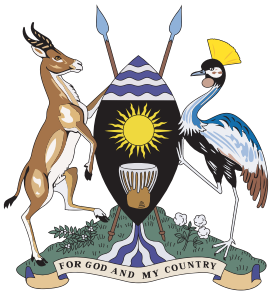
MINISTRY OF HEALTH

UGANDA

Malaria Indicator Survey (MIS)

2009



THE REPUBLIC OF UGANDA

Uganda Malaria Indicator Survey 2009

Uganda Bureau of Statistics
Kampala, Uganda

Uganda Malaria Surveillance Project Molecular Laboratory
Mulago Hospital
Kampala, Uganda

National Malaria Control Programme
Uganda Ministry of Health
Kampala, Uganda

ICF Macro
Calverton, Maryland, USA

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World Health Organization

CDC USAID FROM THE AMERICAN PEOPLE President's Malaria Initiative

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This report presents the findings from the Uganda Malaria Indicator Survey (UMIS) directed by ICF Macro under a contract with the Uganda Bureau of Statistics (UBOS), the Uganda Malaria Surveillance Project Molecular Laboratory at Mulago Hospital, and the National Malaria Control Programme of the Uganda Ministry of Health.

Additional information about the survey may be obtained from the Uganda Bureau of Statistics (UBOS), Plot 9 Coleville Street, P.O. Box 7186, Kampala, Uganda; Telephone: (256-41) 706000; Fax: (256-41) 237553/230370; Email: ubos@ubos.org; Internet: www.ubos.org.

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FOREWORD

Malaria is noteworthy for the burden it places on both individuals and families. In Uganda, the illness exacts a high economic toll from the losses in productivity that result from ill-health and death.

For the past five years, major interventions have been undertaken as a part of the country's strategic planning effort to help bring malaria under control in Uganda. The Ministry of Health, in partnership with many of the stakeholders in the fight against malaria, has intensified efforts to increase access to and use of long-lasting insecticidal nets (LLINs), which are more durable and cost-effective than untreated nets. The first line of treatment for malaria has shifted from largely ineffective antimalarial drugs to artemisinin-based combination therapies (ACTs), which are more efficacious and cost-effective. The home-based management of fever is a strategy that was rolled out nationwide, although its impact has suffered from having an inadequate supply of ACTs for treatment at the community level. Indoor residual spraying (IRS) of the walls of houses with insecticide has been implemented in selected districts in northern Uganda, and many individuals have chosen to spray their own homes.

Despite these many efforts to combat malaria over the years, the Ministry of Health has previously never conducted a comprehensive survey to measure the extent of treatment efforts on morbidity and mortality. The 2009 Uganda Malaria Indicator Survey (UMIS) is the first nationally representative survey of malaria in Uganda, and the Ministry of Health (MOH) plans to repeat this survey every two to three years. Another key source of information about malaria indicators is the Uganda Demographic and Health Survey (UDHS), last conducted in 2006 and now conducted every five years.

This report presents national and regional estimates of a range of malaria indicators and thus provides a robust and comprehensive picture of malaria control in Uganda. It captures both biological and behavioural information relevant to malaria and will provide a useful reference tool and evidence base for national policy decision making. Both the National Malaria Control Programme (NMCP) and all stakeholders will know where to focus their efforts in designing interventions for malaria control.

Although this report shows that the country has made significant strides in improving strategies designed to control malaria, many challenges remain if Uganda is to attain its 2010 Abuja targets in prevention and treatment. This report is a call to action as we seek to expand our efforts to control and to eventually eliminate malaria from Uganda.

Stephen O. Mallinga (MP)
Honourable Minister of Health

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Special thanks go to members of the technical working group whose tireless efforts made this work possible. With guidance from the ICF Macro technical team, this document was prepared by the following: Dr. Denis Rubahika, Dr. Richard Ndyomugyenyi, Dr. Myers Lugemwa, Dr. Ebony Quinto, Dr. Mufubenga Patrobas, Connie Balayo, Dr. Adibaku Seraphine, Dr. Mukone George, Phellister Nakamya, Dr. Alex Opio, Dr. Wilford Kirungi, Dr. Joshua Musinguzi, Dr. James SSekitoleko, Agaba Bosco, Mary Byangire, and Michael Okia of the Ministry of Health (MOH); Drs. Patrick Okello and Gunawardena Dissanayake of USAID; Dr. Susie Nasr of PMI; Drs. Scott Filler and Menon Manoj of CDC/Atlanta; Drs. Sam Nsobya and Yeka Adoke of UMSP; Dr. Charles Katureebe of WHO; James Muwonge and Stephen Baryahirwa of UBOS. The National Malaria Control Program (NMCP) would also like to thank the data collection team that was recruited and supervised by UBOS.

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Dr. Asuman Lukwago
Ag. Permanent Secretary

ABBREVIATIONS

ACT	Artemisinin-based Combination Therapy
ANC	Antenatal Care
CDC	Centers for Disease Control and Prevention
CDM	Community Medicine Distributor
DHS	Demographic and Health Survey
EA	Enumeration area
HBMF	Home-Based Management of Fever
HMIS	Health Management Information System
HSSP-II	Health Sector Strategic Plan-II
IPT	Intermittent preventive treatment
IRS	Indoor Residual Spraying
ITN	Insecticide-treated mosquito Net
LLIN	Long Lasting Insecticidal mosquito Net
NMCP	National Malaria Control Programme
PMI	President's Malaria Initiative
RDT	Rapid Diagnostic Test
RBM	Roll Back Malaria
SP	Sulfadoxine-pyrimethamine
UBOS	Uganda Bureau of Statistics
UDHS	Uganda Demographic and Health Survey
UMCSP	Uganda Malaria Control Strategic Plan
UMIS	Uganda Malaria Indicator Survey
UMSP	Uganda Malaria Surveillance Project
UNCST	Uganda National Council for Science and Technology
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UVRI	Uganda Virus Research Institute
WHO	World Health Organisation

SUMMARY OF FINDINGS

The 2009 UMIS was carried out between November 4, 2009 and December 24, 2009, using a nationally representative sample of 4,760 households. All women age 15-49 years in these households were eligible to be individually interviewed and were asked questions about the prevention of malaria during pregnancy and the treatment of childhood fevers. In addition, the survey included testing for anaemia and malaria among children age 0-59 months. Using a finger (or heel) prick blood sample, results from anaemia and malaria testing were available immediately and were provided to the children's parents or guardians. Thick and thin smears were also prepared in the field and taken to the Uganda Malaria Surveillance Project Molecular Laboratory in Kampala for microscopy.

The 2009 UMIS was designed to provide data to monitor all key malaria indicators in Uganda. Specifically, the UMIS collected information on ownership and use of mosquito bed nets, intermittent preventive drug treatment for pregnant women, timing and type of treatment for childhood fever, and prevalence of anaemia and malaria among children.

BEDNET OWNERSHIP AND USE

The survey showed a substantial increase in household ownership of mosquito bed nets. Overall, 59 percent of households in Uganda have at least one mosquito net (treated or untreated), 47 percent have at least one insecticide-treated net (ITN), and 46 percent have at least one long-lasting insecticidal net (LLIN). Compared with statistics for 2006, when 34 percent of households owned at least one mosquito net and only 16 percent owned at least one ITN, ownership of mosquito nets has increased quite significantly. In Uganda, universal bednet coverage is defined as three ITNs per household. However, only 8 percent of households have three or more ITNs, which falls far short of the 2010 target of 50 percent.

Only a third (33 percent) of children under age 5 in all households were reported to have slept under an ITN the night before the survey (an increase from 10 percent in 2006), although the survey took place just after the height of the malaria transmission season. Thirty-three percent of all women reported that they slept under an ITN the night before the survey (an increase from 10 percent in 2006), and 44 percent of pregnant women reported that they slept under an ITN (an increase from 10 percent in 2006).

INTERMITTENT PREVENTIVE TREATMENT FOR PREGNANT WOMEN

Women who had a live birth in the two years preceding the 2009 UMIS were asked if they had taken any drugs to prevent getting malaria during that pregnancy and, if they answered yes, which drug. Only 32 percent said they received IPT during the last pregnancy (compared with 16 percent in 2006).

TREATMENT OF CHILDHOOD FEVER

Mothers were asked whether their children under age 5 had had a fever during the two weeks preceding the survey and, if so, whether the child was given any medicine and, if so, what kind. Survey results show that 45 percent of children under age 5 had a fever in the two weeks preceding the survey and among these children, 60 percent took some type of antimalarial drug, 23 percent took an artemisinin-combination therapy (ACT), and 19 percent took quinine. Fourteen percent received the recommended treatment of ACT within 24 hours of the onset of fever according to national treatment policy. Survey findings also show that 80 percent of households live within 5 km of a health facility, compared with 72 percent as stated in the HSSP-II.

ANAEMIA IN CHILDREN

Survey data show that anaemia is a significant public health problem in Uganda. Malaria accounts for a significant proportion of anaemia in children under age 5. Six out of ten Ugandan children under age 5 are anaemic (Hb concentration levels below 11 g/dl). Twenty-one percent are mildly anaemic, 30 percent are moderately anaemic, and 10 percent are severely anaemic.

MALARIA PREVALENCE IN CHILDREN

Malaria prevalence among children age 0-59 months was measured in the 2009 UMIS in two ways. In the field, health technicians used the Paracheck Pf® rapid diagnostic blood test (RDT) to determine whether children had malaria. In addition, thin and thick smears from each child's blood were made in the field and transported to the UMSP Molecular Laboratory for confirmatory microscopy testing.

Using microscopy, 42 percent of children age 0-59 months (45 percent of children age 6-59 months) tested positive for malaria.

SUMMARY OF KEY INDICATORS

Indicator	Base line (2006 DHS)	2009 UMIS Results	Strategic Plan targets 2010
Mean size of households	5.0	4.7	na
Households living within 1-4 km radius of nearest health facility	72 percent*	80 percent	na
Household ownership of radio	61 percent	68 percent	na
Household ownership of mobile phone	16 percent	44 percent	na
Proportion of women 15-49 with no education	23 percent	17 percent	na
Percentage of households that own at least one ITN	16 percent	47 percent	85 percent
Percentage of households that own at least two ITNs	na	24 percent	60 percent
Percentage of households that own three or more ITNs	na	8 percent	50 percent
Proportion of children under age 5 sleeping under an ITN the previous night	10 percent	33 percent	85 percent
Proportion of pregnant women sleeping under an ITN the previous night	10 percent	44 percent	85 percent
Proportion of households sprayed in previous 12 months (IRS)	6 percent	6 percent	na
U5 malaria prevalence (by microscopy)	na	42 percent	na
Proportion of children under age 5 with fever in the last 2 weeks who received antimalarial treatment according to national policy (using ACT) within 24 hours from onset of fever	1 percent	14 percent	85 percent
Proportion of children under age 5 with fever in the last 2 weeks who had a finger or heel stick	na	17 percent	na
Proportion of children under age 5 with fever in the last 2 weeks who sought treatment from the public health sector	na	44 percent	na
Proportion of pregnant women who received IPT during last pregnancy	16 percent	32 percent	85 percent

* HSSP-II

UGANDA
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
National capital
Town, village
Airport
International boundary
District boundary
Main road
Secondary road
Railroad
SUDAN
KENYA
DEMOCRATIC REPUBLIC OF THE CONGO
RWANDA
UNITED REPUBLIC OF TANZANIA
Kigali
Lake Victoria
Lake Albert
Lake Edward
L. George
Lake Kyoga
Lake Kwania
L. Bisina
Sese Is.
YUMBE
MOYO
ADJUMANI
ARUA
NEBBI
GULU
KITGUM
PADER
KOTIDO
MOROTO
APAC
LIRA
KATAKWI
MASINDI
HOIMA
KABERAMAIDO
SOROTI
NAKAPIRIPIRIT
KUMI
SIRONKO
KAPCHORWA
NAKASONGOLA
KAYUNGA
KAMULI
PALLISA
MBALE
KIBOGA
KIBAALE
BUNDIBUGYO
KABAROLE
KYENJOJO
MUBENDE
LUWERO
IGANGA
TORORO
BUSIA
JINJA
KAMPALA
MPIGI
WAKISO
KASESE
KAMWENGE
SEMBABULE
MASAKA
MBARARA
BUSHENYI
RUKUNGIRI
KANUNGU
NTUNGAMO
KABALE
KISORO
RAKAI
KALANGALA
MUKONO
MAYUGE
BUGIRI
Kampala
Lopodi
Kitgum
Kotido
Arua
Gulu
Moroto
Lira
Lothaa
Katakwi
Soroti
Namalu
Masindi
Bunia
Hoima
Kumi
Kapchorwa
Mbale
Kitale
Kamuli
Iganga
Tororo
Bungoma
Bombo
Mubende
Fort Portal
Jinja
Kasese
Entebbe
Buvuma
Damba
Kome
Sigulu
Lolui
Ibanda
Kalangala
Bugala
Masaka
Mbarara
Kabale
Kyaka
Bumbire
Ukara
Ukerewe
Speke Gulf
Winam Gulf
Kagera
Victoria Nile
Albert Nile
Bahr el Jebel (White Nile)
Kafu
Nkusi
Semliki
Katonga
Kibali
Shari
Ituri
Nzoia
0 25 50 75 100 km
0 25 50 75 mi
30°
32°
34°
2°
0°
4°

INTRODUCTION 1

1.1 COUNTRY PROFILE

The republic of Uganda is a small, landlocked East African country positioned between latitudes 1° south and 4° north of the equator. It shares borders with Sudan in the north, Kenya in the east, the Democratic Republic of Congo in the west, and Tanzania and Rwanda in the south (see map). Owing to its relatively high altitude (1,300-1,500 metres above sea level), it experiences a favourable tropical climate, with mean annual temperatures between 16°C in the southwest; 25°C in the centre, east, and northwest; and close to 30°C in the northeast. Uganda experiences two peaks of rainfall, from March to May and from September to December. Vegetation is varied, with tropical rain forests in the south and savannah woodland and semi-desert conditions in the north (UBOS, 2001).

The country covers an area of about 241,039 square kilometres and is divided into 80 districts.[1] Power is decentralized at the local government level within the districts. The central government, however, sets policy and supervises standards.

The public sector, private not-for-profit sector, and private for-profit sector comprise the formal health care system. There is a fairly large informal health care sector, including traditional medicine providers, medicine vendors and shops, and complementary and alternative practitioners. The public health facility sector ranges from large referral hospitals serving about 2,000,000 people to parish-level health centres that provide basic preventive and curative health services for approximately 5,000 people. Also included in the public sector are community health centres. These centres provide mobile health services through volunteers who are increasingly organized to form village health teams and often include community medicine distributors (CMDs). Selected development indicators for Uganda are provided in Table 1.1.

Table 1.1 Selected human development indicators for Uganda

Population (projected for mid-year 2010)	30.8 million
Annual population growth	3.2 percent
Total fertility rate (per woman)	6.7[a]
Infant mortality rate (per 1,000 births)	76
Maternal mortality ratio (per 100,000 births)	435[a]
Life expectancy at birth	50

[a] UBOS and Macro, 2007

1.2 BACKGROUND ON MALARIA IN UGANDA

1.2.1 Malaria Transmission

Malaria remains one of the most important diseases in Uganda, causing significant morbidity, mortality, and economic loss. Children under age 5 and pregnant women are disproportionately affected. Hospital records suggest that malaria is responsible for 30 to 50 percent of outpatient visits, 15 to 20 percent of admissions, and 9 to 14 percent of inpatient deaths. According to the 2008 World Malaria

[1] There were 80 districts at the time of designing and collecting data for the 2009 UMIS. Currently there are 112 districts in Uganda.

Report, Uganda ranks 6th worldwide in number of malaria cases and 3rd in number of malaria deaths (World Health Organization, 2008). The overall malaria-specific mortality is estimated to be between 70,000 and 100,000 child deaths annually in Uganda, a death toll that far exceeds that for HIV/AIDS (Lynch et al., 2005).

Uganda has stable, perennial malaria transmission in 90 to 95 percent of the country. In the rest of the country, particularly in the highland areas, there is low and unstable transmission, with potential for epidemics. The areas of stable transmission are divided into 3 epidemiological zones:

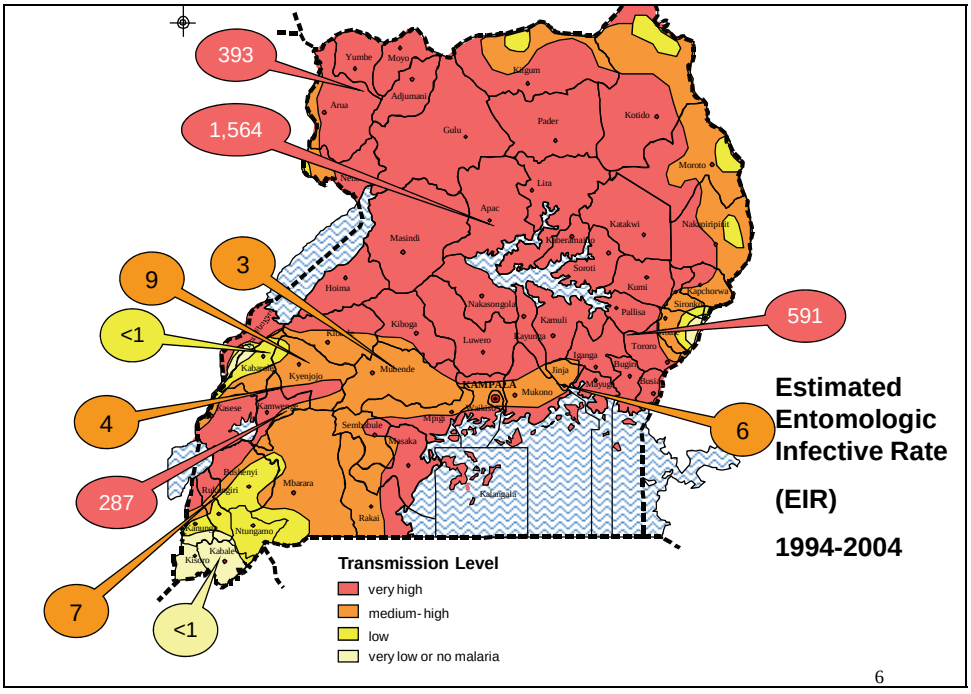
1. Areas of very high transmission levels with more than 100 infective bites per person per year (70 percent of the country)

2. Areas with medium to high transmission levels with 10-100 infective bites per person per year (20 percent of the country)

3. Areas of low transmission with fewer than 10 infective bites per person per year (10 percent of the country) (Figure 1.1).

Areas of unstable transmission (very low or no malaria) include the southwest area of the country, Mt. Rwenzori in the west and Mt. Elgon in the east, and areas with altitudes above 1,800 metres.

Figure 1.1 **Uganda Malaria Endemicity Map**



Source: Malaria Control Program, Ministry of Health, Uganda. Available at http://www.health.go.ug/mcp/distmaps.html

Although transmission is largely stable, there is some seasonal variation associated with the rainy seasons in different geographic areas of Uganda. Malaria transmission levels are highest following the rainy seasons.

All four human *Plasmodia* species coexist in Uganda; however, *P. falciparum* is by far the most common, responsible for 90 to 98 percent of diagnosed cases, and the most common cause of severe malaria. *P. malariae* contributes to about 1 to 3 percent of all malaria cases.

The most common malaria vectors in Uganda include members of *Anopheles gambiae s.l.* and *A. funestus,* species that are known to be endophagic and endophilic, that is, they bite and rest indoors. These malaria vectors are able to breed in very small pools of water such as cattle hoof prints.

1.2.2 Malaria Policy

The Uganda government, through the Uganda National Malaria Control Program (NMCP), which was started in 1995, is implementing the Uganda Malaria Control Strategic Plan (UMCSP) 2005/06-2009/10. This plan details national prevention and control strategies that include:

- Use of long-lasting insecticidal nets (LLINs)
- Indoor residual spraying (IRS)
- Environmental management (where feasible and effective)
- Uncomplicated malaria case management with artemisinin-based combination therapy (ACT) at the community level and in health units (with emphasis on improved diagnosis and management of severe malaria)
- Treatment and prevention of malaria during pregnancy, including intermittent preventive treatment (IPT)
- Early detection and response to malaria epidemics

Major national prevention activities include distribution of LLINs, IRS, and changes to the recommended diagnostic and treatment regimes. About 6 million LLINs had been distributed before the Uganda malaria indicator survey data collection. National IRS coverage has focused on epidemic-prone areas, including geographically vulnerable populations and those in internally displaced persons camps in the north. In 2006, the Ugandan government rolled out a new case management policy in which the recommended first line of treatment was changed from chloroquine plus Fansidar (CQ + SP) to artemisinin-based combination therapy (ACT), which was deemed more efficacious and cost-effective. In addition, a home-based management of fever (HBMF) strategy was rolled out nationwide. Unfortunately, the sustainability of HBMF suffered due to inadequate ACT supplies at the community level following the suspension of the Global Fund grant for Round 4 Phase II.

1.2.3 Sources of Malaria Data in Uganda

Malaria case reporting

Routine morbidity case reports through the Health Management Information Systems (HMIS) represent the main source of malaria data in Uganda. According to these reports, there were 11.7 million outpatient cases of malaria in 2008 alone.[2] However, given that HMIS in the country rely solely on the public sector and NGO health facilities for malaria morbidity and mortality data, the above figures most likely represent a gross underestimation of the burden of malaria in Uganda. With recent estimates

[2] The majority of these reported cases of malaria are not laboratory confirmed.

specifying that 60 to 80 percent of fever cases are treated in the informal and private sector, the true burden of malaria in Uganda likely approximates 60 million cases annually.

Malaria surveillance project

Through a collaborative project that involved the government of Uganda; Makerere University, Kampala; and the University of California, San Francisco, malaria sentinel sites were established at health facilities in Uganda and have been operational since 1998. Although these sites were traditionally used to monitor antimalarial drug resistance, the focus in the recent past has shifted to measure other malaria indicators. Indicators collected include monthly outpatient malaria morbidity; laboratory-confirmed cases of malaria based on positive smears and rapid diagnostic tests (RDTs); parasite densities; and antimalarial drug usage. Currently, six sites are operational, and a pilot inpatient surveillance site, which will also capture mortality data, has been started.

Demographic and Health Surveys

Population-based Demographic and Health Surveys (DHS surveys) complement facility-based malaria data sources by providing strategic information to guide programmes. These surveys are based on nationally representative household samples that give national and sub-national estimates of a range of demographic and health indicators. In Uganda, four DHS surveys were conducted in 1988-89, 1995, 2000-01, and 2006. These surveys provide important data on malaria, including information on household ownership and use of mosquito nets, indoor residual spraying, intermittent preventive treatment for pregnant women, and treatment of childhood fever.

1.3 OBJECTIVES OF THE UGANDA MALARIA INDICATOR SURVEY

Since 1995, the NMCP and its partners have been scaling up malaria interventions in all parts of the country. To determine the progress made in malaria control and prevention in Uganda, the 2009 Uganda Malaria Indicator Survey (UMIS) was designed to provide data on key malaria indicators, including mosquito net ownership and use, as well as prompt treatment using ACT.

The key objectives of the 2009 UMIS were to:

- Measure the extent of ownership and use of mosquito bed nets
- Assess coverage of the intermittent preventive treatment programme for pregnant women
- Identify practices used to treat malaria among children under age 5 and the use of specific antimalarial medications
- Measure the prevalence of malaria and anaemia among children age 0-59 months
- Determine the species of plasmodium parasite most prevalent in Uganda
- Assess knowledge, attitudes, and practices regarding malaria in the general population

1.4 METHODOLOGY OF THE UGANDA MALARIA INDICATOR SURVEY

The 2009 UMIS was carried out during November and December 2009, using a nationally representative sample of 4,760 households in 170 census enumeration areas. All women age 15-49 years in these households were eligible for individual interviews, during which they were asked questions about malaria prevention during pregnancy and treatment of childhood fevers. In addition, the survey included testing for anaemia and malaria among children age 0-59 months using finger (or heel) prick blood samples. Test results for anaemia (using the HemoCue portable machine) and malaria (using malaria RDT) were available immediately and were provided to the children's parents or guardians. Thick and thin blood smears were also made in the field and transported to the Uganda Malaria Surveillance Project

Molecular Laboratory at the Mulago Hospital in Kampala where they were tested for the presence of malaria parasites and where the species of plasmodium parasite was determined.

1.4.1 Survey Organization

The 2009 UMIS was implemented by the Uganda Bureau of Statistics (UBOS) and the Uganda Malaria Surveillance Project (UMSP) on behalf of the National Malaria Control Program (NMCP). UBOS was responsible for general administrative management of the survey, including overseeing the day-to-day operations, designing the survey, and processing the data. UBOS assisted NMCP in the design of the UMIS, especially in the area of sample design and selection. In this regard, they provided the necessary maps and lists of households in the selected sample points. NMCP took primary responsibility for organizing the Technical Working Group, developing the survey protocol, and ensuring its approval by the Uganda National Council of Science and Technology prior to the data collection. Also, NMCP helped UBOS recruit, train, and monitor field staff and provided the medicines to treat children who tested positive for malaria during the survey.

The Uganda Malaria Surveillance Project (UMSP) Molecular Laboratory at the Mulago Hospital complex in Kampala trained field technicians and implemented the microscopic reading of the malaria slides to determine malaria parasite infection.

Technical assistance was provided by ICF Macro**.** ICF Macro staff assisted with overall survey design, sample design, questionnaire design, field staff training, field work monitoring, collection of biomarkers (anaemia testing, rapid diagnostic testing for malaria, and making and reading blood smears), data processing, data analysis, and report preparation.

Financial support for the survey was provided by the U.S. President's Malaria Initiative (PMI) through the U.S. Agency for International Development (USAID).

1.4.2 Sample Design

The 2009 UMIS survey was designed to provide national, regional, urban, and rural estimates of key malaria indicators. The sample was stratified into 9 survey regions of the country, plus Kampala. Each of the nine regions consisted of 8 to 10 contiguous administrative districts of Uganda that share similar languages and cultural characteristics. Kampala district, because it had a unique character as an entirely urban district and also was the capital city of Uganda, comprised a separate region. The 10 regions contained the following districts:

1. **North East region**: Kotido, Abim, Kaabong, Moroto, Nakapiripirit, Katakwi, Amuria, Bukedea, Soroti, Kumi, and Kaberamaido

2. **Mid Northern region**: Gulu, Amuru, Kitgum, Pader, Apac, Oyam, Lira, Amolatar, and Dokolo

3. **West Nile region**: Moyo, Adjumani, Yumbe, Arua, Koboko, Nyadri, and Nebbi

4. **Mid Western region**: Masindi, Buliisa, Hoima, Kibaale, Bundibugyo, Kabarole, Kasese, Kyenjojo, and Kamwenge

5. **South Western region**: Bushenyi, Rukungiri, Kanungu, Kabale, Kisoro, Mbarara, Ibanda, Isingiro, Kiruhura, and Ntungamo

6. **Mid- Eastern region**: Kapchorwa, Bukwa, Mbale, Bududa, Manafwa, Tororo, Butaleja, Sironko, Pallisa, Budaka, and Busia

7. **Central 1 region**: Kalangala, Masaka, Mpigi, Rakai, Lyantonde, Sembabule, and Wakiso

8. **Central 2 region**: Kayunga, Kiboga, Luwero, Nakaseke, Mubende, Mityana, Mukono, and Nakasongola

9. **East Central region**: Jinja, Iganga, Namutumba, Kamuli, Kaliro, Bugiri, and Mayuge

10. **Kampala**: Kampala

The sample was not spread geographically in proportion to the population, but rather equally across the regions, with 17 sample points or clusters per region. As a result, the UMIS sample is not self-weighting at the national level, and sample weighting factors have been applied to the survey records in order to bring them into proportion.

The survey utilized a two-stage sample design. The first stage involved selecting sample points or clusters from a list of enumeration areas (EAs) covered in the 2002 Population Census. A total of 170 clusters (26 urban and 144 rural) with probability proportional to size were selected. Several months prior to the main survey, a complete listing of all households in the 170 selected clusters was carried out. This provided a sampling frame from which households were then selected for the survey. The second stage of selection involved the systematic sampling of households from the list of households in each cluster. Twenty-eight households were selected in each cluster.

All women age 15-49 years who were either permanent residents of the households in the sample or visitors present in the household on the night before the survey were eligible to be interviewed in the survey. All children age 0-59 months who were listed in the household were eligible for the anaemia and malaria testing component of the survey.

1.4.3 Questionnaires

Two questionnaires were used in the UMIS: a Household Questionnaire and a Woman's Questionnaire for all women age 15-49 in the selected households. Both instruments were based on the standard Malaria Indicator Survey Questionnaires developed by the Roll Back Malaria and DHS programmes. In consultation with the Technical Working Group, NMCP and ICF Macro staff modified the model questionnaires to reflect issues relevant to malaria in Uganda. The questionnaires were translated into the 6 major local languages commonly spoken in Uganda (Ateso-Karamojong, Luganda, Lugbara, Luo, Runyankore-Rukiga, and Runyoro-Rutoro).

The **Household Questionnaire** was used to list all the usual members and visitors in the selected households. Some basic information was collected on the characteristics of each person listed, including age, sex, and relationship to the head of the household. The main purpose of the Household Questionnaire was to identify women who are eligible for the individual interview and children who are age 0-59 months for anaemia and malaria testing. The Household Questionnaire also collected information on characteristics of the household's dwelling unit, such as the source of water; type of toilet facilities; materials used for the floor, roof, and walls of the house; ownership of various durable goods; and ownership and use of mosquito nets. In addition, this questionnaire was used to record consent and results with regard to the anaemia and malaria testing of young children.

The **Woman's Questionnaire** was used to collect information from all women age 15-49 years and covered the following topics:

- Background characteristics (age, residential history, education, literacy, and dialect)
- Full reproductive history and child mortality
- Antenatal care and preventive malaria treatment for most recent birth

- Prevalence and treatment of fever among children under age 5
- Knowledge about malaria (causes, ways to avoid, types of medicines, and so on).

The questionnaires and process of biomarker collection were pretested prior to the main data collection. The pretest involved 12 interviewers and 12 health technicians/nurses (2 for each of the 6 local languages into which the questionnaires were translated). The interviewers were trained for five days and collected data in the six languages for three days in areas close to Kampala. The purpose of the pretest was to assess the appropriateness of the wording of the questions as well as to verify the translations and skip patterns.

1.4.4 Anaemia and Malaria Testing

The 2009 UMIS incorporated three biomarkers, which were collected through finger (or heel) prick blood samples from children age 0-59 months to perform on-the-spot testing for (1) anaemia and malaria and (2) to prepare thick and thin blood smears to be read in the laboratory to determine malaria parasitemia. Children age 0-5 months were included in the survey because previous studies in Uganda revealed malaria parasites in this group, but no national estimates of prevalence exist for reference. Each data collection team included two health technicians who implemented the malaria and anaemia testing and made the blood smear slides. Also on each team was one medically trained staff person (nurse or clinical officer) who ensured that medications for malaria were given in accordance with the appropriate treatment protocols. Verbal informed consent for testing of children was requested from the child's parent or guardian at the end of the household interview. The protocol for the blood specimen collection and analysis was approved by ICF Macro's Institutional Review Board as well as by the Uganda Virus Research Institute (UVRI), Centers for Disease Control and Prevention (CDC), and the Uganda National Council for Science and Technology (UNCST).

Anaemia testing: Because of the strong correlation between malaria infection and anaemia, the UMIS included anaemia testing for children age 0-59 months. After obtaining informed consent from the child's parent or guardian, blood samples were collected using a single-use, spring-loaded, sterile lancet to make a finger prick. Health technicians then collected blood on a microcuvette from the finger or heel prick. Haemoglobin analysis was carried out on site using a battery-operated portable HemoCue analyzer, which produces a result in less than one minute. Results were given to the child's parent or guardian verbally and in written form. Those whose children had a haemoglobin level of under 8 g/dl were urged to take the child to a health facility for follow-up care and were given a referral letter with the haemoglobin reading to show staff at the health facility. Results of the anaemia test were recorded on the Household Questionnaire as well as in a brochure explaining the causes and prevention of anaemia that was left in the household.

Malaria testing using rapid diagnostic testing (RDT): Another major objective of the UMIS was to provide information about the extent of malaria infection among children age 0-59 months. Using the same finger (or heel) prick used for anaemia testing, a drop of blood was tested immediately using the Paracheck Pf™ rapid diagnostic test (RDT), which tests for *Plasmodium falciparum*. The test includes a loop applicator that comes in a sterile packet. A tiny volume of blood is captured on the applicator and placed on the well of the device. Malaria RDTs (HRP2) have been available in various commercial formats for several years, have shown good sensitivity in a variety of field settings, and are increasingly advocated as a diagnostic test where reliable microscopy is not available. A potential problem for HRP2-based assays is persistence of detectable circulating antigen for up to several weeks after parasites have been eradicated (Tjitra et al. 2001; Singh et al. 2002; Mayxay et al. 2001). This would result in overestimation of disease prevalence.

All field technicians were trained to perform the RDT in the field according to manufacturers' instructions. They read, interpreted, and recorded RDT results after 15 minutes. They recorded the RDT

results as either positive or negative, with faint test lines being considered positive. Test results were provided to the child's parent/guardian in oral and written form and were recorded on the Household Questionnaire.

Children who tested positive for malaria using the rapid diagnostic test were offered a full course of treatment according to standard procedures for treating malaria in Uganda, provided they were not currently on treatment and had not completed a full course of ACT during the preceding 2 weeks. To ascertain the correct dose, the medically trained staff on each team were instructed to ask about any medications the child might already be taking. They then provided the age-appropriate dose of ACT—Coartem® (Artemether lumefantrine)—along with instructions on how to administer the medicine to the child.[3, 4]

Malaria testing using blood smears: In addition to the RDT, thick and thin blood smears were made in the field from each child's blood. Each of the two blood smear slides was given a bar code label, with a triplicate label attached to the Household Questionnaire on the line showing consent for that child. A fourth copy of the same bar code label was affixed to a Blood Sample Transmittal Form in order to track the blood samples from the field to the laboratory. The slides were dried in a dust-free environment and stored in slide boxes. Technicians fixed the thin smears in the field lab at the end of each day by dipping the slide in 100 percent methanol. The thick and thin slides were periodically collected in the field along with the completed questionnaires and transported to UBOS headquarters in Kampala for log in, after which they were taken to the UMSP Molecular Research Laboratory at Mulago Hospital in Kampala. Thick smears were first examined to determine malaria infection. Thin smears of all positive thick smears were then read to determine the species of plasmodium parasite.

1.4.5 Training

Interviewers/Supervisors: UBOS recruited 59 interviewers and 18 nurses for a 2-week interviewer/supervisor training session, which took place from October 19-31, 2009, at the Africana Hotel in Kampala. Training consisted of a review of how to fill out the Household and Woman's Questionnaires, mock interviews, and sessions covering tips on interviewing, how to locate selected households, and how to code interview results. Training also included 2 field practices. Two quizzes were administered to assess how well the participants understood what they were being trained on. Of the 59 interviewer attendees in the interviewer/supervisor training, 17 were selected as team supervisors, 34 were selected as interviewers, and the rest were held in reserve. Seventeen of the 18 nurses were selected as team nurses, and 1 was held in reserve. The nurses were also trained on informed consent procedures and malaria treatment.

Laboratory field technicians: The NMCP Molecular Research Laboratory identified 39 technicians who were trained for the anaemia and malaria testing. All technicians went through classroom training and practice and also attended three days of additional practice at the Mulago Hospital. The classroom training involved presentation, discussion, and actual testing for anaemia and malaria. Training for anaemia testing was done using HemoCue equipment, and Paracheck RDT was used for malaria testing. Technicians were also trained on the preparation of thick and thin smears, as well as how to fix the thin slides in the field and store and transfer the slides from the field to the lab. Finally, the technicians were taught how to administer the informed consent and report the results to the parent/caretaker of the child. Thirty-four of the 39 technicians were eventually selected for field work.

[3] Dosage of the ACT during the survey was based on the age of the recipient. The proper dosage for a child under 3 years of age is 1 tablet of Coartem® to be taken twice daily for three days, while the dosage for a child age 3-8 years is two tablets of Coartem® to be taken twice daily for three days.

[4] Children below 4 months of age who tested positive to the malaria RDT were referred to the nearest facility for treatment.

Joint training sessions: All trainees (interviewers, nurses, and laboratory technicians) received lectures on the epidemiology of malaria in Uganda and correct treatment protocols by a senior member of the National Malaria Control Programme (NMCP). To simulate field work, all trainees participated in two field practice exercises in and around Kampala. Laboratory technicians, team supervisors, and the nurses on each team received more specific instructions on how to record children's anaemia and malaria test results on the anaemia and malaria brochure meant to be left in every household in which children were tested. Team members learned how to complete the referral forms for any child with severe anaemia.

1.4.6 Fieldwork

Seventeen teams were organized for the data collection, each consisting of one team supervisor, two interviewers, one nurse (or clinical officer), two field laboratory technicians, and one driver. Two senior staff from UBOS and one from NMCP were designated to be field coordinators and were each assigned a number of teams to monitor.

Data collection for the UMIS started on schedule on November 4, 2009. Fieldwork was completed by all teams by December 24, 2009. However, one team had to revisit 1 cluster in Kampala region where there were some challenges in obtaining permission from the local government. This final cluster was completed in January 2010.

1.4.7 Laboratory Testing

The blood slides for malaria were read at the UMSP Molecular Research Laboratory in Mulago Hospital. The purpose of the thick blood slides was to provide a 'gold standard' for malaria infection while that of the thin smear was to ascertain the type of parasite.

The protocol for microscopy of the blood slides was as follows: thick and thin blood smears were stained with 2 percent Giemsa for 30 minutes. Thick blood smears were evaluated for the presence of parasites (asexual forms only) and gametocytes. Parasite and gametocyte densities were calculated from thick blood smears by counting the number of asexual parasites and gametocytes, respectively, per 200 leukocytes (or per 500, if the count was less than 10 parasites or gametocytes per 200 leukocytes), assuming a leukocyte count of 8,000/µl. A thick blood smear was considered negative when the examination of times 100 high power fields did not reveal asexual parasites or gametocytes. For quality control, all slides were read by a second microscopist, and a third reviewer settled any discrepant readings. Of the 4,075 thick slides evaluated, there were only 176 (4.3 percent) discrepant readings that were settled by a third reviewer. The corresponding thin blood smears of all positive thick smears were evaluated to determine parasite species.

1.4.8 Data Processing

The processing of the UMIS questionnaire data began soon after the fieldwork commenced. Completed questionnaires were returned periodically from the field to the UBOS office in Kampala, where they were coded by data processing personnel recruited and trained for this task. The data processing staff consisted of a supervisor from UBOS, a questionnaire administrator, data entry operators, and data editors, all of whom were trained by a MEASURE DHS data processing specialist. Data were entered using the CSPro computer package. All data were entered twice (100 percent verification).

1.5 Response Rates

Table 1.2 shows response rates for the 2009 UMIS. Of the 4,760 households selected in the sample, 4,536 were found to be occupied at the time of the fieldwork. The shortfall is due to dwellings

that were found to be vacant or destroyed. Of the existing households, 4,421 were successfully interviewed, yielding a household response rate of 98 percent.

In the households interviewed in the survey, a total of 4,312 eligible women were identified, of whom 4,134 were successfully interviewed, yielding a response rate of 96 percent. The household and women's response rates were slightly lower in the urban than in the rural sample. The principal reason for non-response among eligible women was the failure to find them at home despite repeated visits to the household.

Table 1.2 Results of the household and individual interviews

Number of households, number of interviews, and response rates, according to residence (unweighted), Uganda MIS 2009

Result	Residence		Total
	Urban	Rural	
Household interviews			
Households selected	728	4,032	4,760
Households occupied	689	3,847	4,536
Households interviewed	660	3,761	4,421
Household response rate	95.8	97.8	97.5
Interviews with women age 15-49			
Number of eligible women	720	3,592	4,312
Number of eligible women interviewed	679	3,455	4,134
Eligible women response rate	94.3	96.2	95.9

[1] Households interviewed/households occupied
[2] Interviewed/eligible women

CHARACTERISTICS OF HOUSEHOLDS 2

This chapter presents summary information on some socioeconomic characteristics of the households[1] interviewed in the 2009 UMIS. The Household Questionnaire (Appendix E) included questions about age, sex, and relationship to the head of the household for all usual residents and visitors who spent the night preceding the interview. This method of data collection allows the analysis of the results for either the de jure (usual residents) or de facto (those who are there at the time of the survey) populations. The Household Questionnaire also obtained information on housing facilities (e.g., source of water supply and sanitation facilities) and household possessions. These latter items are used to create an index of relative wealth, which is described in this chapter.

The information presented in this chapter is intended to facilitate interpretation of the key demographic, socioeconomic, and health indicators presented later in the report. It is also intended to assist in the assessment of the representativeness of the survey sample.

2.1 POPULATION BY AGE AND SEX

Age and sex are important demographic variables and are the primary basis of demographic classification. Table 2.1 shows the reported distribution of the de facto household population in the 2009 UMIS by five-year age groups, sex, and urban-rural residence.

Table 2.1 Household population by age, sex, and residence

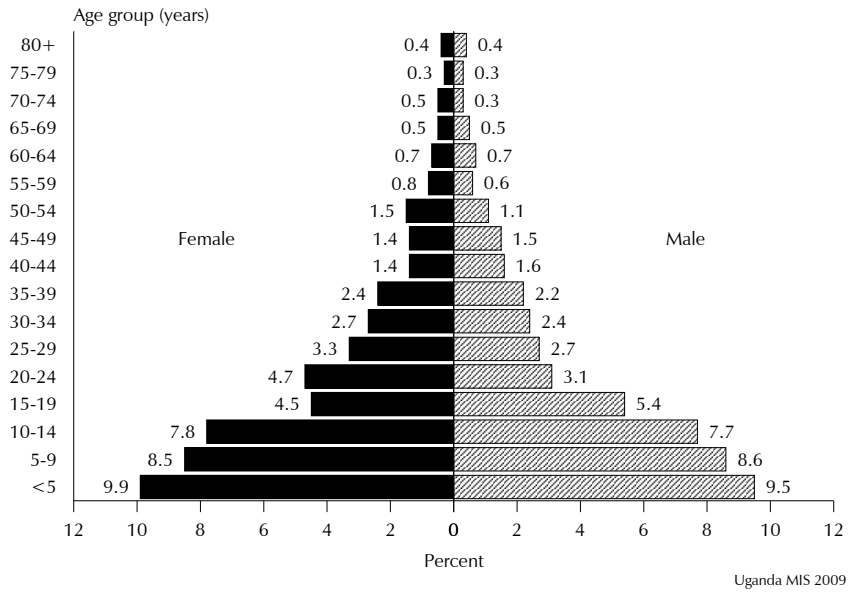
Percent distribution of the de facto household population by 5-year age groups, according to sex and residence, Uganda MIS 2009

	Urban			Rural			Total		
Age	Male	Female	Total	Male	Female	Total	Male	Female	Total
<5	19.3	18.7	19.0	19.5	19.3	19.4	19.5	19.2	19.3
5-9	11.1	15.4	13.4	18.6	16.7	17.6	17.6	16.5	17.1
10-14	13.5	10.7	12.0	16.2	15.9	16.0	15.8	15.2	15.5
15-19	12.6	9.1	10.8	10.9	8.8	9.8	11.1	8.8	9.9
20-24	11.1	15.5	13.4	5.6	8.1	6.9	6.3	9.1	7.7
25-29	7.4	8.2	7.8	5.4	6.2	5.8	5.7	6.5	6.1
30-34	8.8	7.3	8.0	4.5	4.9	4.7	5.0	5.3	5.1
35-39	4.5	6.9	5.8	4.6	4.3	4.5	4.6	4.7	4.6
40-44	3.4	2.1	2.7	3.2	2.9	3.0	3.2	2.8	3.0
45-49	4.0	2.1	3.0	2.9	2.8	2.9	3.0	2.7	2.9
50-54	1.0	1.3	1.1	2.4	3.2	2.8	2.2	2.9	2.6
55-59	0.5	0.7	0.6	1.5	1.8	1.6	1.3	1.6	1.5
60-64	1.1	0.7	0.9	1.5	1.4	1.4	1.4	1.3	1.4
65-69	0.4	0.3	0.4	1.0	1.2	1.1	0.9	1.0	1.0
70-74	0.5	0.3	0.4	0.7	1.1	0.9	0.7	1.0	0.8
75-79	0.3	0.4	0.4	0.7	0.7	0.7	0.6	0.6	0.6
80+	0.3	0.3	0.3	0.8	0.8	0.8	0.8	0.7	0.7
Don't know/missing	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	1,275	1,405	2,680	8,752	9,205	17,957	10,026	10,611	20,637

[1] For the purpose of the survey, a household is defined as a person or a group of persons, related or unrelated, who live together and share a common source of food.

The data show that almost 21,000 people were enumerated in the survey, with women constituting 51 percent of the population and men constituting 49 percent. The sex composition of the population does not show significant variation by urban-rural residence. The data further depict Uganda as a young population, with a large proportion of the population being in the younger age groups. The population under age 15 constitutes 52 percent of the total population, similar to 2006 UDHS estimates, and only 3 percent are 65 or older (Figure 2.1). There is an implausibly large drop-off between ages 10-14 and 15-19, especially for females. Examination of the distribution by single year (Appendix C Table C.1) shows evidence that interviewers may have intentionally underestimated women's ages to be younger than the age cut-off of 15 so as to make them ineligible for the individual interview; for example, whereas the number of boys age 14 and 15 enumerated in the household are identical (280 and 254), the number of girls age 14 is much higher than the number age 15 (337 and 212).

Figure 2.1 Population Pyramid



2.2 HOUSEHOLD COMPOSITION

Information on key aspects of the composition of households including the sex of the head of the household and the size of the household is presented in Table 2.2. These characteristics are important because they are associated with the welfare of a household. Female-headed households are, for example, typically poorer than male-headed households. Economic resources are often more limited in larger households. Moreover, where the size of the household is large, crowding can lead to health problems.

Survey results show that households in Uganda are predominantly male-headed (70 percent), a common feature in African countries. Nevertheless, three in ten households are headed by women, with the proportion of female–headed households just slightly higher in urban than in rural areas.

Table 2.2 Household composition

Percent distribution of households by sex of head of household and by household size; and mean size of household, according to residence, Uganda MIS 2009

Characteristic	Residence		Total
	Urban	Rural	
Household headship			
Male	65.9	71.1	70.2
Female	34.1	28.9	29.8
Total	100.0	100.0	100.0
Number of usual members			
1	19.6	9.7	11.3
2	15.7	9.7	10.7
3	19.2	12.6	13.7
4	12.2	14.9	14.4
5	9.8	14.0	13.3
6	9.7	12.2	11.8
7	4.3	10.8	9.7
8	6.1	7.0	6.8
9+	3.3	9.1	8.1
Total	100.0	100.0	100.0
Mean size of households	3.8	4.9	4.7
Number of households	710	3,711	4,421

Note: Table is based on de jure household members, i.e., usual residents.

The mean household size is 4.7 persons. This is only slightly lower than the figure of 5.0 obtained from the 2006 UDHS. The mean household size is larger in rural areas (4.9 persons) than in urban areas (3.8 persons). One-person, two-person, and three-person households are more likely to be found in urban areas than in rural areas; on the flip side, large households are more likely to be found in rural areas than in urban areas. This scenario is similar to what was reported in the 2006 UDHS.

2.3 HOUSEHOLD ENVIRONMENT

The physical characteristics of the dwelling in which a household lives are important determinants of the health status of household members, especially children. They can also be indicators of the socioeconomic status of households. UMIS household respondents were asked a number of questions about their household environment, including questions on the source of drinking water; type of toilet facility, cooking fuel, flooring, roof, and walls; and the number of rooms in the dwelling used for sleeping as well as the number of sleeping spaces available in the household. The results are presented both in terms of households and of the de jure population.

2.3.1 Drinking Water

Increasing access to improved drinking water is one of the Millennium Development Goals that Uganda, along with other nations worldwide, has adopted (United Nations General Assembly, 2001). Table 2.3 shows the percent distribution of households and of population by the source of the household's drinking water. Sources that are likely to provide water suitable for drinking are identified as 'improved sources'. They include a piped source within the dwelling or plot, public tap, tube well or borehole, protected well or spring, rainwater, and bottled water.[2] It should be noted, however, that even if water is obtained from an improved source, it may be contaminated during transportation or storage.

[2] The categorization into improved and non-improved sources follows that proposed by the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (WHO and UNICEF, 2004).

Table 2.3 Household drinking water

Percent distribution of households and de jure population by source of drinking water, according to residence, Uganda MIS 2009

Source of drinking water	Households			Population		
	Urban	Rural	Total	Urban	Rural	Total
Improved source[1]						
Piped water into dwelling/yard/plot	9.2	0.3	1.7	8.7	0.3	1.4
Piped water into yard/compound	11.3	1.1	2.8	13.4	1.0	2.6
Public tap/standpipe	30.8	6.2	10.1	28.1	5.2	8.2
Protected well in yard/compound	0.1	0.5	0.5	0.1	0.5	0.4
Protected public well	3.3	9.9	8.8	3.2	10.3	9.4
Borehole	33.8	34.4	34.3	34.6	36.1	35.9
Protected spring	3.6	13.0	11.5	4.5	13.5	12.3
Rainwater	0.1	0.2	0.2	0.0	0.2	0.2
Bottled water	2.0	0.1	0.4	1.1	0.0	0.2
Total improved	**94.4**	**65.7**	**70.3**	**93.8**	**67.1**	**70.5**
Non-improved source						
Unprotected spring	1.7	9.5	8.3	0.8	9.3	8.2
Open well in yard/compound	0.1	0.4	0.4	0.1	0.4	0.3
Open public well	0.8	9.0	7.7	0.9	9.4	8.3
Tanker truck	0.0	0.0	0.0	0.0	0.0	0.0
Surface water	2.7	14.5	12.6	4.2	13.3	12.1
Other	0.3	0.6	0.5	0.2	0.5	0.4
Total non-improved	**5.5**	**34.2**	**29.6**	**6.2**	**32.8**	**29.4**
Missing	0.1	0.2	0.1	0.0	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	710	3,711	4,421	2,692	18,300	20,992

[1] Bottled water is considered an improved source of drinking water.

Seventy percent of Ugandan households have an improved source of drinking water, very similar to the figure of 67 percent reported in the 2006 UDHS. Urban households (94 percent) are much more likely than rural households (66 percent) to use an improved source of drinking water (88 vs. 63 percent in 2006). By far the most common single source of drinking water is the borehole (34 percent of households). Results further show that about one-third of rural households obtain drinking water from non-improved sources, with up to 15 percent getting their drinking water from surface water (lakes and ponds, rivers and streams). Thus, exposure to preventable, waterborne illnesses such as intestinal worms, dysentery, and cholera is likely to be high in rural parts of Uganda.

2.3.2 Household Sanitation Facilities

Households without proper sanitation facilities are more exposed to the risk of diseases like dysentery, diarrhoea, and typhoid fever than those with improved sanitation facilities. Table 2.4 presents data on type of toilet facilities used by the household. Only 3 of 10 Ugandan households use an improved toilet facility, while the remaining 7 use a non-improved facility, mostly covered pit latrines with no slab (43 percent). Eight percent of households either have no facility or use the bush, a slight improvement from the 12 percent reported in the 2006 UDHS.

Table 2.4 Household sanitation facilities

Percent distribution of households and de jure population by type of toilet/latrine facilities, according to residence, Uganda MIS 2009

	Households			Population		
Type of toilet/latrine facility	Urban	Rural	Total	Urban	Rural	Total
Improved facility						
Flush toilet	9.1	0.2	1.6	9.4	0.2	1.4
VIP latrine	10.9	4.8	5.7	10.1	4.5	5.2
Covered pit latrine w/slab	53.3	16.2	22.1	51.0	16.0	20.5
Uncovered pit latrine w/slab	1.7	2.9	2.8	1.7	3.1	2.9
Composting toilet	0.0	0.2	0.2	0.0	0.1	0.1
Total improved facility	**75.0**	**24.3**	**32.5**	**72.2**	**23.9**	**30.1**
Non-improved facility						
Covered pit latrine no slab	21.8	46.6	42.6	24.4	48.0	45.0
Uncovered pit latrine no slab	3.1	19.8	17.1	3.3	19.2	17.2
No facility/bush/field	0.0	9.0	7.6	0.0	8.6	7.5
Total non-improved facility	**24.9**	**75.4**	**67.3**	**27.8**	**75.9**	**69.7**
Other	0.0	0.1	0.1	0.0	0.1	0.1
Missing	0.1	0.1	0.1	0.0	0.2	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	710	3,711	4,421	2,692	18,300	20,992

Note: In the 2009 UMIS, households were not asked if the toilet was shared with other households; consequently, the data are not comparable to the 2006 UDHS results.

2.3.3 Housing Characteristics

Table 2.5 presents information on a number of characteristics of the dwelling in which UMIS households live. These characteristics reflect the household's socioeconomic situation. They also may influence environmental conditions—for example, in the case of the use of biomass fuels, exposure to indoor pollution—that have a direct bearing on the health and welfare of household members.

Ninety percent of Ugandan households do not have electricity. Forty-five percent of households in urban areas have access to electricity, compared with only three percent of households in rural areas. This finding is similar to results of the 2006 UDHS when 42 percent of households in urban areas had electricity.

Table 2.5 Household characteristics

Percent distribution of households and de jure population by housing characteristics and percentage using solid fuel for cooking, according to residence, Uganda MIS 2009

	Households			Population		
Housing characteristic	Urban	Rural	Total	Urban	Rural	Total
Electricity						
Yes	45.0	3.3	10.0	46.4	2.9	8.5
No	54.9	96.4	89.7	53.5	96.9	91.3
Missing	0.0	0.3	0.3	0.1	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
Flooring material						
Earth/sand	15.6	35.7	32.5	14.3	34.0	31.5
Earth and dung	5.9	46.2	39.7	5.8	47.5	42.1
Mosaic or tiles	3.2	0.0	0.6	2.8	0.1	0.4
Bricks	0.0	0.3	0.3	0.0	0.4	0.3
Cement	74.7	16.6	26.0	76.6	16.9	24.6
Stones	0.4	0.9	0.8	0.4	0.9	0.8
Other	0.2	0.1	0.1	0.0	0.1	0.1
Missing	0.0	0.1	0.1	0.0	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Continued…

Table 2.5—*Continued*

Housing characteristic	Households			Population		
	Urban	Rural	Total	Urban	Rural	Total
Main roof material						
Thatched	4.3	38.7	33.2	5.1	39.4	35.0
Mud	0.4	0.1	0.2	0.2	0.1	0.1
Wood/planks	0.2	0.1	0.1	0.1	0.0	0.0
Iron sheets	90.5	59.6	64.6	90.3	59.4	63.4
Asbestos	1.0	0.5	0.6	1.0	0.4	0.5
Tiles	0.7	0.6	0.6	0.9	0.5	0.5
Tin	0.2	0.0	0.0	0.1	0.0	0.0
Cement	1.8	0.1	0.4	1.3	0.1	0.2
Other	0.8	0.1	0.2	0.9	0.1	0.2
Missing	0.1	0.1	0.1	0.1	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Main wall material						
Thatched/straw	0.3	1.2	1.1	0.1	1.2	1.0
Mud and poles	9.9	42.7	37.5	8.2	40.3	36.2
Un-burnt bricks	1.7	16.3	13.9	2.1	17.6	15.6
Un-burnt bricks with plaster	5.8	9.1	8.6	5.3	9.8	9.3
Burnt bricks with mud	4.3	8.4	7.7	5.0	8.9	8.4
Cement blocks	6.7	1.2	2.0	6.3	1.2	1.8
Stone	1.3	0.1	0.3	1.8	0.1	0.3
Timber	0.1	0.8	0.7	0.0	0.4	0.4
Burnt bricks with cement	68.9	19.2	27.2	70.6	19.7	26.2
Other	0.3	0.8	0.7	0.3	0.6	0.5
Missing	0.7	0.3	0.3	0.4	0.3	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Rooms used for sleeping						
One	66.1	39.0	43.3	51.9	28.1	31.2
Two	16.1	33.0	30.3	19.6	35.5	33.5
Three or more	17.8	27.6	26.1	28.5	35.9	35.0
Missing	0.0	0.3	0.3	0.0	0.4	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Sleeping spaces						
One	26.9	17.2	18.7	11.5	7.7	8.2
Two	33.9	32.4	32.6	30.0	26.7	27.1
Three or more	39.1	50.1	48.3	58.3	65.3	64.4
Missing	0.1	0.3	0.3	0.2	0.3	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Cooking fuel						
Electricity	1.0	0.3	0.4	0.9	0.2	0.3
LPG/natural gas/biogas	2.3	0.1	0.4	1.7	0.0	0.3
Kerosene	4.8	0.2	0.9	1.9	0.0	0.3
Charcoal	61.2	11.2	19.2	63.6	9.2	16.2
Firewood	21.3	87.1	76.5	27.7	89.9	82.0
Straw/shrubs/grass	0.0	0.1	0.1	0.0	0.1	0.1
No food cooked in household	7.1	0.9	1.9	2.9	0.3	0.6
Other	2.2	0.0	0.4	1.3	0.0	0.2
Missing	0.0	0.2	0.1	0.0	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
Percentage using solid fuel for cooking[1]	82.5	98.4	95.8	91.3	99.2	98.2
Number	710	3,711	4,421	2,692	18,300	20,992

LPG = Liquid petroleum gas
[1] Includes, charcoal, firewood, straw/shrubs/grass, and animal dung

Seventy-two percent of households live in dwellings with earth, sand, or dung floors, while 26 percent live in dwellings with concrete or cement floors. Differences by urban-rural residence are large. Three-quarters of urban households have concrete or cement floors, while 82 percent of rural households have earthen floors. This information is important because flooring material used in dwellings is not only an indicator of household wealth status but is also often an indicator of the quality of the health environment in which the household lives.

Almost two-thirds of households in Uganda live in dwellings with iron roofs, and the remaining one-third live in dwellings with thatched roofs. Not surprisingly, about 90 percent of urban households live in dwellings with iron roofs compared with 60 percent of rural households.

With regard to the main wall material of the dwelling, 38 percent of households live in structures with mud walls, while 27 percent live in structures having walls made of burnt bricks with cement. Urban households are more likely to live in dwellings with walls made of burnt brick with cement.

The number of rooms a household uses for sleeping is an indicator of socioeconomic level; it can also be used to assess crowding, which can facilitate the spread of disease. In the 2009 UMIS, household respondents were asked how many rooms were used for sleeping, regardless of whether they were bedrooms or not. Results show that 43 percent of households use only one room for sleeping, 30 percent use two rooms, and 26 percent use three or more rooms. These statistics are very similar to figures reported in the 2006 UDHS where 47 percent used one room, 29 percent used two rooms, and 23 percent used three or more rooms. Urban households are more likely than rural households to use only one room for sleeping (66 vs. 39 percent). In terms of sleeping spaces, 19 percent of households have one sleeping space, 33 percent have two, and 48 percent have three or more sleeping spaces.

Table 2.5 also shows the distribution of households by the type of fuel used for cooking, which relates to air quality in the household. Seventy-seven percent of Ugandan households use wood for fuel, and 19 percent use charcoal. Six out of ten urban households use charcoal for cooking, while close to 90 percent of rural households use wood. Overall, 96 percent of households use solid fuel[3] for cooking.

2.4 HOUSEHOLD POSSESSIONS

The availability of durable consumer goods is a good indicator of a household's socioeconomic status. Moreover, particular goods have specific benefits. For instance, having access to a radio or a television exposes household members to mass media and messages; a refrigerator prolongs the wholesomeness of foods; and a means of transport allows greater access to many services that may be unavailable locally. Table 2.6 shows the availability of selected consumer goods by residence.

[3] Solid fuel includes charcoal, wood (firewood), straw, shrubs, grass, and animal dung.

Table 2.6 Household durable goods

Percentage of households and de jure population possessing various household effects, means of transportation, agricultural land, and livestock/farm animals by residence, Uganda MIS 2009

	Households			Population		
Possession	Urban	Rural	Total	Urban	Rural	Total
Household effects						
Radio	77.6	66.4	68.2	83.0	69.6	71.4
Television	37.7	3.3	8.9	38.9	3.6	8.1
Mobile telephone	79.2	37.0	43.8	80.5	40.9	46.0
Non-mobile telephone	6.6	0.8	1.7	6.6	0.8	1.5
Refrigerator	20.0	1.6	4.6	21.2	1.6	4.1
Cassette player	31.8	7.3	11.3	32.1	7.8	10.9
Table	69.2	65.6	66.1	76.5	71.1	71.8
Chairs	70.7	75.2	74.5	76.1	79.0	78.6
Sofa set	46.8	12.1	17.7	52.0	13.5	18.4
Bed	91.9	78.9	81.0	93.2	81.2	82.7
Cupboard	48.8	17.5	22.5	54.3	20.1	24.5
Clock	44.5	12.6	17.7	45.1	14.3	18.3
Watch	36.2	19.4	22.1	39.8	20.9	23.3
Means of transport						
Bicycle	24.8	41.2	38.6	32.1	47.4	45.4
Animal drawn cart	0.0	0.2	0.2	0.0	0.4	0.4
Motorcycle/scooter	11.0	4.8	5.7	11.6	5.7	6.5
Car/truck	7.1	0.8	1.8	8.1	0.9	1.8
Boat with a motor	0.1	0.2	0.2	0.1	0.2	0.2
Boat without motor	0.2	1.3	1.1	0.2	1.4	1.3
Ownership of agricultural land	**31.5**	**79.2**	**71.5**	**39.2**	**83.4**	**77.7**
Ownership of farm animals						
Local cattle	12.6	28.2	25.7	14.3	34.1	31.5
Exotic/ cross cattle	4.4	3.7	3.8	5.6	4.5	4.6
Goats	18.0	43.1	39.1	24.5	50.1	46.8
Sheep	1.6	10.1	8.7	2.1	11.9	10.6
Pigs	3.3	16.3	14.2	4.9	19.3	17.5
Chickens	22.1	56.0	50.6	29.7	62.5	58.3
Total farm animal[1]	**34.7**	**74.3**	**67.9**	**44.0**	**80.6**	**75.9**
Number	710	3,711	4,421	2,692	18,300	20,992

[1] Local cattle, exotic/cross cattle, goats, pigs, sheep, or chickens

Sixty-eight percent of households have a radio, an improvement from 61 percent in the 2006 UDHS. Forty-four percent of households have a mobile phone, but only 9 percent have a television. There is noticeable urban-rural variation in the proportion of households owning these durable goods, and this is important to highlight since these are key channels for communicating messages about malaria.

Comparison with the 2006 UDHS shows mostly minor differences in the proportion of households owning these various possessions. One exception, however, is mobile phone ownership. The proportion of households with a mobile phone has increased from 16 percent in 2006 to 44 percent in 2009. Ownership of mobile phones has increased in both rural areas and urban areas, rising from 53 to 79 percent of households in urban areas and from 10 to 37 percent of rural households.

2.5 WEALTH INDEX

The wealth index is a background characteristic that is used throughout this report as a proxy for long-term standard of living of the household. It is calculated using data on the household's ownership of consumer goods, dwelling characteristics, source of drinking water, sanitation facilities, and other characteristics that relate to a household's socioeconomic status. To construct the index, each of these assets was assigned a weight (factor score) generated through principal component analysis, and the resulting asset scores were standardized in relation to a standard normal distribution with a mean of zero and standard deviation of one (Gwatkin et al., 2000). Each household was then assigned a score for each

asset, and the scores were summed for each household. Individuals were ranked according to the total score of the household in which they resided. The sample was then divided into quintiles from one (lowest) to five (highest). A single asset index was developed on the basis of data from the entire country sample, and this index is used in all of the tabulations presented.

Table 2.7 shows the distribution of the de jure household population into five wealth levels (quintiles) based on the wealth index by urban-rural residence as well as by region. These distributions indicate the degree to which wealth is evenly (or unevenly) distributed by geographic areas.

The table shows that urban respondents and those in Kampala are much more likely to fall in the higher wealth quintiles. Only 2 percent of the urban population falls in the lowest wealth quintile, compared with 23 percent of the rural population. Similarly, none of the residents in Kampala fall into the poorest quintile, while almost nine of every ten persons in Kampala (87 percent) fall in the highest quintile. These statistics are very similar to figures reported in the 2006 UDHS.

Also included in Table 2.7 is the Gini Coefficient, which indicated the level of concentration of wealth. A low Gini coefficient indicates a more equal distribution (0 being total equality), while a higher Gini coefficient indicates more unequal distribution (100 corresponds to total unequal distribution). Survey results show that wealth is relatively more evenly distributed in urban areas (21 percent) than in rural areas (32 percent). The results also show that wealth is most evenly distributed in Kampala (8 percent) and least evenly distributed in East Central (33 percent), West Nile (34 percent), and North East (47 percent) regions.

Table 2.7 Wealth quintiles

Percent distribution of the de jure population by wealth quintiles, and the Gini Coefficient according to residence and region, Uganda MIS 2009

Residence/region	Wealth quintile					Total	Number of population	Gini coefficient
	Lowest	Second	Middle	Fourth	Highest			
Residence								
Urban	1.6	2.3	7.2	20.3	68.6	100.0	2,692	21.2
Rural	22.7	22.7	21.9	19.9	12.8	100.0	18,300	31.7
Region								
Central 1	7.2	11.7	20.3	28.7	32.1	100.0	1,649	26.8
Central 2	6.3	13.2	19.6	28.3	32.6	100.0	2,045	23.0
Kampala	0.0	0.4	1.1	11.8	86.8	100.0	918	7.9
East Central	9.7	13.6	21.1	29.1	26.5	100.0	2,372	33.2
Mid Eastern	14.4	28.1	26.2	19.6	11.7	100.0	2,614	21.6
North East	51.4	18.0	11.0	10.2	9.4	100.0	1,759	46.9
Mid Northern	40.7	36.4	14.2	6.8	1.9	100.0	2,994	26.8
West Nile	47.2	19.0	13.4	11.1	9.2	100.0	1,590	33.8
Mid Western	18.3	17.9	26.0	21.9	15.9	100.0	1,801	29.8
South Western	4.5	20.3	29.6	26.7	19.0	100.0	3,251	27.0
Total	20.0	20.1	20.0	19.9	20.0	100.0	20,992	38.2

2.6 NEAREST HEALTH FACILITY AND NEAREST MARKET

The government of Uganda defines access to health facilities as having a health facility within five kilometres. The 2009 UMIS collected information on the distance to the nearest health facilities. Table 2.8 shows that 80 percent of households reported that a health facility was within five kilometres of their household or community, compared with 72 percent of households as reported in the HSSP-II. The distances to the nearest health facility were far shorter for urban households than for rural households. Sixty percent of urban households reported a distance of less than one kilometre compared with 19 percent of rural households.

Information was also collected on the distance to the nearest market. Proximity to a market is important since health services, such as a medicine shop or clinic, are usually in the vicinity of markets. The results show that 77 percent of households are within five kilometres of the nearest market. Similar to distances to the nearest health facility, urban households are more likely than rural households to have markets nearby.

Table 2.8 Distance to nearest health facility and nearest market

Percent distribution of households and de jure population by distance to nearest health facility and nearest market, according to residence, Uganda MIS 2009

	Households			Population		
Residence	Urban	Rural	Total	Urban	Rural	Total
Distance to nearest health facility (in km)						
<1	59.7	18.7	25.3	54.6	17.4	22.2
1-2	30.8	35.4	34.7	34.8	36.2	36.0
3-4	7.0	21.9	19.5	8.4	22.7	20.9
5-9	0.2	19.1	16.1	0.3	19.3	16.8
10 and above	0.0	3.1	2.6	0.0	3.1	2.7
Don't know/missing	2.2	1.7	1.8	1.8	1.4	1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Distance to nearest market (in km)						
<1	56.4	23.7	28.9	53.8	22.1	26.2
1-2	37.2	29.3	30.6	38.9	30.5	31.5
3-4	3.7	20.1	17.5	4.8	21.0	19.0
5-9	0.4	20.5	17.3	0.4	20.4	17.8
10 and above	0.1	4.3	3.6	0.0	4.4	3.8
Don't know/missing	2.2	2.1	2.1	2.1	1.6	1.7
Total	300.0	300.0	300.0	300.0	300.0	300.0
Number	710	3,711	4,421	2,692	18,300	20,992

CHARACTERISTICS OF WOMEN 3

This chapter provides a descriptive summary of the demographic and socioeconomic characteristics of the women who were interviewed in the 2009 UMIS.

3.1 GENERAL CHARACTERISTICS

Table 3.1 presents the distribution of women age 15-49 by age group, ethnicity, urban-rural residence, region, education level, and wealth quintile. In general, the proportion of respondents in each age group declines as age increases, reflecting the comparatively young age structure of the population. The slightly lower proportion of women who are categorized as age 15-19 could be due to deliberate age misreporting on the part of interviewers. As mentioned in Chapter 2 and shown in Appendix C Table C.1, there were many more girls listed on the Household Questionnaire as being age 14 than age 15. This pattern is almost certainly due to interviewers deliberately displacing the ages of these adolescents to avoid having to do an individual interview.

The largest ethnic groups among the female survey participants are the Baganda (16 percent), Langi and Banyankore (13 percent each), and Basoga (12 percent). The smallest ethnic groups are the Karimojong (1 percent) and Batoro (2 percent). Seventeen percent of the female respondents live in urban areas, and 83 percent live in rural areas. More than 17 percent live in the South Western region, 13 percent live in the Mid Northern region, and 12 percent live in the East Central region.

A quarter of the interviewed women are in the highest wealth quintile, while the remaining three-quarters are fairly evenly distributed among the first four wealth quintiles.

3.2 EDUCATIONAL ATTAINMENT OF WOMEN

Education is a key determinant of the lifestyle and status an individual enjoys in a society. Studies have consistently shown that educational attainment has a strong effect on health behaviours and attitudes. In general, the higher the level of education that a woman attains, the more knowledgeable she is about the use of health facilities and health care services for herself, her children, and her family. Table 3.1 presents general educational characteristics of women, and Table 3.2 presents an overview of the relationship between the respondent's level of education and other background characteristics.

The results in Table 3.2 show that 17 percent of women age 15-49 have no education, 39 percent have completed at least primary school, and only 6 percent have completed secondary school. Overall, the median number of years of education is 5. Younger women have generally reached higher levels of school than older women. For example, only 6 percent of women age 15-24 have never been to school compared with 33 percent of women age 40-44 and 42 percent of women age 45-49 years. In addition, younger women are more likely than older women to have completed secondary school. Urban women are better educated than rural women; this is illustrated by the higher median years of schooling for urban women (9 years) compared with rural women (5 years).

Excluding Kampala, where educational attainment is comparatively high, the East Central, North East, and South Western regions have relatively higher proportions of women who have attained more than secondary schooling (5 to 6 percent) compared with between 1 and 3 percent of women in other regions. The educational level of women in the West Nile region is particularly low, with 30 percent of the women having no schooling at all, and with the median years of completed education being only 2.6.

Table 3.1 Background characteristics of respondents

Percent distribution of women age 15-49 by selected background characteristics, Uganda MIS 2009

Background characteristic	Weighted percent	Number of women	
		Weighted	Unweighted
Age			
15-19	21.8	901	909
20-24	23.0	949	898
25-29	16.4	677	709
30-34	13.3	549	548
35-39	11.7	482	472
40-44	7.1	292	324
45-49	6.9	285	274
Residence			
Urban	17.2	710	679
Rural	82.8	3,424	3,455
Region			
Central 1	7.8	324	403
Central 2	8.9	369	383
Kampala	6.5	271	422
East Central	12.4	513	403
Mid Eastern	10.5	435	418
North East	7.8	323	400
Mid Northern	13.3	549	428
West Nile	7.3	302	456
Mid Western	7.9	328	383
South Western	17.4	721	438
Education			
No education	17.4	718	783
Primary	57.9	2,392	2,324
Secondary	20.4	844	864
More than secondary	4.3	179	163
Wealth quintile			
Lowest	18.5	764	860
Second	18.3	756	675
Middle	18.8	778	720
Fourth	19.5	805	805
Highest	25.0	1,032	1,074
Total 15-49	100.0	4,134	4,134

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

Table 3.2 also shows that poorer women tend to be less educated than richer women. Approximately 9 in 10 women in the lowest wealth quintile either have no education or only some primary education, compared with 2 in 10 women in the highest wealth quintile. On the other hand, only 25 percent of women in the lower three wealth quintiles have at least some secondary education, compared with 63 percent of women in the highest wealth quintile.

Overall, the educational attainment of women seems to have improved compared with findings reported in the 2006 UDHS.

Table 3.2 Educational attainment

Percent distribution of women age 15-49 by highest level of schooling attended or completed, and median year completed, according to background characteristics, Uganda MIS 2009

Background characteristic	Highest level of schooling						Total	Median years completed	Number of women
	No education	Some primary	Completed primary[1]	Some secondary	Completed secondary[2]	More than secondary			
Age									
15-24	6.1	42.6	16.3	28.0	2.3	4.7	100.0	6.1	1,850
15-19	3.8	45.6	18.4	29.2	1.3	1.6	100.0	6.0	901
20-24	8.3	39.7	14.4	26.8	3.3	7.6	100.0	6.1	949
25-29	22.4	43.7	13.2	13.3	1.4	6.0	100.0	4.6	677
30-34	21.5	50.9	9.3	12.9	0.7	4.7	100.0	3.7	549
35-39	25.1	47.3	11.1	13.4	0.3	2.9	100.0	3.7	482
40-44	32.6	42.6	14.5	8.1	0.5	1.6	100.0	2.9	292
45-49	41.8	36.5	12.6	6.3	0.2	2.7	100.0	1.4	285
Residence									
Urban	7.8	19.5	13.1	39.7	5.5	14.4	100.0	8.6	710
Rural	19.4	49.1	14.0	14.7	0.6	2.2	100.0	4.6	3,424
Region									
Central 1	9.6	38.9	19.4	26.8	2.9	2.3	100.0	6.1	324
Central 2	13.9	40.3	14.2	29.3	1.1	1.2	100.0	5.7	369
Kampala	5.9	16.8	10.9	40.0	7.3	19.1	100.0	9.1	271
East Central	15.5	35.2	13.8	27.1	2.0	6.3	100.0	5.9	513
Mid Eastern	18.3	48.3	16.5	15.2	0.5	1.1	100.0	4.9	435
North East	22.1	48.6	9.0	15.0	0.3	5.0	100.0	4.2	323
Mid Northern	20.8	62.2	8.8	6.2	0.0	2.1	100.0	4.0	549
West Nile	29.5	54.2	6.1	7.3	0.1	2.7	100.0	2.6	302
Mid Western	20.6	51.2	12.5	13.1	1.4	1.3	100.0	3.7	328
South Western	16.4	38.5	20.8	17.9	1.1	5.3	100.0	5.7	721
Wealth quintile									
Lowest	33.5	55.4	7.2	3.3	0.0	0.6	100.0	2.4	764
Second	24.1	54.3	12.9	8.5	0.0	0.2	100.0	3.8	756
Middle	16.6	56.2	14.9	11.2	0.3	0.8	100.0	4.6	778
Fourth	12.9	42.9	21.1	21.4	0.2	1.5	100.0	5.6	805
Highest	4.7	19.6	13.2	42.2	5.4	15.0	100.0	8.7	1,032
Total	17.4	44.0	13.9	19.0	1.5	4.3	100.0	5.1	4,134

[1] Completed 7 grades at the primary level
[2] Completed 6 grades at the secondary level

3.3 EXPOSURE TO MASS MEDIA

Access to various sources of information increases people's knowledge and awareness of their environment, which may eventually affect their perceptions and behaviour. In the 2009 UMIS, exposure to the media was assessed by asking how often a respondent reads a newspaper, watches television, or listens to a radio. Table 3.3 shows the variation in exposure to mass media by background characteristics.

The results show that radio is the most common mass medium of exposure, with three in four women listening to a radio broadcast at least once a week. Smaller proportions read a newspaper (16 percent) or watch a television (14 percent) at least once a week. Only 7 percent of women report using all three media at least once a week. Generally, the proportion of women who are exposed to any media declines with age.

Table 3.3 Exposure to mass media

Percentage of women age 15-49 who are exposed to specific media on a weekly basis, by background characteristics, Uganda MIS 2009

Background characteristic	Reads a newspaper at least once a week	Watches television at least once a week	Listens to the radio at least once a week	All three media at least once a week	No media at least once a week	Number
Age						
15-19	24.0	14.2	78.4	6.1	18.0	901
20-24	18.3	21.3	79.0	10.0	18.5	949
25-29	13.8	13.2	73.5	5.7	24.2	677
30-34	11.5	11.4	71.1	5.7	26.8	549
35-39	13.0	12.8	76.3	6.5	21.8	482
40-44	12.9	6.1	71.6	3.6	26.6	292
45-49	9.1	7.2	70.5	3.3	27.1	285
Residence						
Urban	40.8	48.9	82.1	27.5	11.9	710
Rural	11.2	6.9	74.1	2.2	24.1	3,424
Region						
Central 1	26.2	19.0	86.1	8.5	11.4	324
Central 2	19.8	13.0	82.9	6.0	14.0	369
Kampala	51.1	63.7	81.0	37.3	9.9	271
East Central	20.5	22.5	76.5	11.6	22.3	513
Mid Eastern	16.5	6.3	71.1	2.8	25.7	435
North East	9.7	7.9	65.6	3.7	33.3	323
Mid Northern	6.5	4.4	76.9	0.9	21.4	549
West Nile	8.0	8.1	69.2	2.3	29.7	302
Mid Western	9.4	12.6	73.8	2.2	23.3	328
South Western	10.8	5.9	73.6	2.4	24.4	721
Education						
No education	0.3	2.8	57.3	0.0	41.4	718
Primary	8.6	8.3	75.8	2.0	22.0	2,392
Secondary	38.9	31.3	86.8	16.5	9.6	844
More than secondary	76.8	54.6	91.1	46.0	2.0	179
Wealth quintile						
Lowest	3.6	1.9	53.0	0.4	45.9	764
Second	6.0	2.8	71.5	0.4	26.4	756
Middle	8.1	5.5	79.9	0.9	18.5	778
Fourth	12.4	7.5	81.2	1.0	16.4	805
Highest	42.5	43.0	87.4	24.2	8.0	1,032
Total	16.3	14.1	75.5	6.5	22.0	4,134

Only 11 percent of women in rural areas, compared with 41 percent of urban women, read a newspaper at least once a week. About 7 percent of rural women and almost 50 percent of urban women watch television at least once a week. About three-quarters of rural women listen to the radio, compared with 82 percent of urban women.

Survey results reveal regional variations in media exposure, particularly for reading newspapers and watching television at least once a week; there is less regional variation in radio listenership.

Exposure to media is positively associated with educational attainment. For example, 57 percent of the women with no education listen to the radio at least once a week compared with 91 percent of women with more than secondary education. A similar pattern is observed for the reading of newspapers and watching television.

Similar to educational attainment, exposure to media is positively associated with wealth. Women in the higher wealth quintiles are more likely to be exposed to any or all of the three forms of media than women in the lower wealth quintiles.

3.4 EMPLOYMENT

Respondents were asked whether they were employed at the time of the survey and, if not, whether they were employed any time during the 12 months preceding the survey. Table 3.4 presents information on the employment status of women.

Table 3.4 Employment status

Percent distribution of women age 15-49 by employment status, according to background characteristics, Uganda MIS 2009

Background characteristic	Employed in the 12 months preceding the survey		Not employed in the 12 months preceding the survey	Missing/ don't know	Total	Number of women
	Currently employed[1]	Not currently employed				
Age						
15-19	32.1	7.8	60.2	0.0	100.0	901
20-24	51.8	12.8	35.3	0.1	100.0	949
25-29	65.9	12.3	21.8	0.0	100.0	677
30-34	61.3	16.7	22.0	0.0	100.0	549
35-39	65.1	13.6	19.1	2.3	100.0	482
40-44	59.7	14.6	25.3	0.4	100.0	292
45-49	68.8	15.3	15.9	0.0	100.0	285
Number of living children						
0	33.4	8.7	57.9	0.0	100.0	1,048
1-2	60.4	10.8	28.7	0.1	100.0	1,040
3-4	63.5	12.4	24.2	0.0	100.0	889
5+	60.9	17.7	20.4	1.0	100.0	1,157
Residence						
Urban	50.9	9.2	38.5	1.4	100.0	710
Rural	55.1	13.2	31.6	0.1	100.0	3,424
Region						
Central 1	38.1	7.7	54.3	0.0	100.0	324
Central 2	55.5	11.4	32.3	0.9	100.0	369
Kampala	51.8	4.9	43.4	0.0	100.0	271
East Central	55.1	10.6	32.4	1.9	100.0	513
Mid Eastern	69.5	16.3	14.2	0.0	100.0	435
North East	79.6	6.0	14.4	0.0	100.0	323
Mid Northern	44.4	13.9	41.8	0.0	100.0	549
West Nile	60.2	17.0	22.9	0.0	100.0	302
Mid Western	47.8	7.9	44.3	0.0	100.0	328
South Western	49.2	19.4	31.5	0.0	100.0	721
Education						
No education	55.6	16.9	27.4	0.2	100.0	718
Primary	56.3	13.4	29.8	0.5	100.0	2,392
Secondary	45.3	7.6	47.1	0.0	100.0	844
More than secondary	65.9	6.7	27.4	0.0	100.0	179
Wealth quintile						
Lowest	57.9	13.4	28.6	0.1	100.0	764
Second	58.8	14.6	26.6	0.0	100.0	756
Middle	52.9	18.4	28.5	0.3	100.0	778
Fourth	52.6	11.9	34.2	1.2	100.0	805
Highest	50.9	6.4	42.7	0.0	100.0	1,032
Total	54.3	12.5	32.8	0.3	100.0	4,134

[1] "Currently employed" is defined as having done work in the past seven days. Includes persons who did not work in the past seven days but who are regularly employed and were absent from work for leave, illness, vacation, or any other such reason.

The data show that 54 percent of women age 15-49 are currently employed. Younger women (15-24 years) and those with no children are less likely to be currently employed compared with older women (25-49 years) and women with at least one living child.

Current employment is slightly higher in the rural areas than in the urban areas. Regionally, women in the North East region are most likely to be currently employed (80 percent) followed by women in the Mid Eastern region (70 percent). Apart from women with secondary education only, current employment levels seem to relate directly to the educational level of women; women with no education or with a primary education are less likely to be currently employed than women with more than a secondary education.

The data also show that current employment seems to decline with wealth. Women in the lower wealth quintiles are more likely to be currently employed compared with women in the higher wealth quintiles.

3.5 Occupation, Type of Employment, and Unemployment Status of Women

Currently employed respondents were asked to state their occupation and type of employment, and the results are presented in Tables 3.5 and 3.6. Respondents who said that they were unemployed during the 12 months preceding the survey were asked what they had been doing during that period, and the results are presented in Table 3.7.

Among currently employed women, 57 percent are engaged in agriculture, and 26 percent are engaged in sales and services (Table 3.5). The results further show that only 5 percent of working women age 15-49 are employed in the professional/technical/managerial occupations, fields which typically require more skills and attract higher financial returns.

The most common occupation among employed women in rural areas is agriculture (65 percent) whereas in the urban areas it is sales and services (a little more than half of working women). Apart from Kampala and Central 1 regions, where sales and services is the predominant type of occupation, in almost all of the other regions, agriculture is the predominant activity.

Table 3.6 shows the distribution of women employed during the 12 months preceding the survey by type of employment and earnings. Overall, 54 percent of women employed during the 12 months preceding the survey are not paid at all, regardless of type of employment. Sixty-one percent of women employed in agriculture and 44 percent of women engaged in non-agricultural activities are not paid at all; however, among women engaged in non-agricultural work, 46 percent are paid in cash only.

Table 3.7 shows the percent distribution of women who were unemployed during the 12 months preceding the survey according to what they were doing most of the time. Overall, 56 percent of the women reported that they were engaged in household care activities (housework or child care), and another 36 percent declared that they were attending school. Those attending school were mostly found to be in the younger age groups, whereas those engaged in housework or child care tended to be older. Those women going to school tended also to be those who had secondary or more than secondary education and who were in the higher wealth quintiles. The data also show that women engaged in housework/child care are most likely to be women with less education and wealth. Unemployed women, regardless of wealth, are more likely to engage in housework/child care than attend school; however, the proportion of unemployed women attending school increases linearly with increasing wealth, whereas the proportion engaged in housework/child care decreases with increasing wealth.

Overall, only 4 percent of unemployed women reported that they were looking for work at the time of the survey. Household work and school attendance are the dominant activities for unemployed women in all regions.

Table 3.5 Occupation

Percent distribution by occupation of women age 15-49 employed in the 12 months preceding the survey, according to background characteristics, Uganda MIS 2009

Background characteristic	Professional/ technical/ managerial	Clerical	Sales and services	Skilled manual	Unskilled manual	Domestic service	Agri-culture	Missing	Total	Number of women
Age										
15-19	1.7	0.3	16.6	2.8	1.0	6.0	64.6	7.0	100.0	359
20-24	6.3	2.4	28.9	3.7	0.5	3.0	50.8	4.4	100.0	613
25-29	6.8	1.0	28.9	3.1	0.5	0.8	54.9	4.1	100.0	529
30-34	7.5	0.4	29.0	2.2	0.3	0.8	54.4	5.3	100.0	428
35-39	3.8	1.0	23.1	1.3	1.7	0.5	61.2	7.5	100.0	379
40-44	3.6	0.0	26.8	1.5	1.1	1.6	59.1	6.2	100.0	217
45-49	2.1	1.0	25.5	0.6	0.3	0.0	65.0	5.5	100.0	239
Number of living children										
0	7.0	1.1	21.3	4.6	0.1	6.0	53.5	6.4	100.0	441
1-2	8.6	2.3	30.2	2.9	0.7	2.6	47.1	5.4	100.0	741
3-4	4.7	0.5	24.8	2.0	0.8	0.4	62.8	3.9	100.0	674
5+	1.5	0.4	25.9	1.4	1.0	0.4	63.2	6.2	100.0	908
Residence										
Urban	13.8	4.7	53.5	3.3	0.6	5.5	12.6	5.9	100.0	427
Rural	3.5	0.4	21.0	2.3	0.7	1.2	65.4	5.4	100.0	2,337
Region										
Central 1	6.4	0.0	50.7	9.6	1.2	6.2	21.3	4.6	100.0	148
Central 2	4.0	0.0	21.4	2.5	0.8	3.0	67.0	1.2	100.0	247
Kampala	12.3	4.0	64.1	5.2	0.5	8.6	3.0	2.2	100.0	153
East Central	12.0	3.6	29.9	1.1	0.2	2.8	43.7	6.7	100.0	337
Mid Eastern	2.3	0.7	11.2	0.3	0.3	0.6	83.5	1.1	100.0	373
North East	2.5	0.8	23.7	1.1	0.0	0.2	65.6	6.0	100.0	276
Mid Northern	3.4	0.4	21.4	3.3	0.0	0.0	62.2	9.3	100.0	320
West Nile	2.8	0.7	38.4	4.0	5.3	1.0	45.8	2.0	100.0	233
Mid Western	2.1	1.2	28.7	2.0	0.8	0.9	49.2	15.0	100.0	183
South Western	4.9	0.2	15.2	1.8	0.0	1.3	69.9	6.7	100.0	494
Education										
No education	1.0	0.2	23.7	0.3	2.1	1.4	67.1	4.2	100.0	520
Primary	0.8	0.0	25.7	2.5	0.4	2.4	62.8	5.4	100.0	1,667
Secondary	9.4	3.5	34.3	4.5	0.5	1.3	39.1	7.4	100.0	447
More than secondary	61.2	9.2	12.4	3.9	0.0	0.0	8.6	4.8	100.0	130
Wealth quintile										
Lowest	0.1	0.0	23.4	0.7	2.1	0.0	68.3	5.4	100.0	545
Second	1.5	0.0	17.8	1.6	0.5	0.7	73.6	4.3	100.0	554
Middle	1.9	0.0	17.0	3.1	0.3	0.8	71.4	5.6	100.0	554
Fourth	4.0	0.5	34.7	3.1	0.1	1.1	51.6	4.9	100.0	520
Highest	16.9	4.5	37.1	3.9	0.6	6.5	23.5	7.0	100.0	591
Total	5.1	1.0	26.1	2.5	0.7	1.9	57.2	5.5	100.0	2,764

Table 3.6 Type of employment

Percent distribution of women age 15-49 employed in the 12 months preceding the survey by type of earnings, according to type of employment (agricultural or nonagricultural), Uganda MIS 2009

Employment characteristic	Agricultural work	Nonagricultural work	Total
Type of earnings			
Cash only	12.7	46.1	25.9
Cash and in-kind	14.1	8.3	12.1
In-kind only	9.4	1.2	6.2
Not paid	61.2	43.6	53.7
Missing	2.6	0.9	2.2
Total	100.0	100.0	100.0
Number of women employed during the last 12 months	1,583	1,030	2,764

Note: Total includes 151 women with missing information on type of employment who are not shown separately.

Table 3.7 Unemployed in past 12 months

Percent distribution of women age 15-49 unemployed in the 12 months preceding the survey by what they have been doing for most of the time during that time, according to background characteristics, Uganda MIS 2009

Background characteristic	Going to school	Looking for work	Too ill to work	Handi-capped	House-work/ child care	Other	Missing	Total	Number of women
Age									
15-19	79.5	1.5	0.0	0.0	18.1	0.3	0.4	100.0	542
20-24	17.4	8.4	1.0	0.3	71.4	0.6	1.0	100.0	335
25-29	2.1	2.8	0.3	0.3	91.8	2.8	0.0	100.0	148
30-34	0.4	6.1	3.2	2.7	85.6	2.0	0.0	100.0	121
35-39	0.0	1.5	10.2	2.5	83.7	2.1	0.0	100.0	92
40-44	1.7	0.0	0.5	3.5	89.1	4.3	0.8	100.0	74
45-49	(0.0)	(2.1)	(1.2)	(0.5)	(93.0)	(1.8)	(1.4)	100.0	45
Residence									
Urban	37.5	11.1	0.2	0.1	50.8	0.0	0.2	100.0	274
Rural	36.2	1.8	1.6	0.9	57.4	1.5	0.6	100.0	1,083
Region									
Central 1	25.2	5.0	0.0	0.0	66.8	3.0	0.0	100.0	176
Central 2	40.7	2.2	0.4	0.0	53.8	1.9	1.0	100.0	119
Kampala	44.0	5.9	0.5	0.3	48.7	0.0	0.5	100.0	117
East Central	21.5	13.1	0.0	1.9	61.1	0.0	2.3	100.0	166
Mid Eastern	70.4	0.0	1.2	0.0	28.5	0.0	0.0	100.0	62
North East	45.1	1.1	3.1	4.9	45.8	0.0	0.0	100.0	46
Mid Northern	25.3	0.0	2.0	0.8	69.4	2.3	0.2	100.0	229
West Nile	42.5	2.8	3.7	0.9	50.2	0.0	0.0	100.0	69
Mid Western	18.2	0.5	1.6	0.9	76.1	2.4	0.4	100.0	145
South Western	60.1	2.9	2.4	0.0	34.3	0.0	0.0	100.0	227
Education									
No education	0.1	0.7	3.9	2.9	88.1	3.6	0.6	100.0	197
Primary	34.3	2.5	1.4	0.6	59.3	1.2	0.8	100.0	713
Secondary	53.6	7.0	0.0	0.0	39.1	0.2	0.0	100.0	397
More than secondary	73.9	5.8	1.2	0.0	19.1	0.0	0.0	100.0	49
Wealth quintile									
Lowest	20.4	1.4	2.3	2.0	71.1	2.6	0.2	100.0	218
Second	32.0	0.4	4.4	0.2	60.8	1.9	0.3	100.0	201
Middle	34.5	1.6	0.2	0.6	59.8	1.6	1.7	100.0	221
Fourth	41.9	3.1	1.1	0.1	52.3	0.8	0.7	100.0	275
Highest	44.0	7.7	0.1	0.7	47.1	0.2	0.0	100.0	440
Total 15-49	36.4	3.7	1.3	0.7	56.1	1.2	0.5	100.0	1,357

Note: Numbers in parentheses are based on 25-49 unweighted cases, while an asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.

ANTENATAL CARE, KNOWLEDGE OF MALARIA, AND MANAGEMENT OF FEVER IN CHILDREN

4

4.1 ANTENATAL CARE

All pregnant women are at risk of developing complications, many of which are unpredictable. It is during an antenatal care (ANC) visit that screening for complications and advice on a range of issues, including place of delivery and referral for complications, occurs. The major objective of antenatal care, therefore, is to identify and address problems that may arise during pregnancy, such as anaemia and infections. Information on antenatal care is of great value in identifying subgroups of women who do not use such services and is useful in planning improvement of the services. Table 4.1 presents the percent distribution of women age 15-49 who had a live birth in the five years preceding the survey by the type of antenatal care provider consulted[1] during the pregnancy for the most recent birth.

The data show that practically all mothers (95 percent) receive antenatal care from a skilled provider (doctor, nurse, midwife, medical assistant, or clinical officer). Differences by age of mother, by birth order, and by urban-rural residence are on average small; however, urban mothers are more likely than rural mothers to receive antenatal care from doctors, whereas rural women are more likely to receive antenatal care from nurses or midwives. Compared with women in other regions, women in Central 1 region are relatively less likely to receive ANC services from a skilled provider.

Although the difference is not great, use of antenatal care services seems to be related to a woman's educational level. Ninety-six percent of mothers with primary or more education receive antenatal care services from a skilled provider, compared with about 90 percent of mothers with no education.

The relationship between wealth and antenatal care is not very clear. Women in the lower three wealth quintiles are almost as likely as women in the highest wealth quintile to receive antenatal care from a skilled provider (between 95 and 96 percent). However, mothers in the fourth wealth quintile seem less likely to receive antenatal care from a health professional (92 percent). Women in the highest wealth quintile are twice as likely to receive antenatal care from a doctor compared with women in the lowest wealth quintile (24 versus 12 percent).

There has been little change since 2006 in the proportion of mothers who receive antenatal care from a skilled provider. However, the proportion that receives care from a doctor has increased from 9 to 16 percent.

[1] For the 2009 UMIS, if a woman received antenatal care from more than one provider, the provider with the highest qualification was recorded.

Table 4.1 Antenatal care

Percent distribution of women age 15-49 who had a live birth in the five years preceding the survey by antenatal care (ANC) provider during pregnancy for the most recent birth and the percentage receiving antenatal care from a skilled provider for the most recent birth, according to background characteristics, Uganda MIS 2009

Background characteristic	Doctor	Nurse/ midwife	Medical assistant/ clinical officer	Nursing aide	Traditional birth attendant	Other	No one	Missing	Total	Percentage receiving antenatal care from a skilled provider[1]	Number of women
Mother's age at birth											
<20	16.3	78.9	0.0	0.8	1.0	0.5	1.6	0.9	100.0	95.2	398
20-34	16.0	78.0	0.6	0.8	1.0	0.5	2.1	1.0	100.0	94.5	1,681
35-49	15.4	79.0	0.7	0.3	0.7	0.0	2.8	1.1	100.0	95.1	404
Birth order											
1	19.3	76.9	0.0	0.3	1.2	0.7	1.1	0.6	100.0	96.2	433
2-3	16.5	77.4	0.6	1.2	0.8	0.5	2.1	0.9	100.0	94.5	724
4-5	13.0	81.4	0.5	1.0	1.0	0.2	2.5	0.2	100.0	95.0	539
6+	15.5	77.7	0.7	0.4	1.0	0.3	2.4	1.9	100.0	94.0	786
Residence											
Urban	28.6	66.4	0.3	1.2	0.1	0.0	0.8	2.6	100.0	95.3	376
Rural	13.7	80.4	0.6	0.7	1.1	0.5	2.3	0.7	100.0	94.6	2,106
Region											
Central 1	10.4	77.7	0.6	1.6	2.6	1.9	3.9	1.2	100.0	88.7	176
Central 2	15.2	79.0	0.0	1.8	0.4	0.4	2.3	1.0	100.0	94.1	193
Kampala	36.3	59.5	0.5	0.5	0.3	0.0	2.8	0.0	100.0	96.3	113
East Central	15.7	73.1	0.7	1.3	3.2	1.5	1.2	3.4	100.0	89.5	374
Mid Eastern	31.9	63.7	0.5	1.3	0.4	0.5	1.3	0.4	100.0	96.2	272
North East	6.3	88.0	0.9	0.3	0.0	0.0	2.4	2.2	100.0	95.2	212
Mid Northern	10.5	87.4	0.0	0.0	0.7	0.0	1.3	0.1	100.0	97.9	364
West Nile	8.0	90.3	0.3	1.0	0.2	0.0	0.3	0.0	100.0	98.5	206
Mid Western	17.9	75.8	1.9	0.2	0.0	0.0	3.1	1.1	100.0	95.6	231
South Western	15.1	80.6	0.0	0.0	0.7	0.0	3.6	0.0	100.0	95.7	340
Mother's education											
No education	13.1	76.1	0.8	1.1	1.8	0.3	3.9	3.0	100.0	89.9	512
Primary	14.5	80.9	0.5	0.6	0.9	0.3	1.8	0.5	100.0	95.9	1,505
Secondary	24.8	71.4	0.3	0.9	0.4	1.1	1.1	0.0	100.0	96.5	387
More than secondary	18.4	77.1	0.5	0.0	0.0	0.0	1.2	2.9	100.0	95.9	78
Wealth quintile											
Lowest	11.9	82.0	0.6	0.8	1.9	0.3	2.4	0.1	100.0	94.5	524
Second	11.9	82.2	0.5	0.7	0.9	0.5	2.1	1.2	100.0	94.6	514
Middle	14.4	81.0	1.0	0.6	0.9	0.3	1.4	0.3	100.0	96.4	503
Fourth	17.9	73.8	0.1	1.2	0.9	0.6	2.9	2.5	100.0	91.9	465
Highest	24.3	71.5	0.3	0.4	0.2	0.4	1.7	1.1	100.0	96.1	476
Total	15.9	78.3	0.5	0.7	1.0	0.4	2.1	1.0	100.0	94.7	2,482

Note: If more than one source of ANC was mentioned, only the provider with the highest qualifications is considered in this tabulation.
[1] Skilled provider includes doctor, nurse/midwife, medical assistant, and clinical officer.

4.2 BREASTFEEDING

Early initiation of breastfeeding has several benefits for both the mother and the newborn. In addition to fostering bonding between mother and child, early breastfeeding stimulates breast milk production and facilitates the release of oxytocin, which helps the contraction of the uterus and reduces postpartum blood loss. The first breast milk contains colostrum, which is highly nutritious and has antibodies that protect the newborn from diseases. Table 4.2 shows the percentage of all children born in the 5 years preceding the survey who were ever breastfed, and among those who were ever breastfed, the median number of months they were breastfed, by background characteristics.

Table 4.2 Breastfeeding

Percentage of children born in the five years preceding the survey who were ever breastfed, and for the children born in the five years preceding the survey who ever breastfed, the median number of months breastfed by background characteristics, Uganda MIS 2006

Background characteristic	Breastfeeding among children born in last five years		Among children born in the last five years who ever breastfed:	
	Percentage ever breastfed	Number of children born in last five years	Median number of months breastfed	Number of children born in the last five years ever breastfed
Sex				
Male	96.9	1,974	17.2	1,913
Female	97.6	2,018	17.6	1,970
Residence				
Urban	97.3	527	15.0	512
Rural	97.2	3,466	17.5	3,370
Region				
Central 1	96.8	280	14.5	271
Central 2	97.3	319	17.1	310
Kampala	95.0	160	11.9	152
East Central	97.4	611	17.1	595
Mid Eastern	97.8	453	11.9	443
North East	99.1	361	17.9	358
Mid Northern	97.2	594	21.0	577
West Nile	99.0	327	23.0	324
Mid Western	96.9	382	16.0	370
South Western	95.4	507	17.2	483
Mother's education				
No education	94.8	857	17.8	813
Primary	98.0	2,477	17.4	2,426
Secondary	97.7	565	17.1	552
More than secondary	97.6	94	14.6	91
Wealth quintile				
Lowest	97.8	892	18.2	872
Second	97.7	864	17.4	844
Middle	96.1	834	17.6	802
Fourth	97.6	728	17.2	710
Highest	97.0	675	15.0	655
Total	97.2	3,993	17.4	3,883

Note: This table is based on births in the last five years preceding the survey regardless of whether the children are living or dead at the time of the interview.

Breastfeeding is nearly universal in Uganda, with 97 percent of children born in the five years preceding the survey having been breastfed at some time. There is little difference by background characteristics.

The median number of months of breastfeeding for children born in the five years preceding the survey who were ever breastfed is about 17 months. There is little difference by sex of the child or by urban-rural residence. However, children in the Mid Northern and West Nile regions are more likely to breastfeed a little longer (median of 21-23 months), and children in Kampala and Mid Eastern region breastfeed a little less (median of 12 months) than children in other regions. In addition, children born to women with the highest education as well as children born to the wealthiest women breastfeed 2 to 3 fewer months than children born to other women.

4.3 WOMEN'S KNOWLEDGE OF MALARIA

4.3.1 Knowledge of Causes of Malaria

Ignorance of how malaria is spread interferes with the ability to take appropriate preventive measures. Women were asked several questions to ascertain their knowledge of causes of malaria. Table 4.3 presents information on responses provided by women age 15-49 when asked what causes malaria.

Table 4.3 Knowledge of causes of malaria

Among women age 15-49, the percentage who cite specific causes of malaria, by background characteristics, Uganda MIS 2009

Background characteristic	Mosquitoes	Eating maize	Eating mangoes	Eating dirty food	Drinking unboiled water	Getting soaked with rain	Cold or changing weather	Witch-craft	Contact with infected person	Other	Does not know any	Number of women
Age												
15-19	89.9	0.6	1.7	8.8	17.9	3.3	12.1	0.7	0.9	4.6	5.4	901
20-24	88.2	0.3	1.0	4.8	13.7	4.7	16.2	0.2	0.8	4.5	5.7	949
25-29	87.5	1.5	2.6	7.7	16.0	2.6	14.7	0.0	0.3	4.6	7.5	677
30-34	88.4	1.0	2.0	6.4	16.5	3.1	14.9	0.2	0.8	4.0	6.9	549
35-39	82.2	1.6	1.2	6.6	13.6	3.4	18.7	0.0	0.4	6.3	10.3	482
40-44	82.3	2.0	2.7	5.8	15.5	2.4	14.9	0.2	0.6	5.7	8.0	292
45-49	82.5	1.1	1.3	12.1	22.4	4.7	18.1	0.5	0.2	9.1	8.9	285
Residence												
Urban	95.1	0.6	0.2	4.1	12.1	2.0	4.6	0.0	0.5	1.6	3.1	710
Rural	85.3	1.0	2.0	7.8	16.9	3.8	17.4	0.3	0.7	5.8	7.8	3,424
Region												
Central 1	86.7	3.4	2.4	3.8	20.4	1.2	1.1	0.0	0.4	3.4	8.0	324
Central 2	84.9	2.4	0.1	4.9	17.1	3.9	3.3	0.0	2.1	1.1	13.2	369
Kampala	94.2	0.9	0.6	3.3	15.0	1.0	1.2	0.0	0.0	2.2	3.2	271
East Central	89.5	1.0	1.1	2.2	3.4	0.3	4.4	0.0	0.7	0.4	7.9	513
Mid Eastern	82.9	1.1	3.7	12.9	20.7	9.7	27.7	0.9	1.7	9.2	9.2	435
North East	86.7	0.0	0.1	9.5	1.3	0.9	28.0	0.2	0.2	11.5	4.2	323
Mid Northern	87.3	0.0	1.9	10.4	4.0	1.6	37.3	0.0	0.0	12.5	3.6	549
West Nile	84.0	0.0	0.7	5.4	4.2	1.7	30.3	0.1	0.5	4.5	10.2	302
Mid Western	84.4	2.0	3.8	6.4	21.1	2.0	3.1	0.2	0.5	3.2	9.6	328
South Western	88.4	0.1	1.9	8.8	38.8	8.0	9.8	0.7	0.2	2.4	4.3	721
Education												
No education	76.4	0.8	2.1	8.7	14.2	3.6	19.1	0.2	0.2	6.8	13.4	718
Primary	86.2	1.1	1.8	7.6	16.5	4.2	17.3	0.4	0.7	5.3	7.5	2,392
Secondary	96.1	0.9	1.7	5.8	16.7	2.0	7.9	0.1	0.9	3.5	1.8	844
More than secondary	96.9	0.0	0.0	1.9	15.2	1.8	6.2	0.0	0.6	3.9	0.0	179
Wealth quintile												
Lowest	80.9	0.6	2.1	9.2	8.4	2.3	26.0	0.2	0.1	10.3	8.7	764
Second	85.4	1.1	1.9	8.5	13.2	7.6	18.8	0.9	0.7	6.3	8.1	756
Middle	83.1	1.0	2.7	8.2	22.4	4.0	19.1	0.2	0.7	2.9	8.7	778
Fourth	88.9	2.0	1.8	7.1	19.3	2.6	9.8	0.1	0.6	4.4	7.7	805
Highest	94.1	0.3	0.5	3.8	16.6	1.8	5.9	0.0	0.9	2.6	3.3	1,032
Total	87.0	1.0	1.7	7.1	16.1	3.5	15.2	0.3	0.6	5.1	7.0	4,134

Note: Percentages may add to more than 100.0, since multiple responses were allowed.

Eighty-seven percent said that malaria is caused by mosquitoes, 16 percent said malaria is caused by drinking unboiled water, and another 15 percent said it is caused by cold or changing weather. Differences by background characteristics are not large; however, younger women and women in urban areas are more likely to mention mosquitoes as the cause of malaria compared with older women and women in rural areas. The data also show that women with more education and those with more wealth are more likely than the less educated and the less wealthy women to mention mosquitoes as the cause of malaria. Seven percent of respondents could not name any cause of malaria.

4.3.2 Knowledge of Ways to Avoid Malaria

Women were also asked during the survey if they know of ways to avoid getting malaria. Those who knew of ways to avoid getting malaria were further asked to name specific ways to avoid getting malaria. Table 4.4 shows responses provided by women age 15 to 49 on ways to avoid getting malaria.

Table 4.4 Knowledge of ways to avoid malaria

Among women age 15-49 percentage who say there are ways to avoid getting malaria, and among women saying there are ways to avoid getting malaria, the percentage who cite specific ways of avoiding malaria, by background characteristics, Uganda MIS 2009

Background characteristic	Percentage who say there are ways to avoid getting malaria	Number of women	Among women who say there are ways to avoid getting malaria, percentage who cite specific ways to avoid malaria: Sleep under mosquito net	Sleep under an insecti-cide-treated net	Take preventive medication	Use mosquito repellent	Spray house with insecticide	Use mosquito coils	Destroy mosquito breeding sites	Other	Does not know any	Number of women who say there are ways to avoid getting malaria
Age												
15-19	88.2	901	81.5	13.5	5.2	1.2	5.1	2.6	32.9	5.3	0.8	795
20-24	88.2	949	83.9	11.7	4.6	1.9	2.8	2.4	21.5	9.4	0.8	837
25-29	87.8	677	82.8	15.4	7.9	1.3	3.6	2.9	15.9	7.8	0.8	595
30-34	86.1	549	85.4	14.4	5.1	0.3	3.5	1.7	15.6	6.6	1.1	473
35-39	79.5	482	85.5	7.9	8.4	0.9	3.8	2.8	18.0	8.1	0.8	383
40-44	81.2	292	78.8	10.9	11.9	0.1	5.2	5.0	19.9	11.2	2.0	237
45-49	84.3	285	73.2	10.8	9.4	0.6	4.3	0.6	25.4	9.6	2.1	240
Residence												
Urban	93.5	710	86.6	14.6	5.4	2.6	5.7	3.8	21.7	3.2	0.2	664
Rural	84.6	3,424	81.5	12.1	6.8	0.8	3.5	2.2	22.2	8.9	1.2	2,895
Region												
Central 1	93.6	324	85.9	7.8	1.8	1.1	3.4	0.9	20.8	2.4	2.5	303
Central 2	81.4	369	85.7	9.0	7.7	1.4	8.4	4.2	41.1	4.5	0.8	301
Kampala	96.6	271	88.1	11.1	3.9	1.6	5.9	2.0	31.0	3.6	0.5	261
East Central	90.6	513	84.0	16.0	5.5	3.0	0.7	2.9	10.6	0.8	2.7	465
Mid Eastern	88.8	435	88.1	4.0	11.7	0.4	4.2	5.3	12.6	15.3	0.2	386
North East	90.5	323	76.6	21.0	4.3	0.5	3.9	3.8	25.8	21.4	0.0	292
Mid Northern	83.1	549	54.7	33.5	11.4	1.4	2.6	0.6	24.2	14.2	0.5	456
West Nile	77.6	302	85.4	6.6	9.0	1.0	2.2	5.9	24.0	8.8	0.7	235
Mid Western	86.2	328	88.9	6.8	9.3	0.8	1.9	1.7	12.9	2.5	2.2	283
South Western	80.3	721	92.1	4.9	2.1	0.1	6.1	0.5	24.7	5.6	0.1	579
Education												
No education	73.2	718	78.8	13.8	10.1	0.2	2.1	1.5	12.0	8.6	1.5	526
Primary	85.6	2,392	81.8	10.9	6.4	0.7	2.6	2.0	19.8	9.4	1.3	2,049
Secondary	96.4	844	89.3	12.2	5.2	2.6	7.2	4.2	32.1	4.3	0.3	814
More than secondary	95.7	179	69.1	30.1	3.6	1.6	9.3	3.0	33.6	4.5	0.2	171
Wealth quintile												
Lowest	79.0	764	77.2	14.4	7.7	1.0	2.2	2.5	16.3	14.1	1.2	604
Second	83.2	756	76.0	15.2	7.0	0.5	4.7	1.6	19.5	13.6	1.4	629
Middle	83.7	778	82.1	12.4	7.2	0.6	2.1	2.1	20.2	4.3	1.5	651
Fourth	88.0	805	88.7	7.5	7.3	2.2	3.7	2.9	22.1	7.2	1.2	708
Highest	93.9	1,032	85.7	13.5	4.6	1.1	5.9	3.1	28.8	3.1	0.1	968
Total	86.1	4,134	82.5	12.5	6.6	1.1	3.9	2.5	22.1	7.9	1.0	3,560

Note: Percentages may add to more than 100.0, since multiple responses were allowed.

Eighty-six percent of women said that there are ways to avoid getting malaria. Urban women and those in Kampala and Central 1 regions are most likely to respond that there are ways to avoid getting malaria. Further, women with secondary or more education and those in wealthier quintiles are more likely than other women to say that malaria is avoidable. Women in West Nile (78 percent) are notably less likely than average to say that there are ways to avoid getting malaria.

When asked to cite specific ways to avoid getting malaria, 83 percent of women said sleeping under a mosquito net, 22 percent said destroying mosquito breeding sites, and 13 percent cited sleeping under an insecticide-treated mosquito net as ways to avoid getting malaria. Only 7 percent cited taking preventive medication as a way to avoid malaria, and 4 percent mentioned spraying the house with insecticide. Because women were asked, without prompting, to cite specific ways to prevent getting

malaria, it is likely that those who mentioned mosquito nets used the term 'mosquito nets' to refer to all types of mosquito nets, including insecticide treated nets (ITNs). Among women who said there are ways to avoid getting malaria, only 3 percent in Mid Northern region mentioned spraying the house as a method of avoiding malaria despite the fact that an indoor residual spraying exercise was being carried out in the region around the same time data were being collected for this survey.

4.3.3 Knowledge of Medicines to Avoid Getting Malaria during Pregnancy

Women who said there are ways to avoid getting malaria were asked to cite specific medicines that can be given to pregnant women to avoid getting malaria. Women who mentioned SP/Fansidar as a medicine to give to pregnant women to avoid getting malaria were then asked to cite the number of times a pregnant woman should take the medicine during pregnancy to avoid getting malaria. Results are presented in Table 4.5.

Table 4.5 Knowledge of medicines to avoid getting malaria during pregnancy

Among women age 15-49 who say there are ways to avoid getting malaria, the percentage that cite specific medicines that can be given to pregnant women to help them avoid getting malaria, and among women citing SP/Fansidar, the percentage that cite a specific number of times a pregnant woman needs to take SP/Fansidar to avoid getting malaria, by background characteristics, Uganda MIS 2009

	Percentage citing specific medicine to give to pregnant women to avoid getting malaria							Percentage citing				
Background characteristic	SP/ Fansidar	Chloro-quine	Chloro-quine with Fansidar	Coartem/ ACT	Other anti-malarial	Does not know any	Number of women who say there are ways to avoid getting malaria	1 time	2 times	3 or more times	Don't know	Number of women citing SP/Fansidar
Age												
15-19	11.3	2.8	0.6	6.9	3.9	77.3	795	9.1	19.0	45.5	26.4	90
20-24	45.5	5.0	4.9	6.7	3.9	41.8	837	9.0	25.1	49.0	16.9	381
25-29	52.6	4.6	1.5	7.5	4.6	35.3	595	9.0	19.7	58.3	13.0	313
30-34	44.1	4.4	1.1	5.7	6.4	42.7	473	7.5	28.1	53.9	10.4	208
35-39	34.9	4.3	1.0	7.0	5.0	54.0	383	9.8	34.6	41.7	13.9	134
40-44	38.8	8.5	4.6	7.2	5.2	46.9	237	17.5	20.1	52.3	10.1	92
45-49	19.3	5.4	0.9	9.0	7.8	61.6	240	4.3	32.3	51.6	11.9	46
Residence												
Urban	42.1	3.8	6.7	4.8	3.8	46.4	664	11.2	23.5	55.3	10.1	280
Rural	34.0	4.7	1.1	7.5	5.0	53.0	2,895	8.8	25.1	50.4	15.8	984
Region												
Central 1	27.4	1.0	0.0	4.5	1.3	67.1	303	2.3	20.9	46.4	30.4	83
Central 2	22.9	3.9	1.8	7.2	4.0	64.1	301	14.3	17.7	52.1	15.9	69
Kampala	33.6	5.6	1.5	5.5	2.5	54.6	261	10.9	30.3	43.4	15.4	88
East Central	41.8	2.8	9.7	1.2	4.0	46.1	465	7.4	10.4	70.0	12.2	194
Mid Eastern	34.6	6.8	0.1	3.9	5.1	53.7	386	12.9	27.4	48.9	10.9	134
North East	42.0	3.0	0.0	3.6	1.6	51.9	292	4.8	20.6	55.1	19.5	123
Mid Northern	26.7	5.4	0.8	27.2	16.2	40.4	456	11.5	8.8	65.3	14.5	122
West Nile	46.8	11.2	6.1	8.5	3.5	35.5	235	4.8	32.7	47.6	14.8	110
Mid Western	46.8	6.8	0.7	3.2	3.8	43.5	283	14.9	27.0	46.3	11.7	132
South Western	36.3	2.4	0.2	2.4	2.2	59.0	579	9.3	43.8	36.2	10.7	210
Education												
No education	31.5	6.2	2.8	7.3	6.2	50.6	526	8.3	21.3	53.6	16.8	165
Primary	33.5	4.4	1.8	6.2	5.3	53.8	2,049	9.3	25.4	51.6	13.6	687
Secondary	39.2	3.1	3.0	8.1	2.9	51.3	814	10.5	19.8	53.7	16.0	319
More than secondary	54.1	8.2	0.0	10.5	2.8	33.4	171	6.6	42.6	38.3	12.5	93
Wealth quintile												
Lowest	31.8	5.0	2.5	9.4	6.8	52.5	604	8.4	17.9	51.8	21.9	192
Second	30.5	5.7	0.8	9.1	8.4	51.8	629	10.7	27.1	50.1	12.1	191
Middle	33.5	5.6	1.0	5.7	4.9	51.7	651	10.4	22.9	53.6	13.1	218
Fourth	36.3	3.7	4.8	4.7	3.8	53.6	708	9.0	24.3	54.3	12.3	257
Highest	41.9	3.4	1.6	6.6	1.9	50.0	968	8.6	28.1	48.9	14.4	406
Total	35.5	4.5	2.1	7.0	4.8	51.8	3,560	9.3	24.7	51.4	14.5	1,264

Note: Percentages may add to more than 100.0, since multiple responses were allowed.

Half of women who said there are ways to avoid getting malaria did not know of any medicines that a pregnant woman can take during pregnancy to avoid getting malaria. This knowledge gap is more pronounced among the youngest (age 15-19) and oldest (age 45-49) women, and in the two Central regions. Only 36 percent of the women cited SP/Fansidar, 7 percent mentioned Coartem®/ACT, 5 percent named chloroquine, and 2 percent mentioned chloroquine with Fansidar. Urban women, women with the most education, and women in the highest wealth quintile are more likely than other women to cite SP/Fansidar as the medicine that may be given to pregnant women to avoid getting malaria in pregnancy.

Among women who cited SP/Fansidar as a medicine that may be given to pregnant women to avoid getting malaria, 25 percent said SP/Fansidar is to be taken 2 times, and 51 percent said it should be taken 3 times or more during the course of a pregnancy in order to avoid getting malaria.

4.3.4 Exposure to Malaria Messages

A crucial element in the fight to eliminate malaria is the ability to reach the population with information and educational materials. In an effort to assess the coverage of communication programmes, women interviewed in the UMIS were asked if they had seen or heard any messages about malaria in the few months before the survey.

As shown in Table 4.6, approximately 6 in 10 women had seen or heard a message about malaria. The proportion is 50 percent or higher in all categories of background characteristics except among women in the Mid Northern region and women in the lowest wealth quintile where less than 50 percent have seen or heard a malaria message in the 12 months preceding the survey. The proportion who have seen or heard a malaria-related message increases with educational level and with wealth and is higher in urban compared with rural settings.

Table 4.6 also presents information on the places women say they saw or heard malaria-related messages. The most commonly cited sources are the radio (77 percent) and health worker/community medicine distributor (19 percent of women). Other sources of information (TV, newspaper, neighbour, community leader) were each mentioned by less than 10 percent of women. TV was cited mostly by women in Kampala and by women in the highest wealth quintile and with the highest level of education.

Table 4.6 Exposure to malaria messages

Among women age 15-49 percentage who have seen or heard any messages about malaria in the 12 months preceding the survey, and among those who have, the percentage who cite specific places where they saw or heard messages, by background characteristics, Uganda MIS 2009

Background characteristic	Percentage who have seen or heard a message about malaria	Number of women	Among women who have seen or heard any message about malaria, percentage who cite specific places where malaria message was seen or heard								Number of women who have seen or heard a message about malaria
			Radio	TV	News-paper/ leaflet	Health worker/ CMD	Neighbor	Com-munity leader	Other	Does not know any	
Age											
15-19	49.8	901	76.0	5.1	6.6	14.4	7.1	6.2	2.3	0.0	449
20-24	60.1	949	80.3	8.4	2.3	19.3	8.3	9.9	1.0	0.0	570
25-29	55.5	677	79.2	7.0	2.9	22.1	11.2	8.6	2.2	0.0	375
30-34	60.7	549	76.8	5.8	1.6	21.2	6.8	7.7	2.4	0.1	333
35-39	62.4	482	69.8	4.0	3.1	26.1	9.0	7.7	1.4	1.1	301
40-44	63.2	292	78.9	2.3	1.8	17.8	15.6	6.8	6.0	0.0	184
45-49	59.7	285	75.2	2.8	4.4	12.4	10.6	14.5	1.4	0.0	170
Residence											
Urban	67.1	710	74.7	21.1	6.8	22.9	8.3	6.7	1.7	0.0	476
Rural	55.7	3,424	77.6	1.9	2.4	18.5	9.3	8.9	2.2	0.2	1,906
Region											
Central 1	56.8	324	84.3	10.9	3.3	7.8	5.5	4.9	0.7	0.0	184
Central 2	50.0	369	85.3	5.4	6.9	11.2	5.0	13.4	3.9	0.1	185
Kampala	60.4	271	79.9	41.6	7.2	7.4	2.7	3.0	2.8	0.0	163
East Central	68.4	513	76.4	4.1	0.0	19.9	12.2	1.4	0.0	0.0	351
Mid Eastern	60.3	435	71.2	4.3	4.5	14.2	3.0	13.9	0.8	0.0	262
North East	69.5	323	68.8	2.0	5.4	46.7	8.4	9.4	1.9	0.0	224
Mid Northern	43.4	549	60.1	0.2	2.0	27.0	8.4	9.1	2.4	1.4	238
West Nile	49.4	302	78.3	0.2	2.1	24.8	29.2	4.0	4.0	0.0	149
Mid Western	69.1	328	84.3	1.2	1.1	22.7	13.5	14.5	5.8	0.0	227
South Western	55.3	721	83.2	1.4	3.5	12.3	7.6	10.3	1.4	0.0	399
Education											
No education	50.2	718	67.8	0.5	1.0	22.6	16.0	11.5	2.2	0.9	361
Primary	54.3	2,392	77.3	1.2	1.9	18.5	9.5	8.1	2.0	0.0	1,299
Secondary	68.8	844	83.4	14.5	6.4	16.6	5.4	8.3	2.0	0.0	581
More than secondary	78.7	179	72.4	25.3	9.5	30.4	4.0	5.6	3.8	0.0	141
Wealth quintile											
Lowest	47.8	764	59.9	0.1	1.4	33.8	13.7	11.1	3.1	0.9	366
Second	51.1	756	76.0	0.5	1.4	20.0	11.9	9.6	2.1	0.1	386
Middle	55.5	778	80.0	0.5	1.8	16.8	9.7	10.7	1.5	0.0	432
Fourth	62.2	805	80.4	0.2	2.8	15.5	9.2	5.7	2.2	0.0	500
Highest	67.7	1,032	82.3	18.9	6.6	15.7	4.8	7.2	1.9	0.0	698
Total	57.6	4,134	77.0	5.8	3.3	19.3	9.1	8.5	2.1	0.1	2,382

Note: Percentages may add to more than 100.0, since multiple responses were allowed.

4.4 MANAGEMENT OF FEVER AMONG CHILDREN

Most fevers occur at home, and they can rapidly progress to severe illness if treatment is not received promptly.

4.4.1 Knowledge of When a Child with Fever Should Be Taken for Treatment

Table 4.7 presents information on women's knowledge of when a child with fever should be taken for treatment. Two-thirds of women age 15-49 reported that a child with fever should be taken for treatment the same day. The proportion is highest among women age 20-24 years (73 percent) and among urban women (74 percent) compared with rural women (65 percent). In addition, the proportion increases with education level of the women, and is highest among women in the highest wealth quintile, although there is no clear correlation with wealth.

Table 4.7 Knowledge of when a child with fever should be taken for treatment

Among women age 15-49, percentage who cite specific time range when a child with fever should be taken for treatment, percentage reporting that treatment for fever is not necessary, and percentage reporting that it depends on severity of fever, by background characteristics, Uganda MIS 2009

	Among women age 15-49:									
Background characteristic	Same day	Next day	Two days after onset of fever	Three or more days after onset of fever	Fever is normal in children, no treatment necessary	Depends on how serious the fever is	Other	Don't know/ missing	Total	Number of women
Age										
15-19	63.7	16.7	7.3	3.1	0.0	4.4	0.3	4.4	100.0	901
20-24	73.4	14.6	4.7	3.1	0.1	3.5	0.0	0.6	100.0	949
25-29	62.9	18.8	7.1	2.4	0.0	8.2	0.5	0.1	100.0	677
30-34	66.3	17.5	5.9	1.2	0.1	7.9	0.4	0.6	100.0	549
35-39	65.6	18.8	7.9	1.4	0.3	5.3	0.8	0.0	100.0	482
40-44	61.9	17.4	7.7	2.6	0.0	8.9	0.3	1.2	100.0	292
45-49	66.7	17.4	4.8	2.9	0.0	6.6	0.7	0.9	100.0	285
Residence										
Urban	74.2	9.0	4.7	1.3	0.0	9.4	0.1	1.3	100.0	710
Rural	64.8	18.7	6.8	2.8	0.1	5.1	0.4	1.3	100.0	3,424
Region										
Central 1	68.2	16.4	10.1	2.5	0.0	1.5	1.1	0.3	100.0	324
Central 2	57.8	19.3	9.1	3.6	0.0	8.0	0.3	1.8	100.0	369
Kampala	69.2	10.1	7.9	1.7	0.0	9.5	0.3	1.3	100.0	271
East Central	68.5	6.5	2.1	1.8	0.2	19.5	0.6	0.7	100.0	513
Mid Eastern	70.4	16.1	5.1	6.0	0.0	1.4	0.4	0.7	100.0	435
North East	61.1	27.4	7.5	0.4	0.0	2.3	0.4	0.9	100.0	323
Mid Northern	74.8	14.1	5.2	1.3	0.0	2.4	0.2	2.0	100.0	549
West Nile	78.4	9.0	3.3	0.6	0.0	7.3	0.0	1.4	100.0	302
Mid Western	59.2	18.7	8.6	7.2	0.6	4.9	0.0	0.8	100.0	328
South Western	59.6	26.9	7.4	1.2	0.0	2.3	0.3	2.3	100.0	721
Education										
No education	63.0	20.2	6.2	3.0	0.4	6.2	0.6	0.4	100.0	718
Primary	64.2	18.1	7.2	2.7	0.0	5.6	0.4	1.7	100.0	2,392
Secondary	72.9	13.4	5.7	1.7	0.1	5.4	0.0	0.9	100.0	844
More than secondary	80.0	7.2	0.7	1.0	0.0	9.3	0.4	1.3	100.0	179
Wealth quintile										
Lowest	66.2	19.7	5.4	1.6	0.1	4.4	0.6	1.9	100.0	764
Second	66.7	16.7	7.0	3.8	0.0	4.3	1.0	0.5	100.0	756
Middle	63.0	18.2	6.1	3.8	0.0	7.2	0.2	1.5	100.0	778
Fourth	65.6	17.5	7.6	2.2	0.2	5.5	0.0	1.3	100.0	805
Highest	69.7	13.9	6.0	1.5	0.1	7.2	0.2	1.4	100.0	1,032
Total	66.4	17.0	6.4	2.5	0.1	5.9	0.4	1.3	100.0	4,134

Seventeen percent of women age 15-49 reported that a child with fever should be taken for treatment the next day, and 6 percent said 2-3 days after onset of the fever. Another 6 percent said the severity of the fever will determine when the child should be taken for treatment.

4.4.2 Prevalence and Prompt Treatment of Fever in Children

The 2009 UMIS asked mothers whether any of their own children under 5 years had had a fever in the two weeks preceding the survey and, if so, whether any treatment was sought. Questions were also asked about blood testing, the types of drugs given to the child, and how soon and for how long the drugs were taken. Other questions determined the first place they sought advice or treatment, the number of days after onset of fever when advice or treatment was sought, feeding practices during the episode of fever, and knowledge of when a child with fever should be taken to a provider for treatment. Table 4.8 shows the percentage of children under age 5 who had fever in the two weeks preceding the survey and the actions taken to care for them.

Table 4.8 Prevalence and prompt treatment of children with fever

Percentage of children under age 5 with fever in the two weeks preceding the survey, and among children with fever, the percentage for whom advice or treatment was sought from a health facility or provider, the percentage who had blood taken from finger or heel for testing, the percentage who took antimalarial drugs, the percentage who took the antimalarial drugs the same or next day following the onset of fever, and the percentage who took an antibiotic drug, by background characteristics, Uganda MIS 2009

	Among children under age five:		Among children under age five with fever:					
Background characteristic	Percentage with fever in the two weeks preceding the survey	Number of children	Percentage for whom advice or treatment was sought from a health facility or provider[1]	Percentage who reported having blood taken from finger or heel for testing	Percentage who took antimalarial drugs	Percentage who took antimalarial drugs same or next day	Percentage who took antibiotic drugs	Number of children with fever in the two weeks preceding the survey
Age (in months)								
<12	44.7	691	74.3	21.8	48.0	27.1	23.4	309
0-5	31.8	331	69.1	21.7	32.2	21.5	26.1	105
6-11	56.6	360	77.1	21.9	56.2	30.0	22.0	204
12-23	54.6	771	74.5	17.7	68.0	39.7	13.8	421
24-35	44.9	756	70.2	18.4	62.3	35.9	18.7	340
36-47	44.3	709	65.8	12.3	58.3	34.3	10.6	314
48-59	35.4	801	63.9	15.1	57.9	40.3	8.8	283
Residence								
Urban	47.8	489	60.8	26.6	52.7	38.2	15.3	234
Rural	44.3	3,238	71.7	15.6	60.7	35.2	15.1	1,433
Region								
Central 1	33.9	268	78.7	13.4	61.2	32.3	9.2	91
Central 2	54.3	291	71.2	16.3	58.3	34.5	14.4	158
Kampala	22.4	142	(78.2)	(42.2)	(48.1)	(27.4)	(34.2)	32
East Central	56.3	573	53.4	12.5	38.9	25.2	11.5	322
Mid Eastern	30.1	432	70.4	12.6	59.8	37.3	18.4	130
North East	52.4	341	82.4	20.8	69.0	44.5	21.9	179
Mid Northern	66.1	546	72.2	21.2	71.8	39.0	15.1	361
West Nile	51.8	306	59.5	9.8	67.3	53.8	11.2	159
Mid Western	36.4	355	73.2	15.9	67.2	39.7	10.4	129
South Western	22.3	474	94.7	26.2	47.2	13.8	23.0	106
Mother's education								
No education	46.1	782	69.4	15.6	57.6	37.8	10.5	360
Primary	45.8	2,325	68.9	14.8	57.9	31.5	15.4	1,065
Secondary	40.0	528	74.3	29.9	68.6	48.9	20.6	211
More than secondary	32.7	92	*	*	*	*	*	30
Wealth quintile								
Lowest	55.1	836	70.0	15.3	63.0	35.2	12.2	461
Second	45.2	799	68.9	13.1	60.1	35.5	14.4	361
Middle	44.0	767	65.8	14.3	54.5	32.2	15.6	338
Fourth	40.4	687	77.1	19.8	57.2	30.9	15.3	277
Highest	35.9	638	70.6	28.2	62.1	47.7	21.3	229
Total	44.7	3,727	70.2	17.1	59.6	35.7	15.1	1,667

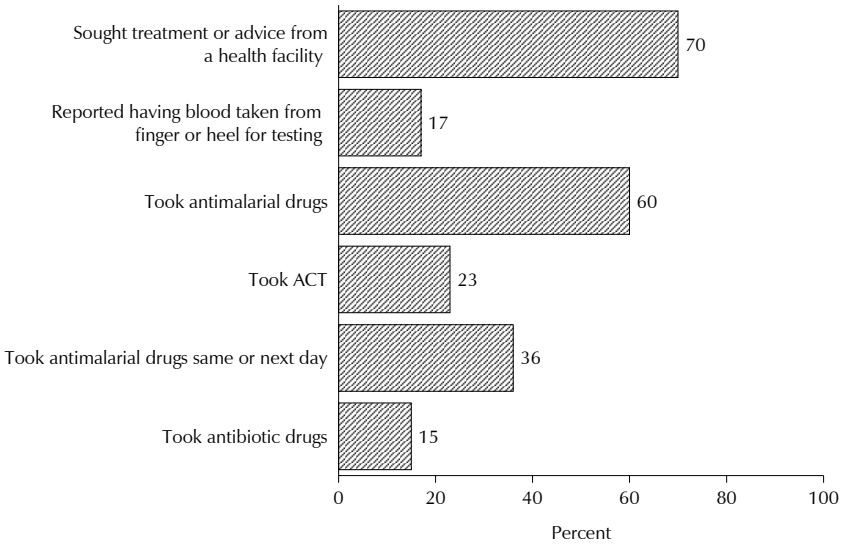
Note: Numbers in parentheses are based on 25-49 unweighted cases, while an asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.
[1] Excludes pharmacy, shop, and traditional practitioner.

About 45 percent of children under age 5 had a fever in the two weeks preceding the survey. The prevalence of fever is lowest among children under age 6 months (32 percent) and among children in the South Western region and Kampala (each 22 percent); prevalence is also low among children of mothers who have more than secondary school education (33 percent) and among children in the highest wealth quintile (36 percent). It is highest among children in the Mid Northern region (66 percent).

Survey findings show that advice or treatment from a health facility or provider was sought for 70 percent of the children with a fever in the two weeks preceding the survey; 60 percent took some type of antimalarial drug, and 23 percent took ACT. However, only 36 percent took antimalarial drugs on the same or the next day, and only 17 percent of children with fever were reported to have had a drop of blood taken from a finger or heel for testing (Figure 4.1).

Children with fever in rural areas are more likely than those in urban areas to take antimalarial drugs for fever.

Figure 4.1 Management of Fever for Children under Age Five



Uganda MIS 2009

4.4.3 Care Seeking Behaviour

Mothers who reported that they sought advice or treatment from a health facility or provider for fever in a child were asked about the first place where care was sought for the child. Findings are presented in Table 4.9.

Forty-four percent of children who had fever in the two weeks preceding the survey were taken to a public sector health facility, while 56 percent were taken to a private sector health facility. Children of wealthier mothers tend to be sent to a private hospital or clinic, while those with less wealthy mothers are taken to government health centres.

The data further show that advice or treatment was sought for 50 percent of children within 24 hours of onset of fever (Table 4.10). Advice or treatment is more likely to be sought on the same day or the next day for urban children than for rural children. Differentials by other background characteristics are not pronounced.

Table 4.9 Care seeking behaviour: first place to seek care

Among children under age 5 with fever in the two weeks preceding the survey for whom advice or treatment was sought[1], percent distribution by sources of first place where advice or treatment was sought, by background characteristics, Uganda MIS 2009

Background characteristic	Public sector						Private sector					Other[2]	Missing	Total	Number of children under age 5 with fever in the two weeks preceding the survey for whom advice or treatment was sought
	Government hospital	Government health centre	Government health post	Mobile clinic	Field worker	Other public	Private hospital, clinic	Pharmacy	Private doctor	Private mobile clinic	Field worker				
Age (in months)															
<12	8.7	31.7	1.0	2.6	0.2	0.4	24.3	14.5	0.4	13.8	0.0	1.3	1.2	100.0	268
0-5	9.9	39.6	1.4	1.2	0.0	0.9	18.0	14.3	1.1	10.0	0.0	0.0	3.6	100.0	88
6-11	8.2	27.8	0.8	3.2	0.3	0.1	27.4	14.6	0.0	15.6	0.0	1.9	0.0	100.0	179
12-23	9.2	31.6	2.6	2.1	0.0	0.3	27.2	12.9	0.0	11.2	0.3	2.4	0.0	100.0	366
24-35	8.5	24.0	2.2	3.9	0.4	0.0	31.9	13.7	0.7	12.1	0.0	2.7	0.0	100.0	279
36-47	15.2	24.8	3.5	4.9	0.0	0.0	19.6	19.6	0.0	11.2	0.6	0.6	0.0	100.0	253
48-59	4.6	31.6	3.3	3.1	0.1	0.0	34.4	11.1	0.0	11.0	0.0	0.9	0.0	100.0	203
Residence															
Urban	18.5	6.4	0.7	1.2	0.0	0.0	58.9	11.3	0.4	2.8	0.0	0.0	0.0	100.0	160
Rural	8.2	31.8	2.7	3.5	0.2	0.2	23.1	14.8	0.2	13.1	0.2	1.9	0.3	100.0	1,209
Region															
Central 1	16.6	16.3	1.9	6.9	0.0	0.0	28.7	7.7	1.2	20.8	0.0	0.0	0.0	100.0	77
Central 2	18.6	10.8	0.6	7.6	0.0	0.0	33.0	14.5	0.0	11.9	0.0	3.0	0.0	100.0	132
Kampala	(22.6)	(14.4)	(0.0)	(6.0)	(0.0)	(0.0)	(39.8)	(10.4)	(2.2)	(4.7)	(0.0)	(0.0)	(0.0)	100.0	28
East Central	16.1	9.1	1.6	4.6	0.1	0.8	54.8	10.8	0.0	0.1	0.0	0.1	1.6	100.0	197
Mid Eastern	16.6	22.2	1.5	3.3	0.0	0.0	35.1	8.2	0.0	3.7	0.0	9.4	0.0	100.0	109
North East	1.5	44.0	0.0	0.0	0.0	0.0	42.7	11.4	0.0	0.0	0.0	0.4	0.0	100.0	163
Mid Northern	4.2	41.1	1.8	0.1	0.4	0.1	5.2	22.9	0.0	23.1	0.8	0.4	0.0	100.0	331
West Nile	8.6	32.8	1.9	2.6	0.3	0.3	17.2	26.7	0.0	6.6	0.0	2.8	0.0	100.0	129
Mid Western	5.8	28.2	18.3	7.2	0.0	0.0	16.9	6.4	0.6	15.9	0.0	0.7	0.0	100.0	101
South Western	2.0	41.6	0.0	3.6	0.0	0.0	23.8	3.0	0.7	23.1	0.0	2.2	0.0	100.0	103
Mother's education															
No education	13.5	29.8	6.8	5.3	0.2	0.5	15.5	13.4	0.0	13.1	0.0	1.8	0.0	100.0	288
Primary	7.7	31.3	1.1	2.4	0.1	0.1	25.9	16.1	0.3	12.6	0.3	1.8	0.4	100.0	881
Secondary	11.7	17.7	1.8	4.8	0.0	0.0	49.6	7.8	0.0	5.3	0.0	1.2	0.0	100.0	172
More than secondary	*	*	*	*	*	*	*	*	*	*	*	*	*	100.0	29
Wealth quintile															
Lowest	6.0	38.7	4.3	1.4	0.4	0.4	19.1	15.7	0.0	12.1	0.0	2.0	0.0	100.0	384
Second	8.2	31.1	0.5	2.5	0.1	0.0	20.9	18.7	0.6	13.5	0.9	3.1	0.0	100.0	309
Middle	9.8	29.0	4.3	4.5	0.1	0.3	24.0	12.7	0.0	14.4	0.0	0.9	0.0	100.0	256
Fourth	8.6	24.4	0.3	4.2	0.0	0.0	39.0	14.5	0.2	8.4	0.0	0.4	0.0	100.0	244
Highest	19.3	9.2	2.3	5.5	0.0	0.0	44.5	5.9	0.3	9.5	0.0	1.5	1.8	100.0	177
Total	9.4	28.8	2.5	3.2	0.1	0.2	27.3	14.3	0.2	11.9	0.2	1.7	0.2	100.0	1,369

Note: Numbers in parentheses are based on 25-49 unweighted cases, while an asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.
[1] Includes advice or treatment from pharmacy, shop, and traditional practitioner.
[2] Other sources include other private sources, shops, and traditional practitioners.

Table 4.10 Care seeking behaviour: number of days after onset of fever when advice or treatment was first sought

Among children under age 5 with fever in the two weeks preceding the survey for whom advice or treatment was sought[1], percentage reporting number of days after onset of fever when advice or treatment was first sought, by background characteristics, Uganda MIS 2009

Background characteristic	Number of days after onset of fever					Total	Number of children under age 5 with fever in the two weeks preceding the survey for whom advice or treatment was sought
	Same day/ next day	2-3 days	4-5 days	6 days and over	Don't know/ missing		
Age (in months)							
<12	41.9	44.7	6.1	5.0	2.2	100.0	268
0-5	50.5	35.4	6.0	4.4	3.6	100.0	88
6-11	37.7	49.4	6.1	5.3	1.5	100.0	179
12-23	51.5	35.9	5.3	5.9	1.3	100.0	366
24-35	51.4	39.4	4.5	2.8	1.8	100.0	279
36-47	45.7	41.7	4.2	2.5	5.9	100.0	253
48-59	58.0	35.7	3.7	1.8	0.9	100.0	203
Residence							
Urban	58.0	26.1	7.2	1.4	7.3	100.0	160
Rural	48.4	41.2	4.5	4.2	1.7	100.0	1,209
Region							
Central 1	51.2	37.5	0.0	9.6	1.6	100.0	77
Central 2	45.8	36.8	5.8	6.5	5.0	100.0	132
Kampala	(44.5)	(35.9)	(4.9)	(8.0)	(6.7)	(100.0)	28
East Central	46.6	29.5	7.7	6.6	9.6	100.0	197
Mid Eastern	48.8	40.9	8.0	2.3	0.0	100.0	109
North East	52.4	42.4	5.3	0.0	0.0	100.0	163
Mid Northern	46.8	46.1	2.4	3.7	1.0	100.0	331
West Nile	67.8	25.4	5.8	0.5	0.4	100.0	129
Mid Western	44.6	47.2	6.0	2.3	0.0	100.0	101
South Western	46.5	46.2	3.5	3.8	0.0	100.0	103
Mother's education							
No education	50.8	37.9	6.1	3.5	1.7	100.0	288
Primary	46.7	41.6	5.1	4.0	2.6	100.0	881
Secondary	58.9	33.8	2.5	3.0	1.7	100.0	172
More than secondary	*	*	*	*	*	*	29
Wealth quintile							
Lowest	47.0	40.8	8.5	2.8	0.9	100.0	384
Second	50.0	40.2	5.2	2.9	1.8	100.0	309
Middle	48.5	37.8	3.3	8.5	2.0	100.0	256
Fourth	51.9	37.5	2.1	2.5	6.1	100.0	244
Highest	52.3	39.8	2.4	3.3	2.2	100.0	177
Total	49.5	39.4	4.9	3.9	2.4	100.0	1,369

Note: Numbers in parentheses are based on 25-49 unweighted cases, while an asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.
[1] Includes advice or treatment from pharmacy, shop, and traditional practitioners

4.4.4 Type and Timing of Antimalarial Drug Use among Children

Details on the types and timing of antimalarial drugs given to children to treat fever are provided in Table 4.11.

Table 4.11 Type and timing of antimalarial drugs

Among children under age 5 with fever in the two weeks preceding the survey, percentage who took specific antimalarial drugs and percentage who took each type of drug the same or next day after developing the fever, by background characteristics, Uganda MIS 2009

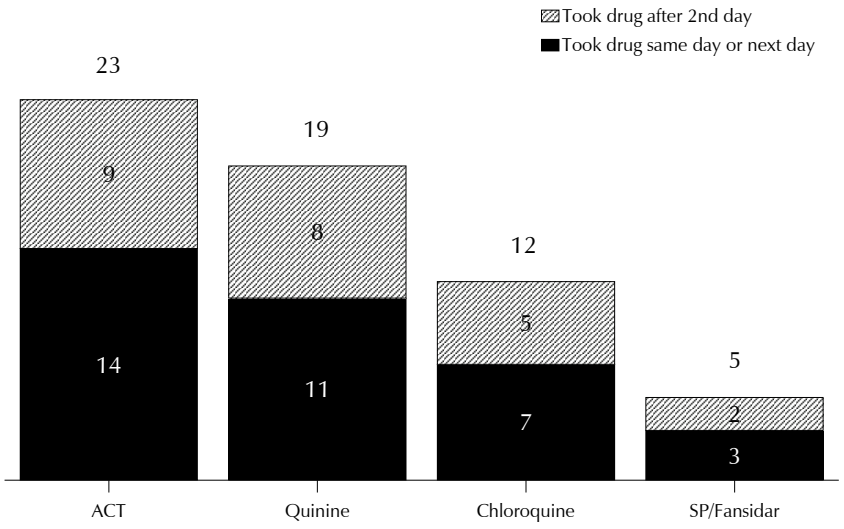
Background characteristic	Percentage of children who took drug:							Percentage of children who took drug the same or next day:							Number of children with fever
	ACT	Quinine	Chloro-quine	SP/ Fansidar	Chloro-quine with Fansidar	Homa-pak	Other anti-malarial	ACT	Quinine	Chloro-quine	SP/ Fansidar	Chloro-quine with Fansidar	Homa-pak	Other anti-malarial	
Age (in months)															
<12	14.9	19.5	8.2	3.0	2.3	0.0	3.6	8.4	9.4	5.3	0.8	2.3	0.0	1.7	309
0-5	10.9	13.2	3.9	1.2	2.8	0.0	2.5	7.0	7.3	2.8	0.9	2.8	0.0	0.8	105
6-11	17.0	22.8	10.4	3.9	2.0	0.0	4.1	9.2	10.4	6.6	0.7	2.0	0.0	2.2	204
12-23	27.4	25.7	12.0	4.3	0.8	0.9	1.3	15.4	15.6	5.8	2.8	0.8	0.0	0.6	421
24-35	25.7	14.7	10.6	7.2	1.7	1.0	4.1	15.6	7.1	5.0	5.3	0.8	1.0	1.8	340
36-47	18.8	21.6	15.3	4.6	1.4	1.0	1.2	9.9	12.9	8.8	2.6	1.2	0.0	0.4	314
48-59	28.4	12.4	13.7	5.8	0.2	1.3	1.2	18.8	7.1	9.6	4.3	0.1	0.4	1.2	283
Residence															
Urban	26.4	11.2	9.1	5.7	0.4	0.0	1.8	20.1	6.3	6.6	5.2	0.1	0.0	1.5	234
Rural	22.8	20.6	12.4	4.8	1.4	1.0	2.3	12.6	11.5	6.8	2.8	1.2	0.3	1.0	1,433
Region															
Central 1	17.4	16.7	16.5	4.3	0.0	0.0	6.3	9.5	11.4	6.6	2.8	0.0	0.0	1.9	91
Central 2	18.0	24.8	10.5	2.0	2.0	0.2	4.5	12.0	14.4	4.4	1.7	1.0	0.0	2.7	158
Kampala	(22.5)	(8.9)	(8.6)	(7.9)	(0.0)	(0.0)	(4.4)	(15.6)	(6.2)	(1.8)	(6.1)	(0.0)	(0.0)	(1.9)	32
East Central	13.4	8.1	9.8	4.9	1.0	0.0	1.7	9.9	3.7	5.6	4.6	1.0	0.0	0.4	322
Mid Eastern	16.6	16.2	25.6	5.0	0.0	0.0	4.1	6.0	7.9	17.9	3.1	0.0	0.0	3.0	130
North East	25.1	40.1	4.2	0.8	0.0	0.0	0.9	13.3	26.1	3.9	0.5	0.0	0.0	0.9	179
Mid Northern	40.8	20.5	5.9	7.7	2.2	3.4	1.2	21.7	11.2	1.3	2.9	2.2	1.1	0.4	361
West Nile	27.7	20.8	14.2	6.2	1.6	0.4	2.3	21.3	14.6	13.1	4.9	1.2	0.0	2.3	159
Mid Western	19.4	14.6	25.9	6.0	0.0	0.0	2.3	11.5	5.2	17.9	6.0	0.0	0.0	0.0	129
South Western	10.0	18.2	13.5	3.2	3.7	0.6	0.0	4.5	4.9	2.2	0.0	2.2	0.6	0.0	106
Mother's education															
No education	22.1	17.0	12.7	6.6	2.3	0.3	1.8	13.7	10.3	9.5	4.5	1.5	0.2	0.7	360
Primary	21.0	20.1	12.8	4.1	1.1	1.2	2.2	10.8	10.6	6.4	2.2	1.1	0.4	0.9	1,065
Secondary	32.2	19.9	6.5	6.9	0.4	0.0	3.5	23.1	12.0	4.9	6.4	0.1	0.0	3.1	211
More than secondary	*	*	*	*	*	*	*	*	*	*	*	*	*	*	30
Wealth quintile															
Lowest	24.4	21.9	11.8	6.2	1.6	1.8	1.8	12.0	12.0	7.0	2.0	1.3	0.6	1.4	461
Second	23.1	23.4	10.2	3.1	0.4	0.7	1.9	12.5	14.1	5.1	3.1	0.1	0.5	0.5	361
Middle	20.9	16.0	12.7	4.9	3.0	0.9	2.8	13.6	7.6	6.9	2.8	3.0	0.0	0.8	338
Fourth	22.0	16.1	15.0	2.5	0.5	0.0	2.8	14.0	7.1	7.1	1.9	0.3	0.0	1.2	277
Highest	26.5	16.1	9.9	8.1	0.3	0.0	2.2	18.6	12.2	8.4	7.7	0.0	0.0	1.9	229
Total	23.3	19.3	11.9	4.9	1.2	0.8	2.3	13.7	10.8	6.8	3.2	1.0	0.3	1.1	1,667

Note: Numbers in parentheses are based on 25-49 unweighted cases, while an asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.

About one-fourth (23 percent) of children under age 5 who had fever in the two weeks preceding the survey took an ACT, while one-fifth (19 percent) took quinine for the management of the fever (Figure 4.2). Use of ACT ranges from 15 percent in children under age 1 to 28 percent of children 48-59 months; however, this does not follow any particular pattern. There is little difference in the use of ACT by urban-rural residence, but there is some regional variation. Use of ACT is least common in the South Western region (10 percent of children with fever) and most common in the Mid Northern region (41 percent of children with fever).

It is interesting to note that while 23 percent of children with a fever in the two weeks preceding the survey took an ACT for the management of fever, only 14 percent of children took the medicine the same day or the next day.

Figure 4.2 Type and Timing of Antimalarial Drugs:
Percent among children under five with fever



Uganda MIS 2009

4.4.5 Community Medicine Distributors

The presence of community health workers or community medicine distributors (CMDs) who distribute antimalarial medicines at the household level enhances prompt management of malaria. Their functionality is affected by many factors, including the availability of medicines and other supplies. In interpreting the results, it is important to note that at the time of the survey, many CMDs were not functional because of the lack of antimalarial medicines for use in home-based management of fever in most areas. Households were asked whether there was a community health worker or community medicine distributor in the village or community who distributes malaria medicines. Findings are presented in Table 4.12.

Table 4.12 Community worker or community medicine distributors

Percentage of households reporting that there is a community worker or community medicine distributor in the village or community who distributes malaria medicines, and among those, percentage reporting that the community worker or community medicine distributor currently have malaria medicines available, by background characteristics, Uganda MIS 2009

Background characteristic	Percentage of households reporting there is a community worker or community medicine distributor (CMD) who distributes malaria medicines in the village or community	Number of households	Percentage of households reporting that the community worker or CMD currently have malaria medicines available	Number of households reporting there is a community worker or community medicine distributor (CMD) who distributes malaria medicines in the village or community
Residence				
Urban	4.0	710	45.8	28
Rural	20.2	3,711	7.5	750
Region				
Central 1	6.8	364	(4.9)	25
Central 2	7.5	439	*	33
Kampala	1.3	273	*	4
East Central	5.8	557	(22.5)	32
Mid Eastern	7.2	530	20.1	38
North East	33.8	335	0.9	113
Mid Northern	78.4	552	5.1	433
West Nile	11.8	288	(2.4)	34
Mid Western	7.9	377	(27.9)	30
South Western	5.2	705	(6.3)	37
Wealth quintile				
Lowest	30.4	871	6.2	265
Second	24.6	931	5.6	229
Middle	14.1	848	8.3	120
Fourth	12.3	852	14.4	104
Highest	6.6	919	25.2	61
Total	17.6	4,421	8.9	779

Note: Numbers in parentheses are based on 25-49 unweighted cases, while an asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.

Only 18 percent of households reported the existence of a community worker or community medicine distributor (CMD) in the village or community. These community workers/community medicine distributors are more likely to be available in rural areas (20 percent) compared with urban areas (4 percent), and they are particularly prevalent in the Mid Northern region (78 percent). The Ministry of Health and partners run CMD projects in these areas, which might explain the high percentage in this region.

MALARIA PREVENTION 5

5.1 MOSQUITO NETS

5.1.1 Background

Insecticide-treated bed nets (ITNs) are one of the most effective preventive measures for malaria. Since 2005, the government of Uganda, with support from several partners, has distributed approximately six million nets across the country. In addition, education on the importance of nets has increased, leading to a greater demand for the nets. The market for all nets (treated and untreated) has grown significantly. The Ministry of Health (MoH) plans to distribute an additional 17.7 million nets across the country in 2010-11 to achieve universal coverage (currently defined as one net per two people).

5.1.2 Ownership of Mosquito Nets

The 2009 UMIS included questions on bed net ownership and use, type and source of net, and reasons for not using a net, when applicable. In addition, questions were asked to determine who slept under the net the previous night and, if no one had, the reasons why the net was not used.

Table 5.1 presents information on the percentage of households that have any type of mosquito net, an ever-treated net, an insecticide-treated net (ITN), and a long-lasting insecticidal net (LLIN), by residence, region, and wealth quintile.

Table 5.1 Ownership of mosquito nets

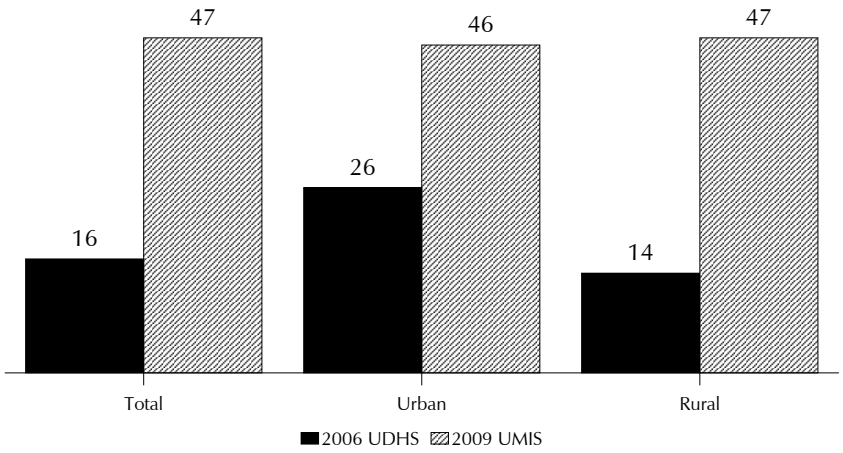
Percentage of households with at least one and more than one mosquito net (treated or untreated), ever-treated mosquito net[1], insecticide-treated net[2] (ITN), and long-lasting insecticidal net[3] (LLIN), and the average number of nets per household, by background characteristics, Uganda MIS 2009

	Any type of mosquito net[1]			Ever treated mosquito net			Insecticide treated mosquito nets (ITNs)[2]				Long-lasting insecticidal nets (LLIN)[3]				
Background characteristic	Percentage with at least one	Percentage with more than one	Average number of nets per household	Percentage with at least one	Percentage with more than one	Average number of ever-treated nets per household	Percentage with at least one	Percentage with more than one	Percentage with 3+	Average number of ITNs per household	Percentage with at least one	Percentage with more than one	Percentage with 3+	Average number of LLINs per household	Number of households
Residence															
Urban	69.8	37.4	1.4	48.9	25.7	0.9	46.4	23.5	10.0	0.9	44.1	22.5	9.4	0.8	710
Rural	56.5	30.7	1.0	47.3	24.2	0.8	46.7	23.7	8.1	0.8	45.8	23.1	7.8	0.8	3,711
Region															
Central 1	50.9	28.3	1.0	35.3	17.0	0.6	35.3	17.0	6.4	0.6	34.0	16.2	5.8	0.6	364
Central 2	40.7	17.0	0.7	24.5	9.6	0.4	23.5	8.7	2.8	0.4	22.3	8.4	2.7	0.4	439
Kampala	74.4	40.4	1.5	50.3	28.4	1.1	49.1	27.4	15.1	1.0	43.8	24.8	13.6	0.9	273
East Central	51.7	22.0	0.8	36.6	14.4	0.5	33.5	11.6	1.1	0.5	33.3	11.5	1.1	0.5	557
Mid Eastern	68.2	33.9	1.1	60.1	27.6	1.0	59.5	26.9	5.3	0.9	58.0	26.8	5.3	0.9	530
North East	87.4	57.3	1.9	76.9	45.0	1.5	76.6	44.6	18.5	1.5	76.4	43.9	18.4	1.5	335
Mid Northern	69.2	43.7	1.4	64.0	38.5	1.2	63.7	37.5	15.4	1.2	62.9	36.9	15.3	1.2	552
West Nile	55.9	31.2	1.1	52.8	26.6	0.9	52.4	26.2	9.6	0.9	51.1	25.7	9.6	0.9	288
Mid Western	40.4	22.0	0.7	34.1	17.5	0.6	33.9	17.4	5.5	0.6	33.1	16.8	4.9	0.6	377
South Western	54.8	29.2	1.0	44.5	23.7	0.8	43.7	23.5	9.3	0.8	43.2	22.6	8.6	0.8	705
Wealth quintile															
Lowest	52.9	25.5	0.9	47.4	22.3	0.8	46.9	22.0	6.9	0.8	46.1	21.5	6.9	0.8	871
Second	50.5	25.1	0.9	44.2	21.3	0.7	43.6	20.9	6.3	0.7	43.1	20.7	6.3	0.7	931
Middle	57.7	31.9	1.0	49.7	26.5	0.9	49.4	26.2	6.7	0.9	49.0	25.9	6.6	0.8	848
Fourth	59.0	31.7	1.1	46.0	22.9	0.8	44.9	22.1	7.3	0.8	44.0	21.7	7.2	0.8	852
Highest	72.8	44.2	1.6	50.5	29.2	1.1	48.7	27.1	14.6	1.0	45.9	25.3	13.2	0.9	919
Total	58.6	31.7	1.1	47.5	24.4	0.9	46.7	23.7	8.4	0.8	45.6	23.0	8.1	0.8	4,421

[1] An ever-treated net is 1) a factory-treated long-lasting insecticidal mosquito net (LLIN) which does not require any further treatment, or 2) a factory net, with or without an insecticide kit, which has subsequently been soaked with insecticide at any time, or 3) a home-made net which has subsequently been soaked with insecticide at any time.
[2] An insecticide-treated net (ITN) is 1) a factory-treated long-lasting insecticidal mosquito net (LLIN) which does not require any further treatment, or 2) a factory net, with or without an insecticide kit, which has subsequently been soaked with insecticide within the past 12 months, or 3) a net that has been soaked with insecticide within the past 12 months.
[3] A long-lasting insecticidal mosquito net (LLIN) is a factory-treated net that does not require any further treatment.

Overall, 59 percent of households have at least one mosquito net, 47 percent have at least one ITN, and 46 percent have at least one LLIN. This implies that almost all ITNs owned by households in Uganda are LLINs. Compared with 2006, when 34 percent of households owned at least one mosquito net and only 16 percent owned at least one ITN (UBOS and Macro, 2007), ownership of mosquito nets has increased quite significantly in Uganda over the years (Figure 5.1). However, only 8 percent of households have three or more ITNs.

Figure 5.1 **Trends in Ownership of ITNs:**
Percent of households with at least one ITN

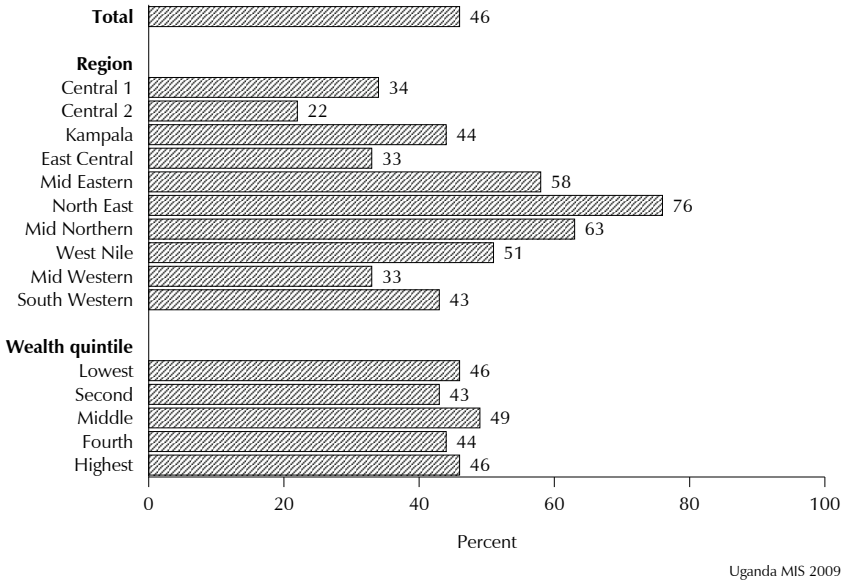


Uganda MIS 2009

Ownership of at least one LLIN varies widely across regions, ranging from 22 percent of households in Central 2 region to 76 percent of households in North East region (Figure 5.2). Survey findings also show that the average number of LLINs per household is about 1 in most regions and approximately 2 for households in North East region. This variation in LLIN ownership across regions is likely due to the fact that several LLIN distribution campaigns focused on the northern and eastern regions of the country.

There are no significant differences in LLIN ownership by rural and urban residence or by wealth quintile.

Figure 5.2 Differentials in Household Ownership of LLINs



There are several ways to procure or obtain a mosquito net in Uganda. A pregnant woman may receive a mosquito net during routine antenatal care visits. Parents of children under 5 years of age may receive them during routine immunization visits to health facilities. Mosquito nets can also be obtained during mass distribution campaigns, and they can be purchased directly through various avenues. The percent distribution of nets by source and according to background characteristics is shown in Table 5.2.

Table 5.2 Source of mosquito net

Percent distribution of nets by source, according to background characteristics, Uganda MIS 2009

Background characteristic	Government health facility	Private hospital/ clinic	Pharmacy/ shop/open market	Hawker	Project/ NGO/ church	Campaign	Other	Don't know/ missing	Total	Number of nets
Residence										
Urban	7.1	3.5	56.9	10.1	12.4	2.6	1.9	5.6	100.0	977
Rural	27.5	0.8	26.8	2.6	29.1	5.2	4.6	3.3	100.0	3,892
Region										
Central 1	23.4	0.8	50.5	7.2	12.8	1.4	1.1	2.8	100.0	356
Central 2	14.1	1.7	42.7	6.0	24.0	2.4	4.4	4.8	100.0	304
Kampala	2.9	3.8	63.1	14.7	5.4	1.6	1.9	6.6	100.0	419
East Central	13.4	0.0	43.8	5.2	14.2	14.6	2.5	6.2	100.0	462
Mid Eastern	21.8	0.0	21.0	4.3	49.3	1.1	1.9	0.6	100.0	598
North East	19.4	1.0	30.1	1.5	43.1	2.2	0.5	2.3	100.0	635
Mid Northern	38.0	0.8	16.3	2.0	28.9	5.8	2.8	5.4	100.0	790
West Nile	35.0	1.5	30.2	5.1	19.0	4.4	3.5	1.5	100.0	309
Mid Western	29.2	0.7	35.7	0.3	26.9	2.6	1.2	3.4	100.0	277
South Western	27.5	3.2	25.7	0.5	16.6	7.7	15.2	3.6	100.0	720
Wealth quintile										
Lowest	30.0	0.3	16.6	2.4	38.8	3.4	2.9	5.6	100.0	783
Second	29.1	1.0	20.9	2.9	34.6	4.8	4.5	2.2	100.0	820
Middle	29.9	1.4	19.5	2.0	32.3	8.3	4.8	1.8	100.0	873
Fourth	27.0	1.3	31.0	5.5	22.4	4.8	5.7	2.3	100.0	923
Highest	10.7	2.2	57.1	6.1	12.2	3.1	3.0	5.7	100.0	1,470
Total	23.4	1.4	32.8	4.1	25.8	4.7	4.1	3.7	100.0	4,869

As in 2006, shops, pharmacies, and open markets remain the main distribution channels for mosquito nets; however, the percentage of nets obtained through these channels has drastically dropped, from 60 percent in 2006 to only 33 percent in 2009. On the other hand, the proportion of nets obtained

from government health facilities has increased considerably, from 6 percent in 2006 to 23 percent in 2009. Similarly, the proportion of mosquito nets obtained from projects, NGOs, or churches has also increased, from 14 percent in 2006 to 26 percent in 2009.

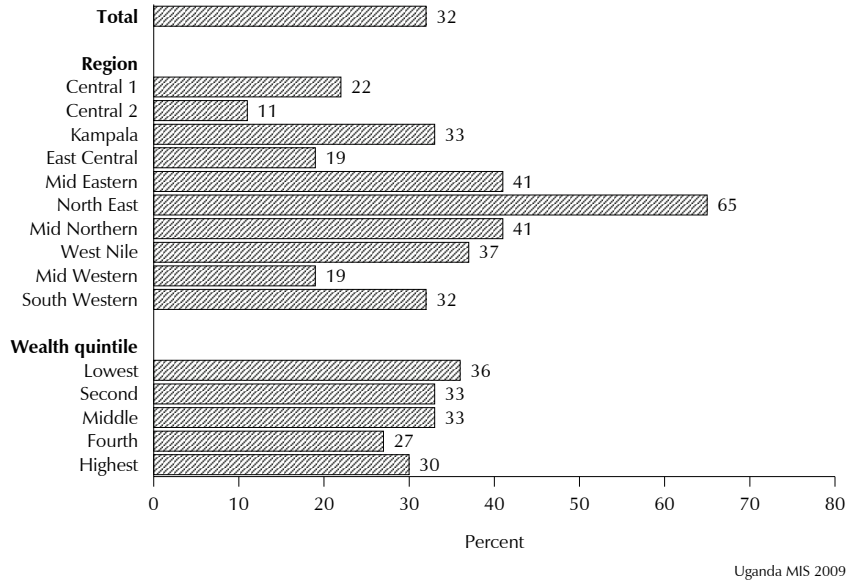
At the regional level, Mid Eastern and North East regions have the highest percentage of nets obtained from projects, NGOs, or churches (49 percent and 43 percent, respectively). Thirty-eight percent of nets in the Mid Northern region and 35 percent of nets in the West Nile region come from a government health facility. Only 3 percent of nets in Kampala come from government health facilities, and 5 percent come from projects, NGOs, or churches, while 63 percent are obtained from pharmacies, shops, or open markets.

Wealthier households are less likely to obtain mosquito nets from government health facilities or a project, NGO, or church, but they are more likely to obtain their mosquito nets from the open market, a pharmacy, or a shop.

5.1.3 Use of Mosquito Nets by Children under Age 5

The use of mosquito nets by children under age 5 is summarized in Table 5.3. Figure 5.4 provides information on trends in use of ITNs. Forty-one percent of children under age 5 in all households were reported to have slept under any net the night before the survey, while 33 percent slept under an ITN, and 32 percent slept under an LLIN (Figure 5.3, Figure 5.4). This is an increase from 2006 when 22 percent of children were reported to have slept under any net, and only 10 percent slept under an ITN the night before the survey (UBOS and Macro, 2007).

Figure 5.3 **Percentage of Children under Age 5 who Slept under an LLIN the Night before the Survey**



Among children living in households that own an LLIN, however, 59 percent slept under an LLIN the night before the survey. Although the data do not show a clear trend or pattern in net usage by age or sex of the child, or by urban-rural residence, they suggest that children under 1 year of age are slightly more likely than older children to sleep under any mosquito net.

The data, however, do show some regional variation, with 78 percent of children under age 5 in households with an LLIN in North East region sleeping under an LLIN compared with only 43 percent of children in Central 2 region, and 49 percent of children in East Central and Mid Western regions. Wealth does not seem to have any clear effect on usage of mosquito nets among children under age 5 in households with LLIN.

Table 5.3 Use of mosquito nets by children

Percentage of children under age 5 who slept under a mosquito net (treated or untreated), an ever-treated mosquito net, an insecticide-treated net (ITN), and a long-lasting insecticidal net (LLIN) the night before the survey, by background characteristics, Uganda MIS 2009

	Children under age 5 in all households					Children under age 5 in households with an ITN		Children under age 5 in households with an LLIN	
Background characteristic	Percentage who slept under any net last night	Percentage who slept under an ever treated net last night[1]	Percentage who slept under an ITN last night[2]	Percentage who slept under an LLIN last night[3]	Number of children	Percentage who slept under an ITN last night[2]	Number of children	Percentage who slept under an LLIN last night[3]	Number of children
Age (in years)									
<1	45.1	36.2	35.9	34.5	704	64.8	390	64.6	376
1	40.9	33.9	32.2	31.8	819	59.5	444	60.3	432
2	40.5	33.1	32.8	32.1	781	54.7	469	54.2	463
3	42.6	34.4	33.1	32.8	805	61.0	437	61.5	429
4	37.1	30.6	30.4	29.6	866	54.9	479	54.4	471
Sex									
Male	39.9	33.2	32.4	31.6	1,943	57.6	1,092	57.4	1,070
Female	42.2	33.8	33.1	32.5	2,032	59.8	1,126	59.9	1,102
Residence									
Urban	53.7	36.6	32.2	30.2	509	57.8	284	56.9	270
Rural	39.2	33.1	32.8	32.3	3,466	58.9	1,934	58.9	1,902
Region									
Central 1	32.2	22.3	22.3	22.0	297	52.7	126	53.4	122
Central 2	20.7	11.3	11.3	10.6	352	42.2	94	43.3	86
Kampala	57.7	42.3	40.9	33.4	142	71.5	81	66.6	71
East Central	33.2	22.8	18.9	18.9	564	48.8	219	49.1	217
Mid Eastern	47.8	42.3	41.8	41.3	479	57.5	348	59.0	336
North East	75.2	64.6	64.5	64.5	358	77.7	297	77.7	297
Mid Northern	48.5	42.0	41.8	41.1	568	57.0	417	56.6	413
West Nile	40.3	37.2	37.0	36.7	346	63.8	201	63.7	200
Mid Western	23.3	20.3	20.0	19.3	383	49.5	155	48.8	152
South Western	39.8	32.8	32.6	31.8	487	56.7	280	55.5	279
Wealth quintile									
Lowest	41.2	36.4	36.2	35.5	906	63.7	515	63.2	510
Second	37.3	33.5	33.1	32.8	840	58.6	474	58.9	468
Middle	39.0	34.1	34.0	33.4	808	55.4	495	55.0	491
Fourth	37.0	28.2	28.0	27.2	752	56.0	376	55.7	367
Highest	52.9	35.0	31.6	30.2	670	59.2	358	60.1	336
Total	41.1	33.5	32.8	32.1	3,975	58.7	2,218	58.7	2,172

[1] An ever-treated net is (1) a factory-treated long-lasting insecticidal mosquito net (LLIN) that does not require any further treatment, or (2) a factory net, with or without an insecticide kit, which has subsequently been soaked with insecticide at any time, or (3) a homemade net which has subsequently been soaked with insecticide at any time.
[2] An insecticide-treated net (ITN) is (1) a factory-treated long-lasting insecticidal mosquito net (LLIN) that does not require any further treatment, or (2) a factory net, with or without an insecticide kit, which has subsequently been soaked with insecticide within the past 12 months, or (3) a net that has been soaked with insecticide within the past 12 months.
[3] A long-lasting insecticidal mosquito net (LLIN) is a factory-treated net that does not require any further treatment.

5.1.4 Use of Mosquito Nets by Women

Table 5.4 shows the usage of nets by all women age 15-49 years, while Table 5.5 provides similar information for women who were pregnant at the time of the survey. Figure 5.4 provides information on trends in use of ITNs.

Table 5.4 Use of mosquito nets by women

Among all women age 15-49 in all households, the percentages who slept the night before the survey under a mosquito net (treated or untreated), under an ever-treated mosquito net, under an insecticide-treated net (ITN), and under a long-lasting insecticidal net (LLIN), and among all women age 15-49 in households with at least one ITN, the percentage who slept the night before the survey under an ITN, and the percentage who slept the night before the survey under an LLIN, by background characteristics, Uganda MIS 2009

	Percentage of all women age 15-49 who:					Percentage of women age 15-49 in households with an ITN who:		Percentage of women age 15-49 in households with an LLIN who:	
Background characteristic	Slept under any net last night	Slept under an ever-treated net last night[1]	Slept under an ITN last night[2]	Slept under an LLIN last night[3]	Number of women	Slept under an ITN last night[2]	Number of women	Slept under an LLIN last night[3]	Number of women
Residence									
Urban	55.7	40.0	37.8	36.0	719	74.2	366	73.3	353
Rural	39.5	32.3	31.7	31.0	3,505	59.9	1,854	59.5	1,827
Region									
Central 1	34.5	21.2	21.2	20.1	334	53.2	133	52.1	129
Central 2	28.7	16.3	15.4	15.2	381	50.5	117	52.0	111
Kampala	58.6	42.3	41.4	36.7	283	72.7	162	69.4	150
East Central	43.0	31.0	27.6	27.3	504	77.4	180	77.9	177
Mid Eastern	48.1	41.5	40.4	39.9	449	63.1	288	63.0	285
North East	73.4	62.2	61.8	61.6	335	77.2	268	77.1	267
Mid Northern	46.4	41.3	41.0	40.4	563	58.1	397	57.9	393
West Nile	44.6	41.6	41.3	41.0	312	70.4	183	70.2	182
Mid Western	26.1	22.1	21.9	20.9	334	58.2	126	56.3	124
South Western	31.2	24.7	24.0	23.0	730	47.6	368	46.4	363
Education									
No education	38.9	34.0	33.2	33.2	707	67.2	349	67.5	347
Primary	40.6	32.5	32.0	31.4	2,355	60.0	1,255	59.8	1,234
Secondary	48.7	37.1	35.2	33.4	830	65.9	443	64.3	431
More than secondary	55.5	38.3	36.4	32.7	176	63.2	101	59.5	96
Wealth quintile									
Lowest	39.6	34.9	34.7	34.2	784	63.9	425	63.9	420
Second	36.4	31.6	31.2	30.8	783	61.9	395	61.7	392
Middle	40.6	34.4	34.1	33.6	793	59.2	457	58.7	454
Fourth	39.3	28.9	27.9	27.3	814	58.7	386	58.6	379
Highest	52.1	37.1	35.2	33.1	1,050	66.3	557	64.8	536
Total	42.2	33.6	32.7	31.8	4,224	62.3	2,220	61.7	2,180

[1] An ever-treated net is (1) a factory-treated long-lasting insecticidal mosquito net (LLIN) which does not require any further treatment, or (2) a factory net, with or without an insecticide kit, which has subsequently been soaked with insecticide at any time, or (3) a home-made net which has subsequently been soaked with insecticide at any time.
[2] An insecticide-treated net (ITN) is (1) a factory-treated long-lasting insecticidal mosquito net (LLIN) that does not require any further treatment, or (2) a factory net, with or without an insecticide kit, which has subsequently been soaked with insecticide within the past 12 months, or (3) a net that has been soaked with insecticide within the past 12 months.
[3] A long-lasting insecticidal mosquito net (LLIN) is a factory-treated net that does not require any further treatment.

Table 5.5 Use of mosquito nets by pregnant women

Among pregnant women age 15-49 in all households, the percentages who slept the night before the survey under a mosquito net (treated or untreated), under an ever-treated mosquito net under an insecticide-treated net (ITN), and under a long-lasting insecticidal net (LLIN), and among pregnant women age 15-49 in households with at least one ITN, the percentage who slept the night before the survey under an ITN, and percentage who slept the night before the survey under an LLIN, Uganda MIS 2009

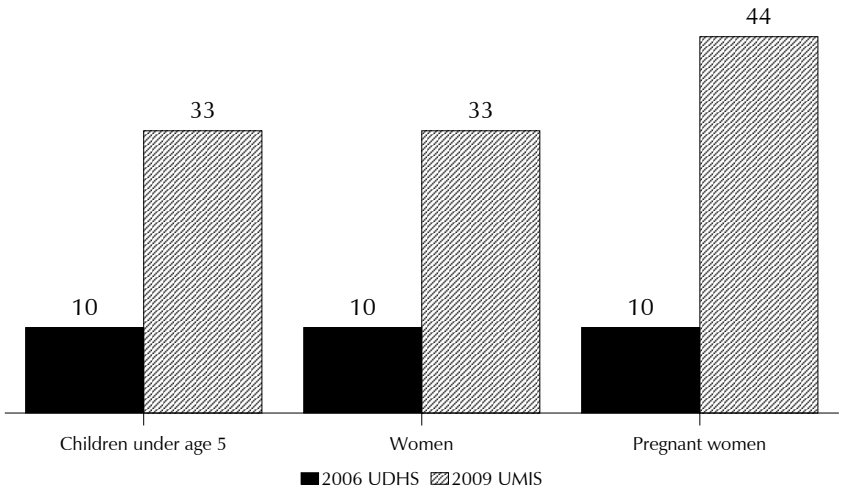
Background characteristic	Percentage of pregnant women age 15-49 who:					Percentage of pregnant women age 15-49 in households with ITN who:		Percentage of pregnant women age 15-49 in households with LLIN who:	
	Slept under any net last night	Slept under an ever treated net last night[1]	Slept under ITN[2] last night	Slept under an LLIN[3] last night	Number of women	Slept under an ITN last night	Number of women	Slept under an LLIN last night	Number of women
Education									
No education	46.9	41.0	41.0	41.0	60	(75.7)	32	(75.7)	32
Primary	52.7	42.0	41.4	41.3	275	75.2	152	75.0	152
Secondary	60.7	55.2	55.2	53.2	65	(82.1)	43	(80.4)	43
More than secondary	*	*	*	*	7	*	4	*	4
Wealth quintile									
Lowest	53.6	44.2	44.2	43.9	94	79.7	52	79.3	52
Second	46.0	37.3	37.3	37.3	91	(71.2)	48	(71.2)	48
Middle	54.2	43.5	42.6	42.6	88	66.6	56	66.6	56
Fourth	53.8	44.1	43.1	43.1	80	(82.6)	42	(82.6)	42
Highest	66.2	56.6	56.6	54.2	54	(91.1)	33	(89.1)	33
Total	53.7	44.1	43.7	43.3	407	76.9	231	76.5	231

Note: Numbers in parentheses are based on 25-49 unweighted cases, while an asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.
[1] An ever-treated net is (1) a factory-treated long-lasting insecticidal mosquito net (LLIN) that does not require any further treatment, or (2) a factory net, with or without an insecticide kit, which has subsequently been soaked with insecticide at any time, or (3) a homemade net which has subsequently been soaked with insecticide at any time.
[2] An insecticide-treated net (ITN) is (1) a factory-treated long-lasting insecticidal mosquito net (LLIN) that does not require any further treatment, or (2) a factory net, with or without an insecticide kit, which has subsequently been soaked with insecticide within the past 12 months, or (3) a net that has been soaked with insecticide within the past 12 months.
[3] A long-lasting insecticidal mosquito net (LLIN) is a factory-treated net that does not require any further treatment.

Forty-two percent of all women reported that they slept under any net the night before the survey (an increase from 23 percent in 2006), and 33 percent of all women reported that they slept under an ITN the night before the survey (an increase from 10 percent in 2006). The data further show that 32 percent slept under an LLIN the night before the survey. Among women in households with an LLIN, 62 percent slept under an LLIN the night before the survey. Regardless of the type of net (any net, ever-treated, ITN, or LLIN), net usage is higher among urban than among rural women. Women in households with an LLIN in East Central and North East regions were more likely than women in other regions to sleep under an LLIN the night before the survey.

Fifty-four percent of pregnant women age 15-49 reported they slept under any net the previous night (Table 5.5) (an increase from 24 percent in 2006). Forty-four percent reported that they slept under an ITN (an increase from 10 percent in 2006). Among pregnant women living in households with an LLIN, 77 percent slept under an LLIN the previous night. Due to the small number of pregnant women in the survey (10 percent of all women), differences in net usage by residence and region are difficult to evaluate; however, it appears that level of education relates to net usage; only 47 percent of pregnant women with no education slept under any net the previous night compared with 61 percent of pregnant women with a secondary education.

Figure 5.4 Trends in Use of ITNs



Uganda MIS 2009

5.1.5 Reasons for Not Using a Mosquito Net

Net ownership does not necessarily guarantee usage. Table 5.6 presents information on households that own nets that were not used the night before the survey. Overall, 17 percent of households had at least one net that was not slept under the previous night. Only 6 percent of households in East Central reported a net that was not slept under the previous night. Among households with a net that was not slept under the previous night, the most common reason cited for non-usage was that the net was not hung (58 percent of households), especially in North East region (99 percent). Sixteen percent reported that the net was not used because it was too hot, and 11 percent said the net had too many holes or was too old.

Table 5.6 Reasons for not using mosquito net for sleeping

Percentage of households with at least one mosquito net that was not slept under the previous night, and among those, percentage reporting various reasons for not using a net for sleeping the previous night, by background characteristics, Uganda MIS 2009

Background characteristic	Percentage of households with at least one mosquito net that was not slept under the previous night	Number of households	Too hot	Don't like smell	No mosqui-toes	Net too old/too many holes	Net not hang	Other	Don't know	Number of households with at least one that was not slept under the previous night
Residence										
Urban	13.6	710	19.8	0.0	13.8	3.6	48.4	51.7	0.4	96
Rural	17.5	3,711	15.2	1.9	5.8	12.6	59.1	34.3	1.6	650
Region										
Central 1	14.2	364	14.5	0.0	2.4	18.5	60.0	32.5	1.9	52
Central 2	14.6	439	7.3	0.0	14.4	7.2	36.2	53.2	2.5	64
Kampala	16.5	273	26.5	0.0	11.4	6.9	38.7	57.6	0.8	45
East Central	5.8	557	(13.2)	(0.0)	(7.6)	(7.3)	(47.1)	(37.0)	(1.7)	32
Mid Eastern	20.8	530	6.6	0.9	5.5	9.3	65.1	31.4	0.0	110
North East	24.7	335	7.4	0.0	4.3	7.6	98.8	21.8	0.0	83
Mid Northern	24.6	552	18.0	0.0	7.7	20.3	63.5	25.4	1.0	136
West Nile	14.7	288	1.0	0.0	0.0	6.3	93.2	19.3	0.0	42
Mid Western	12.2	377	21.4	1.1	7.0	10.2	54.7	37.2	3.7	46
South Western	19.2	705	30.2	7.9	7.2	10.4	28.9	52.6	3.0	136
Wealth quintile										
Lowest	14.7	871	2.7	0.4	4.4	22.4	75.6	21.0	0.2	128
Second	16.7	931	5.0	0.5	4.2	11.3	59.5	33.4	2.6	155
Middle	17.4	848	26.8	0.7	0.9	17.5	52.4	34.5	2.3	148
Fourth	17.5	852	18.9	6.6	8.8	3.4	60.2	35.9	0.3	149
Highest	18.1	919	23.1	0.0	14.6	5.0	44.7	53.8	1.5	166
Total	16.9	4,421	15.7	1.6	6.8	11.4	57.7	36.5	1.4	746

Note: Numbers in parentheses are based on 25-49 unweighted cases, while an asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.

5.2 INDOOR RESIDUAL SPRAYING

Indoor residual spraying (IRS) is another extremely effective method of malaria prevention through vector control. IRS has been instrumental in eliminating malaria in many countries across the world. Uganda first used IRS in the 1960s but then discontinued use following a ban on the chemical DDT for almost 50 years. IRS was reintroduced in 2006 with the spraying of one district. Currently, eight districts are being sprayed: Kitgum, Pader, Gulu, Amuru, Apac, and Oyam, which are all in the Mid Northern region, and Katakwi and Kumi which are in the North East region. Cost has been a major challenge for the Ugandan IRS programme; however, the government of Uganda is increasing its commitment to this intervention, and therefore, coverage could increase in the future.

The 2009 UMIS included questions on whether a household had been sprayed within the previous 12 months, how long ago it was sprayed, who sprayed the household, and whether or not the household paid to have the house sprayed. Table 5.7 presents information on IRS coverage as well as the percentage of households covered by either IRS or at least one ITN.

Table 5.7 Indoor residual spraying

Percentage of households reporting indoor residual spraying in the previous 12 months and percentage of households sprayed in previous 12 months or having at least one ITN, by background characteristics, Uganda MIS 2009

Background characteristic	Percentage of households sprayed in previous 12 months	Percentage of households sprayed in the previous 12 months or having at least one ITN	Number of households
Residence			
Urban	3.7	48.0	710
Rural	5.8	49.4	3,711
Region			
Central 1	0.2	35.3	364
Central 2	4.6	26.2	439
Kampala	5.5	52.3	273
East Central	0.4	33.8	557
Mid Eastern	0.6	59.6	530
North East	4.2	77.1	335
Mid Northern	31.6	77.8	552
West Nile	0.0	52.4	288
Mid Western	0.2	34.1	377
South Western	1.8	44.7	705
Wealth quintile			
Lowest	8.6	51.0	871
Second	8.1	47.9	931
Middle	3.4	50.5	848
Fourth	2.5	46.1	852
Highest	4.6	50.3	919
Total	5.5	49.2	4,421

On average, only 6 percent of all households have been sprayed in the previous 12 months, similar to IRS coverage in 2006. In line with the IRS programme coverage thus far, households in the Mid Northern region have the highest IRS coverage (32 percent of households). Unlike in 2006 when urban households and wealthier households were more likely to have been sprayed in the 12 months preceding the survey, currently, there is very little difference between urban and rural households. Households in the lower two wealth quintiles, however, are more likely to have been sprayed compared with houses in the higher wealth quintiles.

Forty-nine percent of Ugandan households have either been sprayed in the 12 months preceding the survey or own at least one ITN, that is, the household is covered by either IRS or an ITN. Households in the Mid Northern (78 percent) and North East (77 percent) regions are more likely to be covered by either an IRS or an ITN compared with, for example, households in Central 2 (26 percent). There is very little difference by urban or rural residence or by wealth.

5.3 INTERMITTENT PREVENTIVE TREATMENT OF MALARIA IN PREGNANCY

To reduce the risks of pregnant women getting malaria, the current policy under the National Malaria Control Programme calls for all pregnant women to receive at least two doses of sulfadoxine-pyrimethamine (SP/Fansidar), at a minimum of one month apart after quickening.[1] Women receive SP/Fansidar during their antenatal care visits under directly observed therapy. It is also possible that pregnant women obtain SP from sources outside of antenatal care visits.

[1] Quickening occurs when the pregnant women begin to experience foetal movement.

The 2009 UMIS included questions to women with a live birth in the two years preceding the survey regarding the time they were pregnant with their most recent birth. They were asked if they had taken any antimalarial medicine to prevent getting malaria during the pregnancy, and if so, what type of antimalarial medicine. If respondents had taken SP/Fansidar, they were further asked how many times they took it and whether they had received it during an antenatal care visit. Table 5.8 shows the percentage of women who took any antimalarial medicine and the percentage who took SP/Fansidar.

Table 5.8 Prophylactic use of antimalarial drugs and use of intermittent preventive treatment (IPT) by women during pregnancy

Percentage of women age 15-49 with a live birth in the two years preceding the survey who during the pregnancy took any antimalarial drug for prevention, percentage who took SP/Fansidar, any and two or more doses, and who received intermittent preventive treatment (IPT), by background characteristics, Uganda MIS 2009

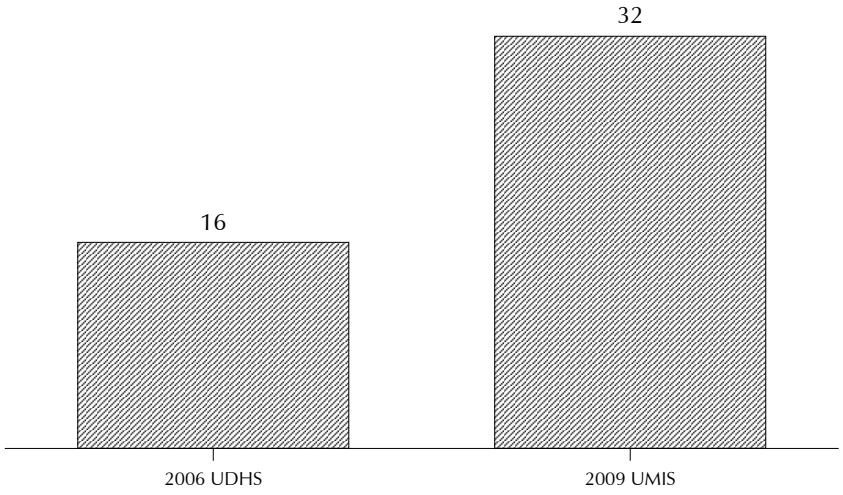
		SP/Fansidar		Intermittent Preventive Treatment[1]		
Background characteristic	Percentage who took any antimalarial drug	Percentage who took any SP/Fansidar	Percentage who took 2+ doses	Percentage who received any SP/Fansidar during an ANC visit	Percentage who received 2+ doses, at least one of which was during an ANC visit	Number of women
Residence						
Urban	74.6	60.8	40.6	59.3	40.6	177
Rural	62.1	44.7	31.3	42.7	30.5	1,287
Region						
Central 1	59.5	46.5	34.7	44.4	33.5	113
Central 2	55.6	31.8	21.2	31.0	21.2	120
Kampala	64.8	52.1	32.6	47.8	32.6	63
East Central	59.1	35.9	25.8	35.6	25.5	192
Mid Eastern	58.1	46.9	30.5	45.1	30.5	173
North East	74.5	60.3	40.1	58.6	38.5	137
Mid Northern	57.2	36.4	29.3	36.2	29.3	223
West Nile	83.3	67.3	48.8	64.7	48.8	110
Mid Western	61.5	44.6	31.7	40.6	30.0	145
South Western	70.1	56.5	35.9	52.8	33.6	187
Education						
No education	53.4	37.8	30.7	37.6	30.7	265
Primary	62.2	43.8	29.7	41.8	28.9	933
Secondary	77.5	62.7	42.4	61.1	41.6	231
More than secondary	(88.6)	(82.9)	(54.7)	(68.8)	(48.0)	34
Wealth quintile						
Lowest	62.2	42.3	31.2	41.8	31.2	330
Second	56.1	39.3	26.1	37.2	24.8	337
Middle	62.7	46.0	31.8	44.7	31.3	304
Fourth	66.0	49.6	37.6	47.5	36.8	240
Highest	74.3	59.9	38.5	55.7	37.1	253
Total	63.6	46.6	32.5	44.7	31.7	1,464

Note: Numbers in parentheses are based on 25-49 unweighted cases, while an asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.

[1] IPT: Intermittent preventive treatment is preventive treatment with a dose of sulfadoxine-pyrimethamine (SP/Fansidar) to pregnant women at each scheduled antenatal visit after the first trimester, but not more frequently than once a month. The percentages included in these columns may include SP/Fansidar from sources other than ANC, since women can get SP/Fansidar from a variety of sources.

Sixty-four percent of women with a live birth in the two years preceding the survey reported they took some type of antimalarial medicine to prevent getting malaria during the last pregnancy (compared with 45 percent of women in 2006). Forty-seven percent said they took SP/Fansidar at least once during the pregnancy (compared with 37 percent in 2006), and 33 percent said they took two or more doses of SP/Fansidar during the last pregnancy (compared with 18 percent in 2006). Intermittent preventive treatment (IPT) is defined as the percentage of pregnant women who received two or more doses of SP/Fansidar, at least one of which was during an antenatal visit. In the UMIS, IPT was estimated at 32 percent, compared with 16 percent in 2006 (Figure 5.5).

Figure 5.5 Trends in Use of IPT



Note: IPT is defined as percentage of women with a live birth in the 2 years preceding the survey who received 2+ doses of SP/Fansidar, at least one of which was during an ANC visit. Uganda MIS 2009

These findings show some urban-rural variation in taking antimalarial medicines to prevent malaria during pregnancy; women in urban areas are more likely to use malaria prophylaxis during pregnancy than women in rural areas. Also, women with more education as well as those in higher wealth quintiles are more likely than women with no or little education and women in lower wealth quintiles to use malaria prophylaxis during pregnancy.

ANAEMIA AND MALARIA IN CHILDREN 6

6.1 ANAEMIA AND MALARIA AMONG CHILDREN

Anaemia, defined as a low level of functional haemoglobin in the blood, decreases the amount of oxygen reaching the tissues and organs of the body, thereby reducing their capacity to function. Because all human cells depend on oxygen for survival, anaemia in children can lead to severe health consequences, including impaired cognitive and motor development, stunted growth, and increased morbidity from infectious diseases. There are several types of anaemia, produced by a variety of underlying causes; inadequate intake of iron, folate, vitamin B12, or other nutrients usually account for the majority of cases of anaemia in many populations. However, in malaria endemic areas, malaria accounts for a significant proportion of anaemia in children under age 5. Other causes of anaemia include thalassemia, sickle cell disease, and intestinal worms. As anaemia is a major cause of morbidity and mortality associated with malaria, prevention and treatment of malaria among children and pregnant women is essential. Promotion of the use of insecticide-treated mosquito bed nets and deworming medication every six months for children under age 5 are two important measures that can be taken to reduce the prevalence of anaemia among children.

Table 6.1 Coverage of testing for anaemia and malaria in children

Percentage of eligible children age 0-59 months who were tested for anaemia and for malaria, by background characteristics (unweighted), Uganda MIS 2009

Background characteristic	Percentage tested for: Anaemia	Malaria with RDT	Malaria by microscopy	Number of children eligible (unweighted)
Age in months				
<12	96.5	95.7	96.1	769
0-5	95.8	94.4	95.0	359
6-11	97.1	96.8	97.1	410
12-17	97.2	96.8	97.2	431
18-23	99.5	99.2	99.5	369
24-35	97.9	97.8	98.0	807
36-47	96.9	96.8	97.2	844
48-59	96.7	96.5	96.7	825
Sex				
Male	97.5	97.2	97.5	2,003
Female	97.1	96.7	97.1	2,042
Residence				
Urban	92.2	91.5	91.8	551
Rural	98.1	97.8	98.1	3,494
Region				
Central 1	98.3	98.0	98.6	356
Central 2	98.1	98.1	98.1	368
Kampala	82.6	81.7	82.6	218
East Central	97.4	97.4	97.4	492
Mid Eastern	98.8	98.6	98.8	425
North East	98.0	97.3	97.7	443
Mid Northern	97.8	97.6	98.1	462
West Nile	99.6	99.4	99.4	509
Mid Western	98.4	98.2	98.4	447
South Western	95.7	94.8	95.7	325
Mother's education				
No education	98.6	98.5	98.8	809
Primary	98.6	98.4	98.6	2,105
Secondary	95.7	95.5	95.9	490
More than secondary	88.3	85.0	85.0	60
Missing	92.6	91.7	92.6	581
Wealth quintile				
Lowest	98.3	98.0	98.3	1,054
Second	98.3	98.5	98.6	778
Middle	98.6	98.3	98.4	773
Fourth	97.6	97.2	97.6	760
Highest	92.5	91.6	92.4	680
Total 0-59	**97.3**	**96.9**	**97.3**	**4,045**
Total 6-59	**97.4**	**97.2**	**97.5**	**3,686**

RDT = Rapid Diagnostic Test (Paracheck)

All children age 0-59 months living in the households selected for the 2009 UMIS were eligible for haemoglobin and malaria testing. In the 2009 UMIS, the HemoCue system was used to measure the concentration of haemoglobin in the blood, and the Paracheck Pf® rapid diagnostic blood test for detection of HRP2 in blood (supplied by Orchid Biomedical Systems, Goa, India) was used to detect malaria. Table 6.1 shows the total number of children age 0-59 months (and children age 6-59 months) eligible for testing and the percentages actually tested for anaemia and malaria.

Of the 4,045 children age 0-59 months eligible for testing, 97 percent were tested for anaemia using the HemoCue portable machine, 97 percent were tested for malaria using the rapid diagnostic test, and blood smears were collected for 97 percent. The coverage levels were uniformly high across most of the population; however, rural children were more likely than urban children to be tested. Testing tended to decrease with increasing education of mothers and with increasing household wealth. In addition, testing levels were significantly lower in Kampala compared with other regions. As shown in Table A-2, the overall response rate was slightly lower in Kampala than in other regions and could potentially explain the lower testing rates in Kampala.

6.1.1 Anaemia Prevalence among Children

Table 6.2 shows the percentage of children age 0-59 months (and children age 6-59 months) classified as having anaemia (haemoglobin concentration of less than 11.0 grams per decilitre), by background characteristics.[1]

Table 6.2 Prevalence of anaemia in children

Percentage of children age 0-59 months classified as having anaemia, by background characteristics, Uganda MIS 2009

Background characteristic	Anaemia status by haemoglobin level			Any anaemia (<11.0 g/dl)	Number of children
	Mild (10.0-10.9 g/dl)	Moderate (8.0-9.9 g/dl)	Severe (below 8.0 g/dl)		
Age in months					
<12	20.0	38.8	8.7	67.5	681
0-5	17.6	25.1	9.7	52.5	319
6-11	22.1	38.0	20.6	80.7	362
12-17	20.8	38.3	20.8	79.9	401
18-23	22.2	36.6	9.8	68.7	406
24-35	23.0	31.8	10.1	64.9	767
36-47	19.9	26.6	6.3	52.8	779
48-59	22.3	24.6	2.0	48.9	814
Sex					
Male	21.3	30.4	10.4	62.2	1,894
Female	21.4	30.4	9.0	60.8	1,954
Residence					
Urban	25.8	25.6	3.0	54.4	472
Rural	20.8	31.1	10.6	62.5	3,376
Region					
Central 1	25.2	26.8	11.0	63.0	293
Central 2	20.7	36.5	10.7	67.9	344
Kampala	15.9	24.8	6.2	46.9	118
East Central	24.0	34.3	11.7	70.0	539
Mid Eastern	22.9	26.9	7.3	57.1	472
North East	20.6	29.6	7.3	57.6	353
Mid Northern	19.8	38.1	15.9	73.8	554
West Nile	19.6	36.6	8.9	65.1	343
Mid Western	19.8	30.6	11.1	61.4	374
South Western	21.4	15.5	2.7	39.6	460
Mother's education					
No education	20.3	32.8	11.1	64.3	718
Primary	20.6	31.6	10.9	63.1	2,080
Secondary	25.3	23.5	6.1	55.0	449
More than secondary	12.2	39.7	6.6	58.4	78
Wealth quintile					
Lowest	18.5	37.0	12.4	67.9	880
Second	21.7	32.4	11.9	65.9	824
Middle	23.1	29.3	9.6	62.0	792
Fourth	22.0	24.5	8.3	54.8	727
Highest	21.9	27.1	4.7	53.6	625
Total 0-59	**21.4**	**30.4**	**9.7**	**61.5**	**3,848**
Total 6-59	**21.7**	**30.9**	**9.7**	**62.3**	**3,529**

[1] Given that haemoglobin requirements differ substantially depending on altitude, anaemia data are normally adjusted for altitude using the formulas recommended by the U.S. Centers for Disease Control (CDC, 1998).

The results of the 2009 UMIS show that 6 out of 10 Ugandan children (62 percent) under the age of 5 years are anaemic (Hb concentration levels are below 11 g/dl). Twenty-one percent are mildly anaemic (Hb concentration levels of 10-10.9 g/dl), 30 percent are moderately anaemic (Hb concentration levels of 8.0-9.9 g/dl), and 10 percent are severely anaemic (Hb concentration levels of less than 8 g/dl). Based on these findings, anaemia seems to be a significant public health problem in Uganda. Anaemia is highest among children age 6-17 months old; the proportion of children with anaemia then decreases with age.

There is little difference in the proportion of children with anaemia by sex. However, rural children are more likely to be anaemic than urban children (63 versus 54 percent); this pattern holds for moderate anaemia (31 percent rural vs. 26 percent urban) as well as for severe anaemia (11 percent rural vs. 3 percent urban). There are also significant regional differences; anaemia appears to be more prevalent among children in East Central (70 percent) and Mid Northern (74 percent) regions than among children in South Western region (40 percent). In addition the data suggest that wealthier children are less likely to be anaemic (or severely anaemic) compared with less wealthy children.

Comparison with the 2006 UDHS data is difficult because of differences in definitions of moderate and severe anaemia. Nevertheless, the proportion of children age 6-59 months with anaemia has declined from 73 to 62 percent.

6.1.2 Malaria Prevalence among Children

Malaria prevalence among children age 0-59 months was measured in the 2009 UMIS in two ways. In the field, health technicians used the Paracheck Pf® rapid diagnostic blood test (RDT) to determine whether children had malaria; blood was obtained from finger or heel prick samples. Children with positive RDT results were offered antimalarial treatment according to Uganda malaria treatment protocol. In addition, thin and thick smears from each child's blood were made in the field, dried in a dust-free environment, stored in slide boxes, and transported to the UMSP Molecular Laboratory for confirmatory microscopy testing. Table 6.3 shows the results of both malaria tests (RDT and microscopy) for children age 0-59 months (and children age 6-59 months) by background characteristics.

Survey results show that the prevalence of malaria is higher using RDTs than using microscopy. This is expected because of the possibility of false positive RDT test results in a few percent of the tests (Chansuda Wongsrichanalai et. al, 2007). Using RDT, 52 percent of children 0-59 months (55 percent of children 6-59 months) tested positive for malaria. Using microscopy, 42 percent of children 0-59 months (45 percent of children 6-59 months) tested positive for malaria (Table 6.3, Figure 6.1). Prevalence is also higher in rural areas than in urban areas (47 versus 15 percent using microscopy) and is higher in the Mid Northern region (63 percent using microscopy) than in other regions.

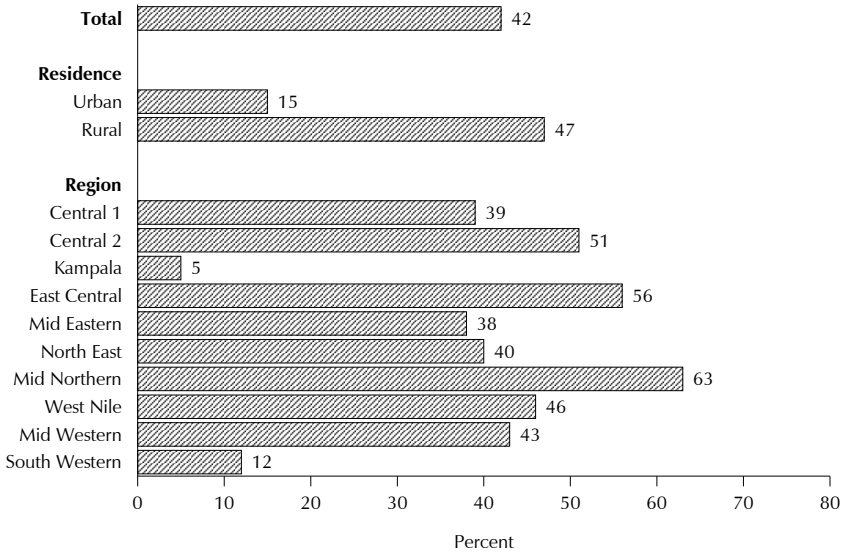
Regardless of which test was used, there is little difference in prevalence by sex of the child; however, malaria prevalence increases with the age of the child and decreases with the mother's educational level as well as with her wealth (Figure 6.2).

Table 6.3 Prevalence of malaria in children

Percentage of children age 0-59 months classified as having malaria, by background characteristics, Uganda MIS 2009

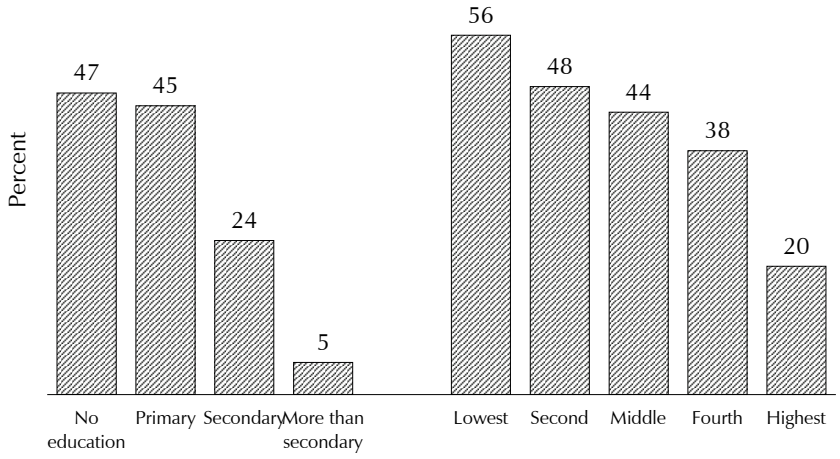
Background characteristic	Malaria prevalence			
	RDT positive	Number of children tested	Microscopy positive	Number of children tested
Age in months				
<12	32.5	673	24.4	678
0-5	18.8	312	16.3	316
6-11	44.3	361	31.5	362
12-17	53.1	399	38.5	401
18-23	47.1	404	35.8	406
24-35	57.5	767	45.2	768
36-47	58.6	778	49.5	782
48-59	58.3	812	53.2	814
Sex				
Male	50.0	1,887	41.1	1,892
Female	53.9	1,946	43.7	1,955
Residence				
Urban	28.6	563	15.3	564
Rural	56.0	3,270	47.1	3,283
Region				
Central 1	44.6	293	39.1	294
Central 2	62.1	344	50.7	344
Kampala	7.4	116	4.9	118
East Central	65.2	539	56.2	539
Mid Eastern	40.1	471	37.5	472
North East	54.5	350	40.0	351
Mid Northern	80.1	550	62.5	554
West Nile	60.2	343	45.7	343
Mid Western	48.4	373	42.7	374
South Western	17.7	455	11.6	460
Mother's education				
No education	55.8	718	46.5	719
Primary	53.8	2,075	45.0	2,080
Secondary	39.3	448	24.0	449
More than secondary	14.3	75	5.1	75
Missing	55.7	517	47.4	523
Wealth quintile				
Lowest	67.6	877	56.1	880
Second	55.7	824	47.8	826
Middle	52.3	791	43.6	791
Fourth	44.1	723	38.0	727
Highest	33.5	618	19.5	623
Total 0-59	**52.0**	**3,833**	**42.4**	**3,847**
Total 6-59	**54.9**	**3,521**	**44.7**	**3,532**

Figure 6.1 Malaria Prevalence among Children 0-59 Months by Residence and Region (According to Microscopy)



Uganda MIS 2009

Figure 6.2 Malaria Prevalence among Children 0-59 Months by Mother's Education and Wealth Quintile



Uganda MIS 2009

6.1.3 Malaria Speciation

Another objective of the survey was to determine the type of *Plasmodium* parasite found in children with positive thick smears. Table 6.4 shows the prevalence of each *Plasmodium* species in children age 0–59 months and the percentage with mixed infections by background characteristics.

Ninety-nine percent of infected children had *Plasmodium falciparum*, 2 percent *P. vivax*, 2 percent *P. malariae* and less than one percent *P. ovale*; three percent carried mixed species infections.

Table 6.4 Malaria species

Percentage of eligible children age 0-59 months with malaria parasites, and among those, percentage with different species of plasmodium, and percentage with mixed infections, by background characteristics, Uganda MIS 2009

Background characteristic	Percentage with malaria parasites	Number of children	P. falciparum	P. vivax	P. ovale	P. malariae	Mixed infections	Number of children with malaria parasite
Age in months								
<12	24.4	678	100.0	0.9	0.0	2.6	3.6	166
0-5	16.7	316	100.0	2.9	0.0	0.0	2.9	53
6-11	31.1	362	100.0	0.0	0.0	3.9	3.9	113
12-17	38.6	401	98.6	1.6	0.0	1.4	1.6	155
18-23	33.1	406	99.2	2.1	0.0	1.2	2.5	134
24-35	45.2	767	99.6	2.3	0.0	0.8	2.7	347
36-47	50.5	779	99.1	1.7	0.2	2.2	3.3	394
48-59	53.2	813	98.5	2.2	0.5	1.2	2.4	433
Sex								
Male	41.5	1,890	99.3	1.6	0.0	1.9	2.7	785
Female	43.2	1,953	98.9	2.2	0.4	1.2	2.7	844
Mother's interview status								
Interviewed	41.6	3,320	99.2	1.7	0.1	1.4	2.5	1,380
Not interviewed but in household	47.4	523	98.3	3.3	0.4	2.1	4.1	248
Residence								
Urban	15.2	471	(100.0)	(0.0)	(0.0)	(0.0)	(0.0)	72
Rural	46.2	3,373	99.0	2.0	0.2	1.6	2.9	1,557
Region								
Central 1	38.9	293	100.0	0.9	0.0	0.0	0.9	114
Central 2	50.7	344	100.0	0.3	0.0	0.0	0.3	174
Kampala	4.9	118	*	*	*	*	*	6
East Central	56.3	538	99.2	1.5	0.0	1.1	1.8	303
Mid Eastern	37.5	472	98.9	4.0	0.0	1.7	4.5	177
North East	40.0	350	97.7	3.3	0.7	0.3	1.9	140
Mid Northern	62.5	554	99.1	2.1	0.1	4.2	5.6	346
West Nile	45.7	343	100.0	1.1	0.0	1.6	2.8	157
Mid Western	42.5	373	97.9	2.8	1.0	0.4	2.1	158
South Western	11.6	460	98.8	0.0	0.0	1.2	0.0	54
Mother's education								
No education	46.3	718	99.1	0.6	0.5	0.8	1.0	333
Primary	45.1	2,079	99.3	2.1	0.0	1.6	3.1	938
Secondary	23.6	449	98.5	1.1	0.0	2.0	1.6	106
More than secondary	5.1	75	*	*	*	*	*	4
Wealth quintile								
Lowest	56.1	879	98.9	2.1	0.4	2.6	4.0	493
Second	47.7	824	98.9	3.2	0.2	0.9	3.3	393
Middle	43.5	791	98.7	1.9	0.0	0.9	1.4	344
Fourth	38.0	727	100.0	0.6	0.0	1.8	2.4	276
Highest	19.5	622	99.5	0.0	0.0	0.5	0.0	121
Total 0-59	**42.4**	**3,843**	**99.1**	**1.9**	**0.2**	**1.5**	**2.7**	**1,628**
Total 6-59	**44.7**	**3,528**	**99.1**	**1.9**	**0.2**	**1.6**	**2.7**	**1,575**

Note: Numbers in parentheses are based on 25-49 unweighted cases, while an asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.

LESSONS LEARNED, CONCLUSIONS, AND RECOMMENDATIONS

LESSONS OF IMPLEMENTATION OF THE UGANDA MIS

Uganda started planning for a combined AIDS indicator and malaria indicator survey in mid-2007 with the intent to start field work in November 2008 during peak malaria transmission season. The surveys were combined to cost-share and to minimize survey fatigue of the Ugandan population. Also, there was the intent to study the effects of one disease on the other. This attempt to field a combined AIS and MIS was abandoned early on when the complexity of data collection was recognized. In the end, because of the technical challenges and the numerous delays caused by these challenges, Uganda decided to separate the surveys. The malaria indicator survey (MIS) was able to progress quickly, and field work started on time in peak season in November 2009. The following are some of the lessons learned from attempting to conduct a malaria indicator survey (MIS) concurrently with another type of survey, such as an AIDS indicator survey:

1. Compromises in laboratory testing may need to be made in both surveys.

2. Questionnaires need careful scrutiny to ensure that all questions are relevant because a combined survey will inevitably require a time commitment from the interviewee.

3. Cost savings may not be significant.

4. Timing of the survey can be difficult in a country with malaria seasonality. As the AIS survey is season-independent, it will have to be flexible and timed to coincide with the peak season for malaria, which is when the MIS survey should be done.

5. In many countries, including Uganda, HIV programmes tend to overshadow other programmes. Malaria control programmes suffer similar challenges.

6. Involvement of Roll Back Malaria (RBM) partners in the implementation of a malaria indicator survey is important in order for the partners to own the results.

CONCLUSIONS FROM THE MIS FINDINGS

This was the first MIS survey conducted in Uganda. The results provide a robust array of coverage indicators critical to monitoring and evaluating performance of interventions of the National Malaria Control Programme.

By comparing some of the key interventions with data from the 2006 Uganda Demographic Health Survey (where available), a mixed picture is observed. Some of the indicators have recorded a moderate increase while others have not improved at all, leaving the programme very far from achieving the national, Abuja, and Roll Back Malaria in Africa targets for 2010.

Moderate to substantial increase in coverage is observed for:

- Overall knowledge level of malaria

- Household ownership of ITNs, children and pregnant women sleeping under an ITN the previous night, although malaria prevalence is still high

- Proportion of pregnant women who received IPT during last pregnancy

- Prompt treatment of fever with an ACT within 24 hours of onset according to the Uganda national treatment policy

In conclusion, there has been an upward trend in most malaria indicators, albeit far from RBM targets.

SUMMARY OF KEY INDICATORS

Indicator	Base line (2006 DHS)	2009 UMIS Results	Strategic Plan targets 2010
Mean size of households	5.0	4.7	na
Households living within 1-4 km radius of nearest health facility	72 percent*	80 percent	na
Household ownership of radio	61 percent	68 percent	na
Household ownership of mobile phone	16 percent	44 percent	na
Proportion of women 15-49 with no education	23 percent	17 percent	na
Percentage of households that own at least one ITN	16 percent	47 percent	85 percent
Percentage of households that own at least two ITNs	na	24 percent	60 percent
Percentage of households that own three or more ITNs	na	8 percent	50 percent
Proportion of children under age 5 sleeping under an ITN the previous night	10 percent	33 percent	85 percent
Proportion of pregnant women sleeping under an ITN the previous night	10 percent	44 percent	85 percent
Proportion of households sprayed in previous 12 months (IRS)	6 percent	6 percent	na
U5 malaria prevalence (by microscopy)	na	42 percent	na
Proportion of children under age 5 with fever in the last 2 weeks who received antimalarial treatment according to national policy (using ACT) within 24 hours from onset of fever	1 percent	14 percent	85 percent
Proportion of children under age 5 with fever in the last 2 weeks who had a finger or heel stick	na	17 percent	na
Proportion of children under age 5 with fever in the last 2 weeks who sought treatment from the public health sector	na	44 percent	na
Proportion of pregnant women who received IPT during last pregnancy	16 percent	32 percent	85 percent

* HSSP-II

RECOMMENDATIONS

1. Data on malaria should be collected by the Uganda National Malaria Control Programme regularly, preferably every three years, to monitor the performance of the programme and its interventions and to guide development of strategies for malaria prevention, control, and elimination.

2. For Uganda to achieve national targets for malaria control, the country, with support from its development partners, must make efficacious, life-saving ACTs available to all health facilities for prompt treatment of fever within 24 hours of onset, in addition to scale up of vector control efforts.

3. Underlying all interventions is the need for a sustained information, education, and communication (IEC) and behaviour, change, communication (BCC) campaign (radio and mobile phones) to increase use of preventive and curative services for malaria. As mobile phone ownership is rising, innovative approaches to engage telecommunication companies to use mobile technology to mobilise and sensitise the population on malaria prevention could be explored.

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SAMPLE DESIGN

Appendix A

A.1 INTRODUCTION

The 2009 UMIS was designed to allow reliable estimation of key malaria indicators for the country as a whole, for urban and rural areas separately, and for Kampala and each of the 9 regions comprised of 8-10 contiguous administrative districts of Uganda that share similar languages and cultural characteristics. Kampala district, because of its unique character as an entirely urban district and capital city of Uganda, comprised a separate region. Thus there were 12 reporting domains:

1. Urban areas
2. Rural areas
3. **North East Region**: Kotido, Abim, Kaabong, Moroto, Nakapiripirit, Katakwi, Amuria, Bukedea, Soroti, Kumi and Kaberamaido.
4. **Mid Northern Region**: Gulu, Amuru, Kitgum, Pader, Apac, Oyam, Lira, Amolatar, Dokolo.
5. **West Nile**: Moyo, Adjumani, Yumbe, Arua, Koboko, Nyadri and Nebbi.
6. **Mid Western region**: Masindi, Buliisa, Hoima, Kibaale, Bundibugyo, Kabarole, Kasese, Kyenjojo and Kamwenge.
7. **South-Western Region**: Bushenyi, Rukungiri, Kanungu, Kabale, Kisoro, Mbarara, Ibanda, Isingiro, Kiruhura and Ntungamo.
8. **Mid Eastern Region**: Kapchorwa, Bukwa, Mbale, Bududa, Manafwa, Tororo, Butaleja, Sironko, Pallisa, Budaka and Busia.
9. **Central 1**: Kalangala, Masaka, Mpigi, Rakai, Lyantonde, Sembabule, and Wakiso.
10. **Central 2**: Kayunga, Kiboga, Luwero, Nakaseke, Mubende, Mityana, Mukono and Nakasongola.
11. **East-Central**: Jinja, Iganga, Namutumba, Kamuli, Kaliro, Bugiri and Mayuge.
12. **Kampala**: Kampala.

A.2 SAMPLING FRAME

Administratively, Uganda is divided into 80 districts[1]. In turn, each district is subdivided into counties, and each county into parishes. In addition to these administrative units, during the last population census, each parish was subdivided in convenient areas called census enumeration areas (EAs). Each EA is either totally urban or rural. The list of EAs has census information on households and population information, and grouped by each administrative unit. The available demarcated cartographic material for each EA in the last census made such census as an adequate sample frame for the 2009 UMIS.

[1] There were 80 districts at the time of designing and collecting data for the 2009 UMIS. Currently there are 112 districts in Uganda.

In the census frame, EAs were grouped by districts, and by rural and urban location. Therefore such stratification by districts and urban and rural areas is also reflected in the 2009 UMIS sample.

A.3 Sample Size Calculation

The primary sampling units were census enumeration areas of the 2002 National Housing and Population Census. The sample was designed to provide malaria prevalence estimates for each of the 10 regions with a sampling error of approximately 12 percent. Determination of the sample size for the UMIS was based on an estimated prevalence for plasmodia parasitemia in the country of 20 percent among children under age five. The survey used a cluster design, so a design effect of 1.69 was assumed.

Assuming a sampling error of 12 percent, the sample size, *n* was estimated using the following formula:

$$n = \frac{p(1-p)}{se^2} \; X \; \frac{DEFF}{R}$$

where

p = 0.20 or 20% (prevalence of malaria) and 1-p = 1-0.20, or 0.8

se = sampling error = (12%*0.20) = 0.024

$DEFF$ = design effect = 1.2^2 = 1.44

R = response rate (estimated at 0.98 or 98%)

n = 408 children aged 0-59 months per region

A sample size of 408 children per region or 4,080 children in the 10 regions of the country will be required. With slightly less than one child under age five per household, about 425 households would be required per region or 4,250 households for the 10 regions in the country. Selecting 28 households per EA will ensure that about 25 per EA will be interviewed. The sample required will be a total of 170 census EAs or approximate 17 per region.

A.4 Sample Allocation and Sample Selection

The sample was not spread geographically in proportion to the population, but rather equally across the regions, with 17 clusters per region and a total of 170 clusters for the country. Table A.1 presents the final allocation of EAs by region and by urban-rural residence, as well as the number of households selected by region.

The sample for the 2009 UMIS was selected using a stratified two-stage cluster design. The first stage involved systematically selecting the 170 EAs from a list of enumeration areas covered in the 2002 census with probability proportional to size using the formula:

$$P_{1i} = (b \; m_i / \Sigma \; m_i)$$

where

- b: number of EAs allocated for region , with EAs ordered first urban and the rural
- m_i: measure of size of i-th EA
- $\Sigma \; m_i$: measure of size for the corresponding region

Among the 170 clusters selected, 26 were in urban areas and 144 were in rural areas.

Table A.1 Sample allocation of clusters by region and urban-rural residence, and number of households selected, 2009 UMIS

Region	Number of urban EAs	Number of rural EAs	Total number of EAs by region	Number of selected households
Central 1	-	17	17	476
Central 2	1	16	17	476
East Central	1	16	17	476
Kampala	17	-	17	476
Mid Eastern	1	16	17	476
Mid Northern	-	17	17	476
Mid Western	1	16	17	476
North East	1	16	17	476
South Western	1	16	17	476
West Nile	3	14	17	476
Total	26	144	170	4,760

In the second stage, a fixed number of households (28) was selected in each of the sampled enumeration areas, using an equal probability systematic sampling from a list of households residing in the EA. The total number of households selected was therefore 4,760. Since the 2009 UMIS sample is unbalanced among regions, it will require a final weighing adjustment procedure to provide estimates at every other domain of study.

In a given selected EA, if 28 is the fixed number of households selected out of the total households (L_i) found in the 2009 listing process for the i-th selected EA, then the household probability in the selected i-th cluster can be expressed as:

$$P_{2i} = (c / L_i)$$

The final households overall probability in the i-th cluster could be calculated as:

$$f_i = P_{1i} * P_{2i}$$

and the sampling design weight for the i-th cluster is given as:

$$1/f_i = 1 / (P_{1i} * P_{2i})$$

All women age 15-49 years who were either permanent residents of the households in the sample or visitors present in the household on the night before the survey were eligible to be interviewed in the survey. In addition, all children age 0-59 months who were listed in the household were eligible for the anaemia and malaria testing component.

A.5 SURVEY IMPLEMENTATION

Table A.2 shows data regarding response rates by residence and region.

Table A.2 Sample implementation

Percent distribution of households and eligible women by results of the household and individual interviews, and household, eligible women and overall response rates, according to urban-rural residence and region, Uganda 2009

	Residence		Region										
Result	Urban	Rural	Central 1	Central 2	Kampala	East Central	Mid Eastern	North East	Mid Northern	West Nile	Mid Western	South Western	Total
Selected households													
Completed (C)	90.7	93.3	93.5	93.9	91.2	92.6	96.0	88.9	94.1	91.8	94.5	92.2	92.9
Household present but no competent respondent at home (HP)	2.5	1.9	2.5	1.5	2.9	1.7	1.1	3.6	2.1	1.3	1.3	1.7	2.0
Refused (R)	0.7	0.1	0.2	0.0	0.8	0.4	0.2	0.0	0.0	0.0	0.0	0.2	0.2
Dwelling not found (DNF)	0.8	0.2	0.2	0.0	0.6	0.0	0.0	0.4	0.0	0.4	0.0	1.1	0.3
Household absent (HA)	3.3	3.1	1.7	3.2	2.1	3.2	1.7	5.7	2.3	5.0	3.4	3.2	3.1
Dwelling vacant/address not a dwelling (DV)	1.9	1.3	1.9	1.5	2.1	1.9	0.8	1.5	0.4	1.1	0.8	1.7	1.4
Dwelling destroy (DD)	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1
Other (O)	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.4	0.0	0.0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of sampled households	728	4,032	476	476	476	476	476	476	476	476	476	476	4,760
Household response rate (HRR)[1]	95.8	97.8	96.9	98.5	95.4	97.8	98.7	95.7	97.8	98.2	98.7	96.9	97.5
Eligible women													
Completed (EWC)	94.3	96.2	96.6	97.2	93.2	95.5	97.7	94.8	94.5	96.8	95.5	97.1	95.9
Not at home (EWNH)	4.2	2.8	1.2	1.3	5.1	3.8	1.4	4.3	5.1	2.3	3.0	2.9	3.1
Postponed (EWP)	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Refused (EWR)	0.8	0.2	0.2	0.3	1.1	0.0	0.9	0.2	0.0	0.0	0.0	0.0	0.3
Partly completed (EWPC)	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incapacitated (EWI)	0.3	0.6	1.2	1.0	0.0	0.2	0.0	0.7	0.2	0.8	1.0	0.0	0.5
Other (EWO)	0.4	0.2	0.5	0.3	0.7	0.2	0.0	0.0	0.2	0.0	0.5	0.0	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of women	720	3,592	417	394	453	422	428	422	453	471	401	451	4,312
Eligible women response rate (EWRR)[2]	94.3	96.2	96.6	97.2	93.2	95.5	97.7	94.8	94.5	96.8	95.5	97.1	95.9
Overall response rate (ORR)[3]	90.3	94.0	93.7	95.7	88.9	93.4	96.4	90.7	92.4	95.1	94.3	94.1	93.4

[1] Using the number of households falling into specific response categories, the household response rate (HRR) is calculated as:

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

[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

Estimates derived from a sample survey are affected by two types of errors: 1) non-sampling errors, and 2) sampling errors. Non-sampling errors are the results of mistakes made in implementing data collection and data processing, such as failure to locate and interview the correct household, misunderstanding of the questions on the part of either the interviewer or the respondent, and data entry errors. Although numerous efforts were made during the implementation of the 2009 Uganda malaria indicator survey (2009 UMIS) to minimize this type of error, non-sampling errors are impossible to avoid and difficult to evaluate statistically.

Sampling errors, on the other hand, can be evaluated statistically. The sample of respondents selected in the 2009 UMIS is only one of many samples that could have been selected from the same population, using the same design and expected size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. Sampling errors are a measure of the variability between all possible samples. Although the degree of variability is not known exactly, it can be estimated from the survey results.

A sampling error is usually measured in terms of the standard error for a particular statistic (mean, percentage, etc.), which is the square root of the variance. The standard error can be used to calculate confidence intervals within which the true value for the population can reasonably be assumed to fall. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range of plus or minus two times the standard error of that statistic in 95 percent of all possible samples of identical size and design.

If the sample of respondents had been selected as a simple random sample, it would have been possible to use straightforward formulas for calculating sampling errors. However, the 2009 UMIS sample is the result of a multi-stage stratified design, and, consequently, it was necessary to use a more complex formula. The computer software used to calculate sampling errors for the 2009 UMIS is the sampling error module in ISSA (Integrated System for Survey Analysis). This module uses the Taylor linearization method of variance estimation for survey estimates that are means or proportions. Another approach, the Jackknife repeated replication method is used for variance estimation of more complex statistics such as fertility and mortality rates.

The Taylor linearization method treats any percentage or average as a ratio estimate, r = y/x, where y represents the total sample value for variable y, and x represents the total number of cases in the group or subgroup under consideration. The variance of r is computed 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

$$z_{hi} = y_{hi} - rx_{hi}\text{, and } \; z_h = y_h - rx_h$$

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 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 is 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 using the given sample design and the standard error that would result if a simple random sample had been used. 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 2009 UMIS are calculated for selected variables considered to be of primary interest for the sample of women. The results are presented in this appendix for the country as a whole, for urban and rural areas separately, for Kampala and for each of the 9 regions. For each variable, the type of statistic (mean, proportion, or rate) and the base population are given in Table B.1. Tables B.2 to B.14 present the value of the statistic (R), its standard error (SE), the number of unweighted (N-UNWE) and weighted (N-WEIG) cases, the design effect (DEFT), the relative standard error (SE/R), and the 95 percent confidence limits (R±2SE), for the selected variables. The DEFT is considered undefined when the standard error considering a simple random sample is zero (when the estimate is close to 0 or 1).

The confidence interval e.g., as calculated for *child slept under an ITN last night* can be interpreted as follows: the overall proportion from the national sample is 0.328 and its standard error is 0.022. Therefore, to obtain the 95 percent confidence limits, one adds and subtracts twice the standard error to the sample estimate i.e., 0.328 ± 2×0.022. There is a high probability (95 percent) that the *true* proportion of children under five who slept under an ITN the night before the survey is between 0.283 and 0.372.

For the total women sample, the value of the design effect (DEFT) averaged over all variables is 2.4, which means that due to multi-stage clustering of the sample the average standard error is increased by a factor of **2.4** over that in an equivalent simple random sample.

Table B.1 List of selected variables for sampling errors, Uganda MIS 2009

Variable	Type of Estimate	Base population
No education	Proportion	All women 15-49
Secondary education or higher	Proportion	All women 15-49
Antenatal care from a skilled provider	Proportion	Last birth for all women 15-49 in last 5 years
Owns at least 1 insecticide-treated net (ITN)	Proportion	Households
Child slept under an ITN last night	Proportion	Children under five in households
Woman slept under an ITN last night	Proportion	All women 15-49 in households
Received 2+ doses of SP/Fansidar antenatal visit	Proportion	Last birth of women 15-49 with live births last 2 years
Child has fever in last 2 weeks	Proportion	Child under 5 in women's birth history
Child took antimalarial	Proportion	Child under 5 with fever in last 2 weeks
Child 6-59 months has anaemia	Proportion	Child 6-59 tested for anaemia
Child 0-59 months has anaemia	Proportion	Child 0-59 tested for anaemia
Child 6-59 has malaria (on rapid test)	Proportion	Children 6-59 tested (rapid test) for malaria
Child 0-59 has malaria (on rapid test)	Proportion	Children 0-59 tested (rapid test) for malaria
Child 6-59 has malaria (on microscopy)	Proportion	Children 6-59 tested (on microscopy) for malaria
Child 0-59 has malaria (on microscopy)	Proportion	Children 0-59 tested (on microscopy) for malaria

Table B.2 Sampling errors for National sample, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.174	0.012	4134	4134	1.963	0.067	0.151	0.197
Secondary education or higher	0.248	0.025	4134	4134	3.684	0.100	0.198	0.297
Antenatal care from a skilled provider	0.947	0.007	2472	2482	1.476	0.007	0.934	0.961
Owns at least 1 insecticide-treated net (ITN)	0.467	0.023	4421	4421	3.000	0.048	0.422	0.512
Child slept under an ITN last night	0.328	0.022	4068	3975	2.399	0.068	0.283	0.372
Woman slept under an ITN last night	0.327	0.020	4312	4224	2.540	0.061	0.287	0.367
Received 2+ doses of SP/Fansidar antenatal visit	0.317	0.016	1506	1464	1.338	0.051	0.285	0.349
Child has fever in last 2 weeks	0.447	0.024	3749	3727	2.600	0.054	0.399	0.495
Child took antimalarial	0.596	0.026	1657	1667	1.863	0.043	0.545	0.647
Child 6-59 months has anaemia	0.623	0.018	3590	3529	2.150	0.030	0.586	0.660
Child 0-59 months has anaemia	0.617	0.017	3921	3835	2.053	0.027	0.583	0.651
Child 6-59 has malaria (on rapid test)	0.549	0.030	3582	3521	3.046	0.054	0.490	0.608
Child 0-59 has malaria (on rapid test)	0.520	0.028	3921	3833	3.052	0.054	0.463	0.576
Child 6-59 has malaria (on microscopy)	0.447	0.028	3593	3532	2.937	0.063	0.391	0.503
Child 0-59 has malaria (on microscopy)	0.424	0.026	3934	3847	2.934	0.062	0.371	0.477

Table B.3 Sampling errors for Urban sample, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.078	0.011	679	710	1.083	0.143	0.056	0.100
Secondary education or higher	0.596	0.023	679	710	1.238	0.039	0.550	0.643
Antenatal care from a skilled provider	0.953	0.010	307	376	0.904	0.011	0.933	0.973
Owns at least 1 insecticide-treated net (ITN)	0.464	0.036	660	710	1.841	0.077	0.392	0.535
Child slept under an ITN last night	0.322	0.040	427	509	1.645	0.124	0.243	0.402
Woman slept under an ITN last night	0.378	0.021	720	719	0.953	0.056	0.336	0.420
Received 2+ doses of SP/Fansidar antenatal visit	0.406	0.041	173	177	1.083	0.100	0.324	0.487
Child has fever in last 2 weeks	0.478	0.106	396	489	4.050	0.222	0.266	0.690
Child took antimalarial	0.527	0.046	135	234	1.229	0.087	0.436	0.618
Child 6-59 months has anaemia	0.538	0.027	349	443	1.127	0.050	0.485	0.591
Child 0-59 months has anaemia	0.547	0.030	381	470	1.326	0.054	0.487	0.606
Child 6-59 has malaria (on rapid test)	0.316	0.075	347	442	2.904	0.238	0.166	0.466
Child 0-59 has malaria (on rapid test)	0.298	0.072	380	469	2.964	0.242	0.154	0.442
Child 6-59 has malaria (on microscopy)	0.160	0.045	349	443	2.373	0.282	0.070	0.251
Child 0-59 has malaria (on microscopy)	0.152	0.043	382	471	2.400	0.281	0.067	0.238

Table B.4 Sampling errors for Rural sample, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.194	0.012	3455	3424	1.835	0.064	0.169	0.218
Secondary education or higher	0.175	0.015	3455	3424	2.302	0.085	0.145	0.205
Antenatal care from a skilled provider	0.946	0.008	2165	2106	1.566	0.008	0.931	0.962
Owns at least 1 insecticide-treated net (ITN)	0.467	0.026	3761	3711	3.182	0.055	0.415	0.519
Child slept under an ITN last night	0.328	0.025	3641	3466	2.477	0.075	0.279	0.378
Woman slept under an ITN last night	0.317	0.024	3592	3505	2.815	0.074	0.270	0.364
Received 2+ doses of SP/Fansidar antenatal visit	0.305	0.017	1333	1287	1.325	0.055	0.271	0.338
Child has fever in last 2 weeks	0.443	0.021	3353	3238	2.145	0.048	0.400	0.485
Child took antimalarial	0.607	0.026	1522	1433	1.781	0.043	0.555	0.659
Child 6-59 months has anaemia	0.635	0.021	3241	3086	2.260	0.033	0.594	0.677
Child 0-59 months has anaemia	0.627	0.019	3540	3366	2.156	0.030	0.589	0.665
Child 6-59 has malaria (on rapid test)	0.582	0.032	3235	3080	3.176	0.055	0.518	0.647
Child 0-59 has malaria (on rapid test)	0.550	0.031	3541	3363	3.163	0.056	0.489	0.612
Child 6-59 has malaria (on microscopy)	0.489	0.029	3244	3089	2.836	0.058	0.432	0.546
Child 0-59 has malaria (on microscopy)	0.462	0.027	3552	3377	2.832	0.059	0.408	0.516

Table B.5 Sampling errors for Central 1 region, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.096	0.018	403	324	1.207	0.184	0.061	0.132
Secondary education or higher	0.320	0.047	403	324	2.038	0.148	0.226	0.415
Antenatal care from a skilled provider	0.887	0.028	210	176	1.317	0.032	0.831	0.944
Owns at least 1 insecticide-treated net (ITN)	0.353	0.046	445	364	2.022	0.130	0.261	0.445
Child slept under an ITN last night	0.223	0.040	356	297	1.479	0.179	0.143	0.303
Woman slept under an ITN last night	0.212	0.041	417	334	1.794	0.193	0.130	0.293
Received 2+ doses of SP/Fansidar antenatal visit	0.335	0.032	136	113	0.778	0.094	0.271	0.398
Child has fever in last 2 weeks	0.339	0.037	319	268	1.248	0.109	0.265	0.413
Child took antimalarial	0.612	0.044	111	91	0.924	0.072	0.524	0.701
Child 6-59 months has anaemia	0.646	0.043	326	273	1.680	0.067	0.560	0.733
Child 0-59 months has anaemia	0.630	0.042	350	293	1.708	0.067	0.546	0.714
Child 6-59 has malaria (on rapid test)	0.472	0.050	325	273	1.612	0.105	0.373	0.571
Child 0-59 has malaria (on rapid test)	0.446	0.049	349	293	1.646	0.109	0.348	0.543
Child 6-59 has malaria (on microscopy)	0.414	0.050	327	274	1.662	0.120	0.314	0.514
Child 0-59 has malaria (on microscopy)	0.391	0.049	351	294	1.681	0.124	0.294	0.488

Table B.6 Sampling errors for Central 2 region, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.139	0.051	383	369	2.870	0.365	0.037	0.241
Secondary education or higher	0.316	0.057	383	369	2.402	0.181	0.202	0.430
Antenatal care from a skilled provider	0.941	0.019	221	193	1.168	0.021	0.902	0.980
Owns at least 1 insecticide-treated net (ITN)	0.235	0.053	447	439	2.637	0.225	0.129	0.341
Child slept under an ITN last night	0.113	0.025	372	352	1.161	0.224	0.062	0.163
Woman slept under an ITN last night	0.154	0.030	394	381	1.476	0.192	0.095	0.214
Received 2+ doses of SP/Fansidar antenatal visit	0.212	0.033	141	120	0.958	0.156	0.146	0.278
Child has fever in last 2 weeks	0.543	0.048	332	291	1.439	0.088	0.447	0.638
Child took antimalarial	0.583	0.057	181	158	1.194	0.098	0.469	0.698
Child 6-59 months has anaemia	0.699	0.032	331	318	1.203	0.046	0.634	0.763
Child 0-59 months has anaemia	0.679	0.028	361	344	1.036	0.041	0.624	0.734
Child 6-59 has malaria (on rapid test)	0.652	0.052	331	318	1.651	0.080	0.547	0.756
Child 0-59 has malaria (on rapid test)	0.621	0.047	361	344	1.514	0.075	0.528	0.714
Child 6-59 has malaria (on microscopy)	0.532	0.083	331	318	2.447	0.156	0.366	0.699
Child 0-59 has malaria (on microscopy)	0.507	0.074	361	344	2.289	0.146	0.359	0.655

Table B.7 Sampling errors for Kampala, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.059	0.011	422	271	0.925	0.181	0.037	0.080
Secondary education or higher	0.664	0.042	422	271	1.825	0.063	0.580	0.748
Antenatal care from a skilled provider	0.963	0.013	169	113	0.900	0.013	0.938	0.989
Owns at least 1 insecticide-treated net (ITN)	0.491	0.028	434	273	1.158	0.057	0.435	0.546
Child slept under an ITN last night	0.409	0.046	219	142	1.207	0.114	0.316	0.502
Woman slept under an ITN last night	0.414	0.035	453	283	1.247	0.084	0.345	0.484
Received 2+ doses of SP/Fansidar antenatal visit	0.326	0.048	95	63	0.992	0.147	0.230	0.422
Child has fever in last 2 weeks	0.224	0.034	211	142	1.170	0.152	0.156	0.292
Child took antimalarial	0.481	0.067	46	32	0.899	0.139	0.348	0.615
Child 6-59 months has anaemia	0.460	0.054	162	107	1.431	0.118	0.352	0.569
Child 0-59 months has anaemia	0.472	0.056	179	117	1.529	0.119	0.360	0.585
Child 6-59 has malaria (on rapid test)	0.082	0.020	160	105	0.924	0.249	0.041	0.123
Child 0-59 has malaria (on rapid test)	0.074	0.019	178	116	0.933	0.253	0.037	0.112
Child 6-59 has malaria (on microscopy)	0.054	0.021	162	107	1.112	0.388	0.012	0.096
Child 0-59 has malaria (on microscopy)	0.049	0.019	180	118	1.114	0.390	0.011	0.088

Table B.8 Sampling errors for East Central region, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.155	0.030	403	513	1.673	0.195	0.095	0.215
Secondary education or higher	0.355	0.093	403	513	3.888	0.261	0.169	0.540
Antenatal care from a skilled provider	0.895	0.028	286	374	1.552	0.031	0.840	0.951
Owns at least 1 insecticide-treated net (ITN)	0.335	0.028	441	557	1.233	0.083	0.280	0.391
Child slept under an ITN last night	0.189	0.022	498	564	0.995	0.114	0.146	0.233
Woman slept under an ITN last night	0.276	0.046	422	504	1.951	0.166	0.185	0.368
Received 2+ doses of SP/Fansidar antenatal visit	0.255	0.044	179	192	1.347	0.173	0.167	0.343
Child has fever in last 2 weeks	0.563	0.062	468	573	2.238	0.110	0.439	0.687
Child took antimalarial	0.389	0.040	213	322	1.171	0.102	0.309	0.469
Child 6-59 months has anaemia	0.707	0.052	432	496	2.175	0.073	0.603	0.810
Child 0-59 months has anaemia	0.704	0.043	475	536	1.907	0.061	0.618	0.790
Child 6-59 has malaria (on rapid test)	0.691	0.087	432	496	3.451	0.127	0.516	0.866
Child 0-59 has malaria (on rapid test)	0.652	0.082	479	539	3.391	0.125	0.488	0.816
Child 6-59 has malaria (on microscopy)	0.592	0.133	432	496	4.526	0.224	0.327	0.858
[a] Child 0-59 has malaria (on microscopy)	0.562	0.125	479	539	4.485	0.222	0.312	0.813

Table B.9 Sampling errors for Mid Eastern region, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.183	0.030	418	435	1.591	0.164	0.123	0.244
Secondary education or higher	0.168	0.038	418	435	2.078	0.226	0.092	0.244
Antenatal care from a skilled provider	0.962	0.015	254	272	1.274	0.016	0.931	0.992
Owns at least 1 insecticide-treated net (ITN)	0.595	0.069	457	530	2.983	0.115	0.457	0.732
Child slept under an ITN last night	0.418	0.073	427	479	2.502	0.174	0.272	0.563
Woman slept under an ITN last night	0.404	0.078	428	449	2.950	0.192	0.249	0.559
Received 2+ doses of SP/Fansidar antenatal visit	0.305	0.061	167	173	1.696	0.199	0.184	0.427
Child has fever in last 2 weeks	0.301	0.041	402	432	1.575	0.137	0.219	0.384
Child took antimalarial	0.598	0.051	142	130	1.003	0.086	0.495	0.701
Child 6-59 months has anaemia	0.566	0.067	375	429	2.491	0.119	0.431	0.700
Child 0-59 months has anaemia	0.574	0.059	418	469	2.289	0.102	0.456	0.691
Child 6-59 has malaria (on rapid test)	0.428	0.087	374	427	3.025	0.204	0.253	0.603
Child 0-59 has malaria (on rapid test)	0.401	0.080	419	471	2.955	0.199	0.241	0.561
Child 6-59 has malaria (on microscopy)	0.397	0.074	375	429	2.694	0.185	0.250	0.544
Child 0-59 has malaria (on microscopy)	0.375	0.069	420	472	2.641	0.184	0.237	0.513

Table B.10 Sampling errors for North East region, Uganda MIS, 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.221	0.050	400	323	2.421	0.228	0.120	0.321
Secondary education or higher	0.202	0.058	400	323	2.869	0.285	0.087	0.318
Antenatal care from a skilled provider	0.952	0.022	258	212	1.693	0.023	0.907	0.997
Owns at least 1 insecticide-treated net (ITN)	0.766	0.035	423	335	1.721	0.046	0.695	0.837
Child slept under an ITN last night	0.645	0.050	443	358	1.723	0.077	0.545	0.744
Woman slept under an ITN last night	0.618	0.043	422	335	1.675	0.070	0.531	0.705
Received 2+ doses of SP/Fansidar antenatal visit	0.385	0.030	163	137	0.782	0.078	0.325	0.445
Child has fever in last 2 weeks	0.524	0.038	415	341	1.533	0.072	0.449	0.600
Child took antimalarial	0.690	0.050	207	179	1.421	0.072	0.591	0.789
Child 6-59 months has anaemia	0.597	0.027	392	319	1.017	0.046	0.543	0.651
Child 0-59 months has anaemia	0.579	0.025	433	351	0.977	0.043	0.530	0.629
Child 6-59 has malaria (on rapid test)	0.594	0.061	390	318	2.181	0.103	0.472	0.717
Child 0-59 has malaria (on rapid test)	0.545	0.064	431	350	2.328	0.117	0.417	0.672
Child 6-59 has malaria (on microscopy)	0.438	0.042	392	319	1.475	0.096	0.354	0.522
Child 0-59 has malaria (on microscopy)	0.400	0.041	433	351	1.552	0.104	0.318	0.483

Table B.11 Sampling errors for Mid Northern region, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.208	0.020	428	549	1.032	0.097	0.168	0.249
Secondary education or higher	0.082	0.016	428	549	1.181	0.191	0.051	0.114
Antenatal care from a skilled provider	0.979	0.009	280	364	1.008	0.009	0.961	0.996
Owns at least 1 insecticide-treated net (ITN)	0.637	0.055	448	552	2.435	0.087	0.526	0.747
Child slept under an ITN last night	0.418	0.054	466	568	1.914	0.130	0.310	0.527
Woman slept under an ITN last night	0.410	0.048	453	563	1.989	0.118	0.313	0.506
Received 2+ doses of SP/Fansidar antenatal visit	0.293	0.034	169	223	0.962	0.115	0.226	0.361
Child has fever in last 2 weeks	0.661	0.032	422	546	1.270	0.048	0.598	0.725
Child took antimalarial	0.718	0.039	293	361	1.290	0.054	0.640	0.796
Child 6-59 months has anaemia	0.750	0.026	409	497	1.200	0.035	0.697	0.803
Child 0-59 months has anaemia	0.738	0.028	451	553	1.295	0.038	0.683	0.794
Child 6-59 has malaria (on rapid test)	0.844	0.024	410	497	1.336	0.029	0.795	0.893
Child 0-59 has malaria (on rapid test)	0.801	0.021	451	550	1.103	0.026	0.760	0.842
Child 6-59 has malaria (on microscopy)	0.667	0.027	410	497	1.084	0.040	0.613	0.720
Child 0-59 has malaria (on microscopy)	0.625	0.026	453	554	1.090	0.041	0.574	0.676

Table B.12 Sampling errors for West Nile region, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.295	0.055	456	302	2.580	0.187	0.185	0.406
Secondary education or higher	0.102	0.025	456	302	1.778	0.248	0.051	0.152
Antenatal care from a skilled provider	0.985	0.008	311	206	1.137	0.008	0.970	1.001
Owns at least 1 insecticide-treated net (ITN)	0.524	0.076	437	288	3.179	0.145	0.372	0.676
Child slept under an ITN last night	0.370	0.064	511	346	2.410	0.172	0.242	0.497
Woman slept under an ITN last night	0.413	0.059	471	312	2.399	0.142	0.296	0.531
Received 2+ doses of SP/Fansidar antenatal visit	0.488	0.051	172	110	1.347	0.106	0.385	0.591
Child has fever in last 2 weeks	0.518	0.036	461	306	1.452	0.069	0.447	0.590
Child took antimalarial	0.673	0.053	259	159	1.651	0.079	0.567	0.780
Child 6-59 months has anaemia	0.664	0.047	476	323	2.016	0.070	0.571	0.757
Child 0-59 months has anaemia	0.655	0.046	505	341	2.023	0.070	0.563	0.747
Child 6-59 has malaria (on rapid test)	0.616	0.077	476	323	2.974	0.125	0.462	0.771
Child 0-59 has malaria (on rapid test)	0.602	0.071	506	343	2.849	0.117	0.460	0.743
Child 6-59 has malaria (on microscopy)	0.464	0.058	476	323	2.366	0.124	0.349	0.579
Child 0-59 has malaria (on microscopy)	0.457	0.050	506	343	2.152	0.109	0.357	0.557

Table B.13 Sampling errors for Mid Western region, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.206	0.049	383	328	2.358	0.237	0.108	0.303
Secondary education or higher	0.158	0.045	383	328	2.427	0.287	0.067	0.248
Antenatal care from a skilled provider	0.956	0.019	262	231	1.536	0.020	0.917	0.994
Owns at least 1 insecticide-treated net (ITN)	0.339	0.061	450	377	2.740	0.181	0.217	0.461
Child slept under an ITN last night	0.200	0.051	451	383	2.155	0.253	0.099	0.302
Woman slept under an ITN last night	0.219	0.044	401	334	1.942	0.200	0.131	0.307
Received 2+ doses of SP/Fansidar antenatal visit	0.300	0.041	165	145	1.149	0.137	0.218	0.382
Child has fever in last 2 weeks	0.364	0.056	407	355	2.010	0.155	0.251	0.476
Child took antimalarial	0.672	0.075	137	129	1.687	0.111	0.523	0.821
Child 6-59 months has anaemia	0.628	0.037	401	345	1.450	0.059	0.554	0.702
Child 0-59 months has anaemia	0.617	0.037	438	372	1.491	0.060	0.543	0.691
Child 6-59 has malaria (on rapid test)	0.513	0.065	401	345	2.354	0.126	0.383	0.642
Child 0-59 has malaria (on rapid test)	0.484	0.066	439	373	2.450	0.137	0.352	0.617
Child 6-59 has malaria (on microscopy)	0.453	0.063	402	346	2.351	0.138	0.328	0.578
Child 0-59 has malaria (on microscopy)	0.427	0.064	440	374	2.470	0.149	0.300	0.554

Table B.14 Sampling errors for South Western region, Uganda MIS 2009

Variable	R	SE	N-UNWE	N-WEIG	DEFT	SE/R	R-2SE	R+2SE
No education	0.164	0.023	438	721	1.289	0.139	0.119	0.210
Secondary education or higher	0.243	0.061	438	721	2.976	0.251	0.121	0.365
Antenatal care from a skilled provider	0.957	0.020	221	340	1.385	0.020	0.918	0.996
Owns at least 1 insecticide-treated net (ITN)	0.437	0.035	439	705	1.469	0.080	0.367	0.506
Child slept under an ITN last night	0.326	0.034	325	487	1.013	0.103	0.259	0.394
Woman slept under an ITN last night	0.240	0.035	451	730	1.620	0.144	0.171	0.309
Received 2+ doses of SP/Fansidar antenatal visit	0.336	0.066	119	187	1.522	0.197	0.203	0.468
Child has fever in last 2 weeks	0.223	0.022	312	474	0.861	0.100	0.178	0.268
Child took antimalarial	0.472	0.132	68	106	1.989	0.280	0.207	0.737
Child 6-59 months has anaemia	0.387	0.032	286	423	1.105	0.084	0.323	0.452
Child 0-59 months has anaemia	0.396	0.030	311	460	1.046	0.075	0.337	0.455
Child 6-59 has malaria (on rapid test)	0.185	0.050	283	418	1.888	0.269	0.085	0.284
Child 0-59 has malaria (on rapid test)	0.177	0.049	308	455	1.996	0.275	0.080	0.275
Child 6-59 has malaria (on microscopy)	0.118	0.040	286	423	1.882	0.337	0.039	0.198
Child 0-59 has malaria (on microscopy)	0.116	0.040	311	460	1.959	0.344	0.036	0.196

DATA QUALITY

Appendix C

Table C.1 Household age distribution

Single-year age distribution of the de facto household population by sex (weighted), Uganda 2009

	Women		Men			Women		Men	
Age	Number	Percent	Number	Percent	Age	Number	Percent	Number	Percent
0	372	3.5	377	3.8	37	75	0.7	73	0.7
1	393	3.7	378	3.8	38	89	0.8	82	0.8
2	398	3.8	383	3.8	39	90	0.8	54	0.5
3	418	3.9	376	3.7	40	108	1.0	138	1.4
4	456	4.3	439	4.4	41	43	0.4	38	0.4
5	343	3.2	363	3.6	42	60	0.6	57	0.6
6	372	3.5	395	3.9	43	54	0.5	57	0.6
7	363	3.4	333	3.3	44	28	0.3	33	0.3
8	359	3.4	305	3.0	45	95	0.9	131	1.3
9	318	3.0	373	3.7	46	47	0.4	21	0.2
10	346	3.3	367	3.7	47	50	0.5	68	0.7
11	222	2.1	251	2.5	48	58	0.6	55	0.5
12	335	3.2	370	3.7	49	36	0.3	29	0.3
13	372	3.5	318	3.2	50	99	0.9	74	0.7
14	337	3.2	280	2.8	51	42	0.4	32	0.3
15	212	2.0	254	2.5	52	77	0.7	36	0.4
16	212	2.0	239	2.4	53	55	0.5	32	0.3
17	152	1.4	259	2.6	54	38	0.4	48	0.5
18	208	2.0	234	2.3	55	49	0.5	35	0.4
19	151	1.4	130	1.3	56	23	0.2	23	0.2
20	278	2.6	190	1.9	57	41	0.4	28	0.3
21	132	1.2	96	1.0	58	45	0.4	27	0.3
22	193	1.8	117	1.2	59	16	0.2	20	0.2
23	201	1.9	117	1.2	60	74	0.7	68	0.7
24	164	1.5	111	1.1	61	5	0.0	15	0.2
25	157	1.5	148	1.5	62	28	0.3	17	0.2
26	117	1.1	100	1.0	63	18	0.2	31	0.3
27	130	1.2	114	1.1	64	11	0.1	12	0.1
28	155	1.5	119	1.2	65	52	0.5	24	0.2
29	131	1.2	85	0.8	66	9	0.1	12	0.1
30	181	1.7	224	2.2	67	17	0.2	24	0.2
31	80	0.8	35	0.3	68	21	0.2	17	0.2
32	146	1.4	121	1.2	69	12	0.1	17	0.2
33	74	0.7	55	0.5	70+	250	2.4	210	2.1
34	77	0.7	70	0.7	Don't know/ missing	0	0.0	8	0.1
35	136	1.3	174	1.7					
36	105	1.0	78	0.8	Total	10,611	100.0	10,026	100.0

Table C.2 Age distribution of eligible and interviewed women

De facto household population of women age 10-54, interviewed women age 15-49, and percentage of eligible women who were interviewed (weighted), by five-year age groups, Uganda 2009

Age group	Household population of women age 10-54	Interviewed women age 15-49		Percentage of eligible women interviewed
		Number	Percent	
10-14	1,613	na	na	na
15-19	935	883	21.7	94.5
20-24	967	937	23.0	96.9
25-29	690	669	16.4	96.9
30-34	557	536	13.2	96.2
35-39	494	477	11.7	96.6
40-44	293	285	7.0	97.2
45-49	288	279	6.9	97.1
50-54	311	na	na	na
15-49	4,224	4,067	100.0	96.3

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.
na = Not applicable

Table C.3 Completeness of reporting

Percentage of observations missing information for selected demographic and health questions (weighted), Uganda 2009

Subject	Percentage with missing information	Number of cases
Month Only (births in last 15 years)	4.32	10,320
Month and Year[1] (births in last 15 years)	0.29	10,320
Respondent's education (all women)	0.00	4,134
Anemia (living children 6-59 months from Household Questionnaire)	2.40	3,615

[1] Both year and age missing

SURVEY PERSONNEL

Appendix D

Survey Coordinator
James Muwonge

Deputy Survey Coordinator
Stephen Baryahirwa

Technical Officers

Byron Twesigye
Julie Kalibbala
Peter S. Ntale
Hassan Wasswa

Regional Supervisors

Hamiidu Katikajiira
Bob Okua
Fiona Nattembo
Angela Kiconco

Technical Working Group

Dr. Denis Rubahika
Dr. Richard Ndyomugyenyi
Dr. Myers Lugemwa
Dr. Ebony Quinto
Dr. Mufubenga Patrobas
Dr. Adibaku Seraphine
Dr. Mukone George
Dr. Alex Opio
Dr. Wilford Kirungi
Dr. Joshua Musinguzi
Dr. James SSekitoleko
Dr. Patrick Okello
Dr. Gunawardena Dissanayake
Dr. Susie Nasr
Dr. Scott Filler
Dr. Menon Manoj
Dr. Sam Nsobya
Dr. Yeka Adoke
Dr. Charles Katureebe
James Muwonge
Stephen Baryahirwa
Connie Balayo
Agaba Bosco
Mary Byangire
Michael Okia
Phellister Nakamya

Team Supervisors

Brenda Ajidiru
Allen Atim
Paul Bazongere
Jonnes Businge
William Eriaku
Halima Kakaire
Lydia Kamuli
Francis Kayondo
Annet Wajju
Oscar Kwaya
Deo Mujwara
Sarah Nalwoga
Joanita Namugenyi
Geoffrey Nsereko
James Okello
Eddie Rutankundira
Martin Tumuhikye

Interviewers

Grace Akeso
Stella Akurut
John Bosco Anguamani
B. Carol Asienzo
Harriet Avutia
Ritah Bagya
Philip Egabe
Robert Habumugisha
Sharifah Karungi
Willy Kasimbi
Annah Katushabe
Proscovia Kayaga
Merab Kemigisha
Laurian Kiiza
Rosemary Akot Kotinah
Enock Kulazikulabe
Caroline Kyomuhendo
Gladys Laker
Betty Lamwaka
Eric Ojao Lomongin
Pius Magona
Peace Mbabazi
Samuel Mubiru
David Kahuka Mutegeki
Irene Nahabi
Justine Namaganda
Sandra Namboozo
Lilian Namugosa
Margaret Namukasa
Peter Nkaayi
Godfrey Nsanja
Mutumba Sam Nsereko
Lilian Ojanduru
Juliet Tuwape

Nurses

Susan Akurut
Judith Atuhaire
Kenneth Ayebazibwe
Jennifer Bazaale
Grace Deboru
Alice Kairanga
Oliver Kato
Evas Katusiime
Peter Olinga
Olivia Kitimbo
Hellen Laker
Lily Lalam
Lucy Lyadda
Joy Munduru
Alice Nabwanika
Mary Kalinzi Nakalinzi
Stella Nyebazenta

Field Laboratory Technicians

Richard Claude Achaye
John Bosco Alumai
Innocent Asiimwe
Ronald Asiimwe
Victor Asua
Didas Atwebembeire
Godfrey Bampiiga
Justine Bukirwa
Deogratious Ekutui
Robert Emolu
Joseph Esimu
Bitanuzire James Kalema
David Katumba
Immaculate Kemigisha
Juliet Kentaro
Peter Kibirige
Remicious Kiiza
Alfred Kinyera
Lydia Kulisoma
Bonny Mulindwa
T. Jude Mwai
Beatrice Nabatta
Ruth Nabwire
Felister Namirimu
Lilian Namuli
Samuel Ogwal
Sixtus Mazolidi Okidi
Saidi Okuku
Samuel Okurut
Mundu Onencan
Simon Ruhweza
Robert Ssali
P. Alex Wacoo
Moses Were

Field Laboratory Supervisors

William Lali
Fred Jjuuko
Sarah Nanyunja
Lawrence Osuwat

Data Processing Staff

Supervisors

Anthony Matovu

Editors

Eunice Akao
Sarah Nabukalu
Pharma Mary Nambalirwa

Data entry operators

Grace Gamwine
Janet Iryamwiza
Mwanga Ernest Kazinda
Olivia Kidiya
Maurine Mpanga
Ann Muganzi
Sam Mundua
Harriet Mwebaze
Diana Violet Nanyanzi
Moses Ssebuliba

Stores Manager

Kenneth Bateesa

ICF Macro

Paul Ametepi
Jasbir Sangha
Ladys Ortiz
Anne Cross
Alfredo Aliaga
Nancy Johnson
Chris Gramer

QUESTIONNAIRES

Appendix ***E***

UGANDA BUREAU OF STATISTICS
2009 UGANDA MALARIA INDICATOR SURVEY
HOUSEHOLD QUESTIONNAIRE - **ENGLISH**

SECTION 1A: IDENTIFICATION

1. REGION _____
2. DISTRICT _____
3. COUNTY _____
4. SUBCOUNTY/TOWN _____
5. PARISH/LC2 NAME _____
6. EA NAME _____
7. UMIS NUMBER .....
8. URBAN=1, PERI URBAN=2, RURAL=3 .....
9. NAME OF HEAD OF HOUSEHOLD _____
10. HOUSEHOLD NUMBER .....
11. HOUSEHOLD SAMPLE NUMBER .....

SECTION 1B: INTERVIEWER VISITS

	1	2	3	FINAL VISIT
1. DATE				1. DAY
				2. MONTH
				3. YEAR
2. INTERVIEWER'S NAME				4. INT. NUMBER
3. RESULT*				5. RESULT
4. NEXT VISIT: DATE				6. TOTAL NUMBER OF VISITS
5. TIME				

*RESULT CODES:

1	COMPLETED
2	NO HOUSEHOLD MEMBER AT HOME OR NO COMPETENT RESPONDENT AT HOME AT TIME OF VISIT
3	ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD OF TIME
4	POSTPONED
5	REFUSED
6	DWELLING VACANT OR ADDRESS NOT A DWELLING
7	DWELLING DESTROYED
8	DWELLING NOT FOUND
9	OTHER _____ (SPECIFY)

7. TOTAL PERSONS IN HOUSEHOLD
8. TOTAL ELIGIBLE WOMEN
9. TOTAL ELIGIBLE CHILDREN
10. LINE NO. OF RESPONDENT TO HOUSEHOLD QUESTIONNAIRE

6. LANGUAGE OF THE QUESTIONNAIRE 7
7. LANGUAGE USED IN THE INTERVIEW .....
8. NATIVE LANGUAGE OF RESPONDENT .....
9. TRANSLATOR USED (NOT AT ALL=1; SOMETIMES=2; ALL THE TIME=3) .....

LANGUAGE USED:
1 ATESO-KARAMOJONG
2 LUGANDA
3 LUGBARA
4 LUO
5 RUNYANKORE-RUKIGA
6 RUNYORO-RUTORO
7 ENGLISH
8 OTHER

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____	NAME _____		
DATE _____	DATE _____		

INTRODUCTION AND CONSENT

Hello. My name is _____. I am working with UBOS in collaboration with MOH. We are conducting a national survey about malaria and would very much appreciate your participation in this survey.This information will help the government to plan health services. As part of the survey we would first like to ask some questions about your household. These questions will take about 15 minutes to complete. Whatever information you provide will be kept strictly confidential, and will not be shared with anyone other than members of our survey team.

Participation in this survey is voluntary, and if we should come to 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.

At this time, 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

START TIME: ☐☐☐☐ HOURS END TIME: ☐☐☐☐ HOURS

SECTION 2: HOUSEHOLD SCHEDULE

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	ELIGIBILITY	
	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 AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON, ASK QUESTIONS 2A-2C TO BE SURE THAT THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-7 FOR EACH PERSON.	What is the relationship of (NAME) to the head of the household? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)?	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49 YEARS	CIRCLE LINE NUMBER OF ALL CHILDREN AGE 0-4 YEARS (0-59 MONTHS)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
01			M F 1 2	Y N 1 2	Y N 1 2	IN YEARS	01	01
02			1 2	1 2	1 2		02	02
03			1 2	1 2	1 2		03	03
04			1 2	1 2	1 2		04	04
05			1 2	1 2	1 2		05	05
06			1 2	1 2	1 2		06	06
07			1 2	1 2	1 2		07	07
08			1 2	1 2	1 2		08	08

CODES FOR Q. 3: RELATIONSHIP TO HEAD OF HOUSEHOLD

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

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	ELIGIBILITY	
	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 AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON, ASK QUESTIONS 2A-2C TO BE SURE THAT THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-7 FOR EACH PERSON.	What is the relationship of (NAME) to the head of the household? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)?	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49 YEARS	CIRCLE LINE NUMBER OF ALL CHILDREN AGE 0-4 YEARS (0-59 MONTHS)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
09			M F 1 2	Y N 1 2	Y N 1 2	IN YEARS	09	09
10			1 2	1 2	1 2		10	10
11			1 2	1 2	1 2		11	11
12			1 2	1 2	1 2		12	12
13			1 2	1 2	1 2		13	13
14			1 2	1 2	1 2		14	14
15			1 2	1 2	1 2		15	15
16			1 2	1 2	1 2		16	16

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 are not listed? YES ☐ → ADD TO TABLE NO ☐

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

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 NO ☐

CODES FOR Q. 3: RELATIONSHIP TO HEAD OF HOUSEHOLD

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

SECTION 3: 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 INTO YARD/COMPOUND . . . 12 PUBLIC TAP . . . . . 13 **WATER FROM OPEN WELL** OPEN WELL IN YARD/COMPOUND. . 21 OPEN PUBLIC WELL . . . . . 22 **WATER FROM COVERED WELL OR BOREHOLE** PROTECTED WELL IN YARD/COMPOUND . . . . . 31 PROTECTED PUBLIC WELL . . . . . 32 BOREHOLE. . . . . 33 **SURFACE WATER** PROTECTED SPRING . . . . . 41 UNPROTECTED SPRING . . . . . 42 RIVER/STREAM . . . . . 43 POND/LAKE . . . . . 44 DAM . . . . . 45 RAINWATER . . . . . 51 WATER TRUCK . . . . . 61 BOTTLED WATER . . . . . 71 OTHER _____ 96 (SPECIFY)	
102	What kind of toilet facility do members of your household usually use?	FLUSH TOILET. . . . . 01 VIP LATRINE . . . . . 02 COVERED PIT LATRINE NO SLAB . . . . 03 COVERED PIT LATRINE W/ SLAB . . . . 04 UNCOVERED PIT LATRINE NO SLAB . . 05 UNCOVERED PIT LATRINE W/ SLAB . . 06 COMPOSTING TOILET . . . . . 07 NO FACILITY/BUSH/FIELD . . . . . 08 OTHER _____ 96 (SPECIFY)	
104	Does your household have: a) Electricity? b) A radio? c) A cassette player? d) A television? e) A mobile phone? f) A fixed phone? g) A refrigerator? h) A table? i) A chair? j) A sofa set? k) A bed? l) A cupboard? m) A clock?	YES NO ELECTRICITY . . . . . 1 2 RADIO . . . . . 1 2 CASSETTE PLAYER . . . . . 1 2 TELEVISION . . . . . 1 2 MOBILE PHONE . . . . . 1 2 FIXED PHONE . . . . . 1 2 REFRIGERATOR . . . . . 1 2 TABLE . . . . . 1 2 CHAIRS . . . . . 1 2 SOFA SET . . . . . 1 2 BED . . . . . 1 2 CUPBOARD . . . . . 1 2 CLOCK 1 2	
105	What type of fuel does your household mainly use for cooking?	ELECTRICITY . . . . . 01 LPG/NATURAL GAS . . . . . 02 BIOGAS . . . . . 03 PARAFFIN / KEROSENE . . . . . 04 CHARCOAL . . . . . 05 FIREWOOD. . . . . 06 STRAW/SHRUBS/GRASS. . . . . 07 ANIMAL DUNG . . . . . 08 NO FOOD COOKED IN HOUSEHOLD. . . 95 OTHER _____ 96 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
106	What is the main source of energy for lighting in the household?	ELECTRICITY . . . . . 01 SOLAR . . . . . 02 GAS . . . . . 03 PARAFFIN-HURRICANE LAMP . . . 04 PARAFFIN-PRESSURE LAMP . . . . . 05 PARAFFIN-WICK LAMP . . . . . 06 FIREWOOD . . . . . 07 CANDLES . . . . . 08 OTHER _____ (SPECIFY) 96	
107	MAIN MATERIAL OF THE FLOOR RECORD OBSERVATION. MARK ONLY ONE.	**NATURAL FLOOR** EARTH/SAND . . . . . 11 EARTH AND DUNG . . . . . 12 **FINISHED FLOOR** PARQUET OR POLISHED WOOD . . . . . 31 MOSAIC OR TILES . . . . . 33 BRICKS . . . . . 34 CEMENT . . . . . 35 STONES . . . . . 36 OTHER _____ 96 (SPECIFY)	
108	MAIN MATERIAL OF THE ROOF. RECORD OBSERVATION. MARK ONLY ONE.	**NATURAL ROOFING** THATCHED . . . . . 11 MUD . . . . . 12 **FINISHED ROOFING** WOOD/PLANKS . . . . . 21 IRON SHEETS . . . . . 22 ASBESTOS . . . . . 23 TILES . . . . . 24 TIN . . . . . 25 CEMENT . . . . . 26 OTHER _____ 96 (SPECIFY)	
109	MAIN MATERIAL OF THE EXTERIOR WALLS. RECORD OBSERVATION. MARK ONLY ONE.	**NATURAL WALLS** THATCHED/STRAW . . . . . 11 **RUDIMENTARY WALLS** MUD AND POLES . . . . . 21 UN-BURNT BRICKS . . . . . 22 UN-BURNT BRICKS WITH PLASTER 23 BURNT BRICKS WITH MUD . . . . . 24 **FINISHED WALLS** CEMENT BLOCKS . . . . . 31 STONE . . . . . 32 TIMBER . . . . . 33 BURNT BRICKS WITH CEMENT . . . . 34 OTHER _____ 96 (SPECIFY)	
110	How many rooms in your household are used for sleeping? (INCLUDING ROOMS OUTSIDE THE MAIN DWELLING)	ROOMS	
111	How many sleeping spaces like mats, mattresses, or beds are available in your household?	NUMBER OF SLEEPING SPACES . .	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
112	Does any member of your household own or have:	**YES** **NO**	
	a) A watch?	WATCH 1 2	
	b) A bicycle?	BICYCLE 1 2	
	c) A motorcycle or motor scooter?	MOTORCYCLE/SCOOTER . . . 1 2	
	d) An animal-drawn cart?	ANIMAL-DRAWN CART 1 2	
	e) A car or truck?	CAR/TRUCK 1 2	
	f) A boat with a motor	BOAT WITH MOTOR 1 2	
	g) A boat without a motor	BOAT WITH NO MOTOR 1 2	
	e) A bank account?	BANK ACCOUNT 1 2	
113	How many acres of agricultural land do members of this household own?	ACRES. . . . . [ ][ ][ ][ ] . [ ] 9995 OR MORE ACRES. . . . . 9995.0 DON'T KNOW. 9999.8	
114	How many of the following animals/birds does this household own? IF NONE, ENTER '00'. IF MORE THAN 95, ENTER '95'. IF UNKNOWN, ENTER '98'.		
	a) Local Cattle?	LOCAL CATTLE . . . . . [ ][ ]	
	b) Exotic/Cross Cattle?	EXOTIC/CROSS CATTLE . . . . [ ][ ]	
	c) Goats?	GOATS . . . . . [ ][ ]	
	d) Sheep?	SHEEP . . . . . [ ][ ]	
	e) Pigs?	PIGS . . . . . [ ][ ]	
	f) Chickens?	CHICKENS . . . . . [ ][ ]	
115	How far is it to the nearest market place? WRITE '00' IF LESS THAN ONE KILOMETRE IF MORE THAN 95 KM, WRITE 95 CIRCLE '98' IF DON'T KNOW	KILOMETRES . . . . . [ ][ ] DON'T KNOW 98	
116	Now I would like to ask you about the food your household eats. How many meals does your household usually have per day?	MEALS . . . . . [ ]	
117	In the past week, on how many days did the household eat meat?	DAYS . . . . . [ ]	
118	How often in the last year did you have problems in satisfying the food needs of the household?	NEVER . . . . . 1 SELDOM . . . . . 2 SOMETIMES . . . . . 3 OFTEN . . . . . 4 ALWAYS 5	
119	How far is it to the nearest health facility? WRITE '00' IF LESS THAN ONE KILOMETRE IF MORE THAN 95 KM, WRITE 95 CIRCLE '98' IF DON'T KNOW	KILOMETRES . . . . . [ ][ ] DON'T KNOW 98	
120	If you were to go to this facility, how would you *most likely* go there?	CAR/MOTORCYCLE . . . . . 1 PUBLIC TRANSPORT (BUS, TAXI) . . . 2 ANIMAL/ANIMAL CART . . . . . 3 WALKING . . . . . 4 BICYCLE . . . . . 5 OTHER _____ 6 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
121	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	→ 121D
121A	How many months ago was the dwelling last sprayed? IF LESS THAN ONE MONTH, RECORD '00' MONTHS AGO.	MONTHS AGO	
121B	Who sprayed the dwelling?	GOVERNMENT WORKER/PROGRAM 1 PRIVATE COMPANY . . . . . 2 NGO . . . . . 3 OTHER _____ 6 (SPECIFY) (SPECIFY) DON'T KNOW 8	
121C	Did you pay for your dwelling to be sprayed?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
121D	Is there a community worker or community medicine distributor (CMD) who distributes malaria medicines in your village or community?	YES 1 NO 2 DON'T KNOW 8	→ 122
121E	Does the community health worker currently have malaria medicines available?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
122	Does your household have any mosquito nets that can be used while sleeping?	YES . . . . . 1 NO 2	→ 201
123	How many mosquito nets does your household have?	NUMBER OF NETS	

NO.	QUESTIONS AND FILTERS	NET # 1	NET # 2	NET # 3	SKIP
124	May I have a look at (all) the net(s) to establish the brand?	OBSERVED . . . 1 NOT OBSERVED 2	OBSERVED . . . 1 NOT OBSERVED 2	OBSERVED . . . 1 NOT OBSERVED 2	
125	How many months ago did your household obtain the mosquito net? IF LESS THAN ONE MONTH, WRITE '00'.	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	
126	Where did you get the mosquito net from?	PUBLIC SECTOR GOV'T HOSPITAL . . 01 GOV'T HEALTH CENTER . . . . 02 PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/ CLINIC . . . . 03 PHARMACY . . . . . 04 OTHER SOURCE SHOP . . . . 05 OPEN MARKET . . . 06 HAWKER . . . . 07 PROJECT/NGO . . . 08 CAMPAIGN . . . . . 09 CHURCH . . . . 10 OTHER ________ 96 DOES NOT KNOW 98	PUBLIC SECTOR GOV'T HOSPITAL . . 01 GOV'T HEALTH CENTER . . . . 02 PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/ CLINIC . . . . 03 PHARMACY . . . . . 04 OTHER SOURCE SHOP . . . . 05 OPEN MARKET . . . 06 HAWKER . . . . 07 PROJECT/NGO . . . 08 CAMPAIGN . . . . . 09 CHURCH . . . . 10 OTHER ________ 96 DOES NOT KNOW 98	PUBLIC SECTOR GOV'T HOSPITAL . . 01 GOV'T HEALTH CENTER . . . . 02 PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/ CLINIC . . . . 03 PHARMACY . . . . . 04 OTHER SOURCE SHOP . . . . 05 OPEN MARKET . . . 06 HAWKER . . . . 07 PROJECT/NGO . . . 08 CAMPAIGN . . . . . 09 CHURCH . . . . 10 OTHER ________ 96 DOES NOT KNOW 98	
127	OBSERVE OR ASK THE BRAND OR TYPE OF MOSQUITO NET.	'LONGLASTING' NET PERMANET . . . . . 11 DURANET . . . . . 12 INTERCEPTOR. . . . 13 NETPROTECT. . . . . 14 OLYSET. . . . . 15 DAWANET. . . . . . . 16 ICONLIFE. . . . . 17 (SKIP TO 131) FACTORY NET WITH INSECTICIDE KIT KO NET . . . . 21 KOOPER NET . . . 22 ICONET . . . . 23 SAFI NET . . . . 24 FACTORY NET WITH NO INSECTICIDE B52 . . . . 31 BAMBOO HUT . . . 32 CENTURY . . . . . 33 LUCKY NET . . . . . 34 VICTORIA . . . . . 35 HOMEMADE NET . . 41 OTHER ________ 96 (SPECIFY) DK BRAND 98	'LONGLASTING' NET PERMANET . . . . . 11 DURANET . . . . . 12 INTERCEPTOR. . . . 13 NETPROTECT. . . . . 14 OLYSET. . . . . 15 DAWANET. . . . . . . 16 ICONLIFE. . . . . 17 (SKIP TO 131) FACTORY NET WITH INSECTICIDE KIT KO NET . . . . 21 KOOPER NET . . . 22 ICONET . . . . 23 SAFI NET . . . . 24 FACTORY NET WITH NO INSECTICIDE B52 . . . . 31 BAMBOO HUT . . . 32 CENTURY . . . . . 33 LUCKY NET . . . . . 34 VICTORIA . . . . . 35 HOMEMADE NET . . 41 OTHER ________ 96 (SPECIFY) DK BRAND 98	'LONGLASTING' NET PERMANET . . . . . 11 DURANET . . . . . 12 INTERCEPTOR. . . . 13 NETPROTECT. . . . . 14 OLYSET. . . . . 15 DAWANET. . . . . . . 16 ICONLIFE. . . . . 17 (SKIP TO 131) FACTORY NET WITH INSECTICIDE KIT KO NET . . . . 21 KOOPER NET . . . 22 ICONET . . . . 23 SAFI NET . . . . 24 FACTORY NET WITH NO INSECTICIDE B52 . . . . 31 BAMBOO HUT . . . 32 CENTURY . . . . . 33 LUCKY NET . . . . . 34 VICTORIA . . . . . 35 HOMEMADE NET . . 41 OTHER ________ 96 (SPECIFY) DK BRAND 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			SKIP
129	Since you got the mosquito net, was it ever soaked or dipped in a liquid to repel mosquitoes or bugs?	YES . . . . 1 NO . . . . 2 (SKIP TO 131) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 131) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 131) NOT SURE 8	
130	How many months ago was the net last soaked or dipped? IF LESS THAN 1 MONTH, RECORD '00'.	MONTHS AGO . . . [ ][ ] 25 OR MORE MONTHS AGO . . . 95 NOT SURE 98	MONTHS AGO . . . [ ][ ] 25 OR MORE MONTHS AGO . . . 95 NOT SURE 98	MONTHS AGO . . . [ ][ ] 25 OR MORE MONTHS AGO . . . 95 NOT SURE 98	
131	Did anyone sleep under this mosquito net last night?	YES . . . . 1 (SKIP TO 132) NO . . . . 2 NOT SURE . . . . . 8 (SKIP TO 133)	YES . . . . 1 (SKIP TO 132) NO . . . . 2 NOT SURE . . . . . 8 (SKIP TO 133)	YES . . . . 1 (SKIP TO 132) NO . . . . 2 NOT SURE . . . . . 8 (SKIP TO 133)	
131A	What are some of the reasons why this net was not used?	TOO HOT . . . . A DON'T LIKE SMELL B NO MOSQUITOES C NET TOO OLD/TOO MANY HOLES . . D NET NOT HANG . . . .. E OTHER____________ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 133)	TOO HOT . . . . A DON'T LIKE SMELL B NO MOSQUITOES C NET TOO OLD/TOO MANY HOLES . . D NET NOT HANG . . . .. E OTHER____________ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 133)	TOO HOT . . . . A DON'T LIKE SMELL B NO MOSQUITOES C NET TOO OLD/TOO MANY HOLES . . D NET NOT HANG . . . .. E OTHER____________ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 133)	
132	Who slept under this mosquito net last night? RECORD THE PERSON'S NAME AND LINE NUMBER FROM THE HOUSEHOLD SCHEDULE	NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ]	NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ]	NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ]	
133		GO BACK TO 124 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO BACK TO 124 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO BACK TO 124 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			SKIP
		NET # 4	NET # 5	NET # 6	
124	May I have a look at (all) the net(s) to establish the brand?	OBSERVED . . . 1 NOT OBSERVED 2	OBSERVED . . . 1 NOT OBSERVED 2	OBSERVED . . . 1 NOT OBSERVED 2	
125	How many months ago did your household obtain the mosquito net? IF LESS THAN ONE MONTH, WRITE '00'.	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	
126	Where did you get the mosquito net from?	PUBLIC SECTOR GOV'T HOSPITAL . . 01 GOV'T HEALTH CENTER . . . . 02 PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/ CLINIC . . . . 03 PHARMACY . . . . . 04 OTHER SOURCE SHOP . . . . 05 OPEN MARKET . . . 06 HAWKER . . . . 07 PROJECT/NGO . . . 08 CAMPAIGN . . . . . 09 CHURCH . . . . 10 OTHER ________ 96 DOES NOT KNOW 98	PUBLIC SECTOR GOV'T HOSPITAL . . 01 GOV'T HEALTH CENTER . . . . 02 PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/ CLINIC . . . . 03 PHARMACY . . . . . 04 OTHER SOURCE SHOP . . . . 05 OPEN MARKET . . . 06 HAWKER . . . . 07 PROJECT/NGO . . . 08 CAMPAIGN . . . . . 09 CHURCH . . . . 10 OTHER ________ 96 DOES NOT KNOW 98	PUBLIC SECTOR GOV'T HOSPITAL . . 01 GOV'T HEALTH CENTER . . . . 02 PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/ CLINIC . . . . 03 PHARMACY . . . . . 04 OTHER SOURCE SHOP . . . . 05 OPEN MARKET . . . 06 HAWKER . . . . 07 PROJECT/NGO . . . 08 CAMPAIGN . . . . . 09 CHURCH . . . . 10 OTHER ________ 96 DOES NOT KNOW 98	
127	OBSERVE OR ASK THE BRAND OR TYPE OF MOSQUITO NET.	'LONGLASTING' NET PERMANET . . . . . 11 DURANET . . . . . 12 INTERCEPTOR. . . . 13 NETPROTECT. . . . . 14 OLYSET. . . . . 15 DAWANET. . . . . . . 16 ICONLIFE. . . . . 17 (SKIP TO 131) FACTORY NET WITH INSECTICIDE KIT KO NET . . . . 21 KOOPER NET . . . 22 ICONET . . . . 23 SAFI NET . . . . 24 FACTORY NET WITH NO INSECTICIDE B52 . . . . 31 BAMBOO HUT . . . 32 CENTURY . . . . . 33 LUCKY NET . . . . . 34 VICTORIA . . . . . 35 HOMEMADE NET . . 41 OTHER ________ 96 (SPECIFY) DK BRAND 98	'LONGLASTING' NET PERMANET . . . . . 11 DURANET . . . . . 12 INTERCEPTOR. . . . 13 NETPROTECT. . . . . 14 OLYSET. . . . . 15 DAWANET. . . . . . . 16 ICONLIFE. . . . . 17 (SKIP TO 131) FACTORY NET WITH INSECTICIDE KIT KO NET . . . . 21 KOOPER NET . . . 22 ICONET . . . . 23 SAFI NET . . . . 24 FACTORY NET WITH NO INSECTICIDE B52 . . . . 31 BAMBOO HUT . . . 32 CENTURY . . . . . 33 LUCKY NET . . . . . 34 VICTORIA . . . . . 35 HOMEMADE NET . . 41 OTHER ________ 96 (SPECIFY) DK BRAND 98	'LONGLASTING' NET PERMANET . . . . . 11 DURANET . . . . . 12 INTERCEPTOR. . . . 13 NETPROTECT. . . . . 14 OLYSET. . . . . 15 DAWANET. . . . . . . 16 ICONLIFE. . . . . 17 (SKIP TO 131) FACTORY NET WITH INSECTICIDE KIT KO NET . . . . 21 KOOPER NET . . . 22 ICONET . . . . 23 SAFI NET . . . . 24 FACTORY NET WITH NO INSECTICIDE B52 . . . . 31 BAMBOO HUT . . . 32 CENTURY . . . . . 33 LUCKY NET . . . . . 34 VICTORIA . . . . . 35 HOMEMADE NET . . 41 OTHER ________ 96 (SPECIFY) DK BRAND 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			SKIP
129	Since you got the mosquito net, was it ever soaked or dipped in a liquid to repel mosquitoes or bugs?	YES . . . . . 1 NO . . . . . 2 (SKIP TO 131) NOT SURE 8	YES . . . . . 1 NO . . . . . 2 (SKIP TO 131) NOT SURE 8	YES . . . . . 1 NO . . . . . 2 (SKIP TO 131) NOT SURE 8	
130	How many months ago was the net last soaked or dipped? IF LESS THAN 1 MONTH, RECORD '00'.	MONTHS AGO . . . [ ][ ] 25 OR MORE MONTHS AGO . . . 95 NOT SURE 98	MONTHS AGO . . . [ ][ ] 25 OR MORE MONTHS AGO . . . 95 NOT SURE 98	MONTHS AGO . . . [ ][ ] 25 OR MORE MONTHS AGO . . . 95 NOT SURE 98	
131	Did anyone sleep under this mosquito net last night?	YES . . . . . 1 (SKIP TO 132) NO . . . . . 2 NOT SURE . . . . . 8 (SKIP TO 133)	YES . . . . . 1 (SKIP TO 132) NO . . . . . 2 NOT SURE . . . . . 8 (SKIP TO 133)	YES . . . . . 1 (SKIP TO 132) NO . . . . . 2 NOT SURE . . . . . 8 (SKIP TO 133)	

NO.	QUESTIONS AND FILTERS	NET # 4	NET # 5	NET # 6	SKIP
131A	What are some of the reasons why this net was not used?	TOO HOT . . . . A DON'T LIKE SMELL B NO MOSQUITOES C NET TOO OLD/TOO MANY HOLES . . D NET NOT HANG . . . .. E OTHER___________ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 133)	TOO HOT . . . . A DON'T LIKE SMELL B NO MOSQUITOES C NET TOO OLD/TOO MANY HOLES . . D NET NOT HANG . . . .. E OTHER___________ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 133)	TOO HOT . . . . A DON'T LIKE SMELL B NO MOSQUITOES C NET TOO OLD/TOO MANY HOLES . . D NET NOT HANG . . . .. E OTHER___________ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 133)	
132	Who slept under this mosquito net last night? RECORD THE PERSON'S NAME AND LINE NUMBER FROM THE HOUSEHOLD SCHEDULE	NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ]	NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ]	NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ] NAME ________ LINE NUMBER [ ][ ]	
133		GO BACK TO 124 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO BACK TO 124 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO TO 124 IN FIRST COLUMN OF A NEW QUESTIONNAIRE; OR, IF NO MORE NETS, GO TO 201.	

SECTION 4: ANEMIA AND MALARIA TESTING FOR CHILDREN AGE 0-4 (0-59 MONTHS)

201	CHECK COLUMN 9. WRITE THE LINE NUMBER AND NAME FOR ALL CHILDREN 0-4 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 9 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 OCTOBER 2004 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)
206	LINE NUMBER OF PARENT OR ADULT RESPONSIBLE FOR CHILD. RECORD '00' IF NOT LISTED.	LINE NUMBER . . . ☐☐	LINE NUMBER . . . ☐☐	LINE NUMBER . . . ☐☐
207	READ **ANEMIA** CONSENT STATEMENT TO PARENT OR OTHER ADULT RESPONSIBLE FOR CHILD. CIRCLE CODE AND SIGN.	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 RESPONSIBLE FOR CHILD. CIRCLE CODE AND SIGN.	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 AND CONSENT STATEMENT TO PARENT OR OTHER ADULT RESPONSIBLE FOR THE CHILD. ASK ABOUT ANY TREATMENT THE CHILD HAS ALREADY RECEIVED.	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 2004 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)
206	LINE NUMBER OF PARENT OR ADULT RESPONSIBLE FOR CHILD. RECORD '00' IF NOT LISTED.	LINE NUMBER . . . ☐☐	LINE NUMBER . . . ☐☐	LINE NUMBER . . . ☐☐
207	READ **ANEMIA** CONSENT STATEMENT TO PARENT OR OTHER ADULT RESPONSIBLE FOR CHILD. CIRCLE CODE AND SIGN.	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 RESPONSIBLE FOR CHILD. CIRCLE CODE AND SIGN.	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 AND CONSENT STATEMENT TO PARENT OR OTHER ADULT RESPONSIBLE FOR THE CHILD. ASK ABOUT ANY TREATMENT THE CHILD HAS ALREADY RECEIVED.	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 under 5 years 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.

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 under 5 years 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.

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 COARTEMACT. COARTEM/ACT is very effective and in a few days it should get rid of the fever and other symptoms.

BEFORE PROVIDING COARTEM/ACT, FIRST ASK IF THE CHILD IS ALREADY TAKING OTHER MEDICINES AND IF SO, ASK TO SEE THEM. IF CHILD IS ALREADY TAKING COARTEM/ACT, CHECK ON THE DOSE ALREADY AVAILABLE. FOLLOW THE NATIONAL TREATMENT GUIDELINE FOR MALARIA. 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.

TREATMENT WITH COARTEM/ACT	
Weight (in Kg) – Approximate age	**Dosage ***
5 kgs. to less than 15 kgs. (under 3 years)	1 tablet twice daily for 3 days
15 kgs. to less than 25 kgs. (3 -8 years)	2 tablets twice daily for 3 days

First day starts by taking first dose followed by the second one 8 hours later; on subsequent days the recommendation is simply "morning" and "evening" (usually around 12 hours apart). Take the medicine (crushed for smaller children) with high fat food or drinks like milk.

Make sure that the FULL 3 days treatment is taken at the recommended times, otherwise the infection may return.
If your child vomits within an hour of taking the medicine, you will need to get get additional tablets and repeat the dose.

ALSO TELL THE PARENT/CARE TAKER:

If [NAME] has any of the following symptoms, you should take him/her to a health professional for treatment immediately:

-- High fever
-- Fast or difficult breathing
-- Not able to drink or breastfeed
-- Gets sicker or does not get better in 2 days

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 THE SUPERVISOR: _____ DATE: _____

UGANDA BUREAU OF STATISTICS
UGANDA MALARIA INDICATOR SURVEY 2009
WOMAN'S QUESTIONNAIRE - **ENGLISH**

SECTION 1A: IDENTIFICATION

1. REGION	
2. DISTRICT	
3. COUNTY	
4. SUBCOUNTY/TOWN	
5. PARISH/LC2 NAME	
6. EA NAME	
7. HOUSEHOLD NUMBER	
8. NAME AND LINE NUMBER OF WOMAN	

SECTION 1B: INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY / MONTH / YEAR
INTERVIEWER'S NAME				INT. NUMBER
RESULT*				RESULT
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS
TIME				

*RESULT CODES:

1	COMPLETED	4	REFUSED		
2	NOT AT HOME	5	PARTLY COMPLETED	8	OTHER _____ (SPECIFY)
3	POSTPONED	6	INCAPACITATED		

LANGUAGE OF THE QUESTIONNAIRE	7
LANGUAGE USED IN THE INTERVIEW	
NATIVE LANGUAGE OF RESPONDENT	
TRANSLATOR USED (NOT AT ALL=1; SOMETIMES=2; ALL THE TIME=3)	

LANGUAGE USED:
1 ATESO-KARAMOJONG
2 LUGANDA
3 LUGBARA
4 LUO
5 RUNYANKOLE-RUKIGA
6 RUNYORO-RUTORO
7 ENGLISH
8 OTHER

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME	NAME		
DATE	DATE		

INTRODUCTION AND CONSENT

Hello. My name is _____. I am working with the MOH and UBOS. We are conducting a national survey about malaria and would very much appreciate your participation in this survey. This information will help the government to plan health services. These questions will take about 15 minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shared with anyone other than members of our survey team.

Participation in this survey is voluntary, and if we should come to 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.

At this time, 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 . . . . . [ ][ ] MORNING . . . . . 1 AFTERNOON . . . . . 2 EVENING/NIGHT 3	
102	In what month and year were you born?	MONTH . . . . . [ ][ ] DON'T KNOW MONTH . . . . . 98 YEAR . . . . . [ ][ ][ ][ ] DON'T KNOW YEAR 9998	
103	How old are you? COMPARE AND CORRECT 102 AND/OR 103 IF INCONSISTENT.	AGE IN COMPLETED YEARS [ ][ ]	
104	Have you ever attended school?	YES . . . . . 1 NO 2	→ 107
105	What is the highest level of school you attended: primary, '0' level, 'A' level, or university or tertiary?	PRIMARY . . . . . 1 'O' LEVEL . . . . . 2 'A' LEVEL . . . . . 3 UNIVERSITY/TERTIARY 4	
106	What is the highest (class/year) you completed at that level? IF COMPLETED LESS THAN ONE YEAR AT THAT LEVEL, RECORD '00'.	CLASS/YEAR . . . . . [ ][ ]	
107	Do you read a newspaper or magazine almost every day, at least once a week, less than once a week or not at all?	ALMOST EVERY DAY . . . . . 1 AT LEAST ONCE A WEEK . . . . . 2 LESS THAN ONCE A WEEK . . . . . 3 NOT AT ALL . . . . . 4 CANNOT READ 8	
108	Do you listen to the radio almost every day, at least once week, less than once a week or not at all?	ALMOST EVERY DAY . . . . . 1 AT LEAST ONCE A WEEK . . . . . 2 LESS THAN ONCE A WEEK . . . . . 3 NOT AT ALL 4	
109	Do you watch television almost every day, at least once a week, less than once a week or not at all?	ALMOST EVERY DAY . . . . . 1 AT LEAST ONCE A WEEK . . . . . 2 LESS THAN ONCE A WEEK . . . . . 3 NOT AT ALL 4	
110	As you know, some women take up jobs for which they are paid in cash or kind. Others sell things, have a small business or work on the family farm or in the family business. In the last seven days, have you done any of these things or any other work?	YES . . . . . 1 NO 2	→ 113
111	Although you did not work in the last seven days, do you have any job or business from which you were absent for leave, illness, vacation or any other such reason?	YES . . . . . 1 NO 2	→ 113

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
112	Have you done any work in the last 12 months?	YES . . . . . 1 NO 2	→ 115
113	Are (were) you paid in cash or kind for this work or are (were) you not paid at all?	CASH ONLY . . . . . 1 CASH AND KIND . . . . . 2 IN-KIND ONLY . . . . . 3 NOT PAID 4	
114	What is your occupation, that is, what kind of work do you mainly do? INTERVIEWER: PROBE TO OBTAIN DETAILED INFORMATION ON THE KIND OF WORK RESPONDENT DOES.	_____ _____ _____ ☐☐☐	→ 116
115	What have you been doing for most of the time over the last 12 months?	GOING TO SCHOOL/STUDYING . . . 01 LOOKING FOR WORK . 02 RETIRED . . . . . 03 TOO ILL TO WORK . . . . . 04 HANDICAPPED, CANNOT WORK . . . 05 HOUSEWORK/CHILD CARE . . . . . 06 OTHER _____ 96 (SPECIFY)	
116	What is your ethnic group?	BAGANDA. . . . . 01 BANYANKORE. . . . . 02 ITESO. . . . . 03 LUGBARA/MADI. . . . . 04 BASOGA. . . . . 05 LANGI. . . . . 06 BAKIGA. . . . . 07 KARIMOJONG. . . . . 08 ACHOLI. . . . . 09 BAGISU/SABINY. . . . . 10 ALUR/JOPADHOLA. . . . . 11 BANYORO. . . . . 12 BATORO. . . . . 13 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 given birth?	YES . . . . . 1 NO 2	→ 206
202	Do you have any sons or daughters to whom you have given birth who are now living with you?	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 sons or daughters to whom you have birth 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 given birth to a boy or girl who was born alive but 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: Just to make sure I have this right: you have had in TOTAL ____births during your life. Is that correct? YES ☐ ↓ NO ☐ → PROBE AND CORRECT 201-208 AS NECESSARY.		
210	Are you pregnant now?	YES . . . . . 1 NO . . . . . 2 UNSURE 8	
211	CHECK 208: ONE OR MORE BIRTHS ☐ ↓ NO BIRTHS Q.208 IS '00' ☐ →		224

212 Now I would like to record the names of all your births, whether still alive or not, starting with the first one you had.
RECORD NAMES OF ALL THE BIRTHS IN 213. RECORD TWINS AND TRIPLETS ON SEPARATE LINES.
(IF THERE ARE MORE THAN 12 BIRTHS, USE AN ADDITIONAL QUESTIONNAIRE, STARTING WITH THE SECOND ROW).

213 What name was given to your (first/next) baby? (NAME)	214 Were any of these births twins?	215 Is (NAME) a boy or a girl?	216 In what month and year was (NAME) born? PROBE: What is his/her birthday?	217 Is (NAME) still alive?	218 IF ALIVE: How old was (NAME) at his/her last birthday? RECORD AGE IN COMPLETED YEARS.	219 IF ALIVE: Is (NAME) living with you?	220 IF ALIVE: RECORD HOUSE-HOLD LINE NUMBER OF CHILD (RECORD '00' IF CHILD NOT LISTED IN HOUSEHOLD).	221 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.	222 Were there any other live births 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 → 221	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 → 221	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 222)	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 → 221	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 222)	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 → 221	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 222)	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 → 221	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 222)	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 → 221	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 222)	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 → 221	AGE IN YEARS	YES . . . 1 NO 2	LINE NUMBER (GO TO 222)	DAYS . . . 1 MONTHS 2 YEARS . . 3	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH

213 What name was given to your next baby? (NAME)	214 Were any of these births twins?	215 Is (NAME) a boy or a girl?	216 In what month and year was (NAME) born? PROBE: What is his/her birthday?	217 Is (NAME) still alive?	218 IF ALIVE: How old was (NAME) at his/her last birthday? RECORD AGE IN COM-PLETED YEARS.	219 IF ALIVE: Is (NAME) living with you?	220 IF ALIVE: RECORD HOUSE-HOLD LINE NUMBER OF CHILD (RECORD '00' IF CHILD NOT LISTED IN HOUSE-HOLD).	221 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.	222 Were there any other live births between (NAME OF PREVIOUS BIRTH) and (NAME), including any children who died after birth?
08	SING 1 MULT 2	BOY 1 GIRL 2	MONTH ☐☐ YEAR ☐☐☐☐	YES . . 1 NO . . . 2 → 221	AGE IN YEARS ☐☐	YES . . . 1 NO 2	LINE NUMBER ☐☐ (GO TO 222)	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 → 221	AGE IN YEARS ☐☐	YES . . . 1 NO 2	LINE NUMBER ☐☐ (GO TO 222)	DAYS . . . 1 ☐☐ MONTHS 2 ☐☐ YEARS . . 3 ☐☐	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
10	SING 1 MULT 2	BOY 1 GIRL 2	MONTH ☐☐ YEAR ☐☐☐☐	YES . . 1 NO . . . 2 → 221	AGE IN YEARS ☐☐	YES . . . 1 NO 2	LINE NUMBER ☐☐ (GO TO 222)	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 → 221	AGE IN YEARS ☐☐	YES . . . 1 NO 2	LINE NUMBER ☐☐ (GO TO 222)	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 → 221	AGE IN YEARS ☐☐	YES . . . 1 NO 2	LINE NUMBER ☐☐ (GO TO 222)	DAYS . . . 1 ☐☐ MONTHS 2 ☐☐ YEARS . . 3 ☐☐	YES . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH

223	Have you had any live births since the birth of (NAME OF LAST BIRTH)? IF YES, RECORD BIRTHS IN TABLE.	YES . . . . . 1 NO 2	

224 COMPARE 208 WITH NUMBER OF BIRTHS IN HISTORY ABOVE AND MARK:

NUMBERS ARE SAME ☐↓ NUMBERS ARE DIFFERENT ☐→ (PROBE AND RECONCILE)

CHECK: FOR EACH BIRTH: MONTH AND YEAR OF BIRTH IS RECORDED. ☐

FOR EACH BIRTH SINCE OCTOBER 2004: MONTH AND YEAR OF BIRTH ARE RECORDED. ☐

FOR EACH LIVING CHILD: CURRENT AGE IS RECORDED. ☐

FOR EACH DEAD CHILD: AGE AT DEATH IS RECORDED. ☐

FOR AGE AT DEATH 12 MONTHS OR 1 YEAR: PROBE TO DETERMINE EXACT NUMBER OF MONTHS. ☐

225 CHECK 216 AND ENTER THE NUMBER OF BIRTHS IN 2004 OR LATER. IF NONE, RECORD '0'. ☐

SECTION 3. ANTENATAL CARE AND CHILDREN'S FEVER TREATMENT

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
301	CHECK 216 AND 225 : ONE OR MORE BIRTHS IN 2004 OR LATER ☐ NO BIRTHS/ NO BIRTH IN 2004 OR LATER ☐ → 350		
302	CHECK 216 AND ENTER IN 303 THE NAME AND LINE NUMBER OF THE MOST RECENT BIRTH SINCE 2004 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.		
303	NAME AND LINE NUMBER FROM 213	NAME OF LAST BIRTH _____ LINE NUMBER . . . . . ☐☐	
304	Did you see anyone for antenatal care for this pregnancy? IF YES: Whom did you see? Anyone else? PROBE TO IDENTIFY EACH TYPE OF PERSON AND RECORD ALL MENTIONED	**HEALTH PERSONNEL** DOCTOR . . . . . A NURSE/MIDWIFE . . . . . B MEDICAL ASSISTANT/ CLINICAL OFFICER . . . . . C NURSING AIDE . . D **OTHER PERSON** TRADITIONAL BIRTH ATTENDANT. . E OTHER _____ X (SPECIFY) NO ONE . . . . . Y	
305	CHECK 304. SAW NO ONE FOR ANTENATAL CARE CODE 'Y' CIRCLED ☐ CODE 'A', 'B', 'C', 'D' E' OR 'X' CIRCLED ☐ → 307		
306	What was the main reason why you did not see anyone for antenatal care?	CLINIC TOO FAR . . . . . 1 HAD NO MONEY . . . . . 2 HAD NO TIME . . . . . 3 NOT AWARE HAD TO ATTEND . . . . . 4 DID NOT WANT TO ATTEND . . . . . 5 OTHER _____ 6 (SPECIFY) DON'T KNOW . . . . . 8 (ALL SKIP TO 308)	
307	Where did you receive antenatal care for this pregnancy? Anywhere else? RECORD ALL MENTIONED. IF UNABLE TO DETERMINE IF A HEALTH FACILITY IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE _____ (NAME OF PLACE)	**HOME** YOUR HOME . . . . . A TBA'S HOME . . . . . B OTHER HOME . . . . . C **PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . . D GOVERNMENT HEALTH CENTER . . E GOVERNMENT HEALTH POST . . . . F OTHER PUBLIC _____ G (SPECIFY) **PRIVATE MED. SECTOR** PRIVATE HOSPITAL/CLINIC . . . . . H OTHER PRIVATE MEDICAL _____ I (SPECIFY) OTHER _____ X (SPECIFY)	
308	During this pregnancy, did you take any drugs to keep you from getting malaria?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 → 316	

309	What drugs did you take? RECORD ALL MENTIONED. IF TYPE OF DRUG IS NOT DETERMINED, SHOW HER THE TYPICAL ANTIMALARIAL DRUGS. TREATMENT WITH SP/FANSIDAR USUALLY CONSISTS OF TAKING 3 BIG WHITE TABLETS AT THE HEALTH FACILITY.	SP/FANSIDAR . . . . . A CHLOROQUINE . . . . . B OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
310	CHECK 309. SP/FANSIDAR TAKEN FOR MALARIA PREVENTION? CODE 'A' CIRCLED ☐ ↓ CODE 'A' NOT CIRCLED ☐ → 316		
311	How many times did you take SP/FANSIDAR during this pregnancy?	NUMBER OF TIMES . . . . . ☐☐	
312	CHECK 311. NUMBER OF TIMES SP/FANSIDAR TAKEN DURING THIS PREGNANCY. ONE TIME ☐ ↓ TWO OR MORE TIMES ☐ → 315		
313	Can you tell me why you took or received SP/FANSIDAR only one time?	NOT OFFERED AT CLINIC, UNKNOWN REASON. . . . . 1 TOO LATE IN PREGNANCY. . . . . 2 REACTED TO FIRST DOSE. . . . . 3 DID NOT WANT TO TAKE. . . . . 4 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
314	CHECK 304. ANTENATAL CARE FROM HEALTH PERSONNEL DURING PREGNANCY. CODE 'A', 'B', 'C', 'D' E' OR 'X' CIRCLED ☐ ↓ OTHER ☐ → 316		
315	Did you get the SP/FANSIDAR during any antenatal care visit, during another visit to a health facility or from another source?	ANTENATAL CARE VISIT. . . . . 1 ANOTHER FACILITY VISIT. . . . . 2 OTHER SOURCE. 6	
316	CHECK 216 AND 225 : ONE OR MORE BIRTHS IN 2004 OR LATER ☐ ↓ NO BIRTHS/ NO BIRTH IN 2004 OR LATER ☐ → 350		
317	CHECK 216 AND ENTER IN THE TABLE THE LINE NUMBER, NAME, AND SURVIVAL STATUS OF EACH BIRTH IN 2004 OR LATER. ASK QUESTIONS ABOUT THE BIRTHS AS APPROPRIATE. BEGIN WITH THE LAST BIRTH. IF THERE ARE MORE THAN 3 BIRTHS, USE LAST 2 COLUMNS OF ADDITIONAL QUESTIONNAIRES. Now I would like to ask you some questions about the health of all your children born in the last five years. We will talk about each separately.		

NO.	QUESTIONS AND FILTERS	LAST BIRTH	NEXT-TO-LAST BIRTH	SECOND-FROM-LAST BIRTH
317A	LINE NUMBER FROM 213	LINE NO. ☐☐	LINE NO. ☐☐	LINE NO. ☐☐
317B	FROM 213 AND 217	NAME ________________ LIVING ☐ DEAD ☐	NAME ________________ LIVING ☐ DEAD ☐	NAME ________________ LIVING ☐ DEAD ☐
317C	Did you ever breastfeed (NAME)?	YES . . . . 1 NO . . . . 2 (SKIP TO 317G)	YES . . . . 1 NO . . . . 2 (SKIP TO 317G)	YES . . . . 1 NO . . . . 2 (SKIP TO 317G)
317D	CHECK 317B: IS CHILD LIVING?	LIVING ☐ DEAD ☐ (SKIP TO 317F)		
317E	Are you still breastfeeding (NAME)?	YES . . . . 1 (SKIP TO 318) NO 2		
317F	For how many months did you breastfeed (NAME)?	MONTHS . . . . . ☐☐ DON'T KNOW . . . 98	MONTHS . . . . ☐☐ STILL BF . . . . 95 DON'T KNOW . . . 98	MONTHS . . . . . ☐☐ STILL BF . . . . 95 DON'T KNOW . . . 98
317G	CHECK 317B: IS CHILD LIVING?	LIVING ☐ DEAD ☐ (SKIP TO 349)	LIVING ☐ DEAD ☐ (SKIP TO 349)	LIVING ☐ DEAD ☐ (SKIP TO 349)
318	Has (NAME) been ill with a fever at any time in the last 2 weeks?	YES . . . . 1 NO . . . . 2 (SKIP TO 349) DON'T KNOW 8	YES . . . . 1 NO . . . . 2 (SKIP TO 349) DON'T KNOW 8	YES . . . . 1 NO . . . . 2 (SKIP TO 349) DON'T KNOW 8
NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME______________	NEXT-TO-LAST BIRTH NAME______________	SECOND-FROM-LAST BIRTH NAME______________
319	Now I would like to know how much (NAME) was given to drink (including breast milk) during the illness with a fever. Was he/she given less than usual to drink, about the same amount, or more than usual to drink? IF LESS, PROBE: Was he/she given much less than usual to drink or somewhat less?	MUCH LESS . . . . . 1 SOMEWHAT LESS 2 ABOUT THE SAME 3 MORE . . . . 4 NOTHING TO DRINK 5 DON'T KNOW 8	MUCH LESS . . . . . 1 SOMEWHAT LESS . 2 ABOUT THE SAME . 3 MORE . . . . 4 NOTHING TO DRINK 5 DON'T KNOW 8	MUCH LESS . . . . . 1 SOMEWHAT LESS . 2 ABOUT THE SAME . 3 MORE . . . . 4 NOTHING TO DRINK 5 DON'T KNOW 8
320	When (NAME) had a fever, was he/she given less than usual to eat, about the same amount, more than usual or nothing to eat? IF LESS, PROBE: Was he/she given much less than usual to eat or somewhat less?	MUCH LESS . . . . . 1 SOMEWHAT LESS . 2 ABOUT THE SAME . 3 MORE . . . . 4 STOPPED FOOD . 5 NEVER GAVE FOOD 6 DON'T KNOW 8	MUCH LESS . . . . . 1 SOMEWHAT LESS . 2 ABOUT THE SAME . 3 MORE . . . . 4 STOPPED FOOD . 5 NEVER GAVE FOOD 6 DON'T KNOW 8	MUCH LESS . . . . . 1 SOMEWHAT LESS . 2 ABOUT THE SAME . 3 MORE . . . . 4 STOPPED FOOD . 5 NEVER GAVE FOOD 6 DON'T KNOW 8
321	Did you seek advice or treatment for the illness from any source?	YES . . . . 1 (SKIP TO 322) NO 2	YES . . . . 1 (SKIP TO 322) NO 2	YES . . . . 1 (SKIP TO 322) NO 2
321A	Why have you not sought advice or treatment from any source?	CHILD JUST FELL ILL . . A CHILD NOT VERY ILL . . B CLINIC TOO FAR . . . . C HAVE NO MONEY . . . D WAITING FOR CHILD'S FATHER . . . . E DON'T KNOW WHAT TO DO . . . . F ALREADY HAD MEDICINE AT HOME G OTHER _____________ X (SPECIFY) SKIP TO 326	CHILD JUST FELL ILL . . A CHILD NOT VERY ILL . . B CLINIC TOO FAR . . . . C HAVE NO MONEY . . . D WAITING FOR CHILD'S FATHER . . . . E DON'T KNOW WHAT TO DO . . . . F ALREADY HAD MEDICINE AT HOME G OTHER __________ X (SPECIFY) SKIP TO 326	CHILD JUST FELL ILL . . A CHILD NOT VERY ILL . . B CLINIC TOO FAR . . . . C HAVE NO MONEY . . . D WAITING FOR CHILD'S FATHER . . . . E DON'T KNOW WHAT TO DO . . . . F ALREADY HAD MEDICINE AT HOME G OTHER __________ X (SPECIFY) SKIP TO 326

NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME______________	NEXT-TO-LAST BIRTH NAME______________	SECOND-FROM-LAST BIRTH NAME______________
322	Where did you seek advice or treatment? Anywhere else? RECORD ALL MENTIONED. IF UNABLE TO DETERMINE IF A HEALTH FACILITY IS PUBLIC OR PRIVATE MEDICAL, WRITE THE THE NAME OF THE PLACE. ______________ (NAME OF PLACE(S))	**PUBLIC SECTOR** GOVT HOSPITAL . A GOVT. HEALTH CENTER ...... B GOVT. HEALTH POST .... C CLINIC/OUTREACH SERVICES ... D COMMUNITY HEALTH WORKER/CMD E OTHER PUBLIC ______________ F (SPECIFY) **PRIVATE MEDICAL SECTOR** PVT. HOSPITAL/ CLINIC .... G PHARMACY/ DRUG SHOP . H PVT DOCTOR ... I CLINIC/OUTREACH SERVICES ... J COMMUNITY HEALTH WORKER/CMD K OTHER PRIVATE MED. __________ L (SPECIFY) **OTHER SOURCE** SHOP .... M TRADITIONAL PRACTITIONER N OTHER __________ X (SPECIFY)	**PUBLIC SECTOR** GOVT HOSPITAL . A GOVT. HEALTH CENTER ...... B GOVT. HEALTH POST .... C CLINIC/OUTREACH SERVICES ... D COMMUNITY HEALTH WORKER/CMD E OTHER PUBLIC ______________ F (SPECIFY) **PRIVATE MEDICAL SECTOR** PVT. HOSPITAL/ CLINIC .... G PHARMACY/ DRUG SHOP . H PVT DOCTOR ... I CLINIC/OUTREACH SERVICES ... J COMMUNITY HEALTH WORKER/CMD K OTHER PRIVATE MED. __________ L (SPECIFY) **OTHER SOURCE** SHOP .... M TRADITIONAL PRACTITIONER N OTHER __________ X (SPECIFY)	**PUBLIC SECTOR** GOVT HOSPITAL . A GOVT. HEALTH CENTER ..... B GOVT. HEALTH POST .... C CLINIC/OUTREACH SERVICES ... D COMMUNITY HEALTH WORKER/CMD E OTHER PUBLIC ______________ F (SPECIFY) **PRIVATE MEDICAL SECTOR** PVT. HOSPITAL/ CLINIC .... G PHARMACY/ DRUG SHOP . H PVT DOCTOR ... I CLINIC/OUTREACH SERVICES ... J COMMUNITY HEALTH WORKER/CMD K OTHER PRIVATE MED. __________ L (SPECIFY) **OTHER SOURCE** SHOP .... M TRADITIONAL PRACTITIONER N OTHER __________ X (SPECIFY)

NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME_______________	NEXT-TO-LAST BIRTH NAME_______________	SECOND-FROM-LAST BIRTH NAME_______________
323	CHECK 322:	TWO OR MORE CODES CIRCLED ☐ ONLY ONE CODE CIRCLED ☐ (SKIP TO 325)	TWO OR MORE CODES CIRCLED ☐ ONLY ONE CODE CIRCLED ☐ (SKIP TO 325)	TWO OR MORE CODES CIRCLED ☐ ONLY ONE CODE CIRCLED ☐ (SKIP TO 325)
324	Where did you first seek advice or treatment? USE LETTER CODE FROM 322.	FIRST PLACE . . . ☐	FIRST PLACE . . . ☐	FIRST PLACE . . . ☐
324A	How far did you travel for this advice or treatment?	LESS THAN 1KM. . . . . 1 BETWEEN 1-4 KM. . . . 2 MORE THAN 5KM. . . . 3 DON'T KNOW. 8	LESS THAN 1KM. . . . . 1 BETWEEN 1-4 KM. . . . 2 MORE THAN 5KM. . . . 3 DON'T KNOW. 8	LESS THAN 1KM. . . . . 1 BETWEEN 1-4 KM. . . . 2 MORE THAN 5KM. . . . 3 DON'T KNOW. 8
325	How many days after the fever began did you first seek advice or treatment for (NAME)? IF THE SAME DAY, RECORD '00'	DAYS . . . . ☐☐	DAYS . . . . . . ☐☐	DAYS . . . . ☐☐
325A	At any time during the illness, did (NAME) have blood taken from his/her finger or heel for testing?	YES . . . . 1 NO . . . . 2 DON'T KNOW . . . 8	YES . . . . 1 NO . . . . 2 DON'T KNOW . . . 8	YES . . . . 1 NO . . . . 2 DON'T KNOW . . . 8
326	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
327	At any time during the illness, did (NAME) take any drugs for the illness?	YES . . . . 1 NO . . . . 2 (GO BACK TO 317A IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 350) DON'T KNOW 8	YES . . . . 1 NO . . . . 2 (GO BACK TO 317A IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 350) DON'T KNOW 8	YES . . . . 1 NO . . . . 2 (GO TO 317A IN NEXT-TO-LAST COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 350) DON'T KNOW 8
328	What drugs did (NAME) take? Any other drugs? RECORD ALL MENTIONED.	**ANTIMALARIAL DRUGS** SP/FANSIDAR . . . A CHLOROQUINE . B CHLOROQUINE WITH FANSIDAR . . . C HOMAPAK RED . . . . D GREEN . . . . . . E COARTEM/ACT . . F OTHER ANTI-MALARIAL ____________ . . . G (SPECIFY) **ANTIBIOTIC DRUGS** PILL/SYRUP . . . H INJECTION . . . I **OTHER DRUGS** PANADOL . . . . J ASPRIN . . . . K IBUPROFEN . . . L OTHER ____________ X (SPECIFY) DON'T KNOW . . . . . Z	**ANTIMALARIAL DRUGS** SP/FANSIDAR . . . A CHLOROQUINE . B CHLOROQUINE WITH FANSIDAR . . . C HOMAPAK RED . . . . D GREEN . . . . E COARTEM/ACT . . F OTHER ANTI-MALARIAL ____________ . . . G (SPECIFY) **ANTIBIOTIC DRUGS** PILL/SYRUP . . . H INJECTION . . . I **OTHER DRUGS** PANADOL . . . . J ASPRIN . . . . K IBUPROFEN . . . L OTHER ____________ X (SPECIFY) DON'T KNOW . . . . . Z	**ANTIMALARIAL DRUGS** SP/FANSIDAR . . . A CHLOROQUINE . B CHLOROQUINE WITH FANSIDAR . . . C HOMAPAK RED . . . . D GREEN . . . . E COARTEM/ACT . . F OTHER ANTI-MALARIAL ____________ . . . G (SPECIFY) **ANTIBIOTIC DRUGS** PILL/SYRUP . . . H INJECTION . . . I **OTHER DRUGS** PANADOL . . . . J ASPRIN . . . . K IBUPROFEN . . . L OTHER ____________ X (SPECIFY) DON'T KNOW . . . . . Z

NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME_____	NEXT-TO-LAST BIRTH NAME_____	SECOND-FROM-LAST BIRTH NAME_____
329	CHECK 328: ANY CODE A-G CIRCLED?	YES ☐ NO ☐ (GO BACK TO 317A IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 348A)	YES ☐ NO ☐ (GO BACK TO 317A IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 348A)	YES ☐ NO ☐ (GO TO 317A IN NEXT-TO-LAST COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 348A)
331	CHECK 328: SP/FANSIDAR ('A') GIVEN	CODE 'A' CIRCLED ☐ CODE 'A' NOT CIRCLED (SKIP TO 334) ☐	CODE 'A' CIRCLED ☐ CODE 'A' NOT CIRCLED (SKIP TO 334) ☐	CODE 'A' CIRCLED ☐ CODE 'A' NOT CIRCLED (SKIP TO 334) ☐
332	How long after the fever started did (NAME) first take SP/Fansidar?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . 0 NEXT DAY . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8
333	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
334	CHECK 328: CHLOROQUINE ('B') GIVEN	CODE 'B' CIRCLED ☐ CODE 'B' NOT CIRCLED (SKIP TO 337) ☐	CODE 'B' CIRCLED ☐ CODE 'B' NOT CIRCLED (SKIP TO 337) ☐	CODE 'B' CIRCLED ☐ CODE 'B' NOT CIRCLED (SKIP TO 337) ☐
335	How long after the fever started did (NAME) first take chloroquine?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . 0 NEXT DAY . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8
336	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
337	CHECK 328: CHLOROQUINE WITH FANISIDAR ('C') GIVEN	CODE 'C' CIRCLED ☐ CODE 'C' NOT CIRCLED (SKIP TO 340) ☐	CODE 'C' CIRCLED ☐ CODE 'C' NOT CIRCLED (SKIP TO 340) ☐	CODE 'C' CIRCLED ☐ CODE 'C' NOT CIRCLED (SKIP TO 340) ☐

NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME_____	NEXT-TO-LAST BIRTH NAME_____	SECOND-FROM-LAST BIRTH NAME_____
338	How long after the fever started did (NAME) first take Chloroquine with Fansidar?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . 0 NEXT DAY . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8
339	For how many days did (NAME) take the Chloroquine with Fansidar? IF 7 DAYS OR MORE, WRITE 7.	DAYS . . . . . ☐☐ DON'T KNOW . . . 8	DAYS . . . . . ☐☐ DON'T KNOW . . . 8	DAYS . . . . . ☐☐ DON'T KNOW . . . 8
340	CHECK 328: HOMAPAK - RED ('D') GIVEN	CODE 'D' CIRCLED CODE 'D' NOT CIRCLED (SKIP TO 343)	CODE 'D' CIRCLED CODE 'D' NOT CIRCLED (SKIP TO 343)	CODE 'D' CIRCLED CODE 'D' NOT CIRCLED (SKIP TO 343)
341	How long after the fever started did (NAME) first take red Homapak?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . 0 NEXT DAY . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8
342	For how many days did (NAME) take the red Homapak? IF 7 DAYS OR MORE, WRITE 7.	DAYS . . . . . ☐☐ DON'T KNOW . . . 8	DAYS . . . . . ☐☐ DON'T KNOW . . . 8	DAYS . . . . . ☐☐ DON'T KNOW . . . 8
343	CHECK 328: HOMAPAK-GREEN ('E') GIVEN	CODE 'E' CIRCLED CODE 'E' NOT CIRCLED (SKIP TO 345A)	CODE 'E' CIRCLED CODE 'E' NOT CIRCLED (SKIP TO 345A)	CODE 'E' CIRCLED CODE 'E' NOT CIRCLED (SKIP TO 345A)
344	How long after the fever started did (NAME) first take the green Homapak?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . 0 NEXT DAY . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8

NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME_____	NEXT-TO-LAST BIRTH NAME_____	SECOND-FROM-LAST BIRTH NAME_____
345	For how many days did (NAME) take the green Homapak? IF 7 DAYS OR MORE, WRITE 7.	DAYS . . . . . ☐☐ DON'T KNOW . . . 8	DAYS . . . . . ☐☐ DON'T KNOW . . . 8	DAYS . . . . . ☐☐ DON'T KNOW . . . 8
345A	CHECK 328: COARTEM/ACT ('F') GIVEN	CODE 'F' CIRCLED ☐ CODE 'F' NOT CIRCLED (SKIP TO 346) ☐	CODE 'F' CIRCLED ☐ CODE 'F' NOT CIRCLED (SKIP TO 346) ☐	CODE 'F' CIRCLED ☐ CODE 'F' NOT CIRCLED (SKIP TO 346) ☐
345B	How long after the fever started did (NAME) first take COARTEM/ACT?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . 0 NEXT DAY . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8
345C	For how many days did (NAME) take the COARTEM/ACT? IF 7 DAYS OR MORE, WRITE 7.	DAYS . . . . . ☐☐ DON'T KNOW . . . 8	DAYS . . . . . ☐☐ DON'T KNOW . . . 8	DAYS . . . . . ☐☐ DON'T KNOW . . . 8
346	CHECK 328: OTHER ANTIMALARIAL ('G') GIVEN	CODE 'G' CIRCLED ☐ CODE 'G' NOT CIRCLED ☐ (GO BACK TO 303 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 348A)	CODE 'G' CIRCLED ☐ CODE 'G' NOT CIRCLED ☐ (GO BACK TO 303 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 348A)	CODE 'G' CIRCLED ☐ CODE 'G' NOT CIRCLED ☐ (GO TO 303 IN NEXT-TO-LAST COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 348A)
347	How long after the fever started did (NAME) first take (OTHER ANTIMALARIAL)?	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . 0 NEXT DAY . . . . 1 TWO DAYS AFTER FEVER . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8	SAME DAY . . . . . 0 NEXT DAY . . . . . 1 TWO DAYS AFTER FEVER . . . . . 2 THREE OR MORE DAYS AFTER FEVER . . 3 DON'T KNOW . . . 8
348	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

NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME_____	NEXT-TO-LAST BIRTH NAME_____	SECOND-FROM-LAST BIRTH NAME_____
348A	CHECK 322 ANY CODE A-N CIRCLED?	YES ☐ NO ☐ → 348D	YES ☐ NO ☐ → 348D	YES ☐ NO ☐ → 348D
348B	Did you pay any money when you sought advice or treatment for [NAME] from any source during this episode of fever?	YES . . . . . 1 NO . . . . . 2 → 348D DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → 348D DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → 348D DON'T KNOW 8
348C	How much did you pay? IF GOODS OR SERVICES USED AS PAYMENT, ASK FOR AN ESTIMATE IN LOCAL CURRENCY.	☐☐☐☐☐ DON'T KNOW.....99998	☐☐☐☐☐ DON'T KNOW.....99998	☐☐☐☐☐ DON'T KNOW.....99998
348D	CHECK 328 ANY CODES A-X CIRCLED?	YES ☐ NO ☐ → 348G	YES ☐ NO ☐ → 348G	YES ☐ NO ☐ → 348G
348E	Did you pay any money for any of the medicines [NAME] took during this episode of fever?	YES . . . . . 1 NO . . . . . 2 → 348G DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → 348G DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → 348G DON'T KNOW 8
348F	How much did you pay? IF GOODS OR SERVICES USED AS PAYMENT, ASK FOR AN ESTIMATE IN LOCAL CURRENCY.	☐☐☐☐☐ DON'T KNOW.....99998	☐☐☐☐☐ DON'T KNOW.....99998	☐☐☐☐☐ DON'T KNOW.....99998
348G	Was [NAME] admitted or hospitalized during this episode of fever?	YES . . . . . 1 NO . . . . . 2 → (348K) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → (348K) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → (348K) DON'T KNOW 8
348H	For how many days was [NAME] admitted or hospitalized? IF DISCHARGED SAME DAY RECORD "00"	# OF DAYS ☐☐	# OF DAYS ☐☐	# OF DAYS ☐☐
348I	Did you pay any money for the admission?	YES . . . . . 1 NO . . . . . 2 → (348K) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → (348K) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → (348K) DON'T KNOW 8
348J	How much did you pay for [NAME'S] admission? IF GOODS OR SERVICES USED AS PAYMENT, ASK FOR AN ESTIMATE IN LOCAL CURRENCY.	☐☐☐☐☐ DON'T KNOW.....99998	☐☐☐☐☐ DON'T KNOW.....99998	☐☐☐☐☐ DON'T KNOW.....99998
348K	CHECK 321 CODE "1" CIRCLED?	YES ☐ NO ☐ → (348N)	YES ☐ NO ☐ → (348N)	YES ☐ NO ☐ → (348N)
348L	While seeking advice or treatment for [NAME] during this episode of fever, did you spend any money on transportation?	YES . . . . . 1 NO . . . . . 2 → (348N) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → (348N) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → (348N) DON'T KNOW 8
348M	How much did you spend on transportation?	☐☐☐☐☐ DON'T KNOW.....99998	☐☐☐☐☐ DON'T KNOW.....99998	☐☐☐☐☐ DON'T KNOW.....99998

NO.	QUESTIONS AND FILTERS	LAST BIRTH NAME_____	NEXT-TO-LAST BIRTH NAME_____	SECOND-FROM-LAST BIRTH NAME_____
348N	Did you or other members of your household have to borrow money in order to pay for these costs?	YES . . . . . 1 NO . . . . . 2 NO COST DURING EPISODE . . . . . 3 → (348P) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 NO COST DURING EPISODE . . . . . 3 → (348P) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 NO COST DURING EPISODE . . . . . 3 → (348P) DON'T KNOW 8
348O	Did you or other members of your household have to sell things that you own in order to pay for these costs?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8
348P	Did you or any other member of your household have to take time off from your normal duties to care for [NAME] during this episode of fever?	YES . . . . . 1 NO . . . . . 2 → (349) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → (349) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 → (349) DON'T KNOW 8
348Q	How many days did you or other household members have to take off?	# OF DAYS ☐☐	# OF DAYS ☐☐	# OF DAYS ☐☐
349		GO BACK TO 317A IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 350.	GO BACK TO 317A IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 350.	GO TO 317A IN NEXT-TO-LAST COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 350.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
350	I would like to ask you a few questions about fever in children. When a child is sick with fever, how long after the fever begins should the child be taken for treatment?	SAME DAY . . . . . 01 NEXT DAY . . . . . 02 TWO DAYS AFTER ONSET OF FEVER . . . . . 03 THREE OR MORE DAYS AFTER ONSET OF FEVER . . . . . 04 FEVER IS NORMAL IN CHILDREN, NO TREATMENT NECESSARY . . . . 05 DEPENDS ON HOW SERIOUS THE FEVER IS . . . . . 06 OTHER _____ 96 (SPECIFY) DON'T KNOW 98	
351	In your opinion, what causes malaria? PROBE: ANYTHING ELSE? RECORD ALL MENTIONED	MOSQUITO BITES . . . . . A EATING MAIZE . . . . . B EATING MANGOES . . . . . C EATING DIRTY FOOD . . . . . D DRINKING UNBOILED WATER . . . . E GETTING SOAKED WITH RAIN . . . . F COLD/CHANGING WEATHER . . . . . G WITCHCRAFT . . . . . H CONTACT WITH INFECTED PERSON . . I OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
351A	Are there ways to avoid getting malaria?	YES . . . . . 1 NO 2	→ 353A
352	What are the ways to avoid getting malaria? PROBE: ANYTHING ELSE? RECORD ALL MENTIONED	SLEEP UNDER MOSQUITO NET . . . . . A SLEEP UNDER AN INSECTICIDE TREATED NET . . . . . B TAKING PREVENTIVE MEDICATION . . . . . C USE MOSQUITO REPELLANT . . . . . D SPRAYING HOUSE WITH INSECTICIDE . . . . . E USING MOSQUITO COILS . . . . . F DESTROY MOSQUITO BREEDING SITES . . . . . G OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
353	What medicine may be given to a pregnant woman to help them avoid getting malaria? RECORD ALL MENTIONED	SP/FANSIDAR . . . . . A CHLOROQUINE . . . . . B CHLOROQUINE W/ FANSIDAR . . . . . C COARTEM/ACT . . . . . D OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
353A	CHECK 353 SP/FANSIDAR MENTIONED CODE 'A' CIRCLED ↓	CODE 'A' NOT CIRCLED ☐	→ 355
354	How many times does a woman need to take SP/FANSIDAR during her pregnancy to avoid getting malaria?	NUMBER OF TIMES . . . . . ☐☐ DON'T KNOW 98	
355	During the past 12 months, have you seen or heard any messages about malaria?	YES . . . . . 1 NO 2	→ END
356	Where did you hear or see message(s)? PROBE: ANYWHERE ELSE? RECORD ALL MENTIONED	RADIO . . . . . A TV . . . . . B NEWSPAPER/LEAFLET . . . . . C HEALTH WORKER/CMD . . . . . D NEIGHBOR . . . . . E COMMUNITY LEADER . . . . . F OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
357	RECORD THE END 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: _____