G/DL [ ][ ] . [ ]
211	RECORD RESULT CODE OF **MALARIA** TEST	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 215)	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 215)	TESTED . . . . 1 NOT PRESENT . . . . 2 REFUSED . . . . 3 OTHER . . . . 6 (SKIP TO 215)
212	BAR CODE LABEL PASTE BAR CODE HERE AND ON SLIDE AND ON TRANSMITTAL FORM.			
213	RESULT OF **MALARIA** TEST	POSITIVE . . . . 1 NEGATIVE . . . . 2 (SKIP TO 215) OTHER 6	POSITIVE . . . . 1 NEGATIVE . . . . 2 (SKIP TO 215) OTHER 6	POSITIVE . . . . 1 NEGATIVE . . . . 2 (SKIP TO 215) OTHER 6
214	READ INFORMATION FOR MALARIA TREATMENT FOR CHILDREN WHO TESTED POSITIVE FOR MALARIA	ACCEPTED MEDICINE 1 ______ (SIGN) REFUSED . . . . 2 ALREADY HAS **ACT** . . . 3 NOT ELIGIBLE . . . . 4 OTHER 6	ACCEPTED MEDICINE 1 ______ (SIGN) REFUSED . . . . 2 ALREADY HAS **ACT** . . . 3 NOT ELIGIBLE . . . . 4 OTHER 6	ACCEPTED MEDICINE 1 ______ (SIGN) REFUSED . . . . 2 ALREADY HAS **ACT** . . . 3 NOT ELIGIBLE . . . . 4 OTHER 6
215		GO BACK TO 203 IN NEXT COLUMN IN THIS QUESTIONNAIRE OR IN THE FIRST COLUMN OF THE ADDITIONAL QUESTIONNAIRE(S); IF NO MORE CHILDREN, END INTERVIEW.		

CONSENT STATEMENT FOR ANEMIA TEST

As part of this survey, we are asking that children all over the country take an **anemia** test. Anemia is a serious health problem that usually results from poor nutrition, infection, or disease. This survey will help the government to develop programs to prevent and treat anemia.

We request that all children born in 2006 or later participate in the anemia testing part of this survey and give a few drops of blood from a finger. The equipment used in taking the blood is clean and completely safe. It has never been used before and will be thrown away after each test.

The blood will be tested for anemia immediately and the result will be told to you right away. The result will be kept confidential and won't be shared with anyone other than members of our survey team.

Do you have any questions about the anemia test?

You can say yes to the test or you can say no. It is up to you to decide.
Will you allow (NAME(S) OF CHILD(REN) to participate in the **anemia** test?

CONSENT STATEMENT FOR MALARIA TEST

As part of this survey, we are asking that children all over the country take a test to see if they have **malaria**. Malaria is a serious illness caused by a parasite transmitted by a mosquito bite. This survey will help the government to develop programs to prevent malaria.

We request that all children born in 2006 or later participate in the malaria testing part of this survey and give a few drops of blood from a finger. The equipment used in taking the blood is clean and completely safe. It has never been used before and will be thrown away after each test. (We will use blood from the same finger prick made for the anemia test).

The blood will be tested for malaria immediately and the result will be told to you right away. The result will be kept confidential and won't be shared with anyone other than members of our survey team.

Do you have any questions about the malaria test?

You can say yes to the test or you can say no. It is up to you to decide.
Will you allow (NAME(S) OF CHILD(REN) to participate in the **malaria** test?

TREATMENT FOR CHILDREN WITH POSITIVE MALARIA TESTS

IF MALARIA TEST IS POSITIVE: The malaria test shows that your child has malaria. We can give you free medicine. The medicine is called artemisin-based combination therapy or ACT. This drug is very effective and in a few days it should get rid of the fever and other symptoms.

BEFORE PROVIDING ACT, FIRST ASK IF THE CHILD IS ALREADY TAKING OTHER DRUGS AND IF SO, ASK TO SEE THEM. IF CHILD IS ALREADY TAKING ACT, CHECK ON THE DOSE ALREADY AVAILABLE. BE CAREFUL NOT TO OVERTREAT.

You do not have to give the child the medicine. This is up to you. Please tell me whether you accept the medicine or not.

MALARIA INDICATOR SURVEY IN ANGOLA

COSEP CONSULTORIA - CONSAUDE

WOMAN'S QUESTIONNAIRE

IDENTIFICATION

NAME OF LOCALITY ____________	☐☐
REGION ____________	☐
PROVINCE ____________	☐☐
MUNICIPALITY ____________	☐☐
CLUSTED NUMBER IN AMIS	☐☐☐
URBAN / RURAL (URBAN =1 / RURAL = 2)	☐
HOUSEHOLD NUMBER	☐☐☐
NAME AND LINE NUMBER OF WOMAN ____________	☐☐

INTERVIEWER VISITS

	1	2	3	LAST VISIT	
DATE	____	____	____	DAY	☐☐
				MONTH	☐☐
				YEAR	2 0 1 1
INTERVIEWER'S NAME	____	____	____	CODE	☐☐☐
RESULT*	____	____	____	RESULT	☐
NEXT VISIT DATE	____	____		NUMBER OF VISITS	☐
TIME	____	____			

*RESULT CODES:

1	COMPLETED	4	REFUSED				
2	NOT AT HOME	5	PARTLY COMPLETED	7	OTHER	____________	
3	POSTPONED	6	INCAPACITATED			(SPECIFY)	

SUPERVISOR	OFFICE EDITOR	KEYED BY
NAME ____________ ☐☐☐ DATE ____________	☐☐	☐☐

INTRODUCTION AND CONSENT

Good morning (good afternoon). My name is __ and I'm from COSEP Consultoria. We are doing a survey all over the country about malaria. I would like to ask you some questions and I hope you will agree. The information you give will help the government to plan health services. The survey usually takes about 10 to 20 minutes to complete. The information you give will be kept confidential and will not be shared with anyone other than members of the survey team. You do not have to participate in the survey. If I ask any question you don't want to answer, just let me know and I will go on to the next question; or you can stop the interview at any time. However, we hope you will participate in the survey since your views are important.

Do you want to ask me anything about the survey? May I begin the interview now?

Signature of interviewer: ____________ Date: ____________

RESPONDENT AGREES TO BE INTERVIEWED...... 1 ↓ RESPONDENT DOES NOT AGREE TO BE INTERVIEWED . . . . 2 → END

SECTION 1. RESPONDENT'S BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	RECORD THE TIME.	HOUR . . . . [ ][ ] MINUTES . . . . [ ][ ]	
102	In what month and year were you born?	MONTH . . . . [ ][ ] DON'T KNOW MONTH . . . . 98 YEAR . . . . [ ][ ][ ][ ] DON'T KNOW YEAR 9998	
103	How old were you in your last anniversary? COMPARE AND CORRECT 104 AND/OR 105 IF INCONSISTENT.	AGE IN COMPLETED YEARS [ ][ ]	
104	Have you ever attended school?	YES . . . . 1 NO 2	 →108
105	What is the highest level of school you attended: basic education, secondary, or higher?	BASIC EDUCATION . . . . 1 SECONDARY . . . . 2 HIGHER 3	
106	What is the highest (class/grade) you completed at that level?	CLASS/GRADE . . . . [ ][ ]	

BASIC EDUCATION	**1 LEVEL**	**1**	**2**	**3**	**4**			**CLASS**
BASIC EDUCATION	**2 LEVEL**	**5**	**6**					**CLASS**
BASIC EDUCATION	**3 LEVEL**	**7**	**8**	**9**				**CLASS**
SECONDARY		**9**	**10**	**11**	**12**			**CLASS**
HIGHER	**5**	**1**	**2**	**3**	**4**	**5**	**6**	**YEAR**

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
107	CHECK 105: BASIC EDUCATION [ ] ↓ SECONDARY OR HIGHER [ ]		→109
108	Now I would like you to read this sentence to me. SHOW SENTENCES TO RESPONDENT. IF RESPONDENT CANNOT READ WHOLE SENTENCE, PROBE: Can you read any part of the sentence to me?	CANNOT READ AT ALL . . . . 1 ABLE TO READ ONLY PARTS OF SENTENCE . . . . 2 ABLE TO READ WHOLE SENTENCE . . . 3 NO CARD WITH REQUIRED LANGUAGE ____________ 4 (SPECIFY LANGUAGE) BLIND/VISUALLY IMPAIRED 5	

1. The child is reading a book

2. Farming is hard work

3. The country should take care of its children

4 The rains were heavy this year

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
109	What is your religion?	CATHOLIC . . . . 1 CHRISTIAN/PROTESTANT . . . . 2 ISLAM . . . . 3 TRADITIONAL RELIGION . . . . 4 NO RELIGION . . . . 5 OTHER ____________ 6 SPECIFY	
110	In which language did you learn to speak?	PORTUGUES . . . . 01 COQWE . . . . 02 KIMBUNDU . . . . 03 KIKONGO . . . . 04 KWANYAMA . . . . 05 NGANGUELA . . . . 06 UMBUNDU . . . . 07 OTHER ____________ 96 (SPECIFY)	

SECTION 2. REPRODUCTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
201	Now I would like to ask about all the births you have had during your life. Have you ever born a child?	YES . . . . 1 NO 2	 → 206
202	Do you have any children you born who are living with you? I mean belly born.	YES . . . . 1 NO 2	 → 204
203	How many sons live with you? And how many daughters live with you? IF NONE, RECORD '00'.	SONS AT HOME . . . . [ ][ ] DAUGHTERS AT HOME . . . . . [ ][ ]	
204	Do you have any children you born who are alive but do not live with you?	YES . . . . 1 NO 2	 → 206
205	How many sons are alive but do not live with you? And how many daughters are alive but do not live with you? IF NONE, RECORD '00'.	SONS ELSEWHERE . . . . [ ][ ] DAUGHTERS ELSEWHERE . . . [ ][ ]	
206	Have you ever born a child who was born alive and later died? IF NO, PROBE: Any baby who cried or showed signs of life but did not survive?	YES . . . . 1 NO 2	 → 208
207	How many boys have died? And how many girls have died? IF NONE, RECORD '00'.	BOYS DEAD . . . . [ ][ ] GIRLS DEAD . . . . [ ][ ]	
208	SUM ANSWERS TO 203, 205, AND 207, AND ENTER TOTAL. IF NONE, RECORD '00'.	TOTAL . . . . [ ][ ]	
209	CHECK 208: So in all, you have belly born ____ (TOTAL) children in your life. Is that correct? YES [ ] ↓ NO [ ] → PROBE AND CORRECT 201-208 AS NECESSARY.		
210	CHECK 208: ONE OR MORE BIRTHS [ ] ↓ NO BIRTHS [ ] →		224

211	Now I want the names of all the children you born, whether still alive or not, starting with the first one. RECORD NAMES OF ALL THE BIRTHS IN 212. RECORD TWINS AND TRIPLETS ON SEPARATE LINES. (IF THERE ARE MORE THAN 12 BIRTHS, USE AN ADDITIONAL QUESTIONNAIRE STARTING WITH THE SECOND ROW).

212 What is/was the name of your first childr? What is/was the name of your second childr? ...etc. (NAME)	213 Was (NAME) a twin?	214 Is (NAME) a boy or a girl?	215 In what month and year was (NAME) born? PROBE: What is his/her birthday?	216 Is (NAME) still living?	217 IF LIVING: How old is (NAME)? RECORD AGE IN COM-PLETED YEARS.	218 IF LIVING: Is (NAME) living with you?	219 IF LIVING: RECORD HOUSE-HOLD LINE NUMBER OF CHILD (RECORD '00' IF CHILD NOT LISTED IN HOUSE-HOLD).	220 IF DEAD: How old was (NAME) when he/she died? IF '1 YR', PROBE: How many months old was (NAME)? RECORD DAYS IF LESS THAN 1 MONTH; MONTHS IF LESS THAN TWO YEARS; OR YEARS.	221 Did you born any other child between (NAME OF PREVIOUS BIRTH) and (NAME), including any children who died after birth?
01	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (NEXT BIRTH)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	
02	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
03	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
04	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
05	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
06	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
07	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
08	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
09	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH

212 What name was given to your next baby? (NAME)	213 Were any of these births twins?	214 Is (NAME) a boy or a girl?	215 In what month and year was (NAME) born? PROBE: What is his/her birthday?	216 Is (NAME) still alive?	217 IF LIVING: How old was (NAME) at his/her last birthday? RECORD AGE IN COM-PLETED YEARS.	218 IF LIVING: Is (NAME) living with you?	219 IF LIVING: RECORD HOUSE-HOLD LINE NUMBER OF CHILD (RECORD '00' IF CHILD NOT LISTED IN HOUSE-HOLD).	220 IF DEAD: How old was (NAME) when he/she died? IF '1 YR', PROBE: How many months old was (NAME)? RECORD DAYS IF LESS THAN 1 MONTH; MONTHS IF LESS THAN TWO YEARS; OR YEARS.	221 Were there any other live births between (NAME OF PREVIOUS BIRTH) and (NAME), including any children who died after birth?
10	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 → 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
11	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 → 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
12	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 → 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
13	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 → 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
14	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 → 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
15	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 → 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
16	SING 1 MULT 2	BOY 1 GIRL 2	MONTH YEAR	YES . . 1 NO . . . 2 → 220	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 221)	DAYS . . . . 1 MONTHS . 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH

222	Did you born any child since the birth of (NAME OF LAST BIRTH)? IF YES, RECORD BIRTH(S) IN TABLE.	YES . . . . 1 NO 2
223	COMPARE 208 WITH NUMBER OF BIRTHS IN HISTORY ABOVE AND MARK: NUMBERS ARE SAME ☐ NUMBERS ARE DIFFERENT ☐ → (PROBE AND RECONCILE)	
224	CHECK 215 AND ENTER THE NUMBER OF BIRTHS IN 2006 OR LATER. NUMBER OF BIRTHS	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
225	Are you pregnant now?	YES . . . . 1 NO . . . . 2 UNSURE 8	 → 227
226	How many months pregnant are you? RECORD NUMBER OF COMPLETED MONTHS.	MONTHS	
227	CHECK 224: ONE OR MORE BIRTHS IN 2006 OR LATER ↓ NO BIRTHS IN 2006 OR LATER → 501		501

SECTION 3. PREGNANCY AND INTERMITTENT PREVENTIVE TREATMENT

301	CHECK 212 AND 215: ENTER IN 302 THE NAME AND LINE NUMBER OF THE MOST RECENT BIRTH SINCE 2006 EVEN IF THE CHILD IS NO LONGER ALIVE. Now I would like to ask you some questions about your last pregnancy that ended in a live birth.		
302	NAME AND LINE NUMBER FROM 212	NAME OF LAST BIRTH ________ LINE NUMBER	
303	When you were pregnant with (NAME) did you see anyone for prenatal care for this pregnancy? IF YES: Whom did you see? Anyone else? PROBE TO IDENTIFY EACH TYPE OF PERSON AND RECORD ALL MENTIONED.	DOCTOR . . . . A NURSE . . . . B MIDWIFE . . . . C AUXILIARY MIDWIFE . . . . D TRADITIONAL MIDWIFE . . . . E OTHER ________ X (SPECIFY) NO ONE . . . . Y	
303A	During this pregnancy, did anyone tell you that pregnant women need to take some kind of medicine to <u>keep</u> them from getting malaria? EMPHASIZE THE WORD 'KEEP'.	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
304	During this pregnancy, did you take any drugs to <u>keep</u> you from getting malaria? EMPHASIZE 'KEEP'. DO NOT CIRCLE '1' IF SHE WAS ONLY GIVEN DRUGS BECAUSE SHE HAD MALARIA.	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	(NO, DON'T KNOW) → 401
305	What drugs did you take to keep from getting malaria? RECORD ALL MENTIONED. IF SHE DOES NOT KNOW THE TYPE OF DRUG, SHOW HER THE TYPICAL ANTIMALARIAL DRUGS.	SP/FANSIDAR . . . . A CHLOROQUINE . . . . B COARTEM . . . . B OTHER ________ X (SPECIFY) DON'T KNOW . . . . Z	
306	CHECK 305: DRUGS TAKEN FOR MALARIA PREVENTION CODE 'A' CIRCLED ☐ ↓ CODE 'A' NOT CIRCLED ☐ →		401
307	How many times did you take SP/Fansidar during this pregnancy?	NUMBER OF TIMES	
308	CHECK 303: PRENATAL CARE FROM HEALTH PERSONNEL DURING THIS PREGNANCY CODE 'A', 'B', 'C' OR 'D' CIRCLED ☐ ↓ OTHER ☐ →		401
309	Did you get the SP/Fansidar during any prenatal care visit, during another visit to a health facility or from another source?	PRENATAL VISIT . . . . 1 ANOTHER FACILITY VISIT . . . . 2 OTHER SOURCE ________ 6 (SPECIFY)	

SECTION 4. FEVER IN CHILDREN

401	ENTER IN THE TABLE THE LINE NUMBER, NAME, AND SURVIVAL STATUS OF EACH BIRTH IN 2006 OR LATER. ASK THE QUESTIONS ABOUT ALL OF THESE BIRTHS. BEGIN WITH THE LAST BIRTH. (IF THERE WERE MORE THAN 3 BIRTHS, USE AN ADDITIONAL QUESTIONNAIRE, STARTING WITH THE FIRST COLUMN). Now I would like to ask you some questions about the health of your children. (We will talk about each one separately.)			
402	LINE NUMBER FROM QUESTION 212	LAST BIRTH LINE NUMBER . . .	NEXT-TO-LAST BIRTH LINE NUMBER . . .	SECOND-FROM-LAST BIRTH LINE NUMBER . . .
403	CHECK 212 AND 216	NAME ______ LIVING DEAD (GO TO 403 IN NEXT COLUMN OR, IF NO MORE BIRTHS, GO TO 501)	NAME ______ LIVING DEAD (GO TO 403 IN NEXT COLUMN OR, IF NO MORE BIRTHS, GO TO 501)	NAME ______ LIVING DEAD (GO TO 403 IN FIRST COLUMN OF NEW QUESTIONNAIRE, OR IF NO MORE BIRTHS, GO TO 501)
404	Has (NAME) been ill with a fever at any time in the last 2 weeks?	YES . . . . 1 NO . . . . 2 (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 501) DON'T KNOW 8	YES . . . . 1 NO . . . . 2 (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 501) DON'T KNOW 8	YES . . . . 1 NO . . . . 2 (GO TO 403 IN FIRST COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 501) DON'T KNOW 8
405	How many days ago did the fever start? IF LESS THAN ONE DAY, WRITE '00'.	DAYS AGO . . DON'T KNOW 98	DAYS AGO . DON'T KNOW 98	DAYS AGO . DON'T KNOW 98
406	Did you seek advice or treatment for the fever from any source?	YES . . . . 1 NO . . . . 2 (SKIP TO 411)	YES . . . . 1 NO . . . . 2 (SKIP TO 411)	YES . . . . 1 NO . . . . 2 (SKIP TO 411)
407	Where did you get treatment from? Anywhere else? PROBE TO IDENTIFY EACH TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE(S). IF UNABLE TO DETERMINE IF A HOSPITAL, HEALTH CENTER, OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE THE NAME OF THE PLACE. ______ (NAME OF PLACE(S))	**PUBLIC SECTOR** STATE HOSPITAL . . . A HEALTH CENTER . . . . B HEALTH POST . . . . . . C MOBILE CLINIC . . . . . D CAMPAIGN WORKER. E PUBLIC COMPANY . . F OTHER PUBLIC ______ G (SPECIFY) **PRIVATE SECTOR** HOSPITAL . . . . H CLINIC . . . . I DOCTOR . . . . J PHARMACY . . . . . . K MOBILE CLINIC . . . . . . L OTHER PRIVATE ______ M (SPECIFY) **OTHER SOURCE** SHOP . . . . N TRADITIONAL PRACTITIONER . . . O OTHER______ X (SPECIFY)	**PUBLIC SECTOR** STATE HOSPITAL . . . A HEALTH CENTER . . . . B HEALTH POST . . . . . . C MOBILE CLINIC . . . . . D CAMPAIGN WORKER. E PUBLIC COMPANY . . F OTHER PUBLIC ______ G (SPECIFY) **PRIVATE SECTOR** HOSPITAL . . . . H CLINIC . . . . I DOCTOR . . . . J PHARMACY . . . . . . K MOBILE CLINIC . . . . . . L OTHER PRIVATE ______ M (SPECIFY) **OTHER SOURCE** SHOP . . . . N TRADITIONAL PRACTITIONER . . . O OTHER______ X (SPECIFY)	**PUBLIC SECTOR** STATE HOSPITAL . . . A HEALTH CENTER . . . . B HEALTH POST . . . . . . C MOBILE CLINIC . . . . . D CAMPAIGN WORKER. E PUBLIC COMPANY . . F OTHER PUBLIC ______ G (SPECIFY) **PRIVATE SECTOR** HOSPITAL . . . . H CLINIC . . . . I DOCTOR . . . . J PHARMACY . . . . . . K MOBILE CLINIC . . . . . . L OTHER PRIVATE ______ M (SPECIFY) **OTHER SOURCE** SHOP . . . . N TRADITIONAL PRACTITIONER . . . O OTHER______ X (SPECIFY)

NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME ________	NEXT-TO-LAST BIRTH NAME ________	SECOND-FROM-LAST BIRTH NAME ________
408	CHECK 407:	TWO OR MORE CODES CIRCLED ☐ ONLY ONE CODE CIRCLED ☐ (SKIP TO 410)	TWO OR MORE CODES CIRCLED ☐ ONLY ONE CODE CIRCLED ☐ (SKIP TO 410)	TWO OR MORE CODES CIRCLED ☐ ONLY ONE CODE CIRCLED ☐ (SKIP TO 410)
409	Where did you first go for advice or treatment? USE LETTER CODE FROM 407.	FIRST PLACE . . . ☐	FIRST PLACE . . . ☐	FIRST PLACE . . . ☐
410	When the fever started, how long it took for you to carry the child for advice or treatment? IF THE SAME DAY, RECORD '00'.	DAYS . . . . . . ☐☐	DAYS . . . . . . ☐☐	DAYS . . . . . . ☐☐
411	Is (NAME) still sick with a fever?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	YES . . . . 1 NO . . . . 2 DON'T KNOW 8
411A	At any time during the illness, did (NAME) have a drop of blood taken from his/her finger or heel?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	YES . . . . 1 NO . . . . 2 DON'T KNOW 8
412	At any time during the illness, did (NAME) take any drugs for the illness?	YES . . . . 1 NO . . . . 2 (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 501) DON'T KNOW 8	YES . . . . 1 NO . . . . 2 (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 501) DON'T KNOW 8	YES . . . . 1 NO . . . . 2 (GO TO 403 IN FIRST COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 501) DON'T KNOW 8
413	What drugs did (NAME) take? Any other drugs? RECORD ALL MENTIONED. IF SHE DOES NOT KNOW THE TYPE OF DRUG, ASK TO SEE THEM. IF THIS IS NOT POSSIBLE OR THE TYPE OF DRUG IS STILL NOT DETERMINED, SHOW HER THE TYPICAL ANTIMALARIAL DRUGS.	**ANTIMALARIAL DRUGS** SP/FANSIDAR . . . . . . A CHLOROQUINE . . . B QUININE . . . . C COARTEM . . . . D OTHER ANTI-MALARIAL ________ E (SPECIFY) **OTHER DRUGS** ASPIRIN . . . . F ACETAMINOPHEN . . . G PARACETAMOL . . . H IBUPROFEN . . . . I OTHER________ X (SPECIFY) DON'T KNOW . . . . . . Z	**ANTIMALARIAL DRUGS** SP/FANSIDAR . . . . . . A CHLOROQUINE . . . B QUININE . . . . C COARTEM . . . . D OTHER ANTI-MALARIAL ________ E (SPECIFY) **OTHER DRUGS** ASPIRIN . . . . F ACETAMINOPHEN . . . G PARACETAMOL . . . H IBUPROFEN . . . . I OTHER________ X (SPECIFY) DON'T KNOW . . . . . . Z	**ANTIMALARIAL DRUGS** SP/FANSIDAR . . . . . . A CHLOROQUINE . . . B QUININE . . . . C COARTEM . . . . D OTHER ANTI-MALARIAL ________ E (SPECIFY) **OTHER DRUGS** ASPIRIN . . . . F ACETAMINOPHEN . . . G PARACETAMOL . . . H IBUPROFEN . . . . I OTHER________ X (SPECIFY) DON'T KNOW . . . . . . Z
414	CHECK 413: ANY CODE 'A'-'E' CIRCLED?	YES ☐ NO ☐ (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 501)	YES ☐ NO ☐ (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 501)	YES ☐ NO ☐ (GO TO 403 IN FIRST COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 501)

NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME ________	NEXT-TO-LAST BIRTH NAME ________	SECOND-FROM-LAST BIRTH NAME ________
415	Did you already have (NAME OF DRUG FROM 413) at home when the child became ill? ASK SEPARATELY FOR EACH OF THE DRUGS 'A' THROUGH 'E' THAT THE CHILD IS RECORDED AS HAVING TAKEN IN 413. IF YES FOR ANY DRUG, CIRCLE CODE FOR THAT DRUG. IF NO FOR ALL DRUGS, CIRCLE 'Y'.	SP/FANSIDAR . . . . . . A CHLOROQUINE . . . B QUININE . . . . C COARTEM . . . . D OTHER ANTI-MALARIAL ________ E (SPECIFY) NO DRUG AT HOME . Y	SP/FANSIDAR . . . . . . A CHLOROQUINE . . . B QUININE . . . . C COARTEM . . . . D OTHER ANTI-MALARIAL ________ E (SPECIFY) NO DRUG AT HOME . Y	SP/FANSIDAR . . . . . . A CHLOROQUINE . . . B QUININE . . . . C COARTEM . . . . D OTHER ANTI-MALARIAL ________ E (SPECIFY) NO DRUG AT HOME . Y
416	CHECK 413: SP/FANSIDAR ('A') GIVEN	CODE 'A' CIRCLED ☐ CODE 'A' NOT CIRCLED ☐ (SKIP TO 419)	CODE 'A' CIRCLED ☐ CODE 'A' NOT CIRCLED ☐ (SKIP TO 419)	CODE 'A' CIRCLED ☐ CODE 'A' NOT CIRCLED ☐ (SKIP TO 419)
417	How long after the fever started did (NAME) first take SP/Fansidar?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8
418	For how many days did (NAME) take the SP/Fansidar? IF 7 DAYS OR MORE, WRITE '7'.	DAYS . . . . ☐ DON'T KNOW . . . 8	DAYS . . . . ☐ DON'T KNOW . . . 8	DAYS . . . . ☐ DON'T KNOW . . . 8
419	CHECK 413: CHLOROQUINE ('B') GIVEN	CODE 'B' CIRCLED ☐ CODE 'B' NOT CIRCLED ☐ (SKIP TO 422)	CODE 'B' CIRCLED ☐ CODE 'B' NOT CIRCLED ☐ (SKIP TO 422)	CODE 'B' CIRCLED ☐ CODE 'B' NOT CIRCLED ☐ (SKIP TO 422)
420	How long after the fever started did (NAME) first take chloroquine?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8
421	For how many days did (NAME) take the chloroquine? IF 7 DAYS OR MORE, WRITE '7'.	DAYS . . . . ☐ DON'T KNOW . . . 8	DAYS . . . . ☐ DON'T KNOW . . . 8	DAYS . . . . ☐ DON'T KNOW . . . 8
422	CHECK 413: QUININE ('C') GIVEN	CODE 'C' CIRCLED ☐ CODE 'C' NOT CIRCLED ☐ (SKIP TO 425)	CODE 'C' CIRCLED ☐ CODE 'C' NOT CIRCLED ☐ (SKIP TO 425)	CODE 'C' CIRCLED ☐ CODE 'C' NOT CIRCLED ☐ (SKIP TO 425)

NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME ________	NEXT-TO-LAST BIRTH NAME ________	SECOND-FROM-LAST BIRTH NAME ________
423	How long after the fever started did (NAME) first take quinine?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8
424	For how many days did (NAME) take the quinine? IF 7 DAYS OR MORE, WRITE '7'.	DAYS . . . . ☐ DON'T KNOW . . . 8	DAYS . . . . ☐ DON'T KNOW . . . 8	DAYS . . . . ☐ DON'T KNOW . . . 8
425	CHECK 413: COARTEM ('D') GIVEN	CODE 'D' CIRCLED ☐ CODE 'D' NOT CIRCLED ☐ (SKIP TO 428)	CODE 'D' CIRCLED ☐ CODE 'D' NOT CIRCLED ☐ (SKIP TO 428)	CODE 'D' CIRCLED ☐ CODE 'D' NOT CIRCLED ☐ (SKIP TO 428)
426	How long after the fever started did (NAME) first take Coartem?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8
427	For how many days did (NAME) take Coartem? IF 7 DAYS OR MORE, WRITE '7'.	DAYS . . . . ☐ DON'T KNOW . . . 8	DAYS . . . . ☐ DON'T KNOW . . . 8	DAYS . . . . ☐ DON'T KNOW . . . 8
428	CHECK 413: OTHER ANTIMALARIAL ('E') GIVEN	CODE 'E' CIRCLED ☐ CODE 'E' NOT CIRCLED ☐ (SKIP TO 431)	CODE 'E' CIRCLED ☐ CODE 'E' NOT CIRCLED ☐ (SKIP TO 431)	CODE 'E' CIRCLED ☐ CODE 'E' NOT CIRCLED ☐ (SKIP TO 431)
429	How long after the fever started did (NAME) first take the (OTHER ANTIMALARIAL)?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE DAYS AFTER FEVER . . . . 3 FOUR OR MORE DAYS AFTER FEVER . . . . 4 DON'T KNOW 8
430	For how many days did (NAME) take the (OTHER ANTIMALARIAL)? IF 7 DAYS OR MORE, WRITE '7'.	DAYS . . . . ☐ DON'T KNOW . . . 8	DAYS . . . . ☐ DON'T KNOW . . . 8	DAYS . . . . ☐ DON'T KNOW . . . 8
431		GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 501.	GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 501.	GO TO 403 IN 1st COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 501.

SECTION 5. KNOWLEDGE OF MALARIA

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
501	Have you ever heard of an illness called malaria?	YES . . . . . 1 NO 2	 → 512
502	What are some things that can happen to a person when he/she has malaria? CIRCLE ALL MENTIONED.	FEVER . . . . . A CHILLS . . . . . B HEADACHE . . . . . C JOINT PAIN . . . . . D POOR APPETITE . . . . . E OTHER ______ X (SPECIFY) DOES NOT KNOW ANY . . . . . Z	
503	Which people are most likely to get a serious case of malaria? CIRCLE ALL MENTIONED.	CHILDREN . . . . . A PREGNANT WOMEN . . . . . B ADULTS . . . . . C ELDERLY . . . . . D EVERYONE . . . . . E OTHER ______ X (SPECIFY) DOES NOT KNOW . . . . . Z	
504	What causes malaria? CIRCLE ALL MENTIONED.	MOSQUITOES . . . . . A DIRTY WATER . . . . . B DIRTY SURROUNDINGS . . . . . C CONTAMINATED FOOD . . . . . D WITCHCRAFT . . . . . E OTHER ______ X (SPECIFY) DOES NOT KNOW ANY . . . . . Z	
505	Are there ways to avoid getting malaria?	YES . . . . . 1 NO . . . . . 2 DOES NOT KNOW 8	 → 507 → 507
506	What are the ways to avoid getting malaria? CIRCLE ALL MENTIONED.	SLEEP UNDER MOSQUITO NET . . . . . A USE MOSQUITO COILS . . . . . B SPRAY HOUSE WITH INSECTICIDE . . . C KEEP DOORS AND WINDOWS CLOSED D USE INSECT REPELLANT . . . . . E KEEP SURROUNDINGS CLEAN . . . . . F CUT THE GRASS . . . . . G OTHER ______ X (SPECIFY) DOES NOT KNOW ANY . . . . . Z	
507	Can malaria be treated?	YES . . . . . 1 NO . . . . . 2 DOES NOT KNOW 8	 → 509 → 509
508	What drugs are used to treat malaria? CIRCLE ALL MENTIONED.	SP/FANSIDAR . . . . . A CHLOROQUINE . . . . . B QUININE . . . . . C COARTEM . . . . . D ASPIRIN, PANADOL, PARACETEMOL . . E OTHER ______ X (SPECIFY) DOES NOT KNOW ANY . . . . . Z	
509	In the past few months, have you seen or heard any messages about malaria?	YES . . . . . 1 NO 2	 → 512

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
510	What messages about malaria have you seen or heard? CIRCLE ALL MENTIONED.	GET MEDICAL TREATMENT IF SICK WITH FEVER . . . . A SLEEP UNDER MOSQUITO BED NETS B PREGNANT WOMEN SHOULD TAKE DRUGS TO PREVENT MALARIA . . . C MALARIA KILLS . . . . D OTHER ______________________ X (SPECIFY) DOES NOT REMEMBER . . . . Z	
511	Where did you hear or see these messages? CIRCLE ALL MENTIONED.	RADIO . . . . A TELEVISION . . . . B NEWSPAPER . . . . C VIDEO CLUB . . . . D BILLBOARD . . . . E POSTER . . . . F LEAFLET/FACT SHEET/ BROCHURE . . G SCHOOL/COLLEGE/UNIVERSITY . . . . H HEALTH WORKERS/HEALTH PROMOTERS . . . . I OTHER ______________________ X (SPECIFY)	
512	RECORD THE TIME.	HOUR . . . . [ ][ ] MINUTES . . . . [ ][ ]	

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ABOUT RESPONDENT:

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S OBSERVATIONS

NAME OF SUPERVISOR: ______________________ DATE: ______________________

EDITOR'S OBSERVATIONS

NAME OF EDITOR: ______________________ DATE: ______________________