MINISTRY OF HEALTH

UGANDA

Malaria Indicator Survey (MIS)

2014-15

MINISTRY OF HEALTH

THE REPUBLIC OF UGANDA

Uganda
Malaria Indicator Survey
2014-15

Uganda Bureau of Statistics
Kampala, Uganda

National Malaria Control Programme
Uganda Ministry of Health
Kampala, Uganda

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Additional information about the 2014-15 UMIS may be obtained from the Uganda Bureau of Statistics (UBOS), Plot 9 Colville Street, P.O. Box 7186, Kampala, Uganda; telephone: 256-414-706000; fax: 256-414-237553; e-mail: ubos@ubos.org; Internet: www.ubos.org.

Information about The DHS Program may be obtained from ICF International, 530 Gaither Road, Suite 500, Rockville, MD 20850 USA; telephone: 301-407-6500; fax: 301-407-6501; e-mail: info@DHSprogram.com; Internet: www.DHSprogram.com.

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FOREWORD

Malaria remains one of the most important diseases in Uganda, causing significant morbidity, mortality and negative socio- economic impact.

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. In 2013-14, there was a nation-wide campaign to distribute LLINs which was successfully implemented. Currently, targeted LLIN distribution through antenatal care and immunization clinics is ongoing.

The use of artemisinin combination therapy (ACT) as the first-line treatment for malaria both in the public and private sector and ensuring that stock outs are minimized is a top priority. ACTs are more efficacious and cost-effective and have displaced monotherapies which are ineffective. Additionally, the Government put a ban on importation of monotherapies which were being used as first line drugs.

The country has adopted the WHO 'test and treat' guidelines, thus rapid diagnostic test (RDT) use at all health facilities to back up microscopy has been enhanced.

Integrated community case management (iCCM) where children under 5 are treated for Malaria, Pneumonia and diarrhoea by village health teams (VHTS) has been scaled up to a number of districts. In this programme, all suspected malaria cases are first tested using RDTs before treatment. In addition, a policy change from use of IV quinine for severe malaria to a more cost effective drug (IV artesunate) was adopted in 2013.

Indoor residual spraying (IRS) of the walls of houses with insecticide has been implemented in selected districts in northern Uganda, and the communities are happy with the impact of this programme. Because of its positive impact, the country is planning a scale up to 50 high malaria burden districts in the next 5 years.

The 2014-15 Uganda Malaria Indicator Survey (UMIS) is the second national survey collecting all malaria indicators, the first was in 2009. This was timely particularly with Uganda's first ever LLIN mass distribution campaign conducted in 2013-2014. 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 2011 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. The National Malaria Control Programme (NMCP) and all stakeholders in the fight against malaria will know where to focus their efforts in designing malaria control interventions which can render maximum impact.

Although this report shows that the country has made significant strides in control of malaria, many challenges remain if Uganda is to reach the pre-elimination phase by 2020 as is stipulated in our Malaria Reduction strategy. Hence, this report is a call to action as we seek to expand our efforts to control and to eventually eliminate malaria from Uganda.

Dr. Elioda Tumwesigye (MP)
Minister of Health

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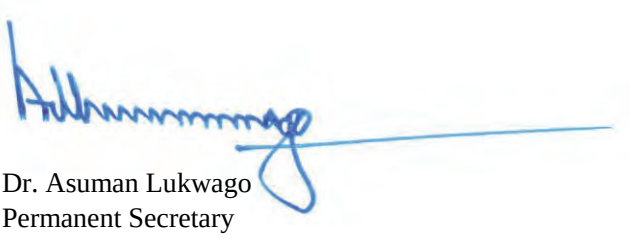


Dr. Asuman Lukwago
Permanent Secretary

PROGRESS ON MALARIA INDICATORS TO DATE

Progress on malaria indicators to date

Indicator	2006 UDHS	2009 UMIS	2011 UDHS	2014-15 UMIS
Percentage of households that own at least one ITN	16%	47%	60%	90%
Proportion of children under five years of age sleeping under an ITN the previous night	10%	33%	43%	74%
Proportion of pregnant women sleeping under an ITN the previous night	10%	44%	47%	75%
Proportion of pregnant women who received at least two doses of IPTp, at least one during ANC	16%	32%	25%	45%
Prevalence of parasitemia (by microscopy) in children 0-59 months	NA	42%	NA	19%
Prevalence of severe anaemia in children 6-59 months (Hb<8 g/dL)	NA	10%	5%	5%

ITN = Insecticide-treated net
IPTp = Intermittent preventive treatment (of malaria) in pregnancy
ANC = Antenatal care
NA = Not applicable

UGANDA

0 50 100
Kilometers

INTRODUCTION 1

1.1 COUNTRY PROFILE

A landlocked country of the East African Community, Uganda lies between latitudes 1° south and 4° north of the equator, sharing borders with South Sudan in the north, Kenya in the east, the Democratic Republic of the Congo in the west, and Tanzania and Rwanda in the south (see map). The altitude above sea level ranges from 620 metres (Albert Nile) to 5,111 metres (Mt. Rwenzori peak). Mean annual temperatures are between 14°C and 32°C. Uganda has two rainfall peaks, March to May and September to December and a wide range of ecosystems, from tropical rain forests in the south to savannah woodland and semi-desert conditions in the north. The country covers an area of about 241,039 square kilometres and is divided into 112 districts governed in a decentralised system of local administration. The central government sets policy and supervises standards of these administrative units (UBOS, 2014c).

1.1.1 Country Demographics

With a population of approximately 34.9 million, Uganda has one of highest fertility rates in the world (6.2 births per woman; UBOS, 2014a). The infant mortality rate (IMR) has decreased from 76 deaths per 1000 births for the calendar period 2002-2006 to 54 deaths per 1000 births for the calendar period 2007-2011 (UBOS 2007, 2012). Other indicators also show improvements in development. For example, less than 20 percent of the total population live below the poverty line, down from 56 percent at the turn of the century (UBOS, 2014b). Similarly, life expectancy, which had fallen below 46 years for both sexes in the early 1990s, has increased to 57 and 59 years, respectively, for males and females (Population Reference Bureau, 2013). Table 1.1 presents selected development indicators for Uganda.

Table 1.1 Selected human development indicators for Uganda

Population	34.9 million [a]
Annual population growth	3.0 percent [a]
Total fertility rate (per woman)	6.2[b]
Infant mortality rate (per 1,000 births)	54 [b]
Maternal mortality rate (per 100,000 births)	438 [b]
Life expectancy at birth	57 male, 59 female [c]

[a] UBOS and ICF International, 2012
[b] UBOS, 2014
[c] Population Reference Bureau, 2013

1.1.2 Health System

The country's health system comprises the public, private not-for-profit, and private for-profit sectors. There is also a fairly large informal health care sector, which includes traditional medicine providers, medicine vendors, drug shops, and complementary and alternative practitioners. The public sector health facilities range from large referral hospitals serving about 2,000,000 people to parish-level health centres (HCII) that provide basic preventive and curative health services for approximately 5,000 people. Also included in the public sector are village health teams (VHTs) that treat children under five years of age for malaria, pneumonia, and diarrhoea. The VHTs also participate in all health promotion programmes such as immunisation, family planning, and long-lasting insecticidal mosquito net (LLIN) distribution campaigns.

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 negative socio-economic impact. Children under age 5 and pregnant women are at high risk because of low immunity against the disease. 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 (NMCP, 2014).

Of the eighteen countries that account for 90 percent of *P. falciparum* infections in sub-Saharan Africa, Uganda ranks third in the total number of infections, after the Democratic Republic of the Congo and Nigeria (WHO, 2014a). Despite the large malaria burden faced by the country, an encouraging epidemiological report showed that 25 of 112 districts achieved greater than a 20% reduction in malaria prevalence between 2000 and 2010 (Talisuna et al., 2013).

Malaria transmission has a stable, perennial transmission pattern in 90 to 95 percent of the country. In the rest of the country, particularly in the highlands, there are areas of low and areas of unstable transmission, with a potential for epidemics. Areas of unstable transmission (very low or no malaria) include the southwest area of the country, Mt. Rwenzori in the west, Mt. Elgon in the east, and other areas with altitudes above 1,800 metres. Although transmission occurs year-round, there is seasonal variation in the transmission intensity; peak transmission occurs at the end of the rainy seasons and several weeks after the end of rains in different geographic areas of the country (NMCP, 2012).

1.2.2 Malaria Policy

The Uganda government, through the Uganda National Malaria Control Programme (NMCP) established in 1995, is implementing the Uganda Malaria Control Strategic Plan (UMCSP) 2014/15–2019/20. 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 in pregnancy (IPTp)
- Early detection and response to malaria epidemics and Monitoring and Evaluation and Operational Research

Major national prevention activities include distribution of LLINs, IRS, and experimental larviciding. About 22 million LLINs were distributed between 2013 and 2014. IRS coverage has focused on 10 districts in the Acholi and Longo sub-region in the last 8 years and has now been scaled up to 14 districts in eastern Uganda.

In 2004, Uganda began a home-based management of fever (HBMF) program using chloroquine plus Fansidar (CQ + SP). Policy shift in 2006 moved away from CQ + SP to the more effective artemisinin-based

combination therapy (ACT). In 2010, Uganda began to take an integrated approach to childhood illness management by training village health teams (VHTs) to implement an integrated community case management (ICCM) strategy. In 2013, Uganda shifted severe malaria management policy from use of IV quinine to IV artesunate, which is more cost effective and has fewer risks.

1.3 OBJECTIVES OF THE UGANDA MALARIA INDICATOR SURVEY

Since 1995, the National Malaria Control Programme (NMCP) and its partners have been implementing and scaling up malaria interventions in all parts of the country. To determine the progress made in malaria control and prevention in Uganda, the Uganda Malaria Indicator Survey (UMIS) was implemented in 2009 and again in 2014-15 to provide data on key malaria indicators including mosquito net ownership and use, as well as prompt treatment using ACT.

The main objective of the UMIS is to obtain population-based estimates on malaria indicators including the prevalence of malaria and anaemia to inform strategic planning and programme evaluation. Specific objectives are:

1. To obtain estimates of the magnitude and distribution of anaemia and malaria parasitemia among children age 0-59 months[1]
2. To estimate core malaria programme coverage indicators
   - 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
   - Assess percentage of children under five with fever for whom advice or treatment was sought
   - Determine the species of plasmodium parasite most prevalent in children age 0-59 months
3. To measure indicators of knowledge, attitudes, and behaviour related to malaria control
4. To determine the factors associated with malaria parasitemia and anaemia

1.4 METHODOLOGY OF THE UGANDA MALARIA INDICATOR SURVEY

The 2014-15 UMIS was carried out during the months of December 2014 and January 2015. A nationally representative sample of 5,802 households in 210 census enumeration areas was used. All women age 15-49 years in these households were eligible for the individual interview which consisted of questions about malaria prevention during pregnancy, treatment of childhood fevers, and knowledge of malaria. 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)

[1] The approved 2014-15 UMIS survey protocol is for anaemia and malaria testing of children age 0-59 months rather than the standard age cohort of 6-59 months. According to the 2009 UMIS, malaria parasite prevalence was 16 percent among children 0-5 months, and 53 percent of children 0-5 months had some form of anaemia. These findings are of concern to the Ministry of Health and government of Uganda, who therefore specifically requested that the 2014-15 UMIS obtain estimates of the magnitude and distribution of anaemia and malaria prevalence among children age 0-59 months.

were available immediately and were provided to the child's parent or guardian. Thick and thin blood smears were prepared 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 Organisation

The 2014-15 UMIS was implemented by the Uganda Bureau of Statistics (UBOS) and the Uganda Malaria Surveillance Project (UMSP) on behalf of the 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. The NMCP took primary responsibility for organising the Technical Working Group, developing the survey protocol, and ensuring its approval by the Uganda National Council for Science and Technology (UNCST) and Makerere University School of Biomedical Sciences Higher Degrees Research and Ethics Committee (SBS-HDREC) prior to the data collection. Additionally, 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 UMSP Molecular Laboratory at the Mulago Hospital complex in Kampala trained field technicians to test for anaemia and malaria in the field and read blood slides to test for malaria parasite infection.

Technical assistance was provided by The DHS Program at ICF International**.** ICF International staff assisted with overall survey design and all phases of the survey including 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) and by the United Kingdom Department for International Development (DFID).

1.4.2 Sample Design

The sample for the 2014-15 Uganda Malaria Indicator Survey (2014-15 UMIS) was designed to provide most of the key malaria indicators for the country as a whole, for urban and rural areas, and for 10 survey regions.

In addition, three study domains based on malaria endemicity were created to provide selected malaria indicators addressing NMCP/MOH programmatic needs: 1) to evaluate the effect of interventions such as indoor residual spraying (IRS) in the 10 districts in the north, 2) to provide baseline indicators for the 14 districts planned for future IRS programmes, and 3) provide estimates separately for high altitude areas with low malaria burden. The three study domains are arranged as follows:

Domain 1: ten (10) districts in which IRS programmes are currently implemented;

Domain 2: fourteen (14) districts planned for future IRS programmes (to provide baseline estimates);

Domain 3: ten (10) high-altitude districts (low malaria burden areas).

Apart from the three study domains above, the region of Karamoja was over-sampled in order to be comparable to a DHS region, and the urban areas of Wakiso and Mukono districts, together with Kampala, were combined to form a special 'Greater Kampala' zone.

Each of the 10 regions and the 3 study domains comprise multiple administrative districts that share a similar malaria burden or have specific malaria prevention efforts. The capital city, Kampala, comprises its own district and is entirely urban.

The 10 regions consist of the following districts:

1. **Central 1:** Butambala, Gomba, Mpigi, Bukomansimbi, Kalangala, Kalungu, Lwengo, Lyantonde, Masaka, Rakai, Sembabule, Wakiso

2. **Central 2:** Buikwe, Buvuma, Kayunga, Kiboga, Kyankwanzi, Luwero, Mityana, Mubende, Mukono, Nakaseke, Nakasongola

3. **East Central:** Bugiri, Namutumba, Buyende, Iganga, Jinja, Kaliro, Kamuli, Luuka, Mayuge, Namayingo

4. **Kampala:** Kampala

5. **Mid-North:** Alebtong, Amolatar, Dokolo, Lira, Otuke, Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, Pader

6. **Mid-Western:** Bundibugyo, Kabarole, Kasese, Ntoroko, Buliisa, Hoima, Kamwenge, Kibaale, Kiryandongo, Kyegegwa, Kyenjojo, Masindi

7. **Mid-Eastern:** Budaka, Butaleja, Kibuku, Pallisa, Tororo, Bukwo, Bulambuli, Kapchorwa, Kween, Bududa, Busia, Manafwa, Mbale, Sironko

8. **North East:** Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit, Napak, Amuria, Bukedea, Katakwi, Kumi, Ngora, Soroti, Kaberamaido, Serere

9. **South Western:** Kabale, Kisoro, Buhweju, Bushenyi, Ibanda, Isingiro, Kanungu, Kiruhura, Mbarara, Mitooma, Ntungamo, Rubirizi, Rukungiri, Sheema

10. **West Nile:** Adjumani, Arua, Koboko, Maracha, Moyo, Nebbi, Yumbe, Zombo

The 3 study domains consist of the following districts:

1. **The 10 IRS districts:** Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, Pader

2. **The 14 future IRS districts:** Bugiri, Namutumba, Alebtong, Amolatar, Dokolo, Lira, Otuke, Budaka, Butaleja, Kibuku, Pallisa, Tororo, Kaberamaido, Serere

3. **The 10 high-altitude districts:** Bundibugyo, Kabarole, Kasese, Ntoroko, Bukwo, Bulambuli, Kapchorwa, Kween, Kabale, Kisoro

The sampling frame used for the 2014-15 UMIS was the preparatory frame for the Uganda Population and Housing Census, which was conducted in August 2014. Provided by the Uganda Bureau of Statistics (UBOS), the sampling frame excluded nomadic and institutional populations such as persons in hotels, barracks, and prisons.

The 2014-15 UMIS sample was selected using a stratified two-stage cluster design consisting of 210 clusters, with 44 in urban areas and 166 in rural areas. In the first stage, 20 sampling strata were created and clusters were selected independently from each stratum by a probability-proportional-to-size selection. In the

selected clusters, a complete listing of households and a mapping exercise was conducted from 25 October to 20 November 2014, with the resulting list of households serving as the sampling frame for the selection of households in the second stage.

In the second stage of the selection process, 28 households were selected in each cluster by equal probability systematic sampling. Because of the nonproportional allocation of the sample to the different regions and study domains, the sample is not self-weighting. Weighting factors have been added to the data file so that the results will be representative at the national and regional level as well as the survey domain level.

All women age 15-49 who were either permanent residents of the households in the 2014-15 UMIS sample or visitors present in the households on the night before the survey were eligible to be interviewed. In addition, all children age 0-59 months who were either permanent residents of the sampled households or visitors present in the households on the night before the survey were eligible to be tested for malaria and anaemia.

1.4.3 Questionnaires

The 2014 UMIS used two questionnaires: a Household Questionnaire and a Woman's Questionnaire (Appendix E) for women age 15-49 in the selected households. Both of these instruments were based on the model Malaria Indicator Survey questionnaires developed by the Roll Back Malaria Monitoring and Evaluation Research Group, as well as other questionnaires from previous surveys conducted in Uganda, including the 2009 UMIS. The Technical Working Group organised stakeholders' meetings in Kampala to review the draft questionnaires. Stakeholders comprised a range of potential users, including government institutions, non-governmental organisations, and interested donor groups. The questionnaires were translated from English into six local languages (Ateso/Karamajong, Luganda, Lugbara, Luo, Runyankole/Rukiga, and Runyoro/Rutoro).

The Household Questionnaire captured data on all usual members and visitors in the selected households. 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 were eligible for the individual interview and children eligible for anaemia and malaria testing. The Household Questionnaire was also used to collect responses on indicators of ownership and use of mosquito bed nets. In addition, the Household Questionnaire collected data on housing conditions and assets to calculate the measures of household wealth.

The Woman's Questionnaire was used to collect data from women age 15-49 years, including: background characteristics (age, education, etc.); reproductive history (number of births, survival of births, etc.); current pregnancy status, intermittent preventive treatment for malaria during recent pregnancies; and antimalarial treatment for children under five with recent fever). It also collected information on knowledge about malaria.

1.4.4 Anaemia and Malaria Testing

The 2014-15 UMIS collected capillary blood samples from the fingers or heels of children age 0-59 months to perform on-the-spot testing for anaemia and malaria and to prepare thick and thin blood smears for microscopy. Blood slides were read in the laboratory for the presence of *Plasmodium* parasites and for determination of the parasite species. Each field team included two health technicians who carried out the anaemia and malaria testing and prepared the blood smears, and a nurse who provided malaria medications for children who tested positive for malaria in accordance with the national treatment protocols. Verbal informed consent for each test was granted by the child's parent or guardian before tests were conducted. The survey protocol, including blood specimen collection and analysis, was approved by ICF International's institutional

review board, the Makerere University School of Biomedical Sciences Higher Degrees Research and Ethics Committee (SBS-HDREC), and the Uganda National Council for Science and Technology (UNCST).

Anaemia testing. Because of the strong correlation between malaria infection and anaemia, the 2014-15 UMIS included anaemia testing for children age 0-59 months. Footnote 1 above explains the reason the approved 2014-15 UMIS survey protocol for anaemia and malaria testing of children specifies *children age 0-59 months* rather than the standard age cohort of 6-59 months. Blood samples were drawn using a single-use, retractable, spring-loaded, sterile lancet to prick a finger or heel. Health technicians then collected blood in a microcuvette from the finger or heel. Haemoglobin analysis was carried out on-site using a battery-operated portable HemoCue analyser which produces a result in less than one minute. Results were given to the child's parent or guardian verbally and in writing. Parents of children with a haemoglobin level 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 and on a brochure left in the household that explains the causes of anaemia and ways to prevent anaemia.

Malaria testing using rapid diagnostic testing (RDT). Another major objective of the UMIS was to provide information about the prevalence 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 SD Bioline Ag P.f rapid diagnostic test (RDT), which is a qualitative test for the detection of histidine-rich protein II (HRP-II) antigen of *Plasmodium falciparum* in human whole blood. *Plasmodium falciparum* (Pf) is the predominant *Plasmodium* species found in Uganda. The test includes a disposable sample applicator that comes in a standard package. A tiny volume of blood is captured on an applicator and placed in the well of the testing device. All field technicians were trained to perform RDTs in the field according to manufacturers' instructions. Technicians read, interpreted, and recorded RDT results after 15 minutes. RDT results were recorded as either positive or negative, with faint test lines being considered positive. As with anaemia testing, malaria RDT results were provided to the child's parent or guardian in oral and written form and were recorded on the Household Questionnaire. Children who tested positive for malaria by RDT 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 two weeks. Nurses on each field team were instructed to ask about signs of severe malaria and about any medications the child might already be taking. The nurses then provided the age-appropriate dose of ACT along with instructions on how to administer the medicine to the child.[2,3]

Malaria testing using blood smears. In addition to the RDT, separate thick and thin blood smears were prepared in the field. Each blood slide was given a bar code label, with a duplicate affixed to the Household Questionnaire. A fourth copy of the 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 at the end of each day by dipping the slide in absolute methanol. The thick and thin smear slides were collected regularly from the field, along with the completed questionnaires, and transported to UBOS headquarters in Kampala for logging, after which they were taken to the UMSP Molecular Research Laboratory at Mulago Hospital in Kampala for staining and microscopic

[2] Dosage of ACT was based on the age of the recipient. The proper dosage for a child age 4 months to 3 years is one tablet of artemether-lumefantrine (co-formulated tablets containing 20 mg artemether and 120 mg lumefantrine) to be taken twice daily for three days, while the dosage for a child age 3-7 years is two tablets of artemether-lumefantrine to be taken twice daily for three days.

[3] Children less than 4 months who tested positive by the malaria RDT and those who exhibited signs of severe malaria were referred to the nearest facility for treatment.

reading. Thick smears were first examined to determine presence of *Plasmodium* infection. Thin smears of all positive thick smears were then read to determine the species of *Plasmodium* parasite.

1.4.5 Training of Field Staff

UBOS and NMCP recruited and trained 88 people to serve as interviewers and supervisors for the fieldwork. The training was conducted during a two-week period in November 2014. The training course consisted of instruction regarding interviewing techniques and field procedures, a detailed review of questionnaire content, instruction for administering and obtaining informed consent, mock interviews between trainees in the classroom, and practice interviews with real respondents in areas outside the 2014-15 UMIS sample. Thirty-eight health technicians underwent two weeks of instruction and practice in obtaining informed consent and collecting blood samples from children age 0-59 months. Seventeen nurses who were trained as interviewers were also trained to offer and administer treatment to children with positive RDTs. Seventeen team supervisors underwent additional training in field editing, data quality control procedures, and fieldwork coordination. Seventeen supervisors, 51 interviewers (of whom 17 were nurses), and 34 health technicians were selected for the 17 field teams.

1.4.6 Fieldwork

Seventeen interviewing teams carried out data collection for the 2014-15 UMIS. Each team consisted of one supervisor, three interviewers (one of whom was a nurse), two health technicians, and one driver. Senior staff members from UBOS, NMCP, and the UMSP Laboratory coordinated and supervised fieldwork activities. Two ICF International staff also monitored fieldwork. Data collection took place from 1 December 2014 through the end of January 2015.

1.4.7 Data Processing

All questionnaires for the 2014-15 UMIS were returned to the data processing centre at the UBOS headquarters in Kampala. Activities performed included office editing, data entry, and editing of computer-identified inconsistencies. The data were processed by a team consisting of one data entry supervisor, one assistant supervisor, 24 data entry operators, and 7 staff who performed tasks related to questionnaire administration, office editing, and secondary editing. Data entry and editing were accomplished using CSPro software. The process of office editing and data processing was initiated in January 2015 and completed in mid-February 2015.

1.5 Response Rates

The household and individual response rates for the 2014-15 UMIS are shown in Table 1.2. A total of 5,802 households were selected for the sample, of which 5,494 were occupied. Of the occupied households, 5,345 were successfully interviewed, yielding a response rate of 97 percent. The response rate among households in rural areas was slightly higher (98 percent) than the response rate in urban areas (96 percent).

In the interviewed households, 5,494 women were identified as eligible for the individual interview; interviews were completed with 5,322 women, yielding a response rate of 97 percent. The eligible women's response rate does not differ by urban or rural residence. The principal reason for non-response among eligible women was failure to find individuals 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 2014-15

	Residence		
Result	Urban	Rural	Total
Household interviews			
Households selected	1,232	4,570	5,802
Households occupied	1,159	4,335	5,494
Households interviewed	1,115	4,230	5,345
Household response rate[1]	96.2	97.6	97.3
Interviews with women age 15-49			
Number of eligible women	1,214	4,280	5,494
Number of eligible women interviewed	1,171	4,151	5,322
Eligible women response rate[2]	96.5	97.0	96.9

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

CHARACTERISTICS OF HOUSEHOLDS AND WOMEN 2

Key Findings

- Almost eight in ten households (78 percent) use an improved source of drinking water
- Only 16 percent of households use an improved, private toilet facility
- In Uganda, 19 percent of households have electricity
- Eighty-five percent of women have attended school
- Two in three women age 15-49 are literate

This chapter provides a summary of the basic demographic and socio-economic characteristics of the households and household population sampled for the 2014-15 Uganda Malaria Indicator Survey (UMIS). The Household Questionnaire collects information on age, sex, and relationship to the head of the household for all usual residents and visitors who spent the night preceding the interview (see Appendix E). This method of data collection allows analysis of results for either the de jure population (usual residents) or the de facto population (those who are there at the time of the survey). Because the difference between these two populations is small, and to maintain comparability with other DHS reports, all tables in the report refer to the de facto population unless otherwise specified. The Household Questionnaire also obtains information on housing facilities, (e.g., source of water supply, type of sanitation facilities) and household possessions. Combined with other indicators, these items are used to create an index of relative wealth for the household; this household wealth index is described later in the chapter. This chapter also provides a profile of the women who were interviewed in the UMIS. Information is presented on basic characteristics, including age at the time of the survey, residence, education, literacy, and wealth.

The information presented in this chapter is intended to facilitate interpretation of the key demographic, socio-economic, 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 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 socio-economic status of the household. The 2014-15 UMIS household respondents were asked a number of questions about their household environment, including: source of drinking water, type of toilet or latrine facility, type of cooking fuel, type of dwelling and floor materials. The results are presented for both households and the de jure population.

2.1.1 Drinking Water

One of the Millennium Development Goals (MDGs) that Uganda and other countries have adopted is to increase the percentage of the population with sustainable access to an improved water source in both urban and rural areas (United Nations General Assembly, 2001). Improved water source in the 2014-15 UMIS refers to household connection (piped), public standpipe, tubewell or borehole, protected dug well, and protected spring or rainwater collection system. Water that must be fetched from an improved source that is not immediately accessible to the household may be contaminated during transport or storage. Long distances to an improved

source of water and the disproportionate burden on female members of the household to collect water may limit the quantity and quality of suitable drinking water available to a household.

Table 2.1 includes a number of indicators that are useful in monitoring household access to improved drinking water. The source of drinking water is an indicator of water quality; sources that are likely to be of suitable quality are listed under "improved source," while sources not of suitable quality are listed under "non-improved source." The categorisations used are those suggested by the WHO/UNICEF Joint Monitoring Programme (JMP) for Water and Sanitation (2014b).

Table 2.1 shows the percent distribution of households and the household population by source of household drinking water. Seventy-eight percent of households in Uganda have an improved source of drinking water, an increase from 70 percent reported in the 2009 UMIS. Urban households (92 percent) are more likely than rural households (74 percent) to use an improved source of drinking water. The most common single source of drinking water in rural households is the public borehole (43 percent) while for urban households the most commonly used improved source is public tap/standpipe (41 percent). Twenty-six percent of rural households obtain drinking water from non-improved sources, with 14 percent obtaining water from unprotected dug wells.

Only 9 percent of households have a source of drinking water on the premises. Availability is higher in urban households (27 percent) than in rural households (4 percent). Forty-seven percent of the households (55 percent in rural areas, and 18 percent in urban areas) take 30 minutes or longer to travel round trip to obtain water.

Table 2.1 Household drinking water

Percent distribution of households and de jure population by source of drinking water and time to obtain drinking water, according to residence, Uganda 2014-15

	Households			Population		
Characteristic	Urban	Rural	Total	Urban	Rural	Total
Source of drinking water						
Improved source	91.5	73.5	77.5	90.7	72.9	76.2
Piped into dwelling/yard/plot	22.4	1.5	6.2	25.0	1.5	5.8
Public tap/standpipe	40.9	7.6	15.0	37.2	7.2	12.8
Borehole in yard/plot	0.9	0.3	0.5	1.1	0.3	0.5
Public borehole	9.0	43.2	35.6	10.2	43.7	37.5
Protected dug well	6.0	6.7	6.5	6.0	6.4	6.4
Protected spring	9.2	11.1	10.7	9.5	10.8	10.6
Gravity flow scheme	0.2	1.9	1.5	0.3	1.8	1.5
Vendor	0.5	0.4	0.4	0.3	0.2	0.2
Rain water	1.0	0.7	0.8	0.6	0.8	0.7
Bottled water	1.3	0.0	0.3	0.5	0.0	0.1
Non-improved source	8.5	26.0	22.1	9.3	26.6	23.4
Unprotected dug well	5.4	13.8	12.0	5.9	14.0	12.5
Unprotected spring	1.7	4.8	4.2	1.8	5.0	4.4
Tanker truck/cart with drum	0.0	0.2	0.2	0.0	0.2	0.2
Surface water	1.3	7.1	5.9	1.5	7.4	6.3
Other source	0.1	0.3	0.2	0.0	0.2	0.2
Missing	0.0	0.2	0.2	0.0	0.3	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
Time to obtain drinking water (round trip)						
Water on premises	26.8	3.9	9.0	29.8	4.0	8.8
Less than 30 minutes	54.3	40.6	43.7	50.8	38.8	41.0
30 minutes or longer	18.0	55.3	47.0	18.9	57.0	49.9
Don't know/missing	0.8	0.2	0.4	0.5	0.2	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

2.1.2 Household Sanitation Facilities

Increasing the percentage of the population with access to improved sanitation facilities in both urban and rural areas is another of the MDG indicators. Residents of households without proper sanitation facilities have higher risk of diseases such as dysentery, diarrhoea, and typhoid fever than do those with improved sanitation facilities. According to the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (2014b), a household is classified as having an improved toilet if the toilet is used only by members of one household (i.e., it is not shared with other households) and if the facility used by the household separates the waste from human contact. According to these guidelines, improved sanitation technologies are defined as follows: connection to a public sewer, connection to a septic system, pour-flush latrine, simple pit latrine with a slab, or ventilated improved pit (VIP) latrine.

Table 2.2 presents data on the type of toilet facilities used by the household. Only 16 percent of households use improved, private toilet facilities. Urban households are more likely to have a private, improved facility (25 percent) than rural households (14 percent). Six percent of households have no facility or use the bush or a field.

Table 2.2 Household sanitation facilities

Percent distribution of households and de jure population by type of toilet/latrine facilities, according to residence, Uganda 2014-15

	Households			Population		
Type of toilet/latrine facility	Urban	Rural	Total	Urban	Rural	Total
Improved, not shared facility	25.1	13.8	16.3	31.0	15.4	18.3
Flush/pour flush to piped sewer system	1.7	0.2	0.5	2.5	0.2	0.6
Flush/pour flush to septic tank	3.7	0.3	1.0	4.1	0.3	1.0
Flush/pour flush to pit latrine	0.1	0.0	0.0	0.2	0.0	0.0
Ventilated improved pit (VIP) latrine	7.8	3.8	4.7	10.4	4.4	5.5
Pit latrine with slab	11.4	9.5	9.9	13.5	10.4	11.0
Composting toilet	0.4	0.1	0.1	0.5	0.1	0.1
Shared facility[1]	44.6	10.0	17.6	38.8	7.9	13.7
Flush/pour flush to piped sewer system	0.6	0.0	0.1	0.3	0.0	0.1
Flush/pour flush to septic tank	1.0	0.1	0.3	1.2	0.0	0.2
Flush/pour flush to pit latrine	0.4	0.0	0.1	0.1	0.0	0.0
Ventilated improved pit (VIP) latrine	13.5	3.2	5.5	11.8	2.7	4.4
Pit latrine with slab	29.0	6.7	11.6	25.3	5.2	8.9
Composting toilet	0.1	0.0	0.0	0.0	0.0	0.0
Non-improved facility	30.3	76.2	66.0	30.2	76.7	68.1
Flush/pour flush not to sewer/septic tank/pit latrine	0.1	0.0	0.0	0.1	0.0	0.0
Pit latrine without slab/open pit	29.3	67.6	59.1	29.1	68.6	61.2
Bucket	0.1	0.0	0.0	0.0	0.0	0.0
Hanging toilet/hanging latrine	0.0	1.0	0.8	0.0	1.1	0.9
No facility/bush/field	0.6	7.2	5.7	0.8	6.6	5.5
Missing	0.2	0.4	0.4	0.2	0.4	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	1,187	4,158	5,345	4,905	21,470	26,375

[1] Facilities that would be considered improved if they were not shared by two or more households.

2.1.3 Housing Characteristics

Table 2.3 presents information on household characteristics such as electricity, housing material, and use of various types of fuel for cooking. These characteristics reflect the household's socio-economic situation and may influence environmental conditions that have a direct bearing on household members' health and welfare. The results indicate that 19 percent of households have electricity, which is almost double the figure reported in the 2009 UMIS (10 percent). The proportion of households with electricity is much higher in urban areas (52 percent) than in rural areas (9 percent). Earth or sand is the most common flooring material, used by 43 percent of all households. Rural households are more than twice as likely to have floors made of earth or sand (49 percent) than urban households (21 percent). Overall, almost three in ten (29 percent) households have floors made of cement. Use of cement floors is more common among households in urban areas than in rural areas (62 percent compared with 20 percent, respectively). Mud with poles is the most common wall material, used by 32 percent of all households. In urban households, 44 percent of walls are made using cement. Seventy percent of all households have iron sheet roofing material, the most common roofing material in urban and rural areas.

When asked about rooms for sleeping, 43 percent of households reported having one room for sleeping while 30 percent have two rooms for sleeping and 26 percent have three or more rooms for sleeping. Households with one room for sleeping are more common in urban areas than in rural areas (55 and 40 percent, respectively), while households with three or more rooms for sleeping are more common in rural areas than in urban areas (27 and 20 percent, respectively).

Table 2.3 shows that wood is the fuel most commonly used for cooking, used by 74 percent of households. Use of wood is more common in rural areas (88 percent) than in urban areas (29 percent). Twenty-three percent of all households interviewed use charcoal for cooking; 64 percent in urban areas compared with 11 percent in rural areas. Ninety-eight percent of all households use solid fuel for cooking. Use of solid fuel for cooking has not changed since the 2009 UMIS.

Table 2.3 Household characteristics

Percent distribution of households by housing characteristics, percentage using solid fuel for cooking, according to residence, Uganda 2014-15

Housing characteristic	Residence		
	Urban	Rural	Total
Electricity			
Yes	51.9	9.0	18.5
No	48.1	90.9	81.4
Missing	0.0	0.1	0.1
Total	100.0	100.0	100.0
Flooring material			
Earth/sand	21.3	49.3	43.1
Sand and dung	7.1	28.9	24.0
Parquet or polished wood	0.4	0.0	0.1
Mosaic or tile	4.4	0.5	1.4
Cement	62.3	19.9	29.3
Stones	0.5	0.5	0.5
Bricks	0.3	0.3	0.3
Other	3.7	0.6	1.3
Missing	0.1	0.1	0.1
Total	100.0	100.0	100.0
Main wall material			
No walls	0.0	0.1	0.1
Thatched/straw	0.0	0.2	0.2
Dirt	3.3	8.8	7.6
Mud and poles	13.1	37.0	31.7
Stone with mud	0.5	0.5	0.5
Reused wood	5.1	0.1	1.2
Unburnt bricks	1.4	1.5	1.5
Unburnt bricks with plaster	0.9	0.7	0.8
Unburnt bricks with mud	2.7	14.5	11.9
Cement	43.5	12.3	19.2
Stone with lime/cement	3.0	0.5	1.1
Burnt bricks with cement	22.0	21.9	21.9
Cement blocks	1.4	0.8	0.9
Wood planks/shingles	0.2	0.0	0.1
Other	2.5	0.7	1.1
Missing	0.3	0.4	0.4
Total	100.0	100.0	100.0
Main roof material			
Thatched	6.1	35.1	28.7
Mud	0.2	0.1	0.1
Palm	0.0	0.2	0.2
Wood planks	0.0	0.1	0.0
Iron sheets	91.8	63.2	69.6
Wood	0.0	0.2	0.2
Tiles	0.5	0.0	0.1
Cement	1.2	0.1	0.4
Roofing shingles	0.0	0.2	0.2
Asbestos	0.1	0.6	0.5
Other	0.0	0.1	0.1
Missing	0.1	0.1	0.1
Total	100.0	100.0	100.0
Rooms used for sleeping			
One	55.2	39.5	43.0
Two	22.5	32.0	29.8
Three or more	20.0	27.1	25.6
Missing	2.2	1.4	1.6
Total	100.0	100.0	100.0
Cooking fuel			
Electricity	0.8	0.2	0.3
LPG/natural gas/biogas	1.6	0.0	0.4
Kerosene	1.5	0.2	0.5
Coal/lignite	0.0	0.1	0.1
Charcoal	64.3	10.8	22.7
Wood	28.7	87.5	74.4
Straw/shrubs/grass	0.0	0.2	0.1
Agricultural crop	0.0	0.2	0.1
Other	0.1	0.0	0.0
No food cooked in household	2.9	0.8	1.3
Missing	0.0	0.0	0.0
Total	100.0	100.0	100.0
Percentage using solid fuel for cooking[1]	93.1	98.7	97.5
Number	1,187	4,158	5,345

LPG = Liquid petroleum gas

[1] Includes coal/lignite, charcoal, wood, straw/shrubs/grass, agricultural crops, and animal dung

2.2 HOUSEHOLD POSSESSIONS

The availability of durable consumer goods is a good indicator of a household's socio-economic status. Moreover, particular goods have specific benefits. For instance, having access to a radio or television exposes household members to mass media and health messages; a refrigerator prolongs the wholesomeness of foods; and a means of transport allows greater access to many services away from the local area.

Table 2.4 shows, by place of residence, the percentage of households owning various household effects, means of transport, and animals. Overall, 65 percent of households own a radio. Households in urban areas are more likely than those in rural areas to own a radio (70 percent compared with 63 percent, respectively). Fourteen percent of households own a television—41 percent in urban areas and 6 percent in rural areas—an increase from 9 percent in the 2009 UMIS. Sixty-eight percent of households own mobile phones, 86 percent in urban areas and 63 percent in rural areas. Mobile phone ownership has increased, particularly in rural areas, since the 2009 UMIS when 44 percent of all households owned a mobile phone, 79 percent in urban areas and 37 percent in rural areas. Six percent of households have a refrigerator; 18 percent in urban areas compared with only 2 percent in rural areas.

Table 2.4 also shows the proportion of households owning various means of transport. Thirty-seven percent of the households own a bicycle (20 percent in urban and 42 percent in rural areas); 9 percent own a motorcycle or scooter (15 percent in urban areas and 8 percent in rural areas) and 3 percent of all households own a car or truck (8 percent in urban areas and 2 percent in rural areas).

Table 2.4 Household possessions

Percentage of households possessing various household effects, means of transportation, agricultural land and livestock/farm animals by residence, Uganda 2014-15

Possession	Residence		Total
	Urban	Rural	
Household effects			
Radio	69.8	63.1	64.6
Television	40.6	6.3	13.9
Mobile telephone	86.3	62.6	67.9
Non-mobile telephone	1.9	0.4	0.7
Refrigerator	17.8	2.2	5.7
Cassette player	14.4	4.7	6.9
Table	74.2	69.8	70.8
Chair	81.3	81.5	81.5
Sofa set	46.8	13.0	20.5
Bed	87.5	78.5	80.5
Cupboard	38.8	17.2	22.0
Clock	26.5	9.1	12.9
Watch	35.5	11.8	17.1
Means of transport			
Bicycle	19.7	41.8	36.9
Animal drawn cart	0.1	0.3	0.3
Motorcycle/scooter	14.9	7.6	9.2
Car/truck	8.0	1.6	3.0
Boat with a motor	0.1	0.2	0.2
Boat without a motor	0.0	0.4	0.3
Ownership of agricultural land	43.0	81.5	72.9
Ownership of farm animals[1]	37.8	71.5	64.0
Number	1,187	4,158	5,345

[1] Cattle, cows, bulls, horses, donkeys, goats, sheep, chickens or pigs

Almost three in four households (73 percent) own agricultural land, 82 percent in rural areas and 43 percent in urban areas. Sixty-four percent of households own farm animals, 72 percent in rural areas and 38 percent in urban areas.

2.3 WEALTH INDEX

The wealth index is a background characteristic that is used throughout this report as an indicator of the economic status of households. The 2014-15 UMIS survey did not include direct questions on household consumption or income. However, the detailed data on dwelling and household characteristics and household assets obtained in the survey have been used to construct the wealth index presented in Table 2.5. The index was constructed from household asset data using principal components analysis. These assets or consumer items consist of a television, bicycle, or car, as well as dwelling characteristics, such as source of drinking water, type of sanitation facilities, and type of flooring material. The wealth index has been shown to be consistent with other expenditure and income measures and to provide a useful measure in assessing inequalities in the use of health and other services and in health outcomes (Rutstein and Johnson, 2004).

The process of constructing the wealth index, which takes into account urban-rural differences in the household characteristics, involved three steps. In the first step, a subset of indicators common to both urban and rural areas was used to create wealth scores for households in both areas. To create the scores, categorical

variables were transformed into separate dichotomous (0-1) indicators. These variables and other continuous measures were then analysed using principal components analysis to produce a common factor score for each household. In a second step, separate factor scores were produced for households in urban areas and rural areas using area-specific indicators (Rutstein, 2008). The third step combined the separate area-specific factor scores to produce a nationally applicable combined wealth index by adjusting the area-specific score through regression on the common factor scores. The resulting combined wealth index has a mean of zero and a standard deviation of one. Once the index was computed, national-level wealth quintiles were formed by assigning the household score to each de jure household member, ranking each person in the population by their score, and then dividing the ranking into five equal categories, each including approximately 20 percent of the population. A single asset index is developed on the basis of data from the entire country sample, and this index is used in all of the tabulations presented.

Table 2.5 shows the percent distribution of the de jure household population by wealth quintile according to residence and region. The distributions indicate the degree to which wealth is evenly (or unevenly) distributed geographically. The table shows that urban areas have a higher proportion of people living in households in the highest quintile (66 percent) compared with rural areas (10 percent). On the other hand, rural areas have a higher proportion of people living in households in the lowest quintile (23 percent) compared with urban areas (7 percent).

Table 2.5 Wealth quintiles

Percent distribution of the de jure population by wealth quintiles, and the Gini coefficient, according to residence and region, Uganda 2014-15

Residence/region	Wealth quintile					Total	Number of persons	Gini coefficient
	Lowest	Second	Middle	Fourth	Highest			
Residence								
Urban	6.6	3.5	6.3	17.7	65.9	100.0	4,905	0.18
Rural	23.1	23.8	23.1	20.5	9.5	100.0	21,470	0.25
Study domain[1]								
Current IRS districts[2]	53.3	25.3	7.0	9.6	4.7	100.0	1,899	0.24
Future IRS districts[3]	25.2	28.2	22.9	16.1	7.6	100.0	3,356	0.23
High-altitude districts[4]	11.1	26.8	29.7	18.8	13.6	100.0	1,940	0.21
Special zones[1]								
Greater Kampala[5]	0.1	2.9	2.7	16.8	77.6	100.0	2,853	0.11
Karamoja	93.1	2.0	1.8	1.9	1.2	100.0	645	0.20
Region								
Central 1	3.5	3.7	11.0	35.7	46.1	100.0	2,923	0.23
Central 2	11.5	21.3	23.5	25.5	18.2	100.0	2,651	0.29
East Central	10.9	17.9	27.8	25.2	18.2	100.0	2,790	0.35
Kampala	0.0	0.0	0.2	2.7	97.1	100.0	1,156	0.09
Mid-North	44.9	29.5	8.8	11.1	5.8	100.0	2,919	0.22
Mid-Western	18.3	25.8	26.4	16.6	12.9	100.0	2,979	0.26
Mid-Eastern	10.1	24.0	36.7	20.1	9.1	100.0	2,995	0.23
North East	57.0	22.1	8.7	7.4	4.8	100.0	2,608	0.35
South Western	3.9	19.9	26.4	29.3	20.7	100.0	3,339	0.30
West Nile	39.4	25.3	15.2	11.5	8.7	100.0	2,015	0.33
Total	20.0	20.0	20.0	20.0	20.0	100.0	26,375	0.29

IRS = Indoor residual spraying
[1] Study domains and Special zones are a subsample and do not sum to the total survey sample; for details see Chapter 1, Section 1.4.2 Sample design.
[2] The 10 current IRS districts include Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, and Pader.
[3] The 14 future IRS districts include Bugiri, Namutumba, Alebtong, Amolatar, Dokolo, Lira, Otuke, Budaka, Butaleja, Kibuku, Pallisa, Tororo, Kaberamaido, and Serere.
[4] The 10 high-altitude districts include Bundibugyo, Kabarole, Kasese, Ntoroko, Bukwo, Bulambuli, Kapchorwa, Kween, Kabale, and Kisoro.
[5] A special zone 'Greater Kampala' includes the urban areas of Wakiso and Mukono districts together with Kampala.

Considering the sub-regions, almost 97 percent of the population of Kampala is in the highest wealth quintile, compared with only 5 percent of the population of North East. Over 70 percent of the populations in the Mid-North and North East are in the lowest and second quintile.

By study domain, most of the population in the current IRS districts are in the lowest and second wealth quintiles (79 percent) while for the future IRS districts, most of the population is in the lowest, second and the middle wealth quintiles (76 percent). Over 90 percent of the population in the Karamoja region is in the lowest wealth quintile.

Also included in Table 2.5 is the Gini coefficient by residence, sub-region and study domain. The Gini coefficient indicates the level of concentration of wealth, 0 being an equal distribution and 1 being a totally unequal distribution. A low Gini coefficient indicates a more equal distribution while a high Gini coefficient indicates a more unequal distribution. In Uganda, the national Gini coefficient is 0.29.

2.4 POPULATION BY AGE AND SEX

Age and sex are important demographic variables and are the primary basis of demographic classification. The distribution of the de facto household population in the 2014-15 UMIS is shown in Table 2.6 by five-year age groups, according to sex and residence. Information was collected for more than 26,000 people in the selected households. Forty-eight percent of the de facto population is male, and 52 percent is female. The sex ratio (the number of men per 100 women) is 94. The ratio in rural areas is similar to the national ratio while the urban ratio is slightly lower at 91. In general, the proportion of the household population in each age group declines as age increases, reflecting the young age structure of the population. Fifty-one percent of the total population is under age 15 while 3 percent is age 65 or older.

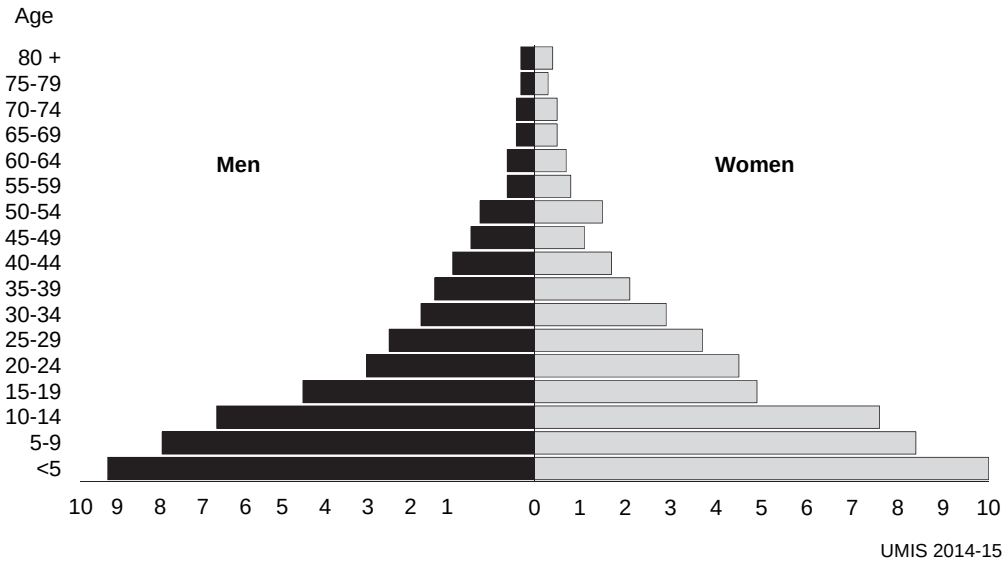
Table 2.6 Household population by age, sex, and residence

Percent distribution of the de facto household population by five-year age groups, according to sex and residence, Uganda 2014-15

	Urban			Rural					
Age	Male	Female	Total	Male	Female	Total	Male	Female	Total
<5	16.5	17.1	16.9	20.2	19.8	20.0	19.5	19.3	19.4
5-9	14.1	13.2	13.6	17.5	17.1	17.3	16.9	16.3	16.6
10-14	12.4	12.8	12.6	15.0	15.2	15.1	14.5	14.7	14.6
15-19	11.1	11.4	11.2	10.5	9.1	9.8	10.6	9.5	10.1
20-24	10.3	12.7	11.6	7.0	7.7	7.4	7.7	8.6	8.2
25-29	10.1	10.2	10.1	5.8	6.4	6.1	6.6	7.1	6.8
30-34	7.5	5.7	6.6	4.7	5.6	5.1	5.2	5.6	5.4
35-39	5.5	4.5	5.0	4.4	4.0	4.2	4.6	4.1	4.4
40-44	4.2	3.4	3.8	3.6	3.2	3.4	3.7	3.3	3.5
45-49	2.6	1.9	2.2	2.9	2.2	2.5	2.8	2.2	2.5
50-54	1.9	2.7	2.3	2.5	2.9	2.7	2.4	2.9	2.6
55-59	1.1	1.3	1.2	1.4	1.5	1.4	1.3	1.5	1.4
60-64	0.9	1.1	1.0	1.3	1.5	1.4	1.2	1.4	1.3
65-69	0.5	0.4	0.4	0.9	1.2	1.0	0.8	1.0	0.9
70-74	0.6	0.7	0.7	0.9	1.1	1.0	0.9	1.0	0.9
75-79	0.2	0.3	0.2	0.7	0.6	0.6	0.6	0.5	0.5
80 +	0.6	0.5	0.5	0.7	0.9	0.8	0.7	0.8	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	2,329	2,557	4,886	10,350	10,986	21,336	12,678	13,543	26,222

Figure 2.1 illustrates the age structure of the household population in a population pyramid. One feature of population pyramids is strength in illustrating whether a population is ‘young’ or ‘old’. The broad base of the pyramid indicates that Uganda’s population is young. This scenario is typical of countries with high fertility rates. The figure shows fewer women age 45-49 and more women age 50-54 than expected as well as fewer women 15-19 and more women 10-14 than expected, likely due to deliberate age misreporting on the part of interviewers as women outside of the age group 15-49 are not eligible for individual interview.

Figure 2.1 **Population pyramid**



2.5 HOUSEHOLD COMPOSITION

Information on key aspects of the composition of the households, including household size, is presented in Table 2.7. These characteristics are important because they are associated with the welfare of the household. Female-headed households are, for example, typically poorer than male-headed households. Economic resources are often more limited in larger households and, when household size is large, crowding can lead to health problems.

The majority of households in Uganda are male-headed (73 percent); less than three in ten (27 percent) are female-headed. The proportion of households headed by women is higher in urban areas than rural areas (31 and 26 percent, respectively).

Table 2.7 shows that the average household size is 4.9 persons, which is similar to the household size reported in the 2014 Uganda Population and Housing Census (UBOS, 2014a). The average household size is higher in rural areas (5.2 persons) than in urban areas (4.1 persons). The proportion of households with nine or more members is 11 percent, and the percentage is higher in rural areas (12 percent) than in urban areas (7 percent).

Table 2.7 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 2014-15

Characteristic	Residence		
	Urban	Rural	Total
Household headship			
Male	68.6	74.3	73.1
Female	31.4	25.7	26.9
Total	100.0	100.0	100.0
Number of usual members			
1	17.5	9.8	11.5
2	13.3	8.3	9.4
3	15.5	13.0	13.5
4	16.2	14.0	14.4
5	11.2	13.2	12.8
6	9.3	13.1	12.3
7	6.9	9.4	8.8
8	3.5	7.4	6.5
9+	6.6	11.9	10.7
Total	100.0	100.0	100.0
Mean size of households	4.1	5.2	4.9
Number of households	1,187	4,158	5,345

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

2.6 CHARACTERISTICS OF WOMEN RESPONDENTS

This section provides a demographic and socio-economic profile of the female respondents in the UMIS 2014-15. The information is essential for interpretation of the findings presented later in the report and provides an indication of the representativeness of the survey.

2.6.1 General Characteristics

Table 2.8 presents the distribution of women age 15-49 by selected background characteristics. The table shows that over 40 percent of the women are age 15-24 years, which reflects the comparatively young age structure of the population. A substantially higher proportion of women age 15-49 live in rural areas (77 percent) than live in urban areas (23 percent).

Fifteen percent of women age 15-49 have never been to school. While 54 percent of women age 15-49 have attended primary school, 25 percent have attended secondary school, and 5 percent have more than a secondary education.

A quarter of the women (25 percent) live in households in the highest wealth quintile while the rest are about evenly distributed in the other four quintiles (18-20 percent each).

2.6.2 Educational Attainment of Women

Education is a key determinant of the lifestyle and status an individual enjoys in 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 2.9 presents the education characteristics of women age 15-49 and shows the relationship between the respondent's level of education and other background characteristics.

Generally, younger women have reached higher levels of education than older women. For example, only 6 percent of women age 15-24 have never been to school compared with 35 percent of women age 45-49. In addition, younger women are much more likely than older women to have some secondary education. For example, 31 percent of women age 15-24 have some secondary education compared with only 9 percent of women age 45-49.

Table 2.8 Background characteristics of respondents

Percent distribution of women age 15-49 by selected background characteristics, Uganda 2014-15

Background characteristic	Women		
	Weighted percent	Weighted number	Unweighted number
Age			
15-19	23.1	1,228	1,250
20-24	21.3	1,132	1,112
25-29	18.0	957	981
30-34	13.9	741	715
35-39	10.3	547	531
40-44	8.0	425	426
45-49	5.5	292	307
Study domain[1]			
Current IRS districts[2]	6.7	358	556
Future IRS districts[3]	11.7	621	621
High-altitude districts[4]	7.2	385	477
Special zones[1]			
Greater Kampala[5]	14.3	761	725
Karamoja	2.2	117	381
Residence			
Urban	23.1	1,227	1,171
Rural	76.9	4,095	4,151
Region			
Central 1	12.7	674	402
Central 2	9.8	521	369
East Central	10.5	559	394
Kampala	6.5	344	489
Mid-North	10.6	566	779
Mid-Western	10.5	556	488
Mid-Eastern	9.6	511	505
North East	9.1	486	864
South Western	13.3	708	602
West Nile	7.5	397	430
Education			
No education	14.9	792	976
Primary	54.3	2,892	2,824
Secondary	25.0	1,329	1,205
More than secondary	5.4	285	291
Missing	0.4	23	26
Wealth quintile			
Lowest	18.2	968	1,364
Second	18.6	992	1,006
Middle	18.6	991	894
Fourth	19.8	1,052	884
Highest	24.8	1,320	1,174
Total 15-49	100.0	5,322	5,322

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.
IRS = Indoor residual spraying
[1] Study domains and Special zones are a subsample and do not sum to the total survey sample; for details see Chapter 1, Section 1.4.2 Sample design.
[2] The 10 current IRS districts include Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, and Pader.
[3] The 14 future IRS districts include Bugiri, Namutumba, Alebtong, Amolatar, Dokolo, Lira, Otuke, Budaka, Butaleja, Kibuku, Pallisa, Tororo, Kaberamaido, and Serere.
[4] The 10 high-altitude districts include Bundibugyo, Kabarole, Kasese, Ntoroko, Bukwo, Bulambuli, Kapchorwa, Kween, Kabale, and Kisoro.
[5] A special zone 'Greater Kampala' includes the urban areas of Wakiso and Mukono districts together with Kampala.

Three times as many rural women as urban women have no education: 18 percent of rural women have never been to school compared with just 6 percent of urban women. Urban women also stay in school longer; 20 percent of urban women have completed secondary or higher education compared with only 4 percent of rural women. The North East has the highest percentage of women with no education (26 percent) while Kampala has the highest percentage of women with secondary education or higher (35 percent). Over 7 in 10 women (74 percent) in Karamoja have not been to school at all.

Table 2.9 shows that women living in poorer households are less educated than women living in richer households. Thirty-one percent of women in the lowest wealth quintile have no education compared with just 4 percent of women in the highest wealth quintile. Six percent of women in the lowest wealth quintile have at least some secondary education, compared with 66 percent of women in the highest wealth quintile.

Table 2.9 Educational attainment: Women

Percent distribution of women age 15-49 by highest level of schooling attended or completed, and median years completed, according to background characteristics, Uganda 2014-15

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	Missing			
Age										
15-24	5.5	41.6	15.0	30.7	3.1	3.7	0.4	100.0	6.2	2,360
15-19	4.5	41.1	15.3	36.1	2.1	0.6	0.4	100.0	6.3	1,228
20-24	6.5	42.1	14.8	24.9	4.3	7.1	0.4	100.0	6.1	1,132
25-29	14.0	38.5	13.4	23.4	1.4	9.0	0.3	100.0	5.8	957
30-34	24.8	39.0	11.2	16.5	1.2	7.0	0.4	100.0	4.6	741
35-39	22.1	43.5	12.8	13.6	1.5	5.6	1.0	100.0	4.4	547
40-44	29.0	44.9	8.8	11.5	0.7	4.8	0.4	100.0	3.0	425
45-49	34.9	40.7	11.7	8.5	0.8	3.0	0.4	100.0	2.6	292
Residence										
Urban	6.0	22.8	14.9	36.4	4.6	15.0	0.2	100.0	8.1	1,227
Rural	17.6	46.5	12.8	18.9	1.3	2.5	0.5	100.0	5.1	4,095
Region										
Central 1	5.2	28.1	16.5	35.9	5.7	8.0	0.6	100.0	7.0	674
Central 2	9.4	41.1	14.3	26.8	3.6	4.5	0.2	100.0	6.0	521
East Central	18.2	36.8	12.9	29.0	0.9	1.7	0.5	100.0	5.7	559
Kampala	2.5	14.0	10.5	37.4	6.4	28.9	0.2	100.0	10.1	344
Mid-North	18.7	54.1	10.1	13.3	0.5	2.6	0.9	100.0	4.7	566
Mid-Western	23.2	43.4	10.4	18.2	1.7	2.0	0.9	100.0	4.3	556
Mid-Eastern	15.4	45.4	18.5	17.5	0.7	2.2	0.3	100.0	5.5	511
North East	26.3	46.7	9.4	13.2	0.9	3.4	0.2	100.0	4.3	486
South Western	10.6	39.9	18.5	24.7	0.7	5.4	0.1	100.0	5.9	708
West Nile	20.7	60.2	6.6	10.4	0.0	1.6	0.4	100.0	3.4	397
Special zone										
Karamoja	73.6	20.8	1.4	2.9	0.0	0.6	0.7	100.0	0.0	117
Wealth quintile										
Lowest	31.3	54.5	7.4	5.8	0.3	0.1	0.5	100.0	2.9	968
Second	18.4	53.2	14.7	12.0	0.1	0.5	1.0	100.0	4.6	992
Middle	14.4	50.1	15.7	18.2	0.4	1.0	0.3	100.0	5.2	991
Fourth	11.1	37.1	16.3	30.0	2.2	2.9	0.4	100.0	6.1	1,052
Highest	3.6	18.4	12.2	41.6	6.0	18.0	0.1	100.0	9.2	1,320
Total	14.9	41.1	13.3	22.9	2.1	5.4	0.4	100.0	5.6	5,322

[1] Completed seven grades at the primary level
[2] Completed six grades at the secondary level

2.7 LITERACY OF WOMEN

The ability to read and write is an important personal asset, allowing individuals increased opportunities in life. Knowing the distribution of the literate population can help those involved in health communication plan how to reach women with their messages. Female respondents who had never attended school or who had attended school up to the primary level were asked to demonstrate literacy by reading from a card with a simple

sentence in English or in one of the local languages. The survey assumed that respondents who attended any secondary schooling are literate.

Table 2.10 shows the percent distribution of female respondents by level of literacy and the percentage literate according to background characteristics. The percentage literate includes respondents who could read part or all of a sentence, and those who attended secondary school or higher.

The data show that 66 percent of women age 15-49 are literate. There are large differentials in literacy according to background characteristics. For example, only 48 percent of women age 45-49 are literate, compared with 79 percent of women age 15-19. While 86 percent of urban women are literate, only 60 percent of rural women are literate. In Kampala, an entirely urban region, 95 percent of women are literate. Outside of Kampala, Central 1 has the highest proportion of women who are literate (85 percent), while the West Nile has the lowest (47 percent). Only 12 percent of women in Karamoja are literate. Literacy levels increase substantially with increasing wealth quintile, from 38 percent among women in the lowest wealth quintile to 91 percent of those in the highest quintile.

Table 2.10 Literacy: Women

Percent distribution of women age 15-49 by level of schooling attended and level of literacy, and percentage literate, according to background characteristics, Uganda 2014-15

		No schooling or primary school								
Background characteristic	Secondary school or higher	Can read a whole sentence	Can read part of a sentence	Cannot read at all	No card with required language	Blind/ visually impaired	Missing	Total	Percent-age literate[1]	Number of women
Age										
15-24	37.6	21.4	17.2	21.9	1.0	0.0	1.0	100.0	76.1	2,360
15-19	38.8	23.2	16.9	19.0	1.2	0.0	0.9	100.0	78.8	1,228
20-24	36.2	19.3	17.5	25.0	0.7	0.1	1.1	100.0	73.1	1,132
25-29	33.8	18.8	15.1	30.3	1.0	0.0	0.9	100.0	67.7	957
30-34	24.6	16.1	13.6	42.9	1.8	0.0	0.9	100.0	54.3	741
35-39	20.7	24.6	13.4	37.7	1.2	0.1	2.3	100.0	58.7	547
40-44	17.0	17.9	13.3	48.6	1.9	0.5	1.0	100.0	48.1	425
45-49	12.3	21.4	13.8	49.6	1.2	0.0	1.7	100.0	47.5	292
Residence										
Urban	56.1	19.7	10.6	12.1	0.4	0.1	1.1	100.0	86.4	1,227
Rural	22.6	20.4	16.9	37.4	1.5	0.1	1.2	100.0	59.9	4,095
Region										
Central 1	49.5	27.4	7.8	11.7	0.6	0.0	3.0	100.0	84.7	674
Central 2	34.9	26.9	19.2	18.8	0.0	0.0	0.2	100.0	81.0	521
East Central	31.7	5.9	22.1	39.5	0.0	0.0	0.8	100.0	59.7	559
Kampala	72.7	13.4	8.8	3.7	0.4	0.2	0.8	100.0	95.0	344
Mid-North	16.3	18.6	15.8	47.4	0.0	0.1	1.7	100.0	50.7	566
Mid-Western	22.0	19.6	16.4	37.8	3.9	0.0	0.3	100.0	58.0	556
Mid-Eastern	20.4	12.8	20.3	41.9	3.0	0.4	1.2	100.0	53.5	511
North East	17.5	15.2	16.6	49.9	0.6	0.0	0.2	100.0	49.3	486
South Western	30.8	37.7	8.6	19.0	2.8	0.0	1.0	100.0	77.2	708
West Nile	12.1	13.0	22.2	50.9	0.0	0.0	1.8	100.0	47.3	397
Special zone										
Karamoja	3.5	3.5	4.8	88.2	0.0	0.0	0.0	100.0	11.8	117
Wealth quintile										
Lowest	6.3	14.9	16.6	60.4	0.8	0.1	1.1	100.0	37.7	968
Second	12.5	21.3	21.1	42.5	2.2	0.0	0.4	100.0	54.9	992
Middle	19.6	23.8	19.6	33.6	2.0	0.2	1.3	100.0	62.9	991
Fourth	35.0	25.8	12.7	23.7	1.0	0.0	1.6	100.0	73.6	1,052
Highest	65.6	16.2	9.3	7.1	0.4	0.1	1.3	100.0	91.2	1,320
Total	30.3	20.2	15.4	31.6	1.2	0.1	1.1	100.0	66.0	5,322

[1] Refers to women who attended secondary school or higher and women who can read a whole sentence or part of a sentence

MALARIA PREVENTION 3

Key Findings

- More than nine in ten households (94 percent) own at least one insecticide-treated net (ITN), and 62 percent of households have at least one ITN for every two persons who stayed in the house the night before the survey.
- Eighty-seven percent of mosquito nets come from mass distribution campaigns.
- Sixty-nine percent of all individuals, 74 percent of children under 5 years, and 75 percent of pregnant women slept under an ITN the night before the survey.
- Forty-five percent of pregnant women received two or more doses of intermittent preventive treatment for malaria (IPTp), at least one dose during an antenatal care visit.

This chapter presents the indicators that relate to primary malaria control interventions. Malaria control efforts in Uganda have focused on vector control, chemoprophylaxis in pregnant women, and effective case management. Indicators measuring vector control interventions include the ownership and use of insecticide-treated nets (ITNs), in particular long-lasting insecticidal nets (LLINs), and indoor residual spraying of households (IRS). Intermittent preventive treatment for pregnant women (IPTp) is another focus of the malaria control programme that is measured in the survey. Effective case management includes prompt diagnosis and effective treatment (within 24 hours of onset of symptoms) with artemisinin combination therapy (ACT). Cross-cutting interventions such as behaviour change communication (BCC) have been critical for increasing knowledge of prevention and rapid case identification and management.

3.1 MALARIA VECTOR CONTROL (MOSQUITO NETS AND INDOOR RESIDUAL SPRAYING)

The use of LLINs, a subset of ITNs, to prevent malaria is a key strategic intervention supported by the government of Uganda. An LLIN is a factory-treated mosquito net made with netting material that has a pyrethroid insecticide incorporated within or bound around the fibres. The net must retain its effective biological activity (without re-treatment) through repeated washes, for three years of use under field conditions (WHO/Global Malaria Programme, 2007). LLINs provide personal protection and, when used on a large communal scale, can reduce the burden of malaria in a community. ITNs have been shown to reduce malaria transmission by as much as 90 percent under trial conditions (Lengeler, 2004).

Uganda has adopted a policy of universal LLIN coverage (one net per two persons) to protect all people from malaria. LLIN distribution is conducted through both community mass campaigns and through public health facilities that target pregnant women and children under 5 years on a routine basis. Uganda first conducted a targeted mass distribution campaign in 2009-10 focused on pregnant women and children under 5 years. In 2013-14 Uganda conducted its first universal distribution of LLINs, aimed to attain coverage of one net for every two persons. With support from the Global Fund to Fight AIDS, Tuberculosis and Malaria and other partners, a distribution of 21.7 million LLINs started in May 2013 and ended in August 2014. Routine distribution of LLINs to pregnant women and children under 5 when antenatal care and immunisation services are accessed remains an avenue for continuous distribution following the mass campaigns.

3.1.1 Ownership of Mosquito Nets

Table 3.1 presents information on the percentage of households that have at least one mosquito net, the average number of mosquito nets per household, and the percentage of households with at least one net for every two persons who stayed in the household the night preceding the survey, by background characteristics. The survey results show that 94 percent of households own a mosquito net, 90 percent of households own at least one ITN, and 90 percent of households own at least one LLIN. Almost all of the mosquito nets owned by households in Uganda are LLINs.

Ownership of at least one ITN is higher in rural areas (92 percent) than urban areas (84 percent). By region, ownership of at least one ITN ranges from 81 percent in Central 1 to 97 percent in North East and South Western (Figure 3.1). Ownership of at least one ITN varies by wealth quintile with more households in the lower wealth quintiles owning at least one ITN compared with households in higher wealth quintiles. On average, households own 2.5 ITNs.

Table 3.1 Household ownership of mosquito nets

Percentage of households with at least one mosquito net (treated or untreated), insecticide-treated net (ITN), and long-lasting insecticidal net (LLIN); average number of nets, ITNs, and LLINs per household; and percentage of households with at least one net, ITN, and LLIN per two persons who stayed in the household last night, by background characteristics, Uganda 2014-15

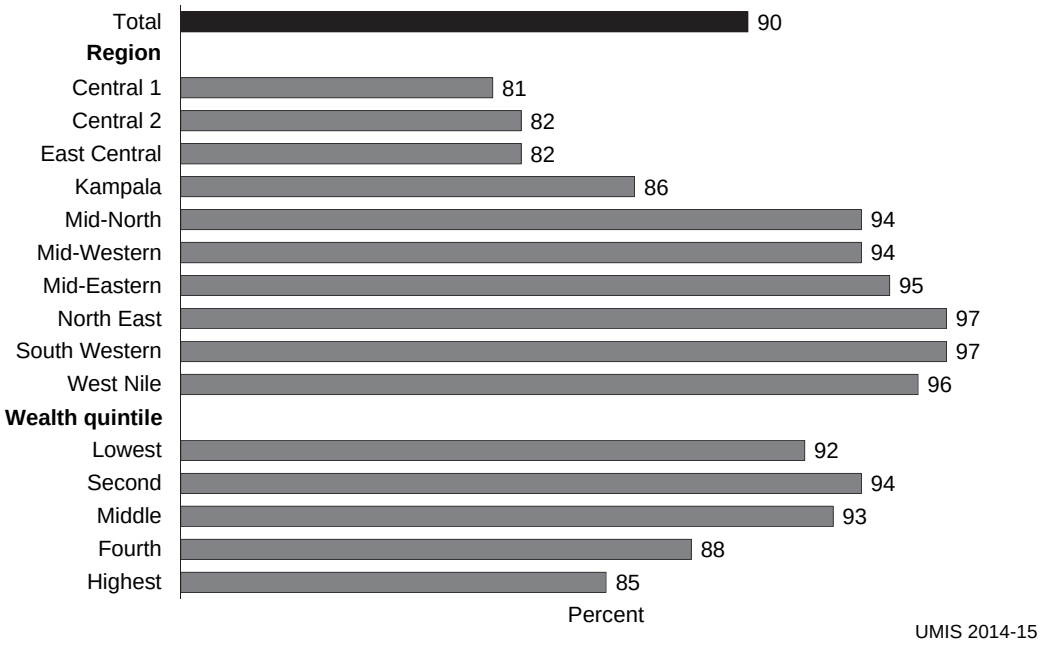
	Percentage of households with at least one mosquito net			Average number of nets per household				Percentage of households with at least one net for every two persons who stayed in the household last night[1]			Number of households with at least one person who stayed in the household last night
Background characteristic	Any mosquito net	Insecticide-treated mosquito net (ITN)[2]	Long-lasting insecticidal net (LLIN)	Any mosquito net	Insecticide-treated mosquito net (ITN)[2]	Long-lasting insecticidal net (LLIN)	Number of households	Any mosquito net	Insecticide-treated mosquito net (ITN)[2]	Long-lasting insecticidal net (LLIN)	
Residence											
Urban	91.1	83.9	83.5	2.4	2.2	2.2	1,187	69.1	61.8	61.3	1,187
Rural	94.5	92.0	91.9	2.7	2.6	2.6	4,158	64.6	62.4	62.4	4,153
Region											
Central 1	91.3	80.8	80.4	2.4	2.1	2.1	660	65.4	56.7	56.7	660
Central 2	88.5	81.6	81.0	2.3	2.1	2.1	593	59.1	53.4	52.7	593
East Central	84.6	82.1	82.1	2.2	2.1	2.1	536	48.0	46.7	46.7	535
Kampala	92.7	86.3	86.0	2.5	2.3	2.3	299	74.6	66.5	65.9	299
Mid-North	96.0	94.3	94.2	2.8	2.7	2.7	569	69.0	66.6	66.5	567
Mid-Western	95.7	93.6	93.6	2.5	2.4	2.4	612	65.6	64.0	64.0	612
Mid-Eastern	95.8	94.6	94.6	2.6	2.6	2.6	571	62.6	61.7	61.7	570
North East	97.2	97.0	97.0	2.9	2.9	2.9	444	61.3	60.6	60.6	444
South Western	98.3	96.9	96.9	3.0	2.9	2.9	691	79.9	76.6	76.6	690
West Nile	97.8	96.3	96.3	3.1	3.0	3.0	370	73.1	72.1	72.1	370
Special zone											
Karamoja	94.8	94.8	94.8	2.8	2.8	2.8	118	64.2	62.8	62.8	118
Wealth quintile											
Lowest	92.8	91.5	91.5	2.3	2.2	2.2	1,109	62.8	61.8	61.8	1,108
Second	95.2	94.0	94.0	2.5	2.5	2.5	1,073	64.9	63.7	63.7	1,071
Middle	95.3	93.0	93.0	2.8	2.7	2.7	961	65.1	62.7	62.7	960
Fourth	92.4	88.4	88.1	2.8	2.6	2.6	1,014	65.2	60.9	60.7	1,012
Highest	93.1	84.9	84.5	2.7	2.4	2.4	1,189	69.8	62.2	61.8	1,189
Total	93.7	90.2	90.0	2.6	2.5	2.5	5,345	65.6	62.3	62.1	5,340

[1] De facto household members
[2] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment (LLIN) or a net that has been soaked with insecticide within the past 12 months.

Although ownership of at least one ITN is widespread throughout Uganda, less than two-thirds of households (62 percent) have at least one net for every two persons who stayed in the household the night preceding the survey.

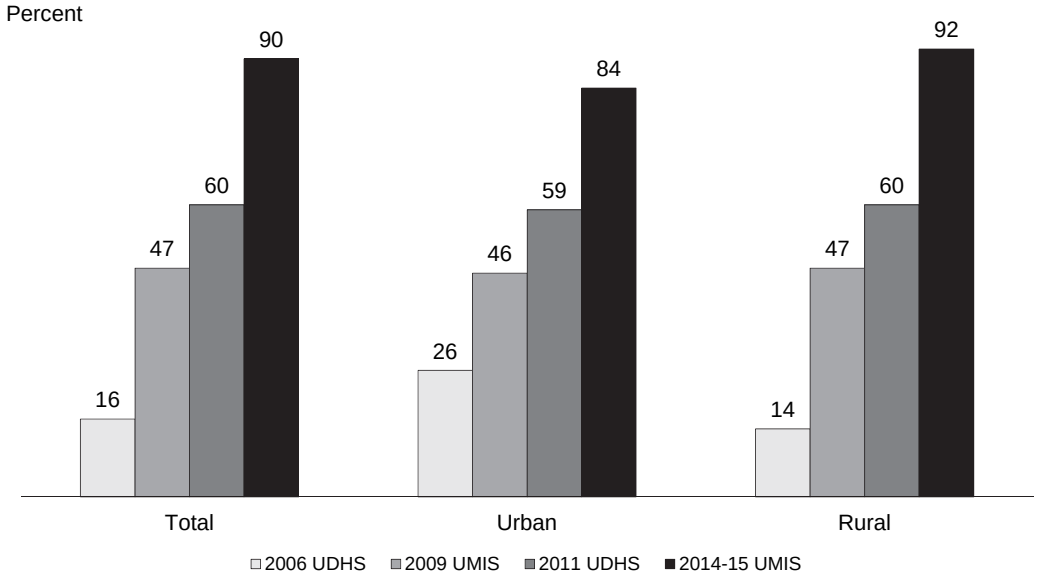
Ownership of at least one ITN for every two persons who stayed in the household the night preceding the survey does not vary by residence; it does vary by region, ranging from a low of 47 percent in East Central to 77 percent in South Western.

Figure 3.1 **Percentage of households with at least one ITN**



Overall, there has been a substantial upward trend in ITN ownership in Uganda, from 16 percent in the 2006 DHS to 90 percent in the 2014-15 UMIS (Figure 3.2). In urban areas, the increase was from 26 percent in the 2006 DHS to 84 percent in the 2014-15 UMIS, while in the rural areas, the increase was from 14 percent in the 2006 DHS to 92 percent 2014-15 UMIS.

Figure 3.2 **Trends in ownership of ITNs: Percent of households with at least one ITN**



In Uganda, a mosquito net can be obtained through health facilities, bought from a pharmacy, shop, open market, or hawker, received from a church or through mass distribution campaigns. Table 3.2 shows the percent distribution of mosquito nets by source of the net. The majority of nets in Uganda (87 percent) were obtained from campaigns. Eight percent of nets (21 percent in urban areas and 5 percent in rural areas) came from a pharmacy, shop, or the open market, while 2 percent of nets were obtained from government health facilities.

Table 3.2 Source of nets

Percent distribution of mosquito nets by source of the net, according to background characteristics, Uganda 2014-15

Background characteristic	Govern-ment health facility	Non-govern-ment health facility[1]	Pharmacy/ shop/open market	Hawker	Church	Campaign	Other	Don't know/ missing	Total	Number of mosquito nets
Residence										
Urban	1.8	0.9	21.2	2.1	1.1	71.1	1.5	0.4	100.0	2,894
Rural	2.3	0.4	5.0	0.2	0.3	90.6	0.6	0.7	100.0	11,077
Region										
Central 1	4.1	0.5	18.6	0.6	0.9	74.0	0.6	0.8	100.0	1,611
Central 2	1.7	0.9	7.5	0.8	1.6	85.8	1.0	0.7	100.0	1,336
East Central	2.8	1.4	8.8	0.1	0.4	85.7	0.3	0.7	100.0	1,174
Kampala	1.8	0.6	36.5	6.2	0.0	52.8	1.1	1.0	100.0	758
Mid-North	1.7	0.5	2.6	0.2	0.4	92.7	1.3	0.6	100.0	1,565
Mid-Western	1.2	0.0	3.5	0.0	0.0	94.7	0.1	0.5	100.0	1,528
Mid-Eastern	1.7	0.4	2.8	0.0	1.1	92.5	1.3	0.2	100.0	1,475
North East	5.6	0.4	8.4	0.0	0.1	84.5	0.1	0.9	100.0	1,303
South Western	0.6	0.2	5.3	0.3	0.0	91.8	1.3	0.5	100.0	2,070
West Nile	1.2	0.3	2.5	0.6	0.0	93.8	0.7	0.9	100.0	1,151
Special zone										
Karamoja	0.1	0.0	0.1	0.0	0.2	98.5	0.0	1.1	100.0	331
Wealth quintile										
Lowest	2.1	0.3	2.1	0.3	0.6	93.3	0.7	0.7	100.0	2,534
Second	2.0	0.3	2.4	0.1	0.1	93.8	0.8	0.6	100.0	2,690
Middle	2.0	0.3	2.9	0.3	0.3	93.2	0.5	0.4	100.0	2,697
Fourth	3.1	0.2	6.1	0.3	0.5	88.4	0.6	0.8	100.0	2,800
Highest	1.7	1.2	24.6	1.7	0.7	68.0	1.3	0.8	100.0	3,249
Total	2.2	0.5	8.3	0.6	0.5	86.5	0.8	0.6	100.0	13,971

[1] Includes non-governmental organisations (NGOs), private not-for-profit health facilities, private for-profit hospitals, and other health facilities.

3.1.2 Indoor Residual Spraying

Indoor residual spraying (IRS) is a vector control method recommended by WHO that was used in Uganda in the 1960s. After almost 50 years without spraying, in 2007 IRS was slowly reintroduced in the Mid-North using mostly lambda cyhalothrin (ICON 10% WP) but also dichlorodiphenyltrichloroethane (DDT). With rising vector resistance and increased pressure from some stakeholders, who were against the use of DDT, the Ministry switched to bendiocarb for IRS. Since 2009, IRS has been scaled up to cover 10 high-malaria-burden districts in the Mid-North: Apac, Kole, Gulu, Amuru, Nwoya, Pader, Agago, Kitgum, Oyam and Lamwo. In 2014, a decision was made to shift IRS from these 10 districts to 14 high-burden districts in the Mid-North, North East, Mid-Eastern, and East Central: Alebtong, Amolatar, Dokolo, Lira, Otuke, Kaberamaido, Serere, Tororo, Pallisa, Kibuku, Budaka, Butaleja, Namutumba and Bugiri. This decision to shift was based on information from the Health Management Information System (HMIS) and partners including the Uganda Malaria Surveillance Project, indicating that IRS in the first 10 districts had achieved a low malaria prevalence and disease burden (Kigozi et al., 2012). At the time of the survey, IRS was being phased out of the first 10 districts (current IRS districts). The last spraying for five of the districts (Lamwo, Pader, Kitgum, Nwoya, and Amuru) was in May and would not be captured when asking about IRS in the six months preceding the survey. However, some household informants in these districts may have erroneously reported the spraying that took

place 7 to 8 months before the survey as having taken place within the last 6 months. The last spraying for the remaining five districts (Gulu, Kole, Agago, Oyam, and Apac) took place in October and thus should be captured by the survey.

Table 3.3 shows that 5 percent of all households surveyed had received IRS in the past 6 months. Ninety-one percent of survey households had at least one ITN and/or IRS in the past 6 months, while 64 percent of households had at least one ITN for every two persons and/or IRS in the past 6 months.

Table 3.3 Indoor residual spraying against mosquitoes

Percentage of households in which someone has come into the dwelling to spray the interior walls against mosquitoes (IRS) in the past 6 months, the percentage of households with at least one ITN and/or IRS in the past 6 months, and the percentage of households with at least one ITN for every two persons and/or IRS in the past 6 months, and among households with IRS in the past 6 months, percentage of households paying for IRS, by background characteristics, Uganda 2014-15

Background characteristic	Percentage of households with IRS[1] in the past 6 months	Percentage of households with at least one ITN[2] and/or IRS in the past 6 months	Percentage of households with at least one ITN[2] for every two persons and/or IRS in the past 6 months	Number of households	Percentage of households paying for IRS	Number of household with IRS in the past 6 months
Residence						
Urban	2.9	84.2	63.2	1,187	10.5	35
Rural	5.4	92.3	64.3	4,158	3.2	226
Study domain[3]						
Current IRS districts - sprayed in last 6 months[4]	75.0	97.1	92.0	246	1.4	184
Current IRS districts - sprayed more than 6 months ago[5]	51.0	97.4	81.2	128	2.9	65
Future IRS districts[6]	0.2	93.5	61.1	598	*	1
High-altitude districts[7]	0.1	98.1	70.7	387	*	0
Region						
Central 1	0.0	80.8	56.7	660	*	0
Central 2	0.4	81.9	53.6	593	*	3
East Central	0.0	82.1	46.7	536	*	0
Kampala	1.0	86.3	67.0	299	*	3
Mid-North	43.9	97.0	83.2	569	1.8	249
Mid-Western	0.2	93.6	64.0	612	*	1
Mid-Eastern	0.3	94.6	61.6	571	*	2
North East	0.1	97.0	60.4	444	*	0
South Western	0.0	96.9	76.5	691	*	0
West Nile	0.6	96.3	72.1	370	*	2
Special zones[3]						
Greater Kampala[8]	0.6	77.0	54.3	708	*	5
Karamoja	0.2	94.8	62.8	118	*	0
Wealth quintile						
Lowest	12.3	92.3	66.4	1,109	2.4	137
Second	5.8	94.5	65.9	1,073	1.9	62
Middle	2.3	93.1	63.3	961	(10.0)	22
Fourth	2.3	88.4	61.8	1,014	(5.2)	24
Highest	1.3	85.0	62.6	1,189	*	16
Total	4.9	90.5	64.0	5,345	4.2	261

Notes: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.
[1] Indoor residual spraying (IRS) is limited to spraying conducted by a government, private, or non-governmental organisation.
[2] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment (LLIN) or a net that has been soaked with insecticide within the past 12 months
[3] Study domains and Special zones are a subsample and do not sum to the total survey sample; for details see Chapter 1, Section 1.4.2 Sample design.
[4] The current IRS districts sprayed in the last 6 months are Gulu, Kole, Agago, Oyam, and Apac.
[5] The current IRS districts sprayed more than 6 months ago are Lamwo, Pader, Kitgum, Nwoya, and Amuru.
[6] The 14 future IRS districts include Bugiri, Namutumba, Alebtong, Amolatar, Dokolo, Lira, Otuke, Budaka, Butaleja, Kibuku, Pallisa, Tororo, Kaberamaido, and Serere.
[7] The 10 high-altitude districts include Bundibugyo, Kabarole, Kasese, Ntoroko, Bukwo, Bulambuli, Kapchorwa, Kween, Kabale, and Kisoro.
[8] A special zone 'Greater Kampala' includes the urban areas of Wakiso and Mukono districts together with Kampala.

Of the districts sprayed by IRS in the 6 months preceding the survey, 75 percent of households reported receiving IRS, 97 percent had at least one ITN and/or IRS in the past 6 months, and 92 percent of households had at least one ITN for every two persons and/or IRS in the past 6 months.

3.2 ACCESS TO MOSQUITO NETS

The 2014-15 UMIS presents data on access to an ITN, measured by the proportion of the population that could sleep under an ITN if each ITN in the household were used by up to two people. Coupled with mosquito net usage, ITN access can provide useful information on the magnitude of the behavioural gap in ITN ownership and use, or, in other words, the population with access to an ITN but not using it. If the difference between these indicators is substantial, the programme may need to focus on behaviour change and how to identify the main drivers and barriers to ITN use, in order to design an appropriate intervention. This analysis helps the NMCP determine whether they need to achieve higher ITN coverage, promote ITN use, or both. Table 3.4 shows the percent distribution of the household population by number of ITNs the household owns, according to number of persons who stayed in the household the night before the survey.

Table 3.4 and Figure 3.3 show the percentage of the population with access to an ITN in the household. Seventy-nine percent of the de facto household population has access to an ITN. By region, the percentage of the population with access to an ITN ranges from 67 percent in East Central to 90 percent in South Western. Those in the highest wealth quintile had the lowest access (76 percent) while those in the second wealth quintile had the highest access (82 percent).

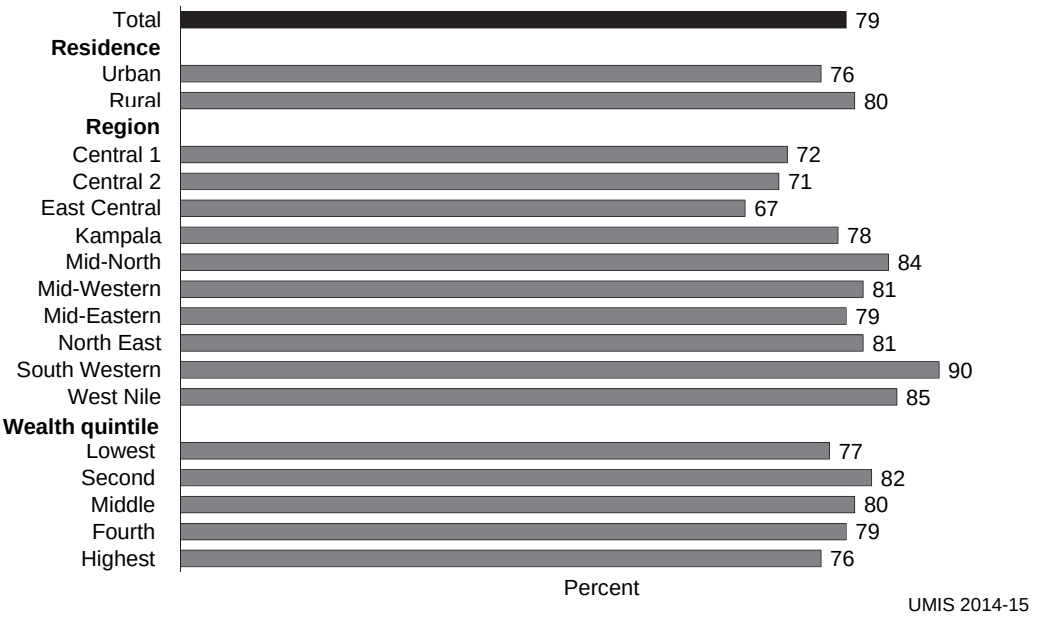
Table 3.4 Access to an insecticide-treated net (ITN)

Percent distribution of the de facto household population by number of ITNs the household owns, according to number of persons who stayed in the household the night before the survey, Uganda 2014-15

	Number of persons who stayed in the household the night before the survey								
Number of ITNs	1	2	3	4	5	6	7	8+	Total
0	25.3	14.2	9.8	8.3	5.8	6.6	4.0	5.7	7.1
1	50.5	30.7	21.6	13.0	7.5	5.7	4.9	2.8	9.1
2	17.1	37.8	40.8	36.7	28.2	18.6	13.1	11.8	21.4
3	6.0	14.4	22.4	30.8	41.5	45.4	42.5	30.2	33.6
4	1.2	2.2	3.7	7.0	9.0	12.1	19.5	16.3	12.1
5	0.0	0.6	1.1	2.6	4.7	6.1	9.5	11.7	7.1
6+	0.0	0.0	0.7	1.7	3.3	5.5	6.5	21.6	9.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	652	1,074	2,075	3,056	3,296	3,883	3,218	8,967	26,222
Percent with access to an ITN[1]	74.7	85.8	83.0	85.2	84.1	83.5	80.8	70.4	78.8

[1] Percentage of the de facto household population who could sleep under an ITN if each ITN in the household were used by up to two people

Figure 3.3 **Percentage of the de facto population with access to an ITN in the household**



3.2.1 Use of Mosquito Nets by Household Population

In August 2014, Uganda completed a mass distribution campaign of LLINs with the aim to achieve universal coverage, defined as one net for every two persons. In addition to LLIN coverage, it is important for the NMCP to assess the use of nets in order to identify and address any barriers to net usage. In Uganda, vulnerable groups, such as children under age 5 and pregnant women, are still be prioritised; however, the equitable and communal benefits of wide-scale ITN use by older children and adults (Killeen et al., 2007) is recognised. Thus, the 2014-15 UMIS asked about use of mosquito nets by all household members the night preceding the survey.

Table 3.5 shows that 69 percent of the de facto household population slept under an ITN the night before the survey. While 74 percent of children under 5 years slept under an ITN the previous night, ITNs were used by just 62 percent of children age 5-14. Use of ITNs by persons in the household varies regionally, ranging from 59 percent in Central 1 and Central 2 to 81 percent in North East. Among the population in households with at least one ITN, 74 percent slept under an ITN the previous night.

Table 3.5 Use of mosquito nets by persons in the household

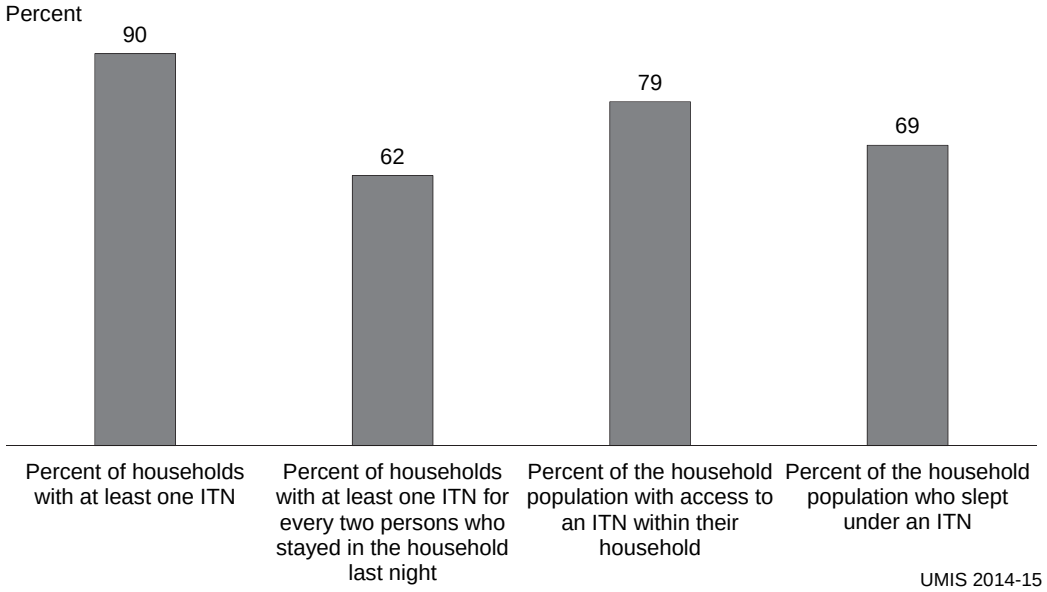
Percentage of the de facto household population who slept the night before the survey under a mosquito net (treated or untreated), under an insecticide-treated net (ITN), under a long-lasting insecticidal net (LLIN), and under an ITN or in a dwelling in which the interior walls have been sprayed against mosquitoes (IRS) in the past 6 months; and among the de facto household population in households with at least one ITN, the percentage who slept under an ITN the night before the survey, by background characteristics, Uganda 2014-15

	Household population					Household population in households with at least one ITN[1]	
Background characteristic	Percentage who slept under any net last night	Percentage who slept under an ITN[1] last night	Percentage who slept under an LLIN last night	Percentage who slept under an ITN[1] last night or in a dwelling sprayed with IRS[2] in the past 6 months	Number	Percentage who slept under an ITN[1] last night	Number
Age (in years)							
<5	77.5	74.3	74.2	75.5	5,087	79.5	4,756
5-14	64.9	62.4	62.2	64.1	8,192	66.2	7,717
15-34	70.1	66.5	66.4	67.9	7,983	72.9	7,279
35-49	80.9	77.9	77.8	78.9	2,715	84.0	2,516
50+	77.3	74.1	74.1	75.1	2,238	79.3	2,092
Sex							
Male	69.5	66.6	66.5	68.2	12,678	71.8	11,765
Female	73.7	70.3	70.2	71.6	13,543	75.6	12,602
Residence							
Urban	72.2	65.4	65.3	66.6	4,886	73.2	4,369
Rural	71.5	69.3	69.2	70.7	21,336	73.9	19,999
Region							
Central 1	68.0	59.0	58.2	59.0	2,985	68.6	2,567
Central 2	64.6	59.2	59.2	59.3	2,663	67.2	2,348
East Central	63.9	61.9	61.9	61.9	2,764	71.5	2,394
Kampala	78.6	70.6	70.3	71.0	1,165	79.0	1,041
Mid-North	77.0	75.2	75.2	87.6	2,833	78.8	2,704
Mid-Western	77.3	75.9	75.9	75.9	3,006	80.2	2,842
Mid-Eastern	71.6	71.1	71.1	71.1	2,971	74.3	2,844
North East	81.2	80.7	80.7	80.7	2,586	83.1	2,511
South Western	65.7	63.0	63.0	63.0	3,283	64.1	3,229
West Nile	74.5	72.4	72.4	72.5	1,967	75.5	1,887
Special zone							
Karamoja	80.3	80.1	80.1	80.1	625	84.0	596
Wealth quintile							
Lowest	73.2	72.3	72.3	76.1	5,177	78.7	4,756
Second	74.4	73.0	73.0	74.6	5,213	76.1	5,004
Middle	71.9	69.8	69.8	70.4	5,235	74.0	4,940
Fourth	67.1	64.0	63.6	64.6	5,264	68.7	4,903
Highest	71.8	63.8	63.6	64.2	5,333	71.4	4,765
Total	71.6	68.6	68.4	69.9	26,222	73.8	24,368

Note: Table includes eight cases where information on age was unknown or missing.
[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment (LLIN) or a net that has been soaked with insecticide within the past 12 months.
[2] Indoor residual spraying (IRS) is limited to spraying conducted by a government, private, or non-governmental organisation.

Figure 3.4 presents a comparison of ITN ownership, coverage, access, and use in Uganda. Although 90 percent of households own at least one ITN, only 62 percent have enough ITNs to cover their entire household (assuming one ITN is used by two persons). While 79 percent of the household population has access to an ITN, 69 percent of the household population slept under an ITN the night before the survey. A comparison of the first two columns indicates that households in Uganda do not have a sufficient number of ITNs to cover the population sleeping in the household. A comparison of the second two columns, on the other hand, suggests that almost all individuals with access to an ITN actually use it.

Figure 3.4 **Ownership of, access to, and use of ITNs**



3.2.2 Use of Mosquito Nets by Children under Five

In Uganda, malaria burden, especially severe disease, is greatest among children under 5 years because they have not developed immunity to malaria. It is therefore important for the National Malaria Control Programme to ensure that this age group is adequately protected by effective prevention interventions such as ITNs. Table 3.6 shows 74 percent of the children under 5 used an ITN the night before the survey, with the same percentage using an LLIN. Seventy-six percent slept under an ITN the night before the survey or in dwelling sprayed with IRS in the past 6 months. Among children under 5 in households with at least one ITN, 80 percent slept under an ITN the night before the survey. The proportion of children under 5 sleeping under an ITN the night before the survey increases as household wealth decreases, from 71 percent in the highest wealth quintile to 78 percent in the lowest wealth quintile. While there is little difference in children under 5 sleeping under an ITN the night before the survey by age, sex, or urban-rural residence, by region use ranges from 64 percent in South Western and Central 2 to 87 percent in North East (Figure 3.5).

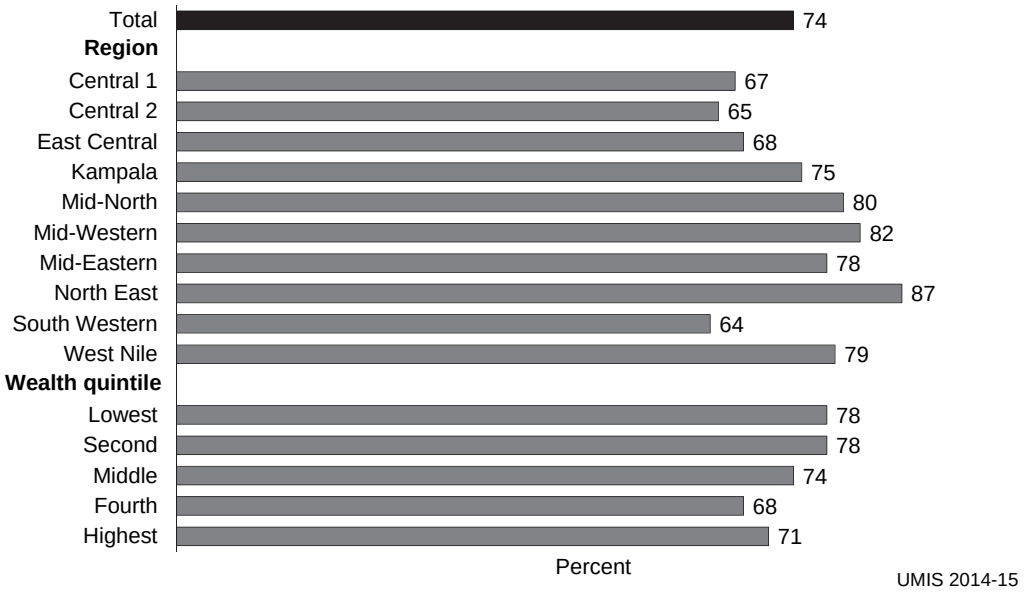
Table 3.6 Use of mosquito nets by children

Percentage of children under five years of age who, the night before the survey, slept under a mosquito net (treated or untreated), under an insecticide-treated net (ITN), under a long-lasting insecticidal net (LLIN), and under an ITN or in a dwelling in which the interior walls have been sprayed against mosquitoes (IRS) in the past 6 months; and among children under five years of age in households with at least one ITN, the percentage who slept under an ITN the night before the survey, by background characteristics, Uganda 2014-15

	Children under age 5 in all households					Children under age 5 in households with at least one ITN[1]	
Background characteristic	Percentage who slept under any net last night	Percentage who slept under an ITN[1] last night	Percentage who slept under an LLIN last night	Percentage who slept under an ITN[1] last night or in a dwelling sprayed with IRS[2] in the past 6 months	Number of children	Percentage who slept under an ITN[1] last night	Number of children
Age (in months)							
<12	78.4	75.5	75.4	76.5	940	81.6	871
12-23	78.1	75.0	74.8	75.9	999	80.5	930
24-35	79.2	76.6	76.6	77.9	1,013	81.2	956
36-47	76.8	72.9	72.7	74.0	1,117	78.3	1,040
48-59	75.3	72.0	71.8	73.5	1,018	76.2	960
Sex							
Male	77.6	75.2	74.9	76.3	2,464	79.7	2,325
Female	77.5	73.5	73.5	74.8	2,622	79.4	2,431
Residence							
Urban	78.4	71.2	71.1	72.2	825	78.8	746
Rural	77.4	74.9	74.8	76.1	4,261	79.6	4,010
Region							
Central 1	78.6	66.7	65.7	66.7	600	76.2	525
Central 2	69.7	65.0	65.0	65.0	533	73.0	474
East Central	70.4	68.4	68.4	68.4	586	78.2	512
Kampala	83.0	75.4	75.0	75.4	196	83.4	177
Mid-North	80.9	79.5	79.5	90.1	559	83.5	532
Mid-Western	82.8	82.3	82.3	82.3	635	86.5	604
Mid-Eastern	78.3	78.3	78.3	78.3	565	80.0	552
North East	87.3	87.1	87.1	87.1	507	89.9	491
South Western	66.8	64.4	64.4	64.4	533	64.5	532
West Nile	82.1	78.5	78.5	78.5	374	82.9	354
Special zone							
Karamoja	84.8	84.8	84.8	84.8	131	89.4	125
Wealth quintile							
Lowest	79.2	78.3	78.3	81.8	1,125	85.4	1,032
Second	79.8	78.4	78.4	79.5	1,092	81.3	1,053
Middle	76.5	74.2	74.3	74.5	1,032	78.7	973
Fourth	71.7	68.1	67.8	68.3	943	72.7	884
Highest	79.9	71.0	70.6	71.3	895	78.1	815
Total	77.5	74.3	74.2	75.5	5,087	79.5	4,756

Note: Table is based on children who stayed in the household the night before the interview.
[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment (LLIN) or a net that has been soaked with insecticide within the past 12 months.
[2] Indoor residual spraying (IRS) is limited to spraying conducted by a government, private, or non-governmental organisation.

Figure 3.5 **Percentage of children under age 5 who slept under an ITN the night before the survey**



3.2.3 Use of Mosquito Nets by Pregnant Women

Pregnancy suppresses immunity, especially among women in their first pregnancy, who are therefore at increased risk for severe malaria compared with non-pregnant women. In Uganda, malaria in pregnant women is frequently associated with anaemia and can interfere with the maternal-foetal exchange, leading to low-birth-weight infants. To prevent these complications from malaria in pregnancy, the NMCP supports a three-pronged approach, including use of an ITN, provision of intermittent preventive treatment of malaria in pregnancy (IPTp), and effective case management of malaria and anaemia.

Table 3.7 presents data on mosquito net usage by pregnant women age 15-49. It shows that 75 percent of pregnant women slept under an ITN—the same percentage as slept under an LLIN—and 77 percent of pregnant women were protected either by sleeping under an ITN or by residing in a household that was sprayed with IRS in the past six months. Among pregnant women age 15-49 in households with at least one ITN, 84 percent slept under an ITN the night before the survey. While there is no clear association between the proportion of pregnant women sleeping under an ITN the previous night and household wealth status, ITN use is associated with level of education; 80 percent of women with no education used ITNs compared to 70 percent of women with secondary education.

Table 3.7 Use of mosquito nets by pregnant women

Percentages of pregnant women age 15-49 who, the night before the survey, slept under a mosquito net (treated or untreated), under an insecticide-treated net (ITN), under a long-lasting insecticidal net (LLIN), and under an ITN or in a dwelling in which the interior walls have been sprayed against mosquitoes (IRS) in the past 6 months; and among pregnant women age 15-49 in households with at least one ITN, the percentage who slept under an ITN the night before the survey, by background characteristics, Uganda 2014-15

	Among pregnant women age 15-49 in all households					Among pregnant women age 15-49 in households with at least one ITN[1]	
Background characteristic	Percentage who slept under any net last night	Percentage who slept under an ITN[1] last night	Percentage who slept under an LLIN last night	Percentage who slept under an ITN[1] last night or in a dwelling sprayed with IRS[2] in the past 6 months	Number of women	Percentage who slept under an ITN[1] last night	Number of women
Residence							
Urban	78.6	73.9	73.9	74.6	78	86.8	66
Rural	79.0	75.6	75.6	77.0	401	83.8	362
Region							
Central 1	(73.2)	(67.4)	(67.4)	(67.4)	48	(80.4)	40
Central 2	(76.8)	(70.2)	(70.2)	(70.2)	59	(78.6)	53
East Central	(58.8)	(55.2)	(55.2)	(55.2)	60	(82.6)	40
Kampala	*	*	*	*	16	*	14
Mid-North	82.0	79.9	79.9	92.9	47	86.4	44
Mid-Western	(89.2)	(83.3)	(83.3)	(83.3)	36	(92.4)	32
Mid-Eastern	(88.1)	(88.1)	(88.1)	(88.1)	46	(91.7)	44
North East	87.2	87.2	87.2	87.2	61	90.3	59
South Western	81.2	75.7	75.7	75.7	58	(77.1)	57
West Nile	(78.0)	(76.0)	(76.0)	(76.0)	46	(81.4)	43
Special zone							
Karamoja	87.8	87.8	87.8	87.8	15	(94.7)	14
Education							
No education	81.3	79.9	79.9	81.9	74	83.3	71
Primary	78.9	75.7	75.7	77.0	271	83.7	245
Secondary	75.0	69.6	69.6	70.5	109	82.9	91
More than secondary	*	*	*	*	15	*	12
Wealth quintile							
Lowest	80.2	79.8	79.8	84.2	117	86.1	108
Second	86.2	82.2	82.2	82.6	120	87.9	112
Middle	78.3	76.8	76.8	76.8	67	82.9	62
Fourth	65.5	63.1	63.1	63.7	89	74.4	75
Highest	81.3	71.3	71.3	71.3	85	87.3	69
Total	78.9	75.4	75.4	76.7	478	84.2	428

Notes: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Total includes 1 woman with missing information on education.

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment (LLIN) or a net that has been soaked with insecticide within the past 12 months.

[2] Indoor residual spraying (IRS) is limited to spraying conducted by a government, private, or non-governmental organisation.

Figure 3.6 shows trends in ITN use by children under 5 and pregnant women. Since 2006, the percentage of children under 5 who slept under an ITN the night before the survey has increased from 10 percent to 74 percent. Among pregnant women, the percentage who slept under an ITN the night before the survey increased from 10 percent in 2006 to 75 percent in 2014-15.

Figure 3.6 **Trends in use of ITNs**

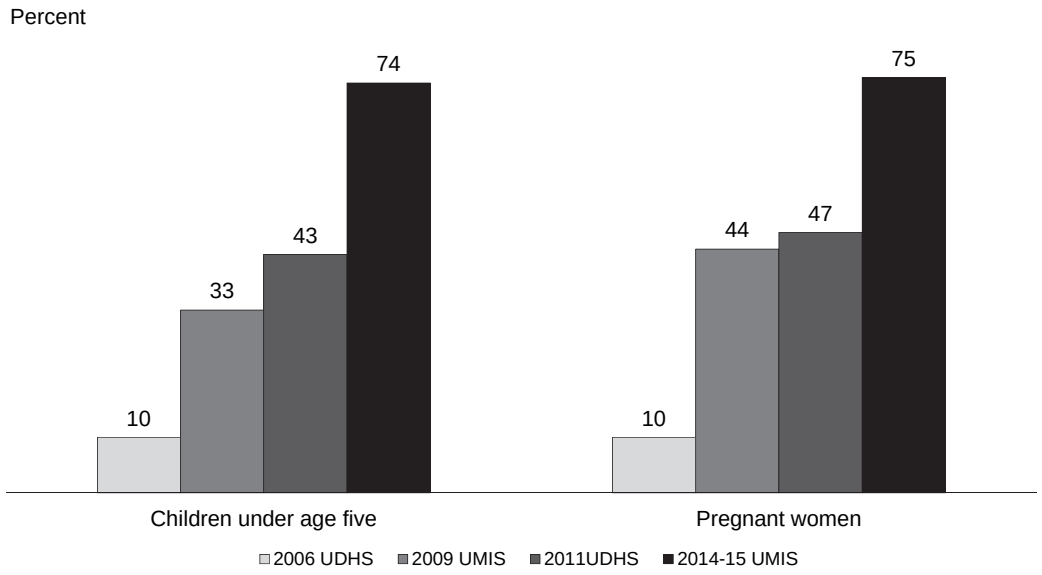


Table 3.8 presents reasons given by respondents for not sleeping under a mosquito net the night before the survey, information that is important to the NMCP for identifying barriers to net usage. Overall, 25 percent of mosquito nets in Uganda were not used for sleeping the night before the survey, an increase from 17 percent in 2009. By region, the proportion ranges from 18 percent in North East and East Central to 40 percent in South Western; there is no variation by urban-rural residence. Among mosquito nets not used for sleeping the night before the survey, the main reason given for not using the net was that it was not yet hung (68 percent). Some of the other reasons given included, they were extra nets or nets for visitors (9 percent), they were too hot (5 percent), and they were too old or had too many holes (5 percent).

Table 3.8 Reasons for not using mosquito net for sleeping

Percentage of mosquito nets that was not used for sleeping the night before the survey, and among the unused nets, the percent distribution of reasons given for not using the net for sleeping the previous night, according to background characteristics, Uganda 2014-15

Background characteristic	Percentage of nets not used for sleeping the previous night	Number of nets	Reasons for not using a net the previous night								
			Net too hot	Don't like smell	No mosqui-toes	Net too old/too many holes in net	Net not yet hung	Extra net/ for visitors	Other	Don't know/ missing	Number of nets not used for sleeping the previous night
Residence											
Urban	24.5	2,894	5.6	2.6	2.7	4.0	66.5	10.6	7.4	0.7	710
Rural	25.3	11,077	5.3	0.5	3.0	5.5	68.4	9.0	8.8	0.5	2,806
Region											
Central 1	22.6	1,611	9.6	0.3	6.3	6.4	54.7	8.3	14.2	1.0	364
Central 2	28.2	1,336	5.3	2.0	5.8	4.6	74.3	5.3	6.2	0.2	377
East Central	18.3	1,174	5.2	1.2	0.0	20.6	53.4	7.3	13.2	3.0	215
Kampala	19.8	758	2.3	1.6	0.8	7.4	66.3	7.4	7.6	0.0	150
Mid-North	22.4	1,565	0.8	1.2	1.7	8.8	53.8	15.6	15.6	1.7	351
Mid-Western	20.3	1,528	9.2	0.0	2.3	2.1	68.3	11.6	7.5	0.0	310
Mid-Eastern	21.8	1,475	13.5	0.6	3.1	2.3	56.8	7.5	5.7	0.0	321
North East	17.8	1,303	0.6	0.0	0.0	5.7	61.7	26.3	6.1	0.0	232
South Western	40.1	2,070	3.5	1.0	3.9	1.4	79.0	6.2	7.1	0.1	830
West Nile	31.8	1,151	3.8	1.1	0.5	4.9	86.1	5.9	4.0	0.6	366
Special zone											
Karamoja	35.6	331	0.5	0.0	0.0	10.5	55.0	29.6	4.4	0.0	118
Wealth quintile											
Lowest	26.1	2,534	3.1	0.7	2.9	6.8	68.5	12.1	7.8	0.6	661
Second	24.1	2,690	5.7	0.5	2.1	4.3	64.7	11.9	8.3	0.2	649
Middle	24.3	2,697	5.9	0.5	2.3	5.5	72.1	5.7	8.5	0.5	655
Fourth	28.2	2,800	6.4	1.9	4.4	4.6	69.8	5.5	9.6	0.7	790
Highest	23.4	3,249	5.4	0.8	2.7	5.0	65.0	11.7	8.0	0.7	761
Total	25.2	13,971	5.4	0.9	2.9	5.2	68.0	9.3	8.5	0.6	3,516

Table 3.9 shows the percentage of existing ITNs that were used by at least one household member the night before the survey. Overall, 74 percent of ITNs were used by someone in the household the night before the survey. There is little difference by urban-rural residence, but by region, the percentage of ITNs that were used by anyone in the household ranges from 59 percent in South Western to 82 percent in North East and East Central.

3.3 INTERMITTENT PERVENTIVE TREATMENT OF MALARIA IN PREGNANCY (IPTP)

To reduce the risks of pregnant women getting malaria, the policy under the NMCP at the time of the survey called for all pregnant women to receive at least two doses of sulfadoxine pyrimethamine (SP/Fansidar) after quickening, at a minimum of one month apart.

This is a key intervention that was upgraded to a more comprehensive and integrated package (IPTp, clinical case management, and prevention with ITNs) for malaria in pregnancy (MiP), coordinated principally through the Reproductive Health Programme. The implementation of the MiP control strategy continues to be carried out through the

Table 3.9 Use of existing ITNs

Percentage of insecticide-treated nets (ITNs) that were used by anyone the night before the survey, by background characteristics, Uganda 2014-15

Background characteristic	Percentage of existing ITNs[1] used last night	Number of ITNs[1]
Residence		
Urban	74.8	2,613
Rural	74.3	10,670
Region		
Central 1	76.6	1,391
Central 2	71.2	1,227
East Central	81.6	1,128
Kampala	79.5	678
Mid-North	77.2	1,514
Mid-Western	79.6	1,493
Mid-Eastern	77.7	1,459
North East	82.1	1,290
South Western	59.1	1,985
West Nile	68.1	1,118
Special zone		
Karamoja	63.9	326
Wealth quintile		
Lowest	74.0	2,488
Second	75.4	2,639
Middle	75.6	2,620
Fourth	71.4	2,666
Highest	75.5	2,869
Total	74.4	13,283

[1] An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment (LLIN) or a net that has been soaked with insecticide within the past 12 months.

existing health care delivery structures from the national level to the community level. Women receive SP/Fansidar during their antenatal care visits, using directly observed therapy (DOT). It is also possible that pregnant women obtain SP/Fansidar from sources outside of antenatal care visits.

The 2014-15 UMIS assessed the use of antenatal care services for the last birth in the past five years and intermittent preventive treatment of malaria in pregnancy (IPTp) for the last birth in the past two years for women 15-49.

Overall, 95 percent of women received antenatal care from a skilled provider for their last birth in the past five years (Table 3.10). Eighty percent received care from a nurse or midwife and 16 percent received care from a doctor. Three percent of women received no antenatal care. The proportion of recently pregnant women reporting antenatal care from a skilled provider is uniformly high across background characteristics.

Table 3.10 Antenatal care

Percent distribution of women age 15-49 who had a live birth in the 5 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, 2014-15

	Antenatal care provider										
Background characteristic	Doctor	Nurse/ midwife	Medical assistant/ clinical officer	Nursing aide	Traditional birth attendant	Other	Missing	No ANC	Total	Percentage receiving antenatal care from a skilled provider[1]	Number of women
Mother's age at birth											
<20	14.0	79.8	0.7	1.2	0.6	0.5	0.8	2.5	100.0	94.5	487
20-34	15.9	79.6	0.2	1.1	0.5	0.1	0.2	2.3	100.0	95.7	2,106
35-49	15.1	79.5	0.8	0.7	0.1	0.0	0.6	3.1	100.0	95.4	434
Birth order											
1	21.1	75.2	0.6	0.6	0.5	0.3	0.3	1.4	100.0	96.9	539
2-3	16.2	79.2	0.2	1.0	0.1	0.4	0.2	2.8	100.0	95.6	992
4-5	13.3	80.3	0.3	1.8	0.2	0.0	0.8	3.3	100.0	93.9	671
6+	12.7	82.3	0.5	0.9	1.1	0.0	0.3	2.2	100.0	95.5	825
Residence											
Urban	28.9	67.3	0.3	0.4	0.3	0.0	0.3	2.5	100.0	96.5	561
Rural	12.4	82.4	0.4	1.2	0.5	0.2	0.4	2.5	100.0	95.2	2,467
Region											
Central 1	29.0	66.5	0.0	0.0	0.4	0.8	0.8	2.6	100.0	95.5	369
Central 2	15.1	78.5	0.4	0.0	1.0	0.0	0.0	5.0	100.0	94.0	284
East Central	10.5	83.9	1.3	0.0	0.6	0.7	0.9	2.0	100.0	95.8	330
Kampala	40.2	56.1	0.0	0.0	0.0	0.0	0.3	3.5	100.0	96.2	148
Mid-North	12.9	85.6	0.5	0.0	0.2	0.0	0.1	0.7	100.0	99.0	345
Mid-Western	15.7	74.6	0.4	3.0	1.6	0.0	0.0	4.7	100.0	90.7	358
Mid-Eastern	4.2	85.3	0.6	7.3	0.0	0.0	1.0	1.7	100.0	90.0	305
North East	6.7	92.2	0.3	0.0	0.2	0.0	0.1	0.5	100.0	99.2	292
South Western	14.1	83.2	0.0	0.0	0.2	0.0	0.0	2.5	100.0	97.3	358
West Nile	17.3	80.4	0.0	0.0	0.0	0.0	0.3	2.0	100.0	97.7	239
Special zone											
Karamoja	8.7	88.3	0.9	0.0	0.6	0.0	0.4	1.0	100.0	98.0	78
Education											
No education	11.6	80.9	0.1	1.9	1.1	0.0	0.1	4.2	100.0	92.7	524
Primary	12.8	82.4	0.2	1.0	0.5	0.2	0.4	2.6	100.0	95.4	1,787
Secondary	19.6	76.6	1.1	1.0	0.0	0.2	0.4	1.1	100.0	97.4	574
More than secondary	51.5	48.5	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	128
Wealth quintile											
Lowest	10.9	83.7	0.3	1.0	1.2	0.0	0.2	2.8	100.0	94.9	680
Second	8.9	85.9	0.2	1.2	0.2	0.0	0.5	3.0	100.0	95.1	638
Middle	10.8	84.1	0.4	2.1	0.3	0.2	0.6	1.4	100.0	95.4	578
Fourth	18.2	76.8	0.6	0.5	0.5	0.7	0.2	2.6	100.0	95.6	549
Highest	30.0	66.0	0.4	0.7	0.0	0.0	0.4	2.5	100.0	96.5	582
Total	15.5	79.6	0.4	1.1	0.5	0.2	0.4	2.5	100.0	95.4	3,027

Note: Table includes 14 cases with missing information on education.
[1] Skilled provider includes doctor, nurse/midwife, medical assistant, and clinical officer.

Table 3.11 shows that 59 percent of women received one or more doses of SP/Fansidar, at least one during an ANC visit (IPTp1); 45 percent received two or more doses, at least one during an ANC visit (IPTp2); and 25 percent received three or more doses, at least one during an ANC visit (IPTp3).

While the proportion of women who received IPTp1 and IPTp2 varies by background characteristic, these differences are less marked for IPTp3. For example, the proportion of women in urban areas who received IPTp1 was greater than the proportion of rural women (65 percent and 58 percent, respectively); however, no difference by residence is observed for women receiving IPTp3. By region, the percentage of women receiving IPTp3 ranges from 20 percent in West Nile to 36 percent in North East. In Karamoja, IPTp3 is just 8 percent.

Figure 3.7 shows that use of IPTp to prevent malaria in pregnancy has increased since 2006. According to the 2006 UDHS, 34 percent of women received IPTp1 and 16 percent received IPTp2. By 2014-15, these proportions increased to 59 percent and 45 percent, respectively.

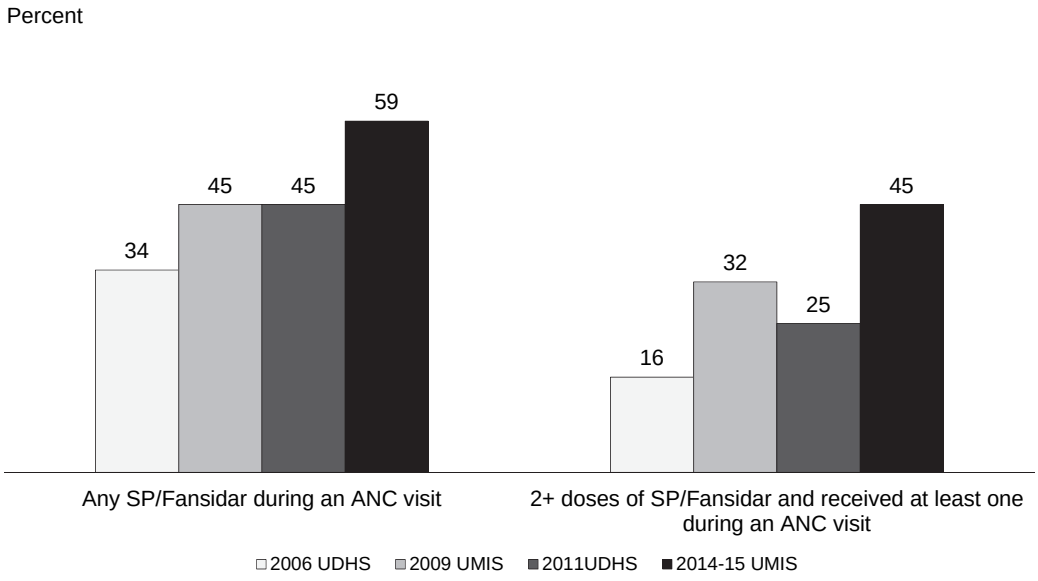
Table 3.11 Use of Intermittent Preventive Treatment (IPTp) by women during pregnancy

Percentage of women age 15-49 with a live birth in the two years preceding the survey who, during the pregnancy preceding the last birth, received one or more, two or more, or three or more doses of SP/Fansidar[1], by background characteristics, Uganda 2014-15

Background characteristic	Percentage who received one or more doses of SP/Fansidar[1]	Percentage who received two or more doses of SP/Fansidar[1]	Percentage who received three or more doses of SP/Fansidar[1]	Number of women with a live birth in the two years preceding the survey
Residence				
Urban	64.9	50.3	25.8	313
Rural	58.1	44.1	25.1	1,507
Region				
Central 1	57.1	44.1	23.3	235
Central 2	57.9	40.3	25.5	174
East Central	43.0	35.7	23.2	215
Kampala	72.8	57.4	28.1	84
Mid-North	70.8	50.0	26.2	193
Mid-Western	65.9	51.0	28.1	212
Mid-Eastern	53.8	40.0	22.4	189
North East	68.1	55.2	35.7	178
South Western	64.1	48.2	20.9	194
West Nile	45.8	35.1	20.4	146
Special zone				
Karamoja	26.4	15.8	7.9	43
Education				
No education	52.7	41.0	23.4	294
Primary	55.9	41.1	23.2	1,091
Secondary	71.7	57.0	32.8	363
More than secondary	81.6	68.5	27.8	62
Wealth quintile				
Lowest	54.6	40.4	23.0	413
Second	58.6	45.2	27.1	405
Middle	57.7	40.9	24.0	350
Fourth	60.4	46.0	25.3	323
Highest	66.5	54.8	26.8	330
Total	59.3	45.2	25.2	1,820

Note: Table includes nine cases with missing information on education.
[1] Received the specified number of doses of SP/Fansidar, at least one of which was received during an ANC visit.

Figure 3.7 **Trends in use of IPTp**



MANAGEMENT OF FEVER IN CHILDREN AND ANAEMIA AND MALARIA IN CHILDREN

4

Key Findings

- Three in ten children under five had a fever in the two weeks preceding the survey.
- Treatment or advice was sought for 82 percent of children with fever in the two weeks preceding the survey.
- Thirty-six percent of children with a fever in the two weeks preceding the survey had blood taken for testing.
- Of children with fever in the two weeks preceding the survey who took an antimalarial drug, 87 percent took an ACT.
- Five percent of children under five in Uganda have severe anaemia (<8 g/dl); 19 percent tested positive for malaria by microscopy.

This chapter presents data used to assess case management of fever and related health outcomes in young children, following recommendations of the National Malaria Control Programme (NMCP). The data include prevalence of fever in children under five in the two weeks preceding the survey and treatment of fever in children, including type of medicines administered to children with fever. The chapter also presents data on the prevalence of severe anaemia and malaria in children age 0-59 months.

4.1 MANAGEMENT OF FEVER IN CHILDREN

The current Uganda National Malaria Control Policy recommends parasitological diagnosis with either microscopy or RDT for all fever cases as part of malaria case management. Following the World Health Organization's recommendations, parasitological confirmation of malaria infection is required before antimalarials can be prescribed (WHO, 2012). Effective case management, incorporating prompt and appropriate treatment with affordable, effective, and safe antimalarials, remains a cornerstone of malaria control in Uganda.

4.1.1 Prevalence, Diagnosis, and Prompt Treatment of Children with Fever

Fever is a major manifestation of malaria and other acute infections in children. Most malarial fevers occur at home, and diagnosis and prompt and effective treatment is critical to prevent morbidity and mortality related to malaria. Therefore, information on access to care is needed for monitoring and evaluation of programmes. The 2014-15 UMIS asked mothers whether any of their children under five had a fever in the two weeks preceding the survey and, if so, whether any advice or treatment was sought. Questions were also asked about blood testing, the types of drugs given to the child, and how soon after the fever started the drugs were taken. Table 4.1 shows the percentage of children under age five who had fever in the two weeks preceding the survey, and the actions taken to care for them.

Overall, 31 percent of children had a fever in the two weeks preceding the survey. Fever in the past two weeks was most common among children age 12-23 months (40 percent) and least common among children less than six months (18 percent). Children in rural areas (32 percent), in West Nile (49 percent), and those living in households in the lowest wealth quintile (40 percent) were more likely than other children to have had fever. It should be noted that the data collected on fever are subjective because they are based on a mother's perception of illness and are not necessarily validated by medical personnel.

Table 4.1 Prevalence, diagnosis, 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 under age 5 with fever, the percentage for whom advice or treatment was sought, the percentage who had blood taken from a finger or heel, the percentage who took any artemisinin-based combination therapy (ACT), and the percentage who took ACT the same or next day following the onset of fever, by background characteristics, Uganda 2014-15

	Among children under age 5:		Among children under age 5 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[1]	Percentage who had blood taken from a finger or heel for testing	Percentage who took any ACT	Percentage who took any ACT same or next day	Number of children
Age in months							
< 6	18.3	464	75.2	30.8	38.2	27.6	85
6-11	37.0	443	92.7	39.5	52.3	37.7	164
12-23	39.6	927	81.5	37.6	67.7	50.4	367
24-35	33.7	894	84.0	37.9	70.6	51.0	301
36-47	28.1	985	81.7	33.9	75.9	58.9	277
48-59	24.4	846	74.9	30.9	70.1	47.2	207
Sex							
Male	30.7	2,247	82.5	33.7	65.7	49.0	690
Female	30.8	2,312	81.6	37.7	67.7	48.8	711
Residence							
Urban	23.0	783	90.1	42.1	56.9	40.2	180
Rural	32.3	3,776	80.8	34.8	68.1	50.2	1,221
Region							
Central 1	18.0	556	89.3	40.1	55.2	31.6	100
Central 2	31.4	453	93.3	38.1	71.7	48.3	142
East Central	47.3	538	90.9	21.3	71.1	46.1	254
Kampala	24.7	191	77.5	47.9	51.5	36.8	47
Mid-North	33.4	487	75.5	44.8	69.0	64.6	163
Mid-Western	28.4	552	83.4	30.0	61.1	29.6	157
Mid-Eastern	19.6	485	83.9	43.5	68.0	57.7	95
North East	45.2	464	61.3	31.5	72.9	62.3	210
South Western	13.5	488	92.0	44.4	53.3	19.2	66
West Nile	48.5	343	81.9	44.0	66.4	60.0	166
Special zone							
Karamoja	26.1	124	81.6	40.5	66.7	58.4	32
Mother's education[2]							
No education	34.2	804	81.6	27.8	67.0	46.2	275
Primary	31.6	2,736	80.1	37.8	68.7	50.6	865
Secondary	27.4	831	88.8	33.6	60.2	45.7	228
More than secondary	16.2	165	(85.2)	(62.3)	(60.6)	(50.6)	27
Wealth quintile							
Lowest	39.9	1,039	75.7	34.1	68.4	56.7	415
Second	33.9	989	80.6	35.2	68.9	48.6	335
Middle	29.1	881	84.5	39.6	68.8	47.5	256
Fourth	26.8	824	84.9	32.5	65.0	43.1	221
Highest	21.1	826	92.6	39.5	57.4	40.2	174
Total	30.7	4,558	82.0	35.8	66.7	48.9	1,401

Notes: Figures in parentheses are based on 25-49 unweighted cases. Total includes cases with missing information on mother's education.
[1] Excludes market and traditional practitioner
[2] Excludes children whose mothers were not interviewed.

Advice or treatment was sought for 82 percent of children under five with recent fever. Care seeking is highest for children with fever age 6-11 months (93%). Advice or treatment was sought for three-quarters of children with recent fever who were less than six months of age or age 48-59 months. The percentage of children in urban areas for whom advice or treatment was sought was higher than the percentage in rural areas (90 percent and 81 percent, respectively). By region, care seeking is lowest in North East (61 percent) and highest in Central 2 (93 percent). Care seeking increases with household wealth status, ranging from 76 percent among children with recent fever in the lowest wealth quintile to 93 percent among those in the highest wealth quintile.

In the 2014-15 UMIS, mothers were asked whether their children under age five with fever had blood taken from a finger or heel for testing, presumably for diagnostic purposes. It should be noted that the question did not ask which test was conducted. While the blood could have been taken for malaria testing, it could also have been taken for anaemia or other tests. The mother may or may not have known the reason that blood was taken from her child. Overall, 36 percent of children with fever in the two weeks preceding the survey had blood taken from a finger or heel for testing. This ranges from 31 percent of children less than six months and children 48-59 months to 40 percent of children 6-11 months. Children with recent fever in urban areas were more likely to have blood taken for testing (42 percent) than children living in rural areas (35 percent). By region, the proportion of children with recent fever who had blood taken for testing ranges from 21 percent in East Central to 48 percent in Kampala.

Although treatment-seeking behaviour for children with fever has not changed since 2009, (care was sought for 82 percent[1]) there have been substantial increases in diagnostic testing and appropriate treatment. Specifically, the percentage of children with recent fever who had blood taken for testing has more than doubled, from 17 percent in 2009 to 36 percent in 2014-15.

4.1.2 Source of Advice or Treatment for Children with Fever

Mothers who reported that they sought advice or treatment for fever in a child in the two weeks preceding the survey were asked about all of the places where care was sought for the child. Table 4.2 shows that of children under five with fever who were taken for care, 47 percent were taken to a public sector source, 49 percent were taken to any private sector source, and 8 percent were taken to any other source including a shop, traditional practitioner, market, or other source.

Table 4.2 Source of advice or treatment for children with fever

Percentage of children under age five with fever in the two weeks preceding the survey for whom advice or treatment was sought from specific sources; and among children under age five with fever in the two weeks preceding the survey for whom advice or treatment was sought, the percentage for whom advice or treatment was sought from specific sources, by background characteristics, Uganda 2014-15

	Percentage for whom advice or treatment was sought from each source:	
Background characteristic	Among children with fever	Among children with fever for whom advice or treatment was sought
Any public sector source	38.5	46.6
Government hospital	7.2	8.7
Government health centre	26.5	32.1
Government health post	0.2	0.2
Mobile clinic	1.2	1.5
Community health worker	1.0	1.2
PNFP hospital	0.6	0.7
PNFP health centre	2.2	2.6
Any private sector source	40.8	49.4
Private hospital/clinic	39.6	47.9
Pharmacy	1.1	1.4
Other private medical sector	0.1	0.1
Any other source	6.2	7.5
Shop	5.7	6.9
Traditional practitioner	0.1	0.2
Market	0.1	0.1
Other	0.3	0.3
Number of children	1,401	1,156

PNFP = Private not-for-profit

4.1.3 Community Medicine Distributers

Health services at the community level are provided by community health workers referred to as Village Health Teams (VHTs) in Uganda. Each village has 5 members selected by the community to form the VHT. A network of VHTs facilitates community participation and empowerment in the delivery of health services. The VHTs are responsible for health promotion activities, community mobilisation to improve health seeking behaviour, disease prevention, and adherence to treatment. The 2014-15 UMIS asked households whether there is a community worker or community medicine distributor (CMD)[2] in the village or community who distributes malaria medicines, and if the community

[1] The indicator presented in the 2009 UMIS final report excludes those for whom advice or treatment was sought from a pharmacy, shop, or traditional practitioner, while in 2014-15 only the traditional practitioner is excluded. For comparison purposes, therefore, data on fever treatment-seeking behaviour from the 2009 survey were recalculated to exclude only the traditional practitioner.

[2] Community worker or CMD is the terminology used in the questionnaire to refer to village health teams

worker or community medicine distributor currently has malaria medicines available. These findings are shown in Table 4.3.

Overall, 37 percent of households reported that community workers or CMDs who distribute malaria medicines were present in their community. Community health workers were less likely to be found in urban areas (22 percent) and in Kampala (4 percent) compared with other regions. Community workers or CMDs were most prevalent in Mid-Western (63 percent) and Karamoja (90 percent). Households in the lowest wealth quintile were more likely to have a community worker or CMD in their community (44 percent) than households in the highest wealth quintile (24 percent).

Households in communities with community workers or CMDs were asked if the worker had malaria medicines currently available. Twenty-one percent of households in communities with community workers or CMDs confirmed the worker had medicines for malaria currently available. In Mid-North, 9 percent of households in these communities reported that the community worker or CMD had malaria medicines currently available, while 49 percent of households in Karamoja confirmed the availability of malaria medicines.

Table 4.3 Access to community workers

Percentage of households reporting that there is a community worker or community medicine distributor (CMD) in the village or community who distributes malaria medicines, and among those, percentage reporting that the community worker or community medicine distributor currently has malaria medicines available, by background characteristics, Uganda 2014-15

			Households with community worker/CMD in community	
Background characteristic	Percentage of households with community worker/CMD in community	Number of households	Percentage of households reporting community worker currently has medicines available	Number of households
Residence				
Urban	22.3	1,188	23.1	265
Rural	41.7	4,157	20.6	1,735
Region				
Central 1	24.5	664	20.7	162
Central 2	23.1	588	21.4	136
East Central	36.5	531	13.1	194
Kampala	3.9	300	*	12
Mid-North	48.2	568	9.0	274
Mid-Western	63.2	612	21.5	387
Mid-Eastern	23.9	574	31.2	137
North East	48.3	446	31.5	215
South Western	52.4	690	25.2	362
West Nile	32.7	372	15.4	121
Special zone				
Karamoja	89.9	118	49.1	106
Wealth quintile				
Lowest	44.1	1,044	19.8	460
Second	41.6	1,058	21.9	440
Middle	42.3	977	20.7	413
Fourth	38.2	1,041	22.7	397
Highest	23.6	1,226	19.1	290
Total	37.4	5,345	20.9	2,000

Note: An asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed.

4.1.4 Types of Antimalarial Drugs

While the National Malaria Treatment Policy of 2012 stipulates use of ACT for simple or uncomplicated malaria, and quinine or artesunate for severe malaria, respondents also reported use of other, non-recommended drugs (such SP/Fansidar, chloroquine and amodiaquine), which find their way into the community. Table 4.4 shows the types of antimalarial drugs taken by children under five with fever in the two weeks preceding the survey, among those who took any antimalarial drug.

Eighty-seven percent of children under five with fever in the two weeks preceding the survey who received any antimalarial drug took ACT, the recommended first-line treatment for uncomplicated malaria. After ACT, the next most common antimalarial medication given to children under five with fever is quinine (12 percent). Other medications such as chloroquine, SP/Fansidar, and amodiaquine are rarely used.

Table 4.4 Type of antimalarial drugs used

Among children under age five with fever in the two weeks preceding the survey who took any antimalarial medication, the percentage who took specific antimalarial drugs, by background characteristics, Uganda 2014-15

	Percentage of children who took drug:						Number of children with fever who took anti-malarial drug
Background characteristic	Any ACT	Quinine	SP/Fansidar	Chloroquine	Amodia-quine	Other anti-malarial	
Age in months							
< 6	(81.8)	(16.4)	(1.8)	(0.0)	(0.0)	(0.0)	40
6-11	82.4	15.6	3.3	0.5	1.8	0.0	104
12-23	86.4	9.9	1.7	4.2	0.5	0.8	287
24-35	85.8	12.8	0.9	0.0	2.3	1.5	248
36-47	89.0	11.3	0.0	2.0	0.6	0.4	236
48-59	88.8	10.6	1.3	1.0	0.7	0.3	163
Sex							
Male	85.7	10.4	1.7	2.7	1.3	0.8	528
Female	87.6	13.1	0.8	0.8	0.8	0.6	549
Residence							
Urban	80.7	14.5	0.7	6.0	2.8	0.0	127
Rural	87.5	11.4	1.3	1.2	0.8	0.8	951
Region							
Central 1	(73.3)	(13.2)	(5.0)	(12.8)	(1.8)	(2.6)	75
Central 2	82.0	12.5	0.0	2.9	5.4	0.0	124
East Central	91.6	7.4	3.1	0.0	0.0	0.0	197
Kampala	(86.6)	(15.5)	(3.1)	(0.0)	(0.0)	(0.0)	28
Mid-North	95.9	5.4	0.0	0.5	0.5	0.7	117
Mid-Western	81.5	22.2	1.5	0.0	0.0	0.0	118
Mid-Eastern	85.8	12.3	0.0	4.4	0.0	0.0	76
North East	88.7	11.3	0.1	0.1	0.0	1.5	172
South Western	(76.4)	(20.4)	(0.0)	(0.0)	(6.1)	(1.8)	46
West Nile	89.2	9.6	0.6	1.3	0.0	1.1	124
Special zone							
Karamoja	94.8	9.7	1.0	0.8	0.0	0.0	23
Mother's education[2]							
No education	90.6	9.3	1.2	1.6	0.0	0.7	203
Primary	87.9	12.1	0.5	1.7	0.4	0.6	676
Secondary	79.0	13.6	4.0	0.8	4.3	1.3	174
More than secondary	*	*	*	*	*	*	21
Wealth quintile							
Lowest	90.8	7.7	1.0	0.5	0.0	1.1	313
Second	88.4	12.2	0.4	1.4	0.0	1.6	261
Middle	86.2	15.4	0.0	1.6	1.6	0.0	204
Fourth	88.3	11.4	2.9	0.0	1.7	0.0	162
Highest	72.8	15.3	3.5	7.6	3.9	0.0	138
Total	86.7	11.8	1.3	1.7	1.1	0.7	1,078

Notes: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Total includes four cases with missing information on mother's education.
ACT = Artemisinin-based combination therapy
[2] Excludes children whose mothers were not interviewed.

Use of ACT for treatment of fever increases with age; 82 percent of children age 6-11 months with fever in the two weeks preceding the survey who received any antimalarial drug took ACT, compared with 89 percent of children age 36-59 months. By residence, 81 percent of urban children with fever in the two weeks preceding the survey who received any antimalarial drug took ACT, compared with 88 percent of rural children. The proportion of children receiving antimalarials who use ACT as a fever treatment decreases with increasing level of mother's education from 91 percent among children of mothers with no education to 79 percent among children of mothers with secondary education. The proportion of children receiving antimalarials who use ACT for fever treatment also decreases with increasing household wealth, from 91 percent among children in the lowest wealth quintile to 73 percent among children in the highest wealth quintile.

Overall, the trend is toward greater use of ACT for treatment of fever in children under five, increasing from 39 percent in 2009 to 87 percent in 2014-15.

4.2 Anaemia and Malaria Prevalence 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. 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 account for the majority of cases of anaemia in many populations. However, in areas where malaria is endemic, malaria usually accounts for a significant proportion of anaemia in children under age five. Other causes of anaemia include thalassemia, sickle cell disease, and intestinal worms. In areas of stable malaria transmission, anaemia has been used to monitor the impact of malaria control interventions. Because anaemia is a major cause of morbidity and mortality associated with malaria, prevention and treatment of malaria among children and pregnant women is essential for reduction of the anaemia burden. Promotion of the use of insecticide-treated mosquito bed nets (ITNs) and deworming medication every six months for children under age five are two important measures that can be taken to reduce the prevalence of anaemia in children.

All children age 0-59 months living in the households selected for the 2014-15 UMIS were eligible for anaemia and malaria testing using finger- or heel-prick blood samples. Test results for anaemia (using the HemoCue portable machine) and malaria (using the SD Bioline Ag *P.f* Rapid Diagnostic Test) were available immediately and were provided to the child's parent or guardian. Children with a positive malaria rapid diagnostic test (RDT) result were offered antimalarial treatment according to Uganda malaria treatment protocol. In addition, thin and thick blood smears were prepared in the field, dried in a dust-free environment, stored in slide boxes, and transported to the UMSP Molecular Laboratory for confirmatory microscopy testing. Ninety-seven percent of eligible children were tested for anaemia, 96 percent were tested for malaria with RDTs, and 97 percent were tested for malaria with microscopy (Table 4.5). Coverage of testing was uniformly high across all background characteristics.

Table 4.5 Coverage of testing for anaemia and malaria in children (unweighted)

Percentage of eligible children 0-59 months who were tested for anaemia and for malaria by background characteristics, Uganda 2014-15

Background characteristic	Percentage tested for: Anaemia	Malaria by RDT	Malaria by microscopy	Number of children
Age in months				
<6	94.3	93.0	94.6	460
6-8	98.3	97.5	97.9	240
9-11	98.2	96.8	98.2	222
12-17	95.8	95.6	95.6	520
18-23	96.5	96.3	96.5	462
24-35	98.3	97.1	97.9	1,004
36-47	97.0	96.1	96.8	1,116
48-59	96.8	96.0	96.8	1,026
Sex				
Male	97.0	96.3	96.9	2,460
Female	96.9	95.9	96.6	2,590
Mother's interview status				
Interviewed	97.9	97.0	97.7	4,257
Not interviewed[1]	91.9	91.0	91.8	793
Residence				
Urban	95.1	94.0	94.8	768
Rural	97.3	96.5	97.1	4,282
Study domain[2]				
Current IRS districts[3]	98.4	96.8	98.1	566
Future IRS districts[4]	97.0	95.7	97.0	658
High-altitude districts[5]	98.3	97.6	98.3	458
Region				
Central 1	90.1	88.9	89.2	352
Central 2	98.9	97.6	98.9	376
East Central	96.9	96.2	96.4	422
Kampala	93.6	92.1	93.3	267
Mid-North	98.5	97.3	98.3	785
Mid-Western	98.7	97.6	98.7	535
Mid-Eastern	94.9	93.0	94.7	525
North East	97.6	97.5	96.9	917
South Western	97.6	97.4	98.5	455
West Nile	98.3	98.3	98.8	416
Special zones[2]				
Greater Kampala[6]	93.7	92.6	93.5	445
Karamoja	96.0	96.0	95.0	423
Mother's education[7]				
No education	97.5	96.9	97.0	975
Primary	98.4	97.4	98.3	2,460
Secondary	97.7	96.6	97.9	656
More than secondary	91.7	91.7	91.7	144
Wealth quintile				
Lowest	97.5	96.6	97.2	1,570
Second	98.2	97.6	98.0	1,064
Middle	97.2	96.3	97.2	892
Fourth	96.7	96.1	96.8	787
Highest	93.8	92.7	93.5	737
Total 0-59	96.9	96.1	96.8	5,050
Total 6-59	97.2	96.4	97.0	4,590

Note: Total includes 22 cases with missing information on mother's education.
RDT = Rapid Diagnostic Test
[1] Includes children whose mothers are deceased.
[2] Study domains and Special zones are a subsample and do not sum to the total survey sample; for details see Chapter 1, Section 1.4.2 Sample design.
[3] The 10 current IRS districts include Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, and Pader.
[4] The 14 future IRS districts include Bugiri, Namutumba, Alebtong, Amolatar, Dokolo, Lira, Otuke, Budaka, Butaleja, Kibuku, Pallisa, Tororo, Kaberamaido, and Serere.
[5] The 10 high-altitude districts include Bundibugyo, Kabarole, Kasese, Ntoroko, Bukwo, Bulambuli, Kapchorwa, Kween, Kabale, and Kisoro.
[6] A special zone 'Greater Kampala' includes the urban areas of Wakiso and Mukono districts together with Kampala.
[7] Excludes children whose mothers were not interviewed.

4.2.1 Prevalence of Severe Anaemia in Children

Table 4.6 shows the percentage of children age 0-59 months (and children age 6-59 months) classified as having severe anaemia (haemoglobin concentration of less than 8.0 grams per decilitre), by background characteristics.

The results of the 2014-15 UMIS show that 5 percent of Ugandan children under five are severely anaemic. Prevalence of severe anaemia is highest among children age 9-11 months (16 percent) and lowest among children 48-59 months (2 percent).

In the future IRS districts, 8 percent of children have a haemoglobin level less than 8.0 g/dl compared with 3 percent in the current IRS districts and 5 percent in the high-altitude districts. Severe anaemia is most prevalent in Karamoja, where 12 percent of children age 0-59 months have a haemoglobin level less than 8.0 g/dl. By geographic region, anaemia prevalence is highest in East Central at 8 percent and lowest in South Western at one percent. Anaemia decreases with increasing household wealth from 6 percent in the three lowest wealth quintiles to 2 percent in the highest wealth quintile. Anaemia also decreases with increasing level of education, from 5 percent among children whose mothers have no education to less than one percent among children whose mothers have more than secondary education.

Prevalence of severe anaemia has decreased considerably since the 2009 UMIS when 10 percent of children age 0-59 months had a haemoglobin level less than 8.0 g/dl. The decrease in severe anaemia is most notable in the Mid-North region where severe anaemia decreased from 16 percent in the 2009 UMIS to 5 percent in the 2014-15 UMIS.

Table 4.6 Prevalence of severe anaemia in children

Percentage of children age 0-59 months with severe anaemia (haemoglobin lower than 8.0 g/dl), by background characteristics, Uganda 2014-15

Background characteristic	Haemoglobin < 8.0 g/dl	Number of children
Age (in months)		
<6	3.8	434
6-8	5.4	240
9-11	15.7	220
12-17	5.8	507
18-23	7.3	448
24-35	4.2	999
36-47	3.2	1,079
48-59	2.2	972
Sex		
Male	4.7	2,375
Female	4.5	2,523
Mother's interview status		
Interviewed	4.5	4,152
Not interviewed[1]	4.9	746
Residence		
Urban	3.5	776
Rural	4.8	4,121
Study domain[2]		
Current IRS districts[3]	3.1	346
Future IRS districts[4]	8.3	630
High-altitude districts[5]	5.3	377
Region		
Central 1	3.7	536
Central 2	4.4	528
East Central	8.0	564
Kampala	2.9	181
Mid-North	4.9	549
Mid-Western	5.2	626
Mid-Eastern	4.0	534
North East	5.7	496
South Western	1.3	517
West Nile	4.0	367
Special zones[2]		
Greater Kampala[6]	2.9	491
Karamoja	12.4	125
Mother's education[7]		
No education	5.0	757
Primary	4.7	2,511
Secondary	4.1	731
More than secondary	0.3	134
Wealth quintile		
Lowest	5.5	1,100
Second	5.5	1,070
Middle	6.1	995
Fourth	2.8	902
Highest	2.4	832
Total 0-59	4.6	4,898
Total 6-59	4.7	4,464

Notes: Table is based on children who stayed in the household the night before the interview. Prevalence of anaemia is based on haemoglobin levels and is adjusted for altitude using CDC formulas (CDC, 1998). Haemoglobin is measured in grams per decilitre (g/dl). Total includes 20 cases with missing information on mother's education.
IRS = Indoor residual spraying
[1] Includes children whose mothers are deceased
[2] Study domains and Special zones are a subsample and do not sum to the total survey sample; for details see Chapter 1, Section 1.4.2 Sample design.
[3] The 10 current IRS districts include Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, and Pader.
[4] The 14 future IRS districts include Bugiri, Namutumba, Alebtong, Amolatar, Dokolo, Lira, Otuke, Budaka, Butaleja, Kibuku, Pallisa, Tororo, Kaberamaido, and Serere.
[5] The 10 high-altitude districts include Bundibugyo, Kabarole, Kasese, Ntoroko, Bukwo, Bulambuli, Kapchorwa, Kween, Kabale, and Kisoro.
[6] A special zone 'Greater Kampala' includes the urban areas of Wakiso and Mukono districts together with Kampala.
[7] Excludes children whose mothers were not interviewed.

4.2.2 Prevalence of Malaria in Children

Table 4.7 presents the results of malaria testing for children age 0-59 months according to RDT and microscopy, by background characteristics.

Table 4.7 Prevalence of malaria in children

Percentage of eligible children 0-59 months classified as having malaria according to two tests (RDT and microscopy), by background characteristics, Uganda 2014-15

Background characteristic	Malaria prevalence according to RDT		Malaria prevalence according to microscopy	
	RDT positive	Number of children	Microscopy positive	Number of children
Age in months				
<6	10.9	429	7.7	432
6-8	16.6	239	7.9	240
9-11	28.0	218	14.4	220
12-17	25.5	506	12.6	506
18-23	30.7	448	16.6	449
24-35	34.5	986	22.1	993
36-47	32.7	1,068	21.4	1,078
48-59	36.2	962	25.9	969
Sex				
Male	30.1	2,357	18.9	2,370
Female	29.7	2,499	18.9	2,518
Mother's interview status				
Interviewed	29.4	4,116	18.3	4,144
Not interviewed[1]	32.4	739	22.3	744
Residence				
Urban	10.1	768	6.3	787
Rural	33.6	4,088	21.3	4,101
Study domain[2]				
Current IRS districts[3]	15.1	342	7.2	338
Future IRS districts[4]	62.7	622	35.6	627
High-altitude districts[5]	9.9	375	8.8	368
Region				
Central 1	13.0	531	10.5	574
Central 2	33.1	522	23.6	512
East Central	49.2	556	36.2	563
Kampala	3.7	178	0.4	188
Mid-North	34.2	544	19.6	536
Mid-Western	17.6	620	17.6	612
Mid-Eastern	26.6	526	13.4	543
North East	55.7	496	27.2	487
South Western	5.7	516	4.1	511
West Nile	51.3	366	27.5	359
Special zones[2]				
Greater Kampala[6]	5.5	487	3.3	510
Karamoja	68.5	125	48.0	126
Mother's education[7]				
No education	41.2	752	27.3	749
Primary	31.0	2,490	19.0	2,499
Secondary	16.5	721	9.8	739
More than secondary	3.3	134	1.1	138
Wealth quintile				
Lowest	47.1	1,085	27.9	1,085
Second	37.0	1,064	22.9	1,054
Middle	29.8	987	22.4	989
Fourth	20.1	898	13.7	911
Highest	8.7	822	3.9	849
Total 0-59	29.9	4,856	18.9	4,888
Total 6-59	31.7	4,426	20.0	4,456

Note: Total includes 20 cases with missing information on mother's education.
RDT = Rapid Diagnostic Test
IRS = Indoor residual spraying
[1] Includes children whose mothers are deceased.
[2] Study domains and Special zones are a subsample and do not sum to the total survey sample; for details see Chapter 1, Section 1.4.2 Sample design.
[3] The 10 current IRS districts include Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, and Pader.
[4] The 14 future IRS districts include Bugiri, Namutumba, Alebtong, Amolatar, Dokolo, Lira, Otuke, Budaka, Butaleja, Kibuku, Pallisa, Tororo, Kaberamaido, and Serere.
[5] The 10 high-altitude districts include Bundibugyo, Kabarole, Kasese, Ntoroko, Bukwo, Bulambuli, Kapchorwa, Kween, Kabale, and Kisoro.
[6] A special zone 'Greater Kampala' includes the urban areas of Wakiso and Mukono districts together with Kampala
[7] Excludes children whose mothers were not interviewed.

The prevalence of malaria differs between the two testing procedures. Prevalence is higher when RDT is used than when microscopy is used. This is expected because RDT detects antigens to malaria parasites that can be present in blood for up to several weeks after successful treatment of the infection. In contrast, microscopy detects the actual parasite. Using RDT, the prevalence of malaria among children age 0-59 months was reported as 30 percent; using microscopy, the prevalence of malaria was 19 percent (Table 4.7).

Malaria prevalence (according to microscopy) increases with increasing age of children (Figure 4.1), from 8 percent among children less than six months to 26 percent among children 48-59 months. Figure 4.2 shows malaria prevalence is higher in rural areas (21 percent) than in urban areas (6 percent). By region, malaria prevalence ranges from less than one percent in Kampala to 36 percent in East Central, with a particularly high prevalence in Karamoja (48 percent).

Malaria prevalence decreases among children under five with increasing level of education and increasing household wealth (Figure 4.3). Prevalence decreases from 27 percent among children of mothers with no education to 1 percent in children of mothers with more than secondary education; likewise, prevalence decreases from 28 percent among children in households in the lowest wealth quintile to 4 percent among children in households in the highest wealth quintile.

Malaria prevalence is lower in the current IRS districts (7 percent) and the high-altitude districts (9 percent). In the future IRS districts malaria prevalence is 36 percent.

Overall, the prevalence of malaria among children age 0-59 months has decreased from 42 percent in the 2009 UMIS to 19 percent in the 2014-15 UMIS. The largest decline was in the Mid-North region where malaria prevalence decreased from 63 percent in the 2009 UMIS to 20 percent in the 2014-15 UMIS.

Figure 4.1 **Malaria prevalence among children 0-59 months by age of the child, according to microscopy**

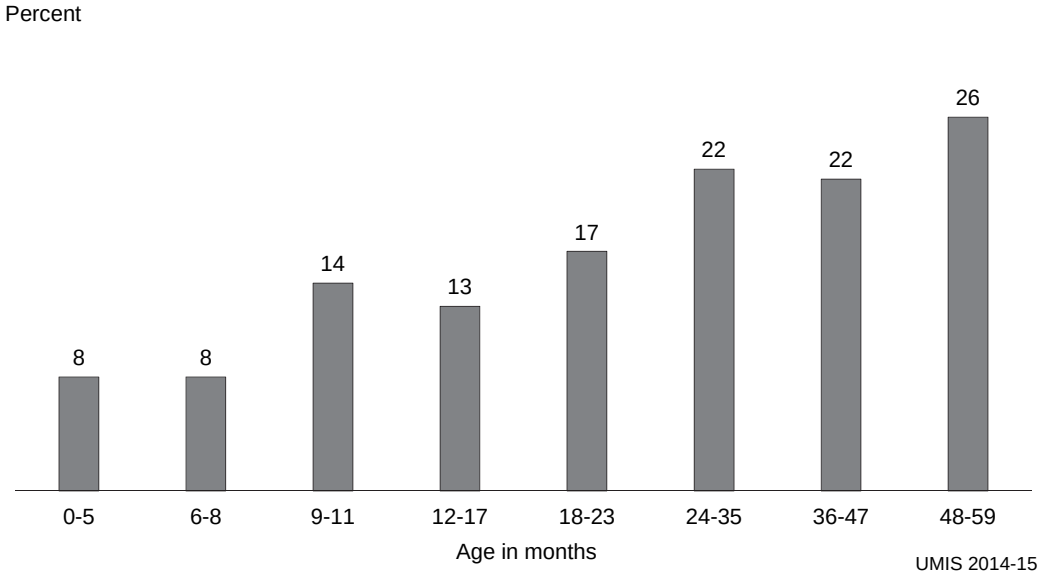


Figure 4.2 **Malaria Prevalence among children 0-59 months by residence and region, according to microscopy**

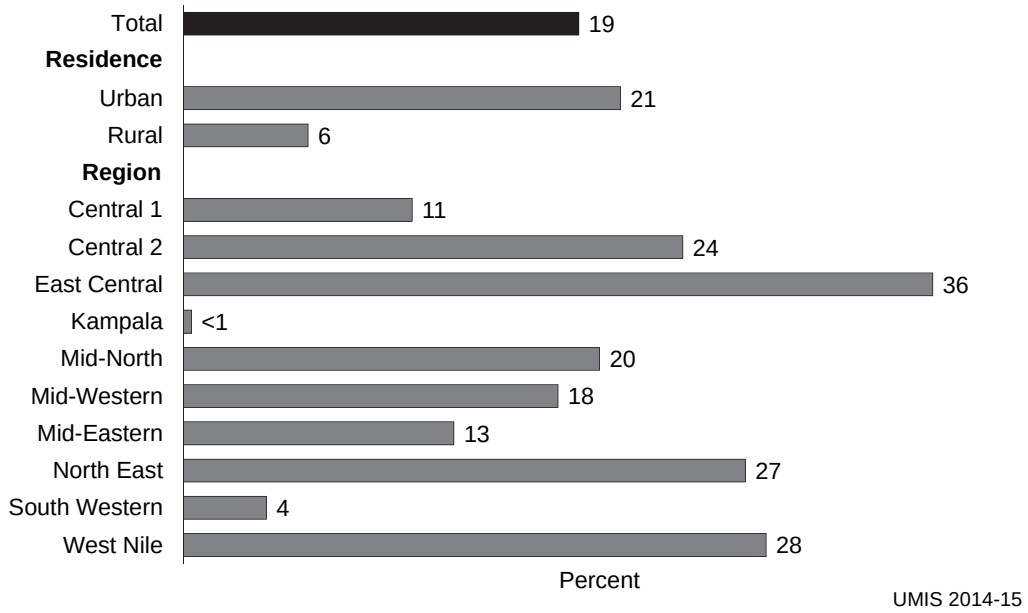
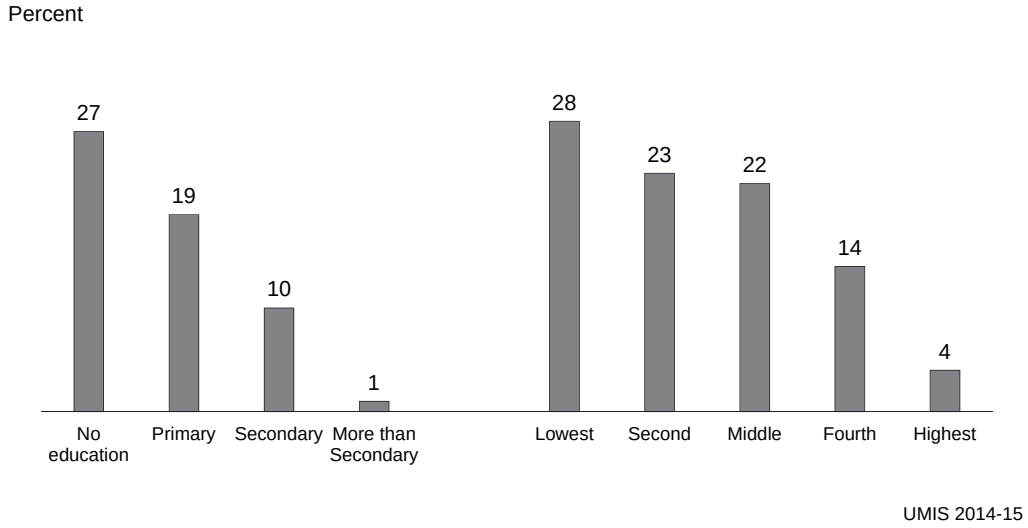


Figure 4.3 **Malaria prevalence among children 0-59 months by mother's education and wealth quintile, according to microscopy**



Species of Plasmodium *infection*

Another objective of the survey was to determine the type of *Plasmodium* parasites found in children with positive blood smears. Table 4.8 shows the prevalence of each *Plasmodium* species in children age 0–59 months and the percentage with mixed infections, by background characteristics.

Ninety-seven percent of children with malaria were infected with *Plasmodium falciparum*, 6 percent with *P. malariae*, one percent with *P. ovale*, and less than one percent with *P. vivax*. Four percent of these infections were mixed infections where two or more *Plasmodium* species were identified. There was no major change in parasite species compared with the 2009 UMIS.

Table 4.8 Malaria species

Among children age 0-59 months with malaria parasites, the percentage with specific species of *Plasmodium* and the percentage with mixed infections, by background characteristics, Uganda 2014-15

Background characteristic	Species of *Plasmodium*				Mixed infections[12]	Number of children with malaria parasites
	P. falciparum[8]	*P. malariae*[9]	*P. ovale*[10]	*P. vivax*[11]		
Age in months						
<6	(100.0)	(0.0)	(0.0)	(0.0)	(0.0)	25
6-8	*	*	*	*	*	19
9-11	(100.0)	(1.6)	(2.7)	(0.0)	(4.3)	32
12-17	96.5	4.1	0.9	0.0	1.6	64
18-23	94.4	8.1	0.0	0.0	2.5	74
24-35	97.0	5.3	0.8	0.4	3.5	217
36-47	96.7	5.9	2.9	0.0	5.5	228
48-59	97.5	6.0	0.4	0.0	3.9	251
Sex						
Male	96.5	5.6	1.3	0.2	3.6	445
Female	97.6	5.5	1.3	0.0	4.3	465
Mother's interview status						
Interviewed	97.4	5.3	1.4	0.1	4.2	746
Not interviewed[1]	95.5	6.7	1.0	0.0	3.2	164
Residence						
Urban	(100.0)	(0.7)	(2.4)	(0.0)	(3.1)	50
Rural	96.9	5.8	1.2	0.1	4.0	860
Study domain[2]						
Current IRS districts[3]	(91.8)	(16.3)	(8.2)	(0.0)	(16.3)	24
Future IRS districts[4]	98.6	2.6	1.3	0.0	2.5	222
High-altitude districts[5]	(97.4)	(10.4)	(7.8)	(0.0)	(15.7)	32
Region						
Central 1	(92.8)	(7.2)	(1.9)	(0.0)	(1.9)	61
Central 2	99.2	3.2	0.0	0.0	2.5	121
East Central	98.2	4.2	0.5	0.0	2.9	202
Kampala	*	*	*	*	*	1
Mid-North	97.4	7.1	1.9	0.0	6.4	104
Mid-Western	91.9	9.4	3.8	0.0	5.1	100
Mid-Eastern	100.0	0.0	1.7	0.0	1.7	73
North East	94.7	8.6	2.1	0.7	6.1	132
South Western	*	*	*	*	*	20
West Nile	100.0	5.4	0.0	0.0	5.4	98
Special zones[2]						
Greater Kampala[6]	*	*	*	*	*	17
Karamoja	93.0	15.1	2.5	0.0	10.7	61
Mother's education[7]						
No education	98.6	5.8	0.4	0.0	4.8	204
Primary	97.2	5.4	1.5	0.2	4.3	468
Secondary	95.1	3.0	3.4	0.0	1.5	68
More than secondary	*	*	*	*	*	2
Wealth quintile						
Lowest	97.4	6.5	0.9	0.0	4.8	298
Second	97.7	4.8	1.2	0.4	4.0	240
Middle	97.3	5.2	1.4	0.0	3.9	217
Fourth	94.8	6.5	1.7	0.0	2.9	124
Highest	*	*	*	*	*	31
Total 0-59	97.1	5.5	1.3	0.1	4.0	910
Total 6-59	97.0	5.7	1.3	0.1	4.1	885

Notes: Table includes 14 cases where no thin smear sample was available to conduct speciation. Table columns are not mutually exclusive; percentages do not add to 100%. An asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed. Figures in parentheses are based on 25-49 unweighted cases. Total includes 4 cases with missing information on mother's education.
IRS = Indoor residual spraying
[1] Includes children whose mothers are deceased.
[2] Study domains and Special zones are a subsample and do not sum to the total survey sample; for details see Chapter 1, Section 1.4.2 Sample design.
[3] The 10 current IRS districts include Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, and Pader.
[4] The 14 future IRS districts include Bugiri, Namutumba, Alebtong, Amolatar, Dokolo, Lira, Otuke, Budaka, Butaleja, Kibuku, Pallisa, Tororo, Kaberamaido, and Serere.
[5] The 10 high-altitude districts include Bundibugyo, Kabarole, Kasese, Ntoroko, Bukwo, Bulambuli, Kapchorwa, Kween, Kabale, and Kisoro
[6] A special zone 'Greater Kampala' includes the urban areas of Wakiso and Mukono districts together with Kampala
[7] Excludes children whose mothers were not interviewed.
[8] Includes cases with parasites identified as *P. falciparum* or *P. falciparum* combined with other species.
[9] Includes cases with parasites identified as *P. malariae* or *P. malariae* combined with other species.
[10] Includes cases with parasites identified as *P. ovale* or *P. ovale* combined with other species.
[11] Includes cases with parasites identified as *P. vivax* or *P. vivax* combined with other species.
[12] Mixed infections include cases with two or more species identified.

MALARIA KNOWLEDGE 5

Key Findings

- Over nine in ten women know that malaria is caused by mosquitoes.
- Ninety-five percent of women are aware of ways to avoid getting malaria.
- Forty-two percent of women know SP/Fansidar is a drug used for prevention of malaria during pregnancy.
- Three-quarters of women know that a child with fever should be taken for treatment on the day of onset.
- Close to two-thirds of women reported having seen or heard messages about malaria in the six months preceding the survey.

5.1 WOMEN'S KNOWLEDGE OF MALARIA

The main aim of advocacy, information, education, and communication, as well as community mobilisation for malaria control is to contribute to the reduction of malaria morbidity and mortality through behaviour change. In order for the community to appreciate, accept, and use key interventions, information must be made available to change attitudes, influence behaviour patterns, gain approval, and enhance skills required for malaria management and prevention at individual, household, and community levels.

Communicating important malaria messages to vulnerable populations is a key component to improving intervention uptake throughout Uganda. Messages such as the importance of sleeping under ITNs, seeking treatment for fever promptly, or allowing one's house to be sprayed during IRS campaigns are an important part of the information, education, and communication strategy of the National Malaria Control Programme.

5.1.1 Knowledge of Causes of Malaria

Knowledge about how malaria is spread encourages uptake of appropriate preventive measures. In the 2014-15 UMIS women were asked several questions to ascertain their knowledge of the causes of malaria. Table 5.1 presents information on responses provided by women age 15-49 when they were asked what causes malaria. Interviewers recorded as many responses as women provided, so a respondent may have mentioned more than one cause.

Ninety-one percent of women know that malaria is caused by mosquitoes; 17 percent said that malaria can be caused by drinking un-boiled water; and 12 percent reported that malaria is caused by cold or changing weather. Only 5 percent of the women reported that they did not know the cause of malaria.

By region, the proportion of women with knowledge that mosquitos cause malaria ranges from 82 percent in Mid-Western to 97 percent in East Central. It is important to note that 11 percent of women in Mid-Western did not know any cause of malaria compared with 5 percent nationally.

Level of education and household wealth status are positively associated with knowledge of the causes of malaria. For example only 79 percent of women with no education know that mosquitoes cause malaria compared with 98 percent of women with more than secondary education. Similarly, 83 percent of the women

in households in the lowest wealth quintile know that mosquitoes cause malaria compared with 95 percent of women in households in the highest quintile.

Table 5.1 Knowledge of causes of malaria

Among women age 15-49, the percentage who reported specific causes of malaria, by background characteristics, Uganda 2014-15

	Percentage of women 15-49 who reported specific causes of malaria															
Background characteristic	Mos-quito bites	Eating maize	Eating man-goes	Eating dirty food	Drinking un-boiled water	Getting soaked with rain	Cold/ chang-ing weather	Witch-craft	Contact with infected person	Parasite	Germ	Stand-ing water/ other breeding environ ments	Poor hygiene	Other causes	Don't know any causes	Number of women
Age																
15-19	91.1	2.5	2.8	7.3	14.4	4.6	9.1	0.0	1.0	1.1	1.6	7.5	0.7	3.6	3.4	1,228
20-24	91.4	2.9	4.2	6.1	15.5	3.5	12.5	0.5	0.8	1.0	0.9	4.2	0.8	4.4	4.4	1,132
25-29	92.0	3.9	4.3	4.2	14.6	5.4	12.1	0.1	0.8	1.0	1.5	4.9	0.9	2.3	4.4	957
30-34	91.5	3.7	5.9	5.5	19.9	5.1	12.2	0.1	1.2	0.8	1.0	4.0	0.5	4.8	5.2	741
35-39	88.8	2.6	2.2	6.7	20.8	3.0	11.7	0.0	1.1	0.5	0.9	4.8	1.6	2.3	6.8	547
40-44	89.7	3.2	4.2	4.5	16.4	4.3	14.5	0.0	0.6	0.0	0.8	4.5	1.2	6.0	5.7	425
45-49	85.6	3.6	4.7	3.2	20.2	5.7	17.1	0.3	1.4	1.0	0.7	5.6	1.2	5.6	7.1	292
Residence																
Urban	93.9	2.9	2.9	3.7	16.6	2.8	5.5	0.0	0.7	1.9	0.5	5.9	0.4	2.0	2.7	1,227
Rural	89.8	3.2	4.2	6.3	16.6	4.9	13.9	0.2	1.0	0.5	1.3	5.0	1.0	4.4	5.4	4,095
Region																
Central 1	95.5	1.7	1.4	1.8	20.4	0.6	1.7	0.0	0.3	0.7	0.6	10.1	0.3	1.7	1.5	674
Central 2	92.3	1.6	1.3	2.0	12.2	0.0	2.2	0.0	0.4	0.5	0.8	2.8	0.3	2.1	3.9	521
East Central	97.1	20.1	23.9	20.3	25.2	20.4	13.1	0.2	2.0	1.2	2.8	15.0	1.3	7.5	1.5	559
Kampala	95.7	0.0	0.0	1.7	13.8	0.5	1.9	0.0	0.1	2.5	0.3	6.7	0.5	0.5	1.4	344
Mid-North	92.8	0.0	1.2	5.8	5.3	1.5	36.5	0.4	0.4	0.9	0.9	3.0	2.6	8.7	3.5	566
Mid-Western	81.7	3.4	5.5	5.2	28.0	5.2	1.9	0.0	2.7	1.0	0.8	5.4	0.2	1.7	11.0	556
Mid-Eastern	90.2	1.5	2.8	6.6	12.1	5.7	10.6	0.7	2.7	0.1	1.5	1.9	0.4	3.3	6.4	511
North East	87.2	0.0	0.4	2.6	2.2	3.7	29.6	0.2	0.1	1.2	0.9	0.9	3.1	3.8	3.5	486
South Western	89.6	1.2	1.0	7.1	30.3	3.7	4.4	0.0	0.6	0.5	1.4	1.1	0.0	1.8	7.1	708
West Nile	84.2	0.0	0.0	1.2	5.1	1.6	22.0	0.0	0.0	0.8	1.0	4.8	0.8	8.4	7.5	397
Special zone																
Karamoja	53.0	0.0	0.0	9.2	4.4	1.0	56.1	0.4	0.5	0.0	3.2	1.6	10.5	10.2	11.4	117
Education																
No education	79.3	5.4	5.8	6.6	14.1	5.7	18.9	0.1	0.8	0.0	0.8	3.6	1.8	4.8	12.4	792
Primary	90.7	3.2	4.4	6.4	16.3	4.6	13.8	0.3	0.9	0.4	1.2	4.1	0.9	4.3	4.8	2,892
Secondary	96.3	2.4	2.7	4.6	20.4	4.0	5.4	0.0	1.1	1.3	1.2	8.5	0.6	2.7	1.1	1,329
More than secondary	97.5	0.0	0.0	1.9	8.9	1.3	3.6	0.0	1.5	5.9	1.7	5.0	0.0	2.5	0.2	285
Wealth quintile																
Lowest	82.6	2.2	2.9	5.4	9.7	3.6	26.8	0.3	0.5	0.1	0.9	2.5	2.2	6.2	8.6	968
Second	88.0	4.5	4.8	6.5	14.5	5.2	17.4	0.2	0.4	0.2	1.3	4.4	0.7	4.7	7.2	992
Middle	92.2	3.7	5.7	7.5	18.2	6.3	8.1	0.3	0.9	1.2	1.5	5.0	0.6	3.6	4.4	991
Fourth	93.6	3.8	5.1	6.0	22.6	5.2	6.8	0.0	1.6	0.2	1.3	7.2	0.8	3.7	2.7	1,052
Highest	95.3	1.8	1.8	3.8	17.1	2.5	4.0	0.0	1.3	2.1	0.8	6.4	0.3	1.9	2.0	1,320
Total	90.7	3.1	3.9	5.7	16.6	4.4	11.9	0.2	1.0	0.9	1.1	5.2	0.9	3.9	4.8	5,322

Note: Total includes 23 women with missing information on education.

5.1.2 Knowledge of Ways to Avoid Malaria

Women were also asked if they know of ways to avoid getting malaria. Those who reported knowing ways to avoid getting malaria were further asked to name specific ways to avoid malaria. Table 5.2 shows responses provided by women age 15-49.

Overall, 95 percent of women reported that there are ways to avoid getting malaria. Women with secondary or more education and those in households in the higher wealth quintiles are more likely than other women to say that malaria can be avoided. The most commonly reported ways to avoid getting malaria were sleeping under a mosquito net or ITN (94 percent) and destroying mosquito breeding sites (30 percent). Eleven

percent of women cited boiling water as a way of avoiding malaria, showing that there are still some challenges in communicating information about malaria transmission and prevention.

The percentage of women who mentioned sleeping under a mosquito net or ITN as a way to avoid malaria varies substantially among regions, from 83 percent in West Nile to 99 percent in Kampala. In Karamoja only 65 of women cited sleeping under a mosquito net or ITN as a way to avoid getting malaria.

Table 5.2 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 report specific ways of avoiding malaria, by background characteristics, Uganda 2014-15

			Among women who say there are ways to avoid getting malaria, percentage who report specific ways to avoid getting malaria										
Background characteristic	Percentage who say there are ways to avoid getting malaria	Number of women	Sleep under mosquito net or ITN	Taking preventive medication	Use mosquito repellant	Spraying house with insecticide	Using mosquito coils	Destroy mosquito breeding sites	Boil water	Good hygiene/ clean environments	Other	Don't know	Number of women who say there are ways to avoid getting malaria
Age													
15-19	95.1	1,228	93.4	9.8	0.8	9.0	1.8	34.9	6.5	2.9	5.8	0.8	1,168
20-24	94.6	1,132	96.5	8.8	1.1	6.6	1.2	31.2	8.6	1.9	7.6	0.9	1,070
25-29	95.6	957	95.1	9.7	1.4	6.9	1.7	28.5	10.2	2.6	8.3	0.8	915
30-34	94.6	741	94.7	10.3	0.7	8.0	1.1	27.2	13.4	2.2	7.6	2.2	701
35-39	95.2	547	92.4	7.0	1.2	5.1	1.0	27.1	15.0	3.2	8.2	1.8	520
40-44	94.8	425	91.7	8.7	0.8	3.5	0.6	22.3	13.3	3.8	10.7	0.5	403
45-49	94.8	292	90.3	10.8	0.0	5.5	1.4	28.7	16.0	4.2	8.4	2.1	277
Residence													
Urban	97.4	1,227	97.0	8.2	1.4	11.1	2.1	39.9	10.3	1.5	4.1	0.2	1,195
Rural	94.3	4,095	93.2	9.7	0.8	5.6	1.1	26.6	10.6	3.1	8.8	1.5	3,860
Region													
Central 1	99.0	674	96.5	4.0	2.1	8.8	1.8	41.9	15.6	2.2	5.2	0.2	668
Central 2	98.9	521	95.7	4.4	0.0	2.3	2.1	40.9	9.3	0.8	2.0	0.7	515
East Central	99.3	559	98.0	23.7	0.5	9.4	1.9	36.2	6.9	2.0	12.4	1.0	555
Kampala	99.3	344	98.5	6.5	2.3	18.3	2.6	46.1	5.5	0.0	3.3	0.2	341
Mid-North	95.9	566	93.9	17.9	0.6	10.3	0.6	21.8	1.8	8.3	14.9	0.7	543
Mid-Western	89.6	556	91.0	3.2	1.4	6.5	1.7	25.5	18.0	0.3	3.8	4.0	498
Mid-Eastern	88.7	511	94.9	11.5	0.4	6.2	1.1	17.1	8.6	3.1	6.5	0.0	454
North East	95.3	486	89.9	5.4	1.6	5.8	2.0	17.0	0.1	4.9	11.0	1.0	464
South Western	91.6	708	96.2	2.0	0.2	1.8	0.0	30.8	25.9	0.4	5.1	0.2	648
West Nile	93.0	397	83.0	17.7	0.6	2.5	0.2	14.4	3.9	5.9	13.5	5.3	369
Special zone													
Karamoja	84.6	117	64.5	6.1	0.0	0.0	0.0	5.0	0.4	18.6	27.6	2.7	99
Education													
No education	88.9	792	86.3	13.0	0.2	2.7	0.8	13.3	8.1	5.0	9.8	4.0	704
Primary	94.4	2,892	93.9	8.8	0.5	4.5	0.8	22.5	11.4	2.9	8.3	1.1	2,731
Secondary	98.8	1,329	97.8	8.6	1.3	10.0	1.7	47.6	10.9	1.5	5.9	0.0	1,312
More than secondary	100.0	285	99.1	9.1	6.1	26.9	6.4	57.3	5.7	0.7	4.9	0.0	285
Wealth quintile													
Lowest	92.0	968	87.4	13.0	0.6	4.4	1.0	12.8	5.4	6.6	13.3	2.3	890
Second	92.4	992	92.3	10.1	0.2	4.0	0.5	23.3	8.0	2.7	9.0	2.4	917
Middle	94.3	991	95.3	9.6	0.4	4.1	0.7	28.1	12.8	1.9	5.7	0.9	934
Fourth	96.6	1,052	96.6	8.0	1.0	6.0	2.0	32.4	15.9	2.0	7.4	0.4	1,016
Highest	98.4	1,320	97.2	7.1	2.1	13.3	2.1	45.0	9.8	1.1	4.4	0.4	1,299
Total	95.0	5,322	94.1	9.3	0.9	6.9	1.3	29.7	10.5	2.7	7.7	1.2	5,055

Notes: Percentages may add up to more than 100.0 because multiple responses were allowed.
Total includes 23 women with missing information on education.

5.1.3 Knowledge of Medicines to Avoid Getting Malaria during Pregnancy

In the 2014-15 UMIS, women who reported that there were ways to avoid getting malaria were asked to cite specific drugs that are given to pregnant women to avoid getting malaria. Table 5.3 presents information

on women's knowledge of malaria prevention during pregnancy. Among women who reported that there are ways to avoid getting malaria, only 42 percent cited SP/Fansidar as a drug used by pregnant women to avoid getting malaria, 17 percent mentioned Coartem/ACT, and 40 percent did not know any drug that is given to women during pregnancy to avoid getting malaria.

Knowledge about SP/Fansidar is most prevalent in Mid-North where 52 percent of women cited this as a medicine for pregnant women to avoid getting malaria. Only 5 percent of women in Karamoja knew SP/Fansidar.

Table 5.3 Knowledge of medicines to avoid getting malaria during pregnancy

Among women age 15-49 who say there are ways to avoid getting malaria, percentage that cite specific medicines that can be given to pregnant women to help them avoid getting malaria, and among women citing SP/Fansidar, percentage citing specific number of times a pregnant woman needs to take SP/Fansidar to avoid getting malaria, by background characteristics, Uganda 2014-15

	Percentage citing specific medicine given to pregnant women to avoid getting malaria							Percentage citing specific number of times pregnant women need to take SP/Fansidar to avoid getting malaria				
Background characteristic	SP/ Fansidar	Chloro-quine	Chloro-quine with Fansidar	Coartem/ ACT	Other anti-malarial	Don't 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	15.3	0.4	0.0	13.1	7.5	70.2	1,168	8.0	21.7	55.3	15.0	179
20-24	41.5	0.6	0.1	18.1	12.3	39.1	1,070	9.1	24.4	53.2	13.3	445
25-29	56.8	0.9	0.0	18.7	11.6	25.1	915	10.0	24.1	54.9	11.0	519
30-34	60.5	0.8	0.9	16.6	11.6	24.2	701	11.8	25.0	51.2	12.0	424
35-39	53.3	2.4	0.9	18.0	8.3	29.3	520	14.1	21.6	50.5	13.8	277
40-44	47.7	2.4	0.0	20.3	11.4	33.8	403	12.8	24.5	53.7	9.0	192
45-49	38.9	2.4	0.0	21.5	10.2	38.5	277	9.2	19.6	54.1	17.1	108
Residence												
Urban	43.7	0.3	0.4	10.2	7.6	45.8	1,195	13.1	22.5	50.1	14.4	522
Rural	42.0	1.3	0.2	19.4	11.2	38.5	3,860	10.0	24.0	54.1	11.9	1,622
Region												
Central 1	33.0	0.4	0.2	9.4	11.5	50.9	668	13.4	17.7	47.3	21.6	220
Central 2	41.5	0.0	0.6	9.4	4.4	49.2	515	4.5	13.9	54.8	26.8	214
East Central	42.4	0.9	0.4	43.6	29.9	24.4	555	12.1	21.6	63.3	3.0	235
Kampala	41.5	0.7	0.5	3.8	1.3	55.4	341	6.8	28.5	48.3	16.3	141
Mid-North	52.3	0.7	0.2	15.9	5.3	34.1	543	4.4	15.7	62.6	17.3	284
Mid-Western	47.3	1.4	0.0	19.4	10.2	33.3	498	10.0	34.9	46.0	9.1	236
Mid-Eastern	46.4	1.7	0.0	17.6	13.4	33.7	454	28.6	30.2	35.6	5.6	211
North East	44.7	0.8	0.0	18.2	3.7	37.0	464	2.3	20.7	71.3	5.8	207
South Western	44.7	1.0	0.0	9.7	2.8	45.8	648	13.4	29.2	46.7	10.8	290
West Nile	28.6	4.3	0.6	25.5	21.0	38.9	369	12.3	27.6	53.6	6.5	106
Special zone												
Karamoja	5.2	0.9	0.0	27.6	8.3	62.6	99	*	*	*	*	5
Education												
No education	41.1	2.6	0.3	24.0	13.0	34.9	704	11.6	26.3	50.6	11.5	290
Primary	42.6	1.0	0.2	17.8	11.4	38.9	2,731	11.9	21.1	54.5	12.4	1,163
Secondary	38.8	0.5	0.3	13.8	7.7	48.2	1,312	8.7	25.7	52.9	12.7	509
More than secondary	61.4	0.5	0.0	10.9	5.2	30.1	285	7.6	28.7	50.1	13.6	175
Wealth quintile												
Lowest	40.8	1.8	0.1	19.5	11.1	37.7	890	6.1	21.7	60.1	12.0	363
Second	45.1	1.2	0.2	21.2	11.9	35.2	917	9.3	22.4	58.2	10.1	413
Middle	40.5	1.2	0.1	18.7	12.3	40.1	934	17.5	22.9	47.3	12.3	378
Fourth	40.2	0.8	0.5	17.4	11.2	42.1	1,016	10.4	22.6	52.2	14.9	408
Highest	44.8	0.7	0.2	11.5	6.6	44.2	1,299	10.4	26.9	49.7	12.9	582
Total	42.4	1.1	0.2	17.2	10.3	40.2	5,055	10.7	23.6	53.1	12.5	2,144

Notes: An asterisk denotes a figure based on fewer than 25 unweighted cases that has been suppressed. Percentages may add up to more than 100.0 because multiple responses were allowed. Total includes 22 women with missing information on education.

Women who cited SP/Fansidar as a medicine given to pregnant women to avoid getting malaria were further asked to cite the specific number of times a woman should take SP/Fansidar. Eleven percent of women said it should be taken one time, 24 percent said it should be taken twice, and 53 percent said it should be taken three or more times. Thirteen percent of these women did not know how many times SP/Fansidar should be taken. Seven in ten women from the North East said that SP/Fansidar needs to be taken 3 or more times compared with only 36 percent in Mid-Eastern.

5.1.4 Knowledge of When a Child with Fever Should be Taken for Treatment

Malaria case management, including the identification, diagnosis, and rapid treatment of all malaria cases with appropriate and effective antimalarial drugs, is one of the key strategic goals for malaria control in Uganda. In the 2014-15 UMIS, women were asked when a child with fever should be taken for treatment.

The results in Table 5.4 show that 75 percent of interviewed women reported that children with fever need to be taken for treatment the same day, an increase from 66 percent in the 2009 UMIS. Fifteen percent of women said that children with fever should be taken for treatment the next day, 5 percent mentioned two days after onset, 2 percent stated three or more days after onset, and 3 percent stated that it depends on the severity of the fever. No woman in the survey reported that a treatment for fever is unnecessary.

Table 5.4 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 2014-15

	Among women age 15-49, knowledge of when a child with fever should be taken for treatment								
Background characteristic	Same day	Next day	Two days after onset of fever	Three or more days after onset of fever	Treatment for fever is not necessary	Depends on severity of fever	Other	Don't know/ missing	Number of women
Age									
15-19	75.5	12.7	4.3	2.7	0.0	1.2	0.0	3.6	1,228
20-24	75.2	14.9	4.6	1.9	0.0	2.6	0.0	0.8	1,132
25-29	73.7	14.8	5.0	2.3	0.0	3.2	0.6	0.4	957
30-34	75.1	15.8	4.4	1.3	0.0	3.1	0.3	0.1	741
35-39	73.6	16.7	4.2	1.1	0.0	3.7	0.4	0.3	547
40-44	71.6	15.0	6.4	1.7	0.0	4.5	0.1	0.6	425
45-49	74.5	18.6	4.6	0.6	0.0	1.4	0.0	0.3	292
Residence									
Urban	76.7	13.5	3.8	1.2	0.0	3.2	0.3	1.3	1,227
Rural	73.8	15.3	4.9	2.1	0.0	2.5	0.2	1.1	4,095
Region									
Central 1	79.5	9.4	4.0	2.4	0.0	4.0	0.5	0.1	674
Central 2	74.1	17.3	4.4	1.8	0.0	1.7	0.4	0.2	521
East Central	70.0	17.0	7.6	2.6	0.0	1.9	0.0	0.9	559
Kampala	80.4	10.6	5.8	1.2	0.0	0.8	0.0	1.1	344
Mid-North	87.4	5.9	1.7	0.5	0.0	2.5	0.0	1.9	566
Mid-Western	64.0	20.6	8.3	3.9	0.0	1.5	0.3	1.5	556
Mid-Eastern	72.1	11.7	2.3	1.8	0.0	9.6	0.5	2.0	511
North East	65.3	25.7	4.9	1.0	0.0	1.3	0.1	1.8	486
South Western	70.4	20.0	5.7	2.4	0.0	0.8	0.0	0.6	708
West Nile	85.3	8.4	1.3	0.0	0.0	2.4	0.2	2.5	397
Special zone									
Karamoja	71.4	23.7	1.7	0.2	0.0	1.4	0.5	1.1	117
Education									
No education	70.3	19.2	4.9	2.4	0.0	2.4	0.3	0.6	792
Primary	72.7	15.5	5.1	1.8	0.0	2.8	0.3	1.8	2,892
Secondary	78.4	12.6	4.3	2.2	0.0	2.1	0.1	0.4	1,329
More than secondary	85.5	8.0	2.3	0.0	0.0	3.9	0.0	0.4	285
Wealth quintile									
Lowest	72.6	17.9	4.6	1.7	0.0	1.7	0.2	1.3	968
Second	72.1	17.2	4.1	2.3	0.0	2.8	0.2	1.4	992
Middle	70.7	15.9	6.2	2.0	0.0	3.2	0.2	1.7	991
Fourth	76.1	13.5	4.9	1.9	0.0	2.8	0.0	0.8	1,052
Highest	79.2	11.4	3.9	1.6	0.0	2.8	0.3	0.9	1,320
Total	74.5	14.9	4.7	1.9	0.0	2.7	0.2	1.2	5,322

Note: Total includes 23 women with missing information on education.

While 87 percent of women in the Mid-North said children with fever should be taken for treatment the same day, just 64 percent of women in the Mid-Western mentioned such prompt treatment. Knowledge that a child with fever should be taken for treatment the same day increases with level of education, from 70 percent among women with no education to 86 percent among women with more than secondary education.

5.1.5 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. To assess the coverage of communication programmes, women interviewed in the 2014-15 UMIS were asked if they had seen or heard any messages about malaria prevention in the six months preceding the survey. Women who had heard or seen malaria prevention messages were then asked to report the source of the messages.

Table 5.5 shows the percentage of women who had seen or heard a malaria message in the last six months, by background characteristics. The table shows that 64 percent of women had heard or seen a malaria message in the six months preceding the survey. Exposure to malaria messages is higher in urban areas (72 percent) than in rural areas (62 percent). A higher proportion of women living in the Kampala (81 percent) reported having seen or heard malaria messages in the past six months compared with women in other regions. Exposure to malaria messages increases with level of education from 54 percent among women with no education to 84 percent among women with more than secondary education.

Of women who heard or saw a message on malaria in the six months preceding the survey, 82 percent heard a message on the radio, 34 percent heard a message from a community health worker, 21 percent saw a message on a poster or billboard, 19 percent saw a message on TV, 17 percent heard a message at a community event, and 25 percent saw or heard a message in other places. By region, exposure to a malaria message on the radio ranges from 67 percent in North East and West Nile to 91 percent in South Western. Exposure to malaria messages from a community health worker varies by region from a low of 15 percent in Central 1 to a high of 58 percent in West Nile. The proportion of women hearing or seeing a malaria message from a community health worker decreases with increasing household wealth; for example, 45 percent of women in households in the lowest wealth quintile heard or saw a malaria message from the community health worker compared with 25 percent of women in households in the highest wealth quintile.

Table 5.5 Exposure to malaria messages

Among women age 15-49, the percentage who have seen or heard any messages about malaria in the 6 months preceding the survey, and among those who have heard or seen any message about malaria, the percentage exposed to a message about malaria through specific media, by background characteristics, Uganda 2014-15

	All women age 15-49		Among women age 15-49 who have seen or heard any message about malaria in the past 6 months, the percentage exposed to a message about malaria through specific media						
Background characteristic	Percentage who have seen or heard a message about malaria in the past 6 months	Number of women	Radio	Television	Poster or billboard	Community health worker	Community event	Any other source	Number of women exposed to a message about malaria in the past 6 months
Age									
15-19	60.1	1,228	82.5	18.8	20.5	29.4	14.9	29.5	738
20-24	65.1	1,132	83.5	21.9	26.5	32.4	15.4	22.6	737
25-29	66.5	957	77.5	20.6	21.1	34.6	15.7	26.5	636
30-34	64.4	741	81.0	17.2	20.3	35.6	19.0	24.6	477
35-39	63.4	547	82.0	19.6	20.4	37.0	22.6	20.4	347
40-44	66.4	425	85.0	13.4	16.8	36.1	16.8	21.8	282
45-49	60.7	292	87.2	9.5	15.8	40.2	18.9	20.5	177
Residence									
Urban	71.6	1,227	84.8	50.1	35.4	23.6	13.7	25.2	878
Rural	61.5	4,095	81.0	7.8	16.4	37.3	18.0	24.6	2,517
Region									
Central 1	69.6	674	85.0	32.0	35.8	15.2	7.1	6.1	469
Central 2	69.5	521	90.3	20.3	30.3	21.9	4.1	2.3	362
East Central	58.2	559	87.2	11.6	9.1	21.1	9.0	14.1	325
Kampala	81.2	344	86.0	83.8	48.6	16.7	10.7	39.0	279
Mid-North	62.8	566	76.7	4.5	5.6	38.8	22.2	26.6	355
Mid-Western	56.0	556	81.4	7.0	15.9	47.1	21.2	27.3	312
Mid-Eastern	56.0	511	82.4	9.0	21.1	49.3	21.1	35.1	286
North East	71.3	486	66.6	4.0	4.2	50.1	13.9	65.7	347
South Western	59.2	708	90.6	11.1	18.4	33.5	26.4	15.9	419
West Nile	60.9	397	67.1	6.8	24.4	58.3	42.4	30.2	242
Special zone									
Karamoja	83.1	117	10.5	0.2	0.7	49.8	9.3	68.0	97
Education									
No education	53.8	792	65.3	3.5	6.8	42.9	16.8	31.5	426
Primary	59.8	2,892	81.5	8.5	16.0	35.2	18.2	24.1	1,731
Secondary	74.0	1,329	89.2	31.8	28.5	28.5	14.7	21.2	983
More than secondary	83.8	285	85.4	67.2	57.2	29.3	17.3	32.2	239
Wealth quintile									
Lowest	59.7	968	63.5	1.7	7.5	45.0	18.5	40.2	578
Second	55.2	992	78.7	1.5	7.5	40.9	17.7	25.9	547
Middle	59.8	991	86.2	3.5	20.0	35.1	23.4	22.3	592
Fourth	64.8	1,052	89.6	7.2	23.0	30.2	16.6	17.6	681
Highest	75.5	1,320	86.8	54.9	36.5	25.0	11.8	21.3	996
Total	63.8	5,322	82.0	18.7	21.3	33.8	16.9	24.7	3,395

Notes: Percentages may add up to more than 100.0 because multiple responses were allowed. Total includes 23 women with missing information on education.

REFERENCES

Bradley, A. K., B. M. Greenwood, A. M. Greenwood, K. Marsh, P. Byass, S. Tulloch, and R. Hayes. 1986. Bed Nets (Mosquito Nets) and Morbidity from Malaria. *The Lancet* 328: 204-207.

Hossain, M. I., and C. F. Curtis. 1989. Permethrin Impregnated Bed Nets: Behavioural and Killing Effects on Mosquitoes. *Medical and Veterinary Entomology* 3: 367-376.

Kigozi R, Baxi S. M., Gasasira A, Sserwanga A, Kakeeto S, Nasr S, Rubahika D, Dissanayake G, Kamya M. R., Filler S, Dorsey G. 2012. Indoor Residual Spraying of Insecticide and Malaria Morbidity in a High Transmission Intensity Area of Uganda. *PLoS One*, **7**: e42857

Killeen G. F., T. A. Smith, H. M. Ferguson, H. Mshinda, S. Abdulla, C. Lengeler, and S. P. Kachur. 2007. Preventing Childhood Malaria in Africa by Protecting Adults from Mosquitoes with Insecticide-Treated Nets. *PLOS Medicine*. 4(7): e229-1258. doi:10.1371/journal.pmed.0040229

Lengeler, C. 2004. Insecticide-treated Bed Nets and Curtains for Preventing Malaria. Cochrane Database of Systematic Reviews 2004, Issue 2. Art. No.: CD000363. doi: 10.1002/14651858.CD000363.pub2.

Lindsay, S. W., and M. E. Gibson. 1988. Bed Nets Revisited: Old Idea, New Angle. *Parasitology Today* 4: 270-272.

Lines, J. O., J. Myamba, and C. F. Curtis. 1987. Experimental Hut Trials of Permethrin-Impregnated Mosquito Nets and Eave Curtains against Malaria Vectors in Tanzania. *Medical and Veterinary Entomology* 1: 37-51.

National Malaria Control Programme (NMCP). 2012. *Guidelines for preparedness and response for malaria epidemics*. Kampala, Uganda.

National Malaria Control Programme (NMCP). 2014. *Uganda Malaria Reduction Strategic Plan 2014-2020*. Kampala, Uganda.

Rutstein, S.O., and K. Johnston. 2004. *The DHS Wealth Index*. DHS Comparative Report No. 6. Calverton, Maryland: ORC Macro.

Talisuna A. O., A. M. Noor, C. W. Mundia, V. Otieno, B. Mitto, P. Amratia, M. Nanyunja, J. B. Rwakimari, M. Okia, P. A. Okui, and R. W. Snow. 2013. *An Epidemiological Profile of Malaria and its Control in Uganda*. Analysis and report funded by Roll Back Malaria and Department for International Development-UK, September 2013.

Uganda Bureau of Statistics (UBOS) and ORC Macro. 2001. *Uganda Demographic and Health Survey 2000-2001*. Calverton, Maryland, USA: UBOS and ORC Macro.

Uganda Bureau of Statistics (UBOS) and Macro International Inc. 2007. *Uganda Demographic and Health Survey 2006.* Calverton, Maryland, USA: UBOS and Macro International, Inc.

Uganda Bureau of Statistics (UBOS) and ICF Macro. 2010. *Uganda Malaria Indicator Survey 2009*. Calverton, Maryland, USA: UBOS and ICF Macro.

Uganda Bureau of Statistics (UBOS) and ICF International Inc. 2012. *Uganda Demographic and Health Survey 2011*. Kampala, Uganda: UBOS and Calverton, Maryland: ICF International Inc.

Uganda Bureau of Statistics (UBOS). 2014a. *National Population and Housing Census 2014, Provisional Results.* Kampala, Uganda; UBOS.

Uganda Bureau of Statistics (UBOS). 2014b. *Uganda National Household Survey 2012/2013*. Kampala Uganda; UBOS.

Uganda Bureau of Statistics (UBOS). 2014c. *2014 Statistical Abstract*. Kampala Uganda; UBOS.

Uganda Ministry of Health. 2014. Mid Term Review of the 2010-2015 Malaria Strategic Plan. Kampala, Uganda.

United Nations General Assembly. 2001. *Road Map towards the Implementation of the United Nations Millennium Declaration: Report of the Secretary-General*. New York: United Nations General Assembly.

Wongsrichanalai, C., M .J. Barcus, S. Muth, A. Sutamihardja, and W. H. Wernsdorfer. 2007. "A Review of Malaria Diagnostic Tools: Microscopy and Rapid Diagnostic Test (RDT)." American Journal of Tropical Medicine and Hygiene 77(Supp 6): 119–127.

WHO/Global Malaria Program. 2007. Insecticide-Treated Mosquito Nets: A WHO Position Statement. Geneva, Switzerland: WHO. http://www.who.int/malaria/publications/atoz/itnspospaperfinal/en/index.html

World Health Organization (WHO). 2012. *T3 Test Treat Track.* Geneva, Switzerland: WHO.

World Health Organization (WHO). 2014a. *World Malaria Report 2014.* Geneva, Switzerland: WHO.

World Health Organization and United Nations Children's Fund (WHO/UNICEF) Joint Monitoring Programme for Water Supply and Sanitation. 2014b. *Progress on Water and Sanitation – 2014 Update*. New York: World Health Organization and UNICEF.

"World Population Data Sheet 2013," Population Reference Bureau, accessed September 23, 2015, http://www.prb.org/pdf13/2013-population-data-sheet_eng.pdf

SAMPLE DESIGN

Appendix A

A.1 INTRODUCTION

The 2014-15 Uganda Malaria Indicator Survey (2014-15 UMIS) is the second survey of its kind in Uganda, following the one implemented in 2009. The survey has a nationally representative sample of 5,880 households from 210 sample clusters. It is designed to provide information on key malaria control indicators, such as the proportion of households having at least one bed net and at least one long-lasting insecticidal net (LLIN); the proportion of children under 5 who slept under a net and under an LLIN the previous night; the proportion of pregnant women who slept under a net and under an LLIN the previous night; the proportion of pregnant women who received intermittent preventive treatment (IPT) for malaria during their last pregnancy; and the prevalence of anaemia and malaria parasitemia among children under 5.

The survey is designed to produce representative estimates for the main MIS indicators for the country as a whole, for urban and rural areas separately, and for each of the ten geo-regions. The survey is also designed to allow cross domain comparisons between the various study domains: the ten IRS districts combined, the 14 future IRS districts combined, and the ten high altitude districts combined. The definition of the geo-regions and the study domains are given in Section A.2.

A.2 SAMPLE FRAME

The sampling frame used for the 2014-15 UMIS was the preparatory frame for the Uganda Population and Housing Census conducted in August 2014, provided by the Uganda Bureau of Statistics (UBOS), the implementing agency for the 2014-15 UMIS. The sampling frame is a complete list of census Enumeration Areas (EA) created for the census covering the whole country and consists of 78,093 EAs. An EA is a natural village in rural areas and a city block in urban areas. Uganda is divided into 112 administrative districts, each district is sub-divided into sub-districts, each sub-district into perishes, and each perish into villages. The frame file contains the administrative belongings for each EA and its estimated number of households at the time of the census cartographic operation. Each EA has also a designated residence type, urban or rural. Following are the definitions of the geo-regions and the study domains.

The ten geo-regions:

1. **Central 1:** Butambala, Gomba, Mpigi, Bukomansimbi, Kalangala, Kalungu, Lwengo, Lyantonde, Masaka, Rakai, Sembabule, Wakiso

2. **Central 2:** Buikwe, Buvuma, Kayunga, Kiboga, Kyankwanzi, Luwero, Mityana, Mubende, Mukono, Nakaseke, Nakasongola

3. **East Central:** Bugiri, Namutumba, Buyende, Iganga, Jinja, Kaliro, Kamuli, Luuka, Mayuge, Namayingo

4. **Kampala:** Kampala

5. **Mid North:** Alebtong, Amolatar, Dokolo, Lira, Otuke, Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, Pader

6. **Mid Western:** Bundibugyo, Kabarole, Kasese, Ntoroko, Buliisa, Hoima, Kamwenge, Kibaale, Kiryandongo, Kyegegwa, Kyenjojo, Masindi

7. **Mid-Eastern:** Budaka, Butaleja, Kibuku, Pallisa, Tororo, Bukwo, Bulambuli, Kapchorwa, Kween, Bududa, Busia, Manafwa, Mbale, Sironko

8. **North East:** Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit, Napak, Amuria, Bukedea, Katakwi, Kumi, Ngora, Soroti, Kaberamaido, Serere

9. **South Western:** Kabale, Kisoro, Buhweju, Bushenyi, Ibanda, Isingiro, Kanungu, Kiruhura, Mbarara, Mitooma, Ntungamo, Rubirizi, Rukungiri, Sheema

10. **West Nile:** Adjumani, Arua, Koboko, Maracha, Moyo, Nebbi, Yumbe, Zombo

The three study domains:

1. **The 10 IRS districts:** Agago, Amuru, Apac, Gulu, Kitgum, Kole, Lamwo, Nwoya, Oyam, Pader

2. **The 14 future IRS districts:** Bugiri, Namutumba, Alebtong, Amolatar, Dokolo, Lira, Otuke, Budaka, Butaleja, Kibuku, Pallisa, Tororo, Kaberamaido, Serere

3. **The ten high altitude districts:** Bundibugyo, Kabarole, Kasese, Ntoroko, Bukwo, Bulambuli, Kapchorwa, Kween, Kabale, Kisoro

Table A.1 shows the distribution of the residential households by region and by type of residence. Looking at regional percent distribution, the share of the regions varies from 5 percent for Kampala to 13 percent for Central 1 and South Western; the percentage of urban households in each region varies from 7 percent for North East to 100 percent for Kampala. In Uganda, 19 percent of households live in urban areas. Table A.2 shows the distribution of EAs and their average size in number of households (average number of households) by region and by type of residence. The average EA size is 94 households in urban areas and 77 households in rural areas, with an overall average size of 80 households per EA.

Table A.1 Households

Distribution of the households in the sampling frame by region and residence, Uganda 2014-15

	Number of households in the frame			Percent distribution of households in the frame	
GEO-REGION	Urban	Rural	Total	Urban	Region
Central 1	178,475	636,394	814,869	21.9	13.1
Central 2	116,877	567,558	684,435	17.1	11.0
East Central	80,566	535,411	615,977	13.1	9.9
Kampala	336,995	0	336,995	100.0	5.4
Mid-North	82,476	573,003	655,479	12.6	10.5
Mid-Western	128,947	591,044	719,991	17.9	11.5
Mid-Eastern	91,859	586,731	678,590	13.5	10.9
North East	35,299	476,932	512,231	6.9	8.2
South Western	110,194	669,529	779,723	14.1	12.5
West Nile	45,721	391,566	437,287	10.5	7.0
Uganda	1,207,409	5,028,168	6,235,577	19.4	100.0

*Source: 2014 population census preparatory frame, Uganda

Table A.2 Enumeration areas and enumeration area size

Distribution of the enumeration areas (EAs) in the sampling frame and average number of households in the EAs, by region and residence, Uganda 2014-15

	Number of enumeration areas in the frame			Average number of households in the enumeration area		
GEO-REGION	Urban	Rural	Total	Urban	Rural	Total
Central 1	1,748	6,872	8,620	102	93	95
Central 2	1,245	6,759	8,004	94	84	86
East Central	817	5,949	6,766	99	90	91
Kampala	3,099	0	3,099	109	0	109
Mid-North	911	8,418	9,329	91	68	70
Mid-Western	1,508	7,432	8,940	86	80	81
Mid-Eastern	1,185	10,310	11,495	78	57	59
North East	407	5,375	5,782	87	89	89
South Western	1,364	9,067	10,431	81	74	75
West Nile	514	5,113	5,627	89	77	78
Uganda	12798	65295	78093	94	77	80

*Source: 2014 population census preparatory frame, Uganda

A.3. SAMPLE DESIGN AND IMPLEMENTATION

The sample for the 2014-15 UMIS is a stratified sample selected in two stages from the sampling frame. Stratification was achieved by separating the districts falling into the various study domains from the rest of the districts. Wakiso urban in the Central 1 region and Mukono urban in the Central 2 are separated from the rest of districts to form a special urban stratum; Karamoja from the North East region also forms a stratum. In total 20 sampling strata were created. Samples were selected independently from each stratum according to the sample allocation shown in Table A.3, by a probability proportional to size selection (PPS). Before the sample selection, the sampling frame was sorted within sampling stratum by residence type first, then by district, by sub-district, by perish, by village, and by EA code. With this sorting and the PPS sampling procedure, implicit stratification by residence was achieved. The sample points were proportionally allocated to urban and rural areas.

After the first stage of sample selection and before the main data collection, a household listing operation was carried out in all of the selected EAs. The household listing operation consisted of visiting each of the 210 selected EAs; drawing a location map and a detailed sketch map; and recording all residential households found in the EA on the household listing forms, including the address and the name of the head of the household. The list of households obtained as a result of the listing exercise served as the sampling frame for household selection in the second stage.

In the second stage, a fixed number of 28 households for each selected EA was selected from the household listing. Household selection was performed in the UBOS central office prior the main survey. The interviewers interviewed only the selected households. No replacements or changes in selected households were allowed during data collection, in order to prevent bias.

Table A.3 shows the sample allocation of selected households and clusters by region and study domain. The sample size by region is comparable with the sample size in the 2009 UMIS, with larger sample size in the regions including oversampled districts for the three study domains and Karamoja. Table A.4 shows the sample allocation selected households and clusters by sampling stratum. Table A. 5 shows the expected number of interviews with women 15-49 and expected number of anaemia and malaria tests for children 0-59 months, by region and study domain.

Table A.3 Sample allocation of households and clusters: region and study domain

Sample allocation of clusters and households by region and study domain, Uganda 2014-15

Region	Number of clusters	Number of households
Central 1	17	476
Central 2	17	476
East Central	15	420
Kampala	16	448
Mid-North	31	868
Mid-Western	20	560
Mid-Eastern	24	672
North East	32	896
South Western	22	616
West Nile	16	448
Uganda	210	5,880
Number of selected households/EAs who fall in the study domains		
The 10 IRS districts	23	650
The 14 future IRS districts	23	650
The 10 high altitude districts	20	560

Table A.4 Sample allocation of households and clusters: sampling stratum

Sample allocation of clusters and households by sampling stratum, Uganda 2014-15

Region	Stratum Name	Number of clusters	Number of households
Central 1	Central 1 Other	14	364
Central 1	Wakiso Urban	3	112
Central 2	Central 2 Other	15	392
Central 2	Mukono Urban	2	84
East Central	The 14 future IRS districts	3	84
East Central	East Central/Other	12	336
Kampala	Kampala	16	448
Mid-North	The 14 future IRS Districts	8	224
Mid-North	The 10 IRS Districts	23	644
Mid-Western	The 10 high altitude districts	8	224
Mid-Western	Mid-Western/ Other	12	336
Mid-Eastern	The 14 future IRS districts	8	224
Mid-Eastern	The 10 high altitude districts	8	224
Mid-Eastern	Mid-Eastern Other	8	224
North East	Karamoja	16	448
North East	North East Other	12	336
North East	The 14 future IRS districts	4	112
South Western	The 10 high altitude districts	4	112
South Western	South Western/Other	18	504
West Nile	West Nile/Other	16	448
Uganda		210	5,880

A.4 SAMPLE PROBABILITIES AND SAMPLE WEIGHTS

Because of the non-proportional allocation of the sample to the different regions and study domains, sampling weights are required for any analysis using the 2014-15 UMIS data to ensure the actual representativeness of the sample. Since the 2014-15 UMIS sample is a two-stage stratified cluster sample, sampling weights will be calculated based on sampling probabilities which will be calculated separately for each sampling stage and for each cluster. We use the following notations:

P_{1hi}: sampling probability of the ith cluster in stratum h
P_{2hi}: sampling probability within the ith cluster for households
P_{hi}: overall sampling probability of any households of the ith cluster in stratum h

Let a_h be the number of clusters selected in stratum h for the 2014-15 UMIS, M_{hi} the number of households according to the sampling frame in the ith cluster, and $\sum M_{hi}$ the total number of structures in the stratum h. The probability of selecting the ith cluster in stratum h for the 2014-15 UMIS is calculated as follows:

$$P_{1hi} = \frac{a_h M_{hi}}{\sum M_{hi}}$$

Let L_{hi} and g_{hi} (g_{hi}=28 for all h and i for 2014-15 UMIS) be the number of households listed and selected in the ith cluster in stratum h. The probability for selecting a household in the ith cluster is calculated as follows:

$$P_{2hi} = \frac{g_{hi}}{L_{hi}}$$

The overall selection probability of each household in cluster i of stratum h is therefore the production of the selection probabilities:

$$P_{hi} = P_{1hi} \times P_{2hi} = \frac{a_h g_{hi} M_{hi}}{L_{hi} \sum M_{hi}}$$

The design weight for each household in cluster i of stratum h is the inverse of its overall selection probability:

$$W_{hi} = 1 / P_{hi}$$

A spreadsheet containing all sampling parameters and selection probabilities was be constructed to facilitate the calculation of sampling weights. Design weights were be adjusted for household non-response and as well as for individual non-response to get the sampling weights for households and for women individuals, respectively. The differences of the household sampling weights and the women individual sampling weights are introduced by individual non-response. Sampling weights for malaria testing for children under 5 were obtained by adjusting the household sampling weight for non response to test for children under 5. All the sampling weights will be further normalised at national level to produce un-weighted cases equal to weighted cases for interviewed households, for interviewed women 15-49 and for children under 5 receiving malaria tests, respectively. It is important to note that the normalised weights are relative weights which are valid for estimating proportions, means, ratios and rates, but not valid for estimating population totals and not valid for pooled data from different surveys.

Table A.5 Sample allocation of completed interviews with women 15-49 and of children under 5 tested for malaria

Sample allocation of expected number of completed interviews with women age 15-49 and of children under 5 tested for malaria by region and survey domain, Uganda 2014-15

Regions	Number of women 15-49	Number of children under 5
Central 1	431	392
Central 2	431	392
East Central	381	346
Kampala	406	369
Mid North	787	715
Mid Western	508	461
Mid-Eastern	609	554
North East	812	738
South Western	558	507
West Nile	406	369
Uganda	5,329	4,844
Number of selected women age 15-49/children under 5 who fall in the study domains		
The 10 IRS districts	589	535
The 14 future IRS districts	589	535
The 10 high altitude districts	508	461

ESTIMATES OF SAMPLING ERRORS *Appendix* B

The estimates from a sample survey are affected by two types of errors: (1) nonsampling errors, and (2) sampling errors. Nonsampling errors are the results of mistakes made in implementing data collection and data processing, such as failure to locate and interview the selected 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 2014-15 Uganda Malaria Indicator Survey (2014-15 UMIS) to minimize this type of error, nonsampling 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 2014-15 UMIS is only one of many samples that could have been selected from the same population, using the same design and identical size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. Sampling error is 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 2014-15 UMIS sample is the result of a multi-stage stratified design, and, consequently, it was necessary to use more complex formulae. The computer software used to calculate sampling errors for the 2014-15 UMIS is a SAS program. This program used the Taylor linearization method for variance estimation for survey estimates that are means or proportions.

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:

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

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 hth stratum,
y_{hi} is the sum of the weighted values of variable y in the ith cluster in the hth stratum,
x_{hi} is the sum of the weighted number of cases in the ith cluster in the hth stratum, and
f_h is the sampling fraction of PSU in the hth stratum which is small and ignored

In addition to the standard error, the program computes the design effect (DEFT) for each estimate, which 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, such as multistage and cluster selection. The program also computes the relative standard error and the confidence limits for the estimates.

Sampling errors for the 2014-15 UMIS are calculated for selected variables considered to be of primary interest for households, for children under five and for pregnant women, respectively. The results are presented in this appendix for the country as a whole; for urban and rural areas separately; for each of the ten geo-regions; for the Greater Kampala area; for the Karamoja region; and for each of the three special survey domains. 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.19 present the value of the statistic (R), its standard error (SE), the number of unweighted (N) and weighted (WN) cases, the design effect (DEFT), the relative standard error (SE/R), and the 95 percent confidence limits (R±2SE), for each variable. The DEFT is considered undefined when the standard error considering simple random sample is zero (when the estimate is close to 0 or 1). In the case of the total fertility rate, the number of unweighted cases is not relevant, as there is no known unweighted value for woman-years of exposure to child-bearing.

The confidence interval (e.g., as calculated for *Average number of mosquito nets per household*) can be interpreted as follows: the overall average from the total sample is 2.614 and its standard error is 0.039. Therefore, to obtain the 95 percent confidence limits, one adds and subtracts twice the standard error to the sample estimate, i.e., 2.614±2×0.039. There is a high probability (95 percent) that the *true* average number mosquito net per household is between 2.536 and 2.692.

For the total sample, the value of the design effect (DEFT), averaged over all variables, is 1.645 which means that, due to multistage and clustering of the sample, the average standard error is increased by a factor of 1.645 over that in an equivalent simple random sample.

Table B.1 List of indicators for sampling errors, Uganda 2014-15

VARIABLE	Type of Estimate	Base Population
HOUSEHOLDS		
Proportion of households having at least one mosquito net of any type	Proportion	All households interviewed
Average number of any mosquito nets per household	Mean	All households interviewed
Proportion of households having at least one LLIN	Proportion	All households interviewed
Average number of LLIN per household	Mean	All households interviewed
Proportion of households having at least one ITN	Proportion	All households interviewed
Average number of ITN per household	Mean	All households interviewed
Proportion of households with IRS in the past 6 months	Proportion	All households interviewed
CHILDREN		
Slept under any mosquito net last night	Proportion	All children under five years of age
Slept under an LLIN last night	Proportion	All children under five years of age
Slept under an ITN last night	Proportion	All children under five years of age
Slept under an ITN or in a dwelling with IRS last night	Proportion	All children under five years of age
Had a fever in last two weeks	Proportion	All children under five years of age
Had received ACT treatment for fever	Proportion	Children under five years of age had fever
Prevalence of anemia (haemoglobin level <8.0 g/dl)	Proportion	All children under five who were tested
Prevalence of malaria (RDT)	Proportion	All children under five who were tested
Prevalence of malaria (microscopy test)	Proportion	All children under five who were tested
PREGNANT WOMEN		
Slept under any mosquito net last night	Proportion	Pregnant women 15-49
Slept under a LLIN last night	Proportion	Pregnant women 15-49
Slept under an ITN last night	Proportion	Pregnant women 15-49
Slept under an ITN last night or in a dwelling with IRS	Proportion	Pregnant women 15-49
Percentage who received any SP/Fansidar during an ANC visit	Proportion	Pregnant women 15-49
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	Proportion	Pregnant women 15-49

Table B.2 Sampling errors: Total sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.937	0.006	5345	5345	1.770	0.006	0.925	0.949
Average number of any mosquito nets per household	2.614	0.039	5345	5345	1.867	0.015	2.536	2.692
Proportion of households having at least one LLIN	0.900	0.007	5345	5345	1.780	0.008	0.886	0.915
Average number of LLIN per household	2.481	0.038	5345	5345	1.816	0.016	2.404	2.558
Proportion of households having at least one ITN	0.902	0.007	5345	5345	1.699	0.008	0.888	0.916
Average number of ITN per household	2.485	0.038	5345	5345	1.805	0.015	2.409	2.562
Proportion of households with IRS in the past 6 months	0.049	0.007	5345	5345	2.315	0.140	0.035	0.062
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.775	0.012	5064	5087	1.646	0.016	0.751	0.799
Slept under an LLIN last night	0.742	0.012	5064	5087	1.605	0.017	0.717	0.767
Slept under an ITN last night	0.743	0.012	5064	5087	1.587	0.017	0.719	0.768
Slept under an ITN or in a dwelling with IRS last night	0.755	0.012	5064	5087	1.577	0.016	0.731	0.779
Had a fever in last two weeks	0.307	0.012	4521	4558	1.605	0.039	0.283	0.332
Had received ACT treatment for fever	0.667	0.019	1413	1401	1.401	0.028	0.629	0.705
Prevalence of anemia (haemoglobin level <8.0 g/dl)	0.046	0.005	4895	4898	1.504	0.102	0.036	0.055
Prevalence of malaria (RDT)	0.299	0.018	4852	4856	2.242	0.059	0.264	0.334
Prevalence of malaria (microscopy test)	0.189	0.013	4888	4888	1.990	0.068	0.163	0.215
PREGNANT WOMEN								
Slept under any mosquito net last night	0.789	0.023	482	478	1.192	0.029	0.743	0.835
Slept under an LLIN last night	0.754	0.026	482	478	1.287	0.034	0.702	0.805
Slept under an ITN last night	0.754	0.026	482	478	1.287	0.034	0.702	0.805
Slept under an ITN last night or in a dwelling with IRS	0.767	0.026	482	478	1.299	0.034	0.715	0.818
Percentage who received any SP/Fansidar during an ANC visit	0.593	0.016	1799	1820	1.421	0.028	0.560	0.626
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.452	0.018	1799	1820	1.495	0.039	0.417	0.487

Table B.3 Sampling errors: Urban sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.911	0.011	1115	1187	1.232	0.012	0.890	0.932
Average number of any mosquito nets per household	2.439	0.061	1115	1187	1.233	0.025	2.318	2.560
Proportion of households having at least one LLIN	0.835	0.017	1115	1187	1.504	0.020	0.801	0.868
Average number of LLIN per household	2.193	0.063	1115	1187	1.267	0.029	2.068	2.318
Proportion of households having at least one ITN	0.839	0.014	1115	1187	1.281	0.017	0.811	0.868
Average number of ITN per household	2.202	0.061	1115	1187	1.235	0.028	2.080	2.324
Proportion of households with IRS in the past 6 months	0.029	0.009	1115	1187	1.699	0.293	0.012	0.046
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.784	0.023	769	825	1.259	0.029	0.738	0.830
Slept under an LLIN last night	0.711	0.024	769	825	1.142	0.033	0.664	0.758
Slept under an ITN last night	0.712	0.024	769	825	1.140	0.033	0.665	0.759
Slept under an ITN or in a dwelling with IRS last night	0.722	0.023	769	825	1.132	0.032	0.676	0.768
Had a fever in last two weeks	0.230	0.018	724	783	1.107	0.077	0.195	0.266
Had received ACT treatment for fever	0.569	0.055	172	180	1.322	0.097	0.459	0.679
Prevalence of anemia (haemoglobin level <8.0 g/dl)	0.035	0.012	730	776	1.566	0.333	0.012	0.058
Prevalence of malaria (RDT)	0.101	0.037	722	768	2.791	0.362	0.028	0.174
Prevalence of malaria (microscopy test)	0.063	0.023	728	787	2.289	0.362	0.018	0.109
PREGNANT WOMEN								
Slept under any mosquito net last night	0.786	0.038	74	78	0.742	0.048	0.711	0.861
Slept under an LLIN last night	0.739	0.046	74	78	0.864	0.063	0.646	0.832
Slept under an ITN last night	0.739	0.046	74	78	0.864	0.063	0.646	0.832
Slept under an ITN last night or in a dwelling with IRS	0.746	0.047	74	78	0.874	0.062	0.653	0.839
Percentage who received any SP/Fansidar during an ANC visit	0.649	0.026	301	313	0.937	0.040	0.597	0.701
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.503	0.027	301	313	0.931	0.053	0.450	0.557

Table B.4 Sampling errors: Rural sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.945	0.006	4230	4158	1.711	0.006	0.933	0.957
Average number of any mosquito nets per household	2.664	0.044	4230	4158	1.925	0.017	2.575	2.753
Proportion of households having at least one LLIN	0.919	0.007	4230	4158	1.781	0.008	0.904	0.934
Average number of LLIN per household	2.563	0.043	4230	4158	1.855	0.017	2.477	2.649
Proportion of households having at least one ITN	0.920	0.007	4230	4158	1.760	0.008	0.905	0.935
Average number of ITN per household	2.566	0.043	4230	4158	1.846	0.017	2.480	2.652
Proportion of households with IRS in the past 6 months	0.054	0.008	4230	4158	2.428	0.156	0.037	0.071
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.774	0.013	4295	4261	1.673	0.017	0.747	0.800
Slept under an LLIN last night	0.748	0.014	4295	4261	1.669	0.019	0.720	0.776
Slept under an ITN last night	0.749	0.014	4295	4261	1.649	0.018	0.722	0.777
Slept under an ITN or in a dwelling with IRS last night	0.761	0.013	4295	4261	1.639	0.018	0.735	0.788
Had a fever in last two weeks	0.323	0.013	3797	3776	1.594	0.042	0.296	0.350
Had received ACT treatment for fever	0.681	0.020	1241	1221	1.409	0.029	0.642	0.721
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.048	0.005	4165	4121	1.477	0.105	0.038	0.058
Prevalence of malaria (RDT)	0.336	0.018	4130	4088	2.109	0.055	0.299	0.373
Prevalence of malaria (microscopy test)	0.213	0.014	4160	4101	1.916	0.066	0.185	0.241
PREGNANT WOMEN								
Slept under any mosquito net last night	0.790	0.024	408	401	1.154	0.030	0.742	0.837
Slept under an LLIN last night	0.756	0.028	408	401	1.281	0.037	0.701	0.812
Slept under an ITN last night	0.756	0.028	408	401	1.281	0.037	0.701	0.812
Slept under an ITN last night or in a dwelling with IRS	0.770	0.027	408	401	1.290	0.035	0.716	0.825
Percentage who received any SP/Fansidar during an ANC visit	0.581	0.019	1498	1507	1.483	0.033	0.543	0.619
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.441	0.020	1498	1507	1.562	0.045	0.401	0.481

Table B.5 Sampling errors: Central 1 sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.913	0.012	408	660	0.893	0.014	0.888	0.938
Average number of any mosquito nets per household	2.443	0.137	408	660	1.711	0.056	2.169	2.717
Proportion of households having at least one LLIN	0.804	0.025	408	660	1.284	0.031	0.753	0.854
Average number of LLIN per household	2.091	0.127	408	660	1.590	0.061	1.837	2.344
Proportion of households having at least one ITN	0.808	0.023	408	660	1.193	0.029	0.762	0.855
Average number of ITN per household	2.110	0.123	408	660	1.538	0.058	1.864	2.356
Proportion of households with IRS in the past 6 months	0.000	0.000	408	660	na	na	0.000	0.000
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.786	0.038	354	600	1.369	0.049	0.710	0.863
Slept under an LLIN last night	0.657	0.056	354	600	1.733	0.085	0.545	0.769
Slept under an ITN last night	0.667	0.052	354	600	1.632	0.078	0.563	0.771
Slept under an ITN or in a dwelling with IRS last night	0.667	0.052	354	600	1.632	0.078	0.563	0.771
Had a fever in last two weeks	0.180	0.034	312	556	1.454	0.190	0.111	0.248
Had received ACT treatment for fever	0.552	0.094	54	100	1.288	0.170	0.364	0.740
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.037	0.008	317	536	0.785	0.214	0.021	0.054
Prevalence of malaria (RDT)	0.130	0.036	313	531	1.698	0.275	0.058	0.201
Prevalence of malaria (microscopy test)	0.105	0.028	314	574	1.608	0.270	0.049	0.162
PREGNANT WOMEN								
Slept under any mosquito net last night	0.732	0.058	32	48	0.710	0.079	0.616	0.847
Slept under an LLIN last night	0.674	0.082	32	48	0.949	0.121	0.510	0.837
Slept under an ITN last night	0.674	0.082	32	48	0.949	0.121	0.510	0.837
Slept under an ITN last night or in a dwelling with IRS	0.674	0.082	32	48	0.949	0.121	0.510	0.837
Percentage who received any SP/Fansidar during an ANC visit	0.571	0.053	129	235	1.208	0.093	0.465	0.677
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.441	0.071	129	235	1.618	0.162	0.298	0.584

Table B.6 Sampling errors: Central 2 sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.885	0.023	434	593	1.476	0.026	0.840	0.930
Average number of any mosquito nets per household	2.254	0.083	434	593	1.161	0.037	2.088	2.420
Proportion of households having at least one LLIN	0.810	0.036	434	593	1.914	0.045	0.737	0.882
Average number of LLIN per household	2.062	0.086	434	593	1.152	0.042	1.890	2.234
Proportion of households having at least one ITN	0.816	0.032	434	593	1.690	0.039	0.753	0.879
Average number of ITN per household	2.069	0.082	434	593	1.100	0.039	1.905	2.232
Proportion of households with IRS in the past 6 months	0.004	0.003	434	593	0.970	0.694	0.000	0.011
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.697	0.030	377	533	1.026	0.044	0.636	0.758
Slept under an LLIN last night	0.650	0.034	377	533	1.107	0.052	0.583	0.717
Slept under an ITN last night	0.650	0.034	377	533	1.107	0.052	0.583	0.717
Slept under an ITN or in a dwelling with IRS last night	0.650	0.034	377	533	1.107	0.052	0.583	0.717
Had a fever in last two weeks	0.314	0.036	311	453	1.281	0.116	0.241	0.387
Had received ACT treatment for fever	0.717	0.033	94	142	0.682	0.046	0.652	0.782
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.044	0.016	372	528	1.498	0.375	0.011	0.076
Prevalence of malaria (RDT)	0.331	0.063	367	522	2.221	0.189	0.206	0.457
Prevalence of malaria (microscopy test)	0.236	0.051	372	512	2.089	0.214	0.135	0.337
PREGNANT WOMEN								
Slept under any mosquito net last night	0.768	0.055	44	59	0.857	0.072	0.658	0.878
Slept under an LLIN last night	0.702	0.075	44	59	1.071	0.106	0.553	0.851
Slept under an ITN last night	0.702	0.075	44	59	1.071	0.106	0.553	0.851
Slept under an ITN last night or in a dwelling with IRS	0.702	0.075	44	59	1.071	0.106	0.553	0.851
Percentage who received any SP/Fansidar during an ANC visit	0.579	0.046	120	174	1.015	0.079	0.487	0.671
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.403	0.036	120	174	0.807	0.090	0.331	0.476

Table B.7 Sampling errors: East Central sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.846	0.032	380	536	1.740	0.038	0.781	0.911
Average number of any mosquito nets per household	2.192	0.195	380	536	2.418	0.089	1.802	2.582
Proportion of households having at least one LLIN	0.821	0.035	380	536	1.778	0.043	0.750	0.891
Average number of LLIN per household	2.107	0.199	380	536	2.482	0.094	1.710	2.504
Proportion of households having at least one ITN	0.821	0.035	380	536	1.778	0.043	0.750	0.891
Average number of ITN per household	2.107	0.199	380	536	2.482	0.094	1.710	2.504
Proportion of households with IRS in the past 6 months	0.000	0.000	380	536	na	na	0.000	0.000
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.704	0.049	423	586	1.678	0.070	0.606	0.802
Slept under an LLIN last night	0.684	0.049	423	586	1.610	0.072	0.586	0.782
Slept under an ITN last night	0.684	0.049	423	586	1.610	0.072	0.586	0.782
Slept under an ITN or in a dwelling with IRS last night	0.684	0.049	423	586	1.610	0.072	0.586	0.782
Had a fever in last two weeks	0.473	0.048	382	538	1.641	0.101	0.378	0.568
Had received ACT treatment for fever	0.711	0.067	186	254	1.887	0.095	0.576	0.846
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.080	0.016	409	564	1.148	0.197	0.049	0.112
Prevalence of malaria (RDT)	0.492	0.074	406	556	2.438	0.151	0.343	0.640
Prevalence of malaria (microscopy test)	0.362	0.055	407	563	1.856	0.151	0.253	0.471
PREGNANT WOMEN								
Slept under any mosquito net last night	0.588	0.080	37	60	1.017	0.137	0.427	0.749
Slept under an LLIN last night	0.552	0.078	37	60	0.980	0.141	0.396	0.707
Slept under an ITN last night	0.552	0.078	37	60	0.980	0.141	0.396	0.707
Slept under an ITN last night or in a dwelling with IRS	0.552	0.078	37	60	0.980	0.141	0.396	0.707
Percentage who received any SP/Fansidar during an ANC visit	0.430	0.045	153	215	1.114	0.104	0.340	0.519
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.357	0.035	153	215	0.910	0.099	0.286	0.428

Table B.8 Sampling errors: Kampala sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.927	0.015	433	299	1.185	0.016	0.897	0.957
Average number of any mosquito nets per household	2.537	0.117	433	299	1.424	0.046	2.303	2.772
Proportion of households having at least one LLIN	0.860	0.024	433	299	1.446	0.028	0.812	0.908
Average number of LLIN per household	2.255	0.141	433	299	1.705	0.063	1.972	2.537
Proportion of households having at least one ITN	0.863	0.023	433	299	1.401	0.027	0.816	0.909
Average number of ITN per household	2.270	0.143	433	299	1.725	0.063	1.983	2.557
Proportion of households with IRS in the past 6 months	0.010	0.005	433	299	1.071	0.504	0.000	0.021
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.830	0.031	268	196	1.086	0.038	0.768	0.893
Slept under an LLIN last night	0.750	0.036	268	196	1.051	0.048	0.679	0.821
Slept under an ITN last night	0.754	0.036	268	196	1.057	0.048	0.683	0.826
Slept under an ITN or in a dwelling with IRS last night	0.754	0.036	268	196	1.057	0.048	0.683	0.826
Had a fever in last two weeks	0.247	0.023	267	191	0.872	0.094	0.201	0.294
Had received ACT treatment for fever	0.515	0.117	66	47	1.774	0.228	0.281	0.750
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.029	0.012	250	181	1.016	0.399	0.006	0.052
Prevalence of malaria (RDT)	0.037	0.011	246	178	0.826	0.293	0.015	0.058
Prevalence of malaria (microscopy test)	0.004	0.004	249	188	0.997	1.001	0.000	0.011
PREGNANT WOMEN								
Slept under any mosquito net last night	0.848	0.076	22	16	0.999	0.089	0.697	0.999
Slept under an LLIN last night	0.790	0.086	22	16	0.997	0.108	0.619	0.961
Slept under an ITN last night	0.790	0.086	22	16	0.997	0.108	0.619	0.961
Slept under an ITN last night or in a dwelling with IRS	0.790	0.086	22	16	0.997	0.108	0.619	0.961
Percentage who received any SP/Fansidar during an ANC visit	0.728	0.052	121	84	1.287	0.072	0.624	0.833
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.574	0.059	121	84	1.306	0.103	0.456	0.692

Table B.9 Sampling errors: Mid North sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.960	0.009	797	569	1.265	0.009	0.942	0.977
Average number of any mosquito nets per household	2.752	0.100	797	569	1.904	0.036	2.552	2.953
Proportion of households having at least one LLIN	0.942	0.013	797	569	1.544	0.014	0.917	0.968
Average number of LLIN per household	2.660	0.099	797	569	1.897	0.037	2.463	2.858
Proportion of households having at least one ITN	0.943	0.012	797	569	1.523	0.013	0.918	0.968
Average number of ITN per household	2.662	0.098	797	569	1.897	0.037	2.465	2.859
Proportion of households with IRS in the past 6 months	0.439	0.045	797	569	2.533	0.102	0.349	0.528
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.809	0.028	788	559	1.628	0.035	0.753	0.865
Slept under an LLIN last night	0.795	0.029	788	559	1.614	0.036	0.737	0.852
Slept under an ITN last night	0.795	0.029	788	559	1.614	0.036	0.737	0.852
Slept under an ITN or in a dwelling with IRS last night	0.901	0.014	788	559	1.055	0.016	0.873	0.929
Had a fever in last two weeks	0.334	0.041	681	487	2.095	0.122	0.252	0.415
Had received ACT treatment for fever	0.690	0.029	202	163	0.899	0.042	0.632	0.748
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.049	0.009	773	549	1.117	0.183	0.031	0.067
Prevalence of malaria (RDT)	0.342	0.042	764	544	2.047	0.122	0.259	0.426
Prevalence of malaria (microscopy test)	0.196	0.028	772	536	1.714	0.144	0.139	0.252
PREGNANT WOMEN								
Slept under any mosquito net last night	0.820	0.052	69	47	1.117	0.063	0.716	0.923
Slept under an LLIN last night	0.799	0.054	69	47	1.109	0.067	0.692	0.907
Slept under an ITN last night	0.799	0.054	69	47	1.109	0.067	0.692	0.907
Slept under an ITN last night or in a dwelling with IRS	0.929	0.031	69	47	1.015	0.034	0.867	0.992
Percentage who received any SP/Fansidar during an ANC visit	0.708	0.053	270	193	1.896	0.075	0.602	0.813
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.500	0.056	270	193	1.817	0.111	0.388	0.611

Table B.10 Sampling errors: Mid Western sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.957	0.020	509	612	2.174	0.021	0.918	0.996
Average number of any mosquito nets per household	2.496	0.102	509	612	1.684	0.041	2.291	2.701
Proportion of households having at least one LLIN	0.936	0.022	509	612	1.973	0.023	0.892	0.979
Average number of LLIN per household	2.438	0.098	509	612	1.570	0.040	2.243	2.634
Proportion of households having at least one ITN	0.936	0.022	509	612	1.973	0.023	0.892	0.979
Average number of ITN per household	2.438	0.098	509	612	1.570	0.040	2.243	2.634
Proportion of households with IRS in the past 6 months	0.002	0.002	509	612	1.127	1.011	0.000	0.007
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.828	0.044	535	635	2.049	0.053	0.740	0.916
Slept under an LLIN last night	0.823	0.044	535	635	2.029	0.053	0.735	0.911
Slept under an ITN last night	0.823	0.044	535	635	2.029	0.053	0.735	0.911
Slept under an ITN or in a dwelling with IRS last night	0.823	0.044	535	635	2.029	0.053	0.735	0.911
Had a fever in last two weeks	0.284	0.048	478	552	2.069	0.170	0.188	0.381
Had received ACT treatment for fever	0.611	0.051	140	157	1.081	0.084	0.509	0.713
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.052	0.024	528	626	2.259	0.454	0.005	0.100
Prevalence of malaria (RDT)	0.176	0.045	522	620	2.345	0.254	0.087	0.266
Prevalence of malaria (microscopy test)	0.176	0.038	528	612	2.105	0.217	0.099	0.252
PREGNANT WOMEN								
Slept under any mosquito net last night	0.892	0.062	30	36	1.082	0.069	0.769	1.015
Slept under an LLIN last night	0.833	0.075	30	36	1.093	0.090	0.683	0.982
Slept under an ITN last night	0.833	0.075	30	36	1.093	0.090	0.683	0.982
Slept under an ITN last night or in a dwelling with IRS	0.833	0.075	30	36	1.093	0.090	0.683	0.982
Percentage who received any SP/Fansidar during an ANC visit	0.659	0.059	184	212	1.672	0.089	0.541	0.777
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.510	0.058	184	212	1.553	0.113	0.395	0.625

Table B.11 Sampling errors: Mid Eastern sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.958	0.010	574	571	1.215	0.011	0.937	0.978
Average number of any mosquito nets per household	2.581	0.088	574	571	1.485	0.034	2.406	2.756
Proportion of households having at least one LLIN	0.946	0.012	574	571	1.261	0.013	0.922	0.970
Average number of LLIN per household	2.553	0.092	574	571	1.535	0.036	2.370	2.736
Proportion of households having at least one ITN	0.946	0.012	574	571	1.261	0.013	0.922	0.970
Average number of ITN per household	2.553	0.092	574	571	1.535	0.036	2.370	2.736
Proportion of households with IRS in the past 6 months	0.003	0.002	574	571	1.017	0.803	0.000	0.007
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.783	0.031	526	565	1.520	0.039	0.722	0.844
Slept under an LLIN last night	0.783	0.030	526	565	1.515	0.039	0.722	0.843
Slept under an ITN last night	0.783	0.030	526	565	1.515	0.039	0.722	0.843
Slept under an ITN or in a dwelling with IRS last night	0.783	0.030	526	565	1.515	0.039	0.722	0.843
Had a fever in last two weeks	0.196	0.029	454	485	1.454	0.148	0.138	0.254
Had received ACT treatment for fever	0.680	0.100	89	95	2.024	0.147	0.480	0.880
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.040	0.014	498	534	1.514	0.348	0.012	0.067
Prevalence of malaria (RDT)	0.266	0.073	488	526	3.045	0.276	0.119	0.412
Prevalence of malaria (microscopy test)	0.134	0.041	497	543	2.285	0.303	0.053	0.215
PREGNANT WOMEN								
Slept under any mosquito net last night	0.881	0.062	39	46	1.281	0.070	0.757	1.004
Slept under an LLIN last night	0.881	0.062	39	46	1.281	0.070	0.757	1.004
Slept under an ITN last night	0.881	0.062	39	46	1.281	0.070	0.757	1.004
Slept under an ITN last night or in a dwelling with IRS	0.881	0.062	39	46	1.281	0.070	0.757	1.004
Percentage who received any SP/Fansidar during an ANC visit	0.538	0.039	182	189	1.039	0.072	0.461	0.615
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.400	0.059	182	189	1.617	0.148	0.282	0.518

Table B.12 Sampling errors: North East sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.972	0.008	813	444	1.400	0.008	0.956	0.988
Average number of any mosquito nets per household	2.931	0.086	813	444	1.693	0.029	2.759	3.104
Proportion of households having at least one LLIN	0.970	0.008	813	444	1.301	0.008	0.954	0.985
Average number of LLIN per household	2.903	0.090	813	444	1.750	0.031	2.724	3.082
Proportion of households having at least one ITN	0.970	0.008	813	444	1.301	0.008	0.954	0.985
Average number of ITN per household	2.903	0.090	813	444	1.750	0.031	2.724	3.082
Proportion of households with IRS in the past 6 months	0.001	0.001	813	444	0.699	1.006	0.000	0.002
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.873	0.010	920	507	0.824	0.012	0.852	0.894
Slept under an LLIN last night	0.871	0.011	920	507	0.875	0.013	0.849	0.894
Slept under an ITN last night	0.871	0.011	920	507	0.875	0.013	0.849	0.894
Slept under an ITN or in a dwelling with IRS last night	0.871	0.011	920	507	0.875	0.013	0.849	0.894
Had a fever in last two weeks	0.452	0.021	846	464	1.131	0.047	0.409	0.494
Had received ACT treatment for fever	0.729	0.030	343	210	1.180	0.041	0.669	0.790
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.057	0.009	895	496	1.072	0.154	0.039	0.074
Prevalence of malaria (RDT)	0.557	0.027	894	496	1.518	0.049	0.503	0.612
Prevalence of malaria (microscopy test)	0.272	0.028	889	487	1.700	0.102	0.217	0.327
PREGNANT WOMEN								
Slept under any mosquito net last night	0.872	0.043	110	61	1.347	0.049	0.786	0.957
Slept under an LLIN last night	0.872	0.043	110	61	1.347	0.049	0.786	0.957
Slept under an ITN last night	0.872	0.043	110	61	1.347	0.049	0.786	0.957
Slept under an ITN last night or in a dwelling with IRS	0.872	0.043	110	61	1.347	0.049	0.786	0.957
Percentage who received any SP/Fansidar during an ANC visit	0.681	0.031	312	178	1.172	0.045	0.619	0.743
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.552	0.033	312	178	1.169	0.060	0.486	0.618

Table B.13 Sampling errors: South Western sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.983	0.006	584	691	1.200	0.006	0.971	0.996
Average number of any mosquito nets per household	2.993	0.079	584	691	1.336	0.027	2.835	3.152
Proportion of households having at least one LLIN	0.969	0.011	584	691	1.486	0.011	0.947	0.990
Average number of LLIN per household	2.871	0.078	584	691	1.335	0.027	2.715	3.027
Proportion of households having at least one ITN	0.969	0.011	584	691	1.486	0.011	0.947	0.990
Average number of ITN per household	2.871	0.078	584	691	1.335	0.027	2.715	3.027
Proportion of households with IRS in the past 6 months	0.000	0.000	584	691	na	na	0.000	0.000
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.668	0.040	456	532	1.512	0.060	0.588	0.748
Slept under an LLIN last night	0.644	0.037	456	532	1.375	0.058	0.569	0.718
Slept under an ITN last night	0.644	0.037	456	532	1.375	0.058	0.569	0.718
Slept under an ITN or in a dwelling with IRS last night	0.644	0.037	456	532	1.375	0.058	0.569	0.718
Had a fever in last two weeks	0.135	0.024	420	488	1.375	0.180	0.087	0.184
Had received ACT treatment for fever	0.533	0.075	56	66	1.102	0.142	0.382	0.684
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.013	0.007	444	517	1.233	0.508	0.000	0.027
Prevalence of malaria (RDT)	0.057	0.024	443	516	1.887	0.425	0.009	0.106
Prevalence of malaria (microscopy test)	0.041	0.017	448	511	1.651	0.418	0.007	0.076
PREGNANT WOMEN								
Slept under any mosquito net last night	0.812	0.062	50	58	1.109	0.076	0.688	0.935
Slept under an LLIN last night	0.757	0.069	50	58	1.122	0.091	0.620	0.894
Slept under an ITN last night	0.757	0.069	50	58	1.122	0.091	0.620	0.894
Slept under an ITN last night or in a dwelling with IRS	0.757	0.069	50	58	1.122	0.091	0.620	0.894
Percentage who received any SP/Fansidar during an ANC visit	0.641	0.043	168	194	1.145	0.066	0.556	0.726
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.482	0.037	168	194	0.954	0.077	0.408	0.555

Table B.14 Sampling errors: West Nile sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.978	0.012	413	370	1.688	0.013	0.953	1.002
Average number of any mosquito nets per household	3.110	0.161	413	370	1.961	0.052	2.788	3.433
Proportion of households having at least one LLIN	0.963	0.015	413	370	1.585	0.015	0.934	0.993
Average number of LLIN per household	3.018	0.162	413	370	1.978	0.054	2.693	3.343
Proportion of households having at least one ITN	0.963	0.015	413	370	1.585	0.015	0.934	0.993
Average number of ITN per household	3.020	0.162	413	370	1.972	0.054	2.696	3.344
Proportion of households with IRS in the past 6 months	0.006	0.004	413	370	1.066	0.703	0.000	0.013
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.821	0.034	417	374	1.340	0.042	0.753	0.889
Slept under an LLIN last night	0.785	0.029	417	374	1.048	0.037	0.727	0.844
Slept under an ITN last night	0.785	0.029	417	374	1.048	0.037	0.727	0.844
Slept under an ITN or in a dwelling with IRS last night	0.785	0.029	417	374	1.048	0.037	0.727	0.844
Had a fever in last two weeks	0.485	0.037	370	343	1.355	0.076	0.412	0.558
Had received ACT treatment for fever	0.664	0.035	183	166	1.031	0.053	0.593	0.735
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.040	0.010	409	367	1.090	0.259	0.020	0.061
Prevalence of malaria (RDT)	0.513	0.066	409	366	2.261	0.128	0.381	0.644
Prevalence of malaria (microscopy test)	0.275	0.048	411	359	1.887	0.173	0.180	0.370
PREGNANT WOMEN								
Slept under any mosquito net last night	0.780	0.058	49	46	0.907	0.074	0.665	0.896
Slept under an LLIN last night	0.760	0.062	49	46	0.967	0.081	0.637	0.884
Slept under an ITN last night	0.760	0.062	49	46	0.967	0.081	0.637	0.884
Slept under an ITN last night or in a dwelling with IRS	0.760	0.062	49	46	0.967	0.081	0.637	0.884
Percentage who received any SP/Fansidar during an ANC visit	0.458	0.085	160	146	2.134	0.186	0.288	0.629
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.351	0.078	160	146	2.028	0.221	0.196	0.506

Table B.15 Sampling errors: Greater Kampala sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.886	0.015	669	708	1.192	0.017	0.857	0.916
Average number of any mosquito nets per household	2.288	0.144	669	708	2.213	0.063	1.999	2.577
Proportion of households having at least one LLIN	0.764	0.029	669	708	1.782	0.038	0.706	0.823
Average number of LLIN per household	1.897	0.140	669	708	2.206	0.074	1.617	2.178
Proportion of households having at least one ITN	0.768	0.028	669	708	1.696	0.036	0.712	0.823
Average number of ITN per household	1.908	0.139	669	708	2.173	0.073	1.631	2.186
Proportion of households with IRS in the past 6 months	0.006	0.003	669	708	0.966	0.465	0.000	0.012
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.830	0.034	447	533	1.579	0.041	0.761	0.898
Slept under an LLIN last night	0.691	0.057	447	533	2.166	0.083	0.576	0.806
Slept under an ITN last night	0.699	0.053	447	533	2.008	0.075	0.593	0.804
Slept under an ITN or in a dwelling with IRS last night	0.699	0.053	447	533	2.008	0.075	0.593	0.804
Had a fever in last two weeks	0.206	0.033	421	492	1.603	0.161	0.140	0.273
Had received ACT treatment for fever	0.537	0.104	94	102	1.837	0.194	0.329	0.745
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.029	0.007	417	491	0.871	0.242	0.015	0.043
Prevalence of malaria (RDT)	0.055	0.014	412	487	1.196	0.249	0.028	0.082
Prevalence of malaria (microscopy test)	0.033	0.013	416	510	1.520	0.403	0.006	0.060
PREGNANT WOMEN								
Slept under any mosquito net last night	0.854	0.053	39	42	0.948	0.062	0.748	0.960
Slept under an LLIN last night	0.705	0.105	39	42	1.452	0.149	0.495	0.915
Slept under an ITN last night	0.705	0.105	39	42	1.452	0.149	0.495	0.915
Slept under an ITN last night or in a dwelling with IRS	0.705	0.105	39	42	1.452	0.149	0.495	0.915
Percentage who received any SP/Fansidar during an ANC visit	0.652	0.056	186	215	1.587	0.086	0.541	0.764
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.530	0.068	186	215	1.838	0.128	0.394	0.665

Table B.16 Sampling errors: Karamoja region sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.948	0.027	395	118	2.361	0.028	0.895	1.001
Average number of any mosquito nets per household	2.793	0.163	395	118	2.451	0.059	2.466	3.120
Proportion of households having at least one LLIN	0.948	0.027	395	118	2.361	0.028	0.895	1.001
Average number of LLIN per household	2.755	0.169	395	118	2.509	0.061	2.417	3.093
Proportion of households having at least one ITN	0.948	0.027	395	118	2.361	0.028	0.895	1.001
Average number of ITN per household	2.755	0.169	395	118	2.509	0.061	2.417	3.093
Proportion of households with IRS in the past 6 months	0.002	0.002	395	118	0.962	1.025	0.000	0.007
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.848	0.033	425	131	1.587	0.039	0.781	0.914
Slept under an LLIN last night	0.848	0.033	425	131	1.587	0.039	0.781	0.914
Slept under an ITN last night	0.848	0.033	425	131	1.587	0.039	0.781	0.914
Slept under an ITN or in a dwelling with IRS last night	0.848	0.033	425	131	1.587	0.039	0.781	0.914
Had a fever in last two weeks	0.261	0.032	397	124	1.438	0.122	0.197	0.324
Had received ACT treatment for fever	0.667	0.075	111	32	1.543	0.112	0.518	0.817
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.124	0.021	406	125	1.325	0.167	0.083	0.166
Prevalence of malaria (RDT)	0.685	0.050	406	125	2.091	0.073	0.585	0.786
Prevalence of malaria (microscopy test)	0.480	0.057	403	126	2.182	0.118	0.369	0.596
PREGNANT WOMEN								
Slept under any mosquito net last night	0.878	0.067	50	15	1.462	0.077	0.743	1.012
Slept under an LLIN last night	0.878	0.067	50	15	1.462	0.077	0.743	1.012
Slept under an ITN last night	0.878	0.067	50	15	1.462	0.077	0.743	1.012
Slept under an ITN last night or in a dwelling with IRS	0.878	0.067	50	15	1.462	0.077	0.743	1.012
Percentage who received any SP/Fansidar during an ANC visit	0.264	0.035	135	43	0.909	0.131	0.195	0.334
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.158	0.027	135	43	0.864	0.173	0.103	0.212

Table B.17 Sampling errors: The 10 IRS districts sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.946	0.014	592	373	1.460	0.014	0.919	0.973
Average number of any mosquito nets per household	2.577	0.098	592	373	1.647	0.038	2.381	2.773
Proportion of households having at least one LLIN	0.929	0.018	592	373	1.657	0.019	0.893	0.964
Average number of LLIN per household	2.507	0.105	592	373	1.775	0.042	2.297	2.716
Proportion of households having at least one ITN	0.930	0.017	592	373	1.626	0.018	0.896	0.964
Average number of ITN per household	2.510	0.104	592	373	1.771	0.042	2.301	2.719
Proportion of households with IRS in the past 6 months	0.668	0.060	592	373	3.061	0.089	0.548	0.787
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.790	0.044	568	353	2.023	0.055	0.703	0.878
Slept under an LLIN last night	0.776	0.045	568	353	2.012	0.058	0.686	0.867
Slept under an ITN last night	0.776	0.045	568	353	2.012	0.058	0.686	0.867
Slept under an ITN or in a dwelling with IRS last night	0.945	0.015	568	353	1.138	0.016	0.915	0.975
Had a fever in last two weeks	0.256	0.045	474	296	2.195	0.177	0.165	0.347
Had received ACT treatment for fever	0.652	0.036	106	76	0.824	0.056	0.580	0.724
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.031	0.009	557	346	1.198	0.301	0.012	0.050
Prevalence of malaria (RDT)	0.151	0.032	548	342	1.987	0.214	0.087	0.216
Prevalence of malaria (microscopy test)	0.072	0.027	555	338	2.123	0.380	0.017	0.127
PREGNANT WOMEN								
Slept under any mosquito net last night	0.757	0.067	49	29	1.057	0.089	0.622	0.891
Slept under an LLIN last night	0.723	0.070	49	29	1.047	0.096	0.584	0.862
Slept under an ITN last night	0.723	0.070	49	29	1.047	0.096	0.584	0.862
Slept under an ITN last night or in a dwelling with IRS	0.938	0.039	49	29	1.089	0.042	0.860	1.016
Percentage who received any SP/Fansidar during an ANC visit	0.777	0.045	183	113	1.470	0.059	0.686	0.868
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.544	0.047	183	113	1.270	0.086	0.450	0.638

Table B.18 Sampling errors: The future 14 IRS districts sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.951	0.013	592	598	1.464	0.014	0.924	0.977
Average number of any mosquito nets per household	2.739	0.128	592	598	2.008	0.047	2.484	2.994
Proportion of households having at least one LLIN	0.935	0.016	592	598	1.557	0.017	0.904	0.967
Average number of LLIN per household	2.674	0.128	592	598	2.014	0.048	2.419	2.929
Proportion of households having at least one ITN	0.935	0.016	592	598	1.557	0.017	0.904	0.967
Average number of ITN per household	2.674	0.128	592	598	2.014	0.048	2.419	2.929
Proportion of households with IRS in the past 6 months	0.002	0.002	592	598	1.093	1.008	0.000	0.006
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.789	0.029	660	652	1.506	0.036	0.732	0.846
Slept under an LLIN last night	0.781	0.030	660	652	1.556	0.038	0.722	0.841
Slept under an ITN last night	0.781	0.030	660	652	1.556	0.038	0.722	0.841
Slept under an ITN or in a dwelling with IRS last night	0.781	0.030	660	652	1.556	0.038	0.722	0.841
Had a fever in last two weeks	0.414	0.032	603	592	1.386	0.077	0.350	0.477
Had received ACT treatment for fever	0.723	0.035	256	245	1.096	0.048	0.654	0.792
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.083	0.012	638	630	0.995	0.140	0.060	0.107
Prevalence of malaria (RDT)	0.627	0.035	630	622	1.597	0.056	0.557	0.697
Prevalence of malaria (microscopy test)	0.356	0.030	638	627	1.425	0.085	0.295	0.417
PREGNANT WOMEN								
Slept under any mosquito net last night	0.867	0.052	59	57	1.158	0.060	0.763	0.970
Slept under an LLIN last night	0.867	0.052	59	57	1.158	0.060	0.763	0.970
Slept under an ITN last night	0.867	0.052	59	57	1.158	0.060	0.763	0.970
Slept under an ITN last night or in a dwelling with IRS	0.867	0.052	59	57	1.158	0.060	0.763	0.970
Percentage who received any SP/Fansidar during an ANC visit	0.628	0.043	248	244	1.388	0.068	0.542	0.713
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.488	0.046	248	244	1.458	0.095	0.395	0.581

Table B.19 Sampling errors: The 10 highland districts sample, Uganda 2014-15

Variable	R	SE	N	WN	DEFT	SE/R	R-2SE	R+2SE
HOUSEHOLD								
Proportion of households having at least one mosquito net of any type	0.986	0.007	484	387	1.236	0.007	0.972	0.999
Average number of any mosquito nets per household	2.824	0.097	484	387	1.496	0.034	2.629	3.019
Proportion of households having at least one LLIN	0.981	0.007	484	387	1.147	0.007	0.967	0.995
Average number of LLIN per household	2.784	0.091	484	387	1.396	0.033	2.603	2.965
Proportion of households having at least one ITN	0.981	0.007	484	387	1.147	0.007	0.967	0.995
Average number of ITN per household	2.784	0.091	484	387	1.396	0.033	2.603	2.965
Proportion of households with IRS in the past 6 months	0.001	0.001	484	387	0.717	1.007	0.000	0.003
CHILDREN UNDER FIVE								
Slept under any mosquito net last night	0.802	0.037	458	382	1.626	0.046	0.728	0.877
Slept under an LLIN last night	0.796	0.036	458	382	1.550	0.045	0.724	0.868
Slept under an ITN last night	0.796	0.036	458	382	1.550	0.045	0.724	0.868
Slept under an ITN or in a dwelling with IRS last night	0.796	0.036	458	382	1.550	0.045	0.724	0.868
Had a fever in last two weeks	0.249	0.053	422	348	2.157	0.215	0.142	0.356
Had received ACT treatment for fever	0.630	0.047	97	87	0.875	0.074	0.536	0.724
Prevalence of anemia (haemoglobinlevel <8.0 g/dl)	0.053	0.035	450	377	3.149	0.663	0.000	0.122
Prevalence of malaria (RDT)	0.099	0.054	447	375	3.370	0.548	0.000	0.207
Prevalence of malaria (microscopy test)	0.088	0.048	450	368	3.099	0.543	0.000	0.184
PREGNANT WOMEN								
Slept under any mosquito net last night	0.796	0.084	35	30	1.277	0.106	0.627	0.965
Slept under an LLIN last night	0.796	0.084	35	30	1.277	0.106	0.627	0.965
Slept under an ITN last night	0.796	0.084	35	30	1.277	0.106	0.627	0.965
Slept under an ITN last night or in a dwelling with IRS	0.796	0.084	35	30	1.277	0.106	0.627	0.965
Percentage who received any SP/Fansidar during an ANC visit	0.545	0.073	161	135	1.839	0.134	0.400	0.691
Took 2+ doses of SP/Fansidar and received at least one during an ANC visit	0.411	0.086	161	135	2.178	0.209	0.239	0.582

DATA QUALITY TABLES

Appendix C

Table C.1 Household age distribution

Single-year age distribution of the de facto household population by sex (weighted), Uganda 2014-15

	Women		Men			Women		Men	
Age	Number	Percent	Number	Percent	Age	Number	Percent	Number	Percent
0	502	3.7	469	3.7	36	102	0.8	85	0.7
1	491	3.6	467	3.7	37	102	0.8	91	0.7
2	521	3.8	498	3.9	38	127	0.9	125	1.0
3	593	4.4	517	4.1	39	78	0.6	75	0.6
4	512	3.8	522	4.1	40	179	1.3	208	1.6
5	402	3.0	433	3.4	41	60	0.4	54	0.4
6	467	3.4	463	3.6	42	97	0.7	97	0.8
7	490	3.6	445	3.5	43	57	0.4	68	0.5
8	478	3.5	384	3.0	44	48	0.4	45	0.4
9	378	2.8	417	3.3	45	101	0.7	142	1.1
10	449	3.3	441	3.5	46	47	0.3	55	0.4
11	283	2.1	289	2.3	47	40	0.3	63	0.5
12	422	3.1	390	3.1	48	72	0.5	59	0.5
13	382	2.8	360	2.8	49	36	0.3	40	0.3
14	460	3.4	355	2.8	50	147	1.1	120	0.9
15	254	1.9	314	2.5	51	50	0.4	28	0.2
16	303	2.2	285	2.2	52	93	0.7	74	0.6
17	205	1.5	284	2.2	53	52	0.4	42	0.3
18	322	2.4	305	2.4	54	49	0.4	40	0.3
19	208	1.5	155	1.2	55	53	0.4	38	0.3
20	343	2.5	275	2.2	56	52	0.4	33	0.3
21	190	1.4	128	1.0	57	29	0.2	33	0.3
22	241	1.8	208	1.6	58	39	0.3	38	0.3
23	173	1.3	168	1.3	59	27	0.2	23	0.2
24	224	1.7	191	1.5	60	105	0.8	84	0.7
25	215	1.6	204	1.6	61	18	0.1	13	0.1
26	174	1.3	142	1.1	62	34	0.2	30	0.2
27	188	1.4	157	1.2	63	19	0.1	17	0.1
28	225	1.7	229	1.8	64	17	0.1	14	0.1
29	157	1.2	102	0.8	65	53	0.4	40	0.3
30	268	2.0	258	2.0	66	18	0.1	12	0.1
31	112	0.8	65	0.5	67	22	0.2	24	0.2
32	156	1.2	178	1.4	68	24	0.2	18	0.1
33	96	0.7	54	0.4	69	21	0.2	12	0.1
34	125	0.9	103	0.8	70+	317	2.3	267	2.1
35	147	1.1	212	1.7	Don’t know/missing	4	0.0	4	0.0
					Total	13,543	100.0	12,678	100.0

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

Table C.2 Age distribution of eligible and interviewed women

De facto household population of women age 10-54, interviewed women age 15-49; and percent distribution and percentage of eligible women who were interviewed (weighted), by five-year age groups, Uganda 2014-15

Age group	Household population of women age 10-54	Interviewed women age 15-49		Percentage of eligible women interviewed
		Number	Percentage	
10-14	1,996	na	na	na
15-19	1,292	1,234	23.3	95.5
20-24	1,171	1,131	21.3	96.6
25-29	958	936	17.7	97.7
30-34	758	742	14.0	97.8
35-39	557	542	10.2	97.3
40-44	440	429	8.1	97.5
45-49	295	285	5.4	96.3
50-54	392	na	na	na
15-49	5,472	5,299	100.0	96.8

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 Questionnaire.
na = Not applicable

Table C.3 Completeness of reporting

Percentage of observations missing information for selected demographic and health questions (weighted), Uganda 2014-15

Subject	Percentage with information missing	Number of cases
Month Only (Births in the 5 years preceding the survey)	1.78	4,761
Month and Year (Births in the 5 years preceding the survey)	0.03	4,761
Respondent's education (All women age 15-49)	0.82	5,322
Anaemia (Living children age 0-59 months from the Household Questionnaire)	3.38	5,046
Rapid diagnostic test (Living children age 0-59 months from the Household Questionnaire)	4.29	5,073
Microscopy (Living children age 0-59 months from the Household Questionnaire)	3.60	5,073

SURVEY PERSONNEL

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QUESTIONNAIRES

Appendix **E**

2014 UGANDA MALARIA INDICATOR SURVEY
HOUSEHOLD QUESTIONNAIRE

UGANDA
IDRC/MOH/UBOS

FORMATTING DATE: 20 November 2014
LANGUAGE DATE: 19 November 2014

IDENTIFICATION (1)

REGION _____

DISTRICT _____

COUNTY _____

SUBCOUNTY/TOWN _____

PARISH/LC2 NAME _____

EA NAME _____

UMIS NUMBER .....

URBAN=1, PERI URBAN=2, RURAL=3 .....

NAME OF HEAD OF HOUSEHOLD _____

HOUSEHOLD NUMBER .....

HOUSEHOLD SAMPLE NUMBER .....

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
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)

TOTAL PERSONS IN HOUSEHOLD

TOTAL ELIGIBLE WOMEN

TOTAL ELIGIBLE CHILDREN

LINE NO. OF RESPONDENT TO HOUSEHOLD QUESTIONNAIRE

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 OF THE QUESTIONNAIRE **English**

LANGUAGE USED:

1 ATESO-KARAMOJONG
2 LUGANDA
3 LUGBARA
4 LUO
5 RUNYANKORE-RUKIGA
6 RUNYORO-RUTORO
7 ENGLISH
8 OTHER _____ (SPECIFY)

SUPERVISOR NAME _____ OFFICE EDITOR KEYED BY

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INFORMED CONSENT

Hello. My name is _____. I am working with the Ministry of Health. We are conducting a survey about malaria all over Uganda. The information we collect will help the government to plan health services. Your household was selected for the survey. I would like to ask you some questions about your household. The questions usually take about 15 to 20 minutes. All of the answers you give will be confidential and will not be shared with anyone other than members of our survey team. You don't have to be in the survey, but we hope you will agree to answer the questions since your views are important. If I ask you 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.
In case you need more information about the survey, you may contact the person listed on this card.

GIVE CARD WITH CONTACT INFORMATION

Do you have any questions?
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	. . . . .	
MINUTES	. . . . .	

HOUSEHOLD SCHEDULE

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	WOMEN AGE 15-49	CHILDREN AGE 0-5
1	2	3	4	5	6	7	8	9
	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 5-9 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)? IF 95 OR MORE, RECORD '95'.	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49	CIRCLE LINE NUMBER OF ALL CHILDREN AGE 0-5
			M F	Y N	Y N	IN YEARS		
01			1 2	1 2	1 2		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
09			1 2	1 2	1 2		09	09
10			1 2	1 2	1 2		10	10

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
08 = BROTHER OR SISTER
09 = OTHER RELATIVE
10 = ADOPTED/FOSTER/ STEPCHILD
11 = NOT RELATED

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	WOMEN AGE 15-49	CHILDREN AGE 0-5
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
	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 5-9 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)? IF 95 OR MORE, RECORD '95'.	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49	CIRCLE LINE NUMBER OF ALL CHILDREN AGE 0-5

05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW

98 = DON'T KNOW

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	WOMEN AGE 15-49	CHILDREN AGE 0-5
1	2	3	4	5	6	7	8	9
	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 5-9 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)? IF 95 OR MORE, RECORD '95'.	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49	CIRCLE LINE NUMBER OF ALL CHILDREN AGE 0-5
			M F	Y N	Y N	IN YEARS		
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
17			1 2	1 2	1 2		17	17
18			1 2	1 2	1 2		18	18
19			1 2	1 2	1 2		19	19
20			1 2	1 2	1 2		20	20

TICK HERE IF CONTINUATION SHEET USED ☐

2A) Just to make sure that I have a complete listing: are there any other persons such as small children or infants that we have not listed?

YES ☐ → ADD TO TABLE 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 ☐

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
08 = BROTHER/SISTER
09 = OTHER RELATIVE
10 = ADOPTED/FOSTER/STEPCHILD
11 = NOT RELATED
98 = DON'T KNOW

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	WOMEN AGE 15-49	CHILDREN AGE 0-5
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
	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 5-9 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)? IF 95 OR MORE, RECORD '95'.	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49	CIRCLE LINE NUMBER OF ALL CHILDREN AGE 0-5

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 ☐

06 = PARENT
07 = PARENT-IN-LAW

HOUSEHOLD CHARACTERISTICS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	What is the main source of drinking water for members of your household?	PIPED WATER PIPED INTO DWELLING . . . . . 11 PIPED TO YARD/PLOT . . . . . 12 PUBLIC TAP/STANDPIPE . . . . . 13 BOREHOLE IN YARD/PLOT . . . . . 21 PUBLIC BOREHOLE . . . . . 22 DUG WELL PROTECTED WELL . . . . . 31 UNPROTECTED WELL . . . . . 32 WATER FROM SPRING PROTECTED SPRING . . . . . 41 UNPROTECTED SPRING . . . . . 42 GRAVITY FLOW SCHEME . . . . . 43 RAINWATER . . . . . 51 TANKER TRUCK . . . . . 61 VENDOR . . . . . 62 CART WITH SMALL TANK . . . . . 71 SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ IRRIGATION CHANNEL) . . . . . 81 BOTTLED WATER . . . . . 91 OTHER _____ 96 (SPECIFY)	→ 104 → 104 → 104
102	Where is that water source located?	IN OWN DWELLING . . . . . 1 IN OWN YARD/PLOT . . . . . 2 ELSEWHERE 3	→ 104
103	How long does it take to go there, get water, and come back?	MINUTES . . . . . [ ][ ][ ] DON'T KNOW 998	
104	What kind of toilet facility do members of your household usually use?	FLUSH OR POUR FLUSH TOILET FLUSH TO PIPED SEWER SYSTEM . . . . . 11 FLUSH TO SEPTIC TANK . . . . . 12 FLUSH TO PIT LATRINE . . . . . 13 FLUSH TO SOMEWHERE ELSE . . . . . 14 FLUSH, DON'T KNOW WHERE . . . . . 15 PIT LATRINE VENTILATED IMPROVED PIT LATRINE . . . . . 21 COVERED PIT LATRINE WITH SLAB . . . 22 COVERED PIT LATRINE WITHOUT SLAB/ OPEN PIT . . . . . 23 UNCOVERED PIT LATRINE WITH SLAB . . . 24 UNCOVERED PIT LATRINE WITHOUT SLAB . . . . . 25 COMPOSTING TOILET (ECOSAN) . . . . . 31 BUCKET TOILET . . . . . 41 HANGING TOILET/HANGING LATRINE . . . . . 51 NO FACILITY/BUSH/FIELD/BAGS/BUCKET . . 61 OTHER _____ 96 (SPECIFY)	→ 107
105	Do you share this toilet facility with other households?	YES . . . . . 1 NO 2	→ 107
106	How many households use this toilet facility?	NO. OF HOUSEHOLDS IF LESS THAN 10 . . . . . [0][ ] 10 OR MORE HOUSEHOLDS . . . . . 95 DON'T KNOW 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
107	Does your household have: a) Electricity? b) A radio? c) A cassette player? d) A television? e) A mobile telephone? f) A non-mobile telephone? g) A refrigerator? h) A table? i) A chair? j) A sofa set? k) A bed? l) A cupboard? m) A clock?	YES NO a) ELECTRICITY . . . . . 1 2 b) RADIO . . . . . 1 2 c) CASSETTE PLAYER . . . . . 1 2 d) TELEVISION . . . . . 1 2 e) MOBILE TELEPHONE . . . . . 1 2 f) NON-MOBILE TELEPHONE . . . . . 1 2 g) REFRIGERATOR . . . . . 1 2 h) TABLE . . . . . 1 2 i) CHAIR . . . . . 1 2 j) SOFA SET . . . . . 1 2 k) BED . . . . . 1 2 l) CUPBOARD . . . . . 1 2 m) CLOCK 1 2	
108	What type of fuel does your household mainly use for cooking?	ELECTRICITY . . . . . 01 LPG . . . . . 02 NATURAL GAS . . . . . 03 BIOGAS . . . . . 04 KEROSENE/PARAFFIN . . . . . 05 COAL, LIGNITE . . . . . 06 CHARCOAL . . . . . 07 WOOD . . . . . 08 STRAW/SHRUBS/GRASS . . . . . 09 AGRICULTURAL CROP . . . . . 10 ANIMAL DUNG . . . . . 11 NO FOOD COOKED IN HOUSEHOLD . . . . . 95 OTHER _____ 96 (SPECIFY)	
109	MAIN MATERIAL OF THE FLOOR. RECORD OBSERVATION.	NATURAL FLOOR EARTH/SAND . . . . . 11 SAND AND DUNG . . . . . 12 RUDIMENTARY FLOOR WOOD PLANKS . . . . . 21 PALM . . . . . 22 FINISHED FLOOR PARQUET/POLISHED WOOD . . . . . 31 MOSAIC OR TILE . . . . . 33 CEMENT . . . . . 34 STONES . . . . . 36 BRICKS . . . . . 37 OTHER _____ 96 (SPECIFY)	
110	MAIN MATERIAL OF THE ROOF. RECORD OBSERVATION.	NATURAL ROOFING NO ROOF . . . . . 11 THATCHED . . . . . 12 MUD . . . . . 13 RUDIMENTARY ROOFING TIN . . . . . 21 PALM . . . . . 22 WOOD PLANKS . . . . . 23 FINISHED ROOFING IRON SHEETS . . . . . 31 WOOD . . . . . 32 CEMENT FIBER . . . . . 33 TILES . . . . . 34 CEMENT . . . . . 35 ROOFING SHINGLES . . . . . 36 ASBESTOS . . . . . 37 OTHER _____ 96 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
111	MAIN MATERIAL OF THE EXTERIOR WALLS. RECORD OBSERVATION.	NATURAL WALLS NO WALLS . . . . . 11 THATCHED/STRAW . . . . . 12 DIRT . . . . . 13 RUDIMENTARY WALLS MUD AND POLES . . . . . 21 STONE WITH MUD . . . . . 22 REUSED WOOD . . . . . 26 UNBURNT BRICKS . . . . . 27 UNBURNT BRICKS WITH PLASTER . . . 28 UNBURNT BRICKS WITH MUD . . . . . 29 FINISHED WALLS CEMENT . . . . . 31 STONE WITH LIME/CEMENT . . . . . 32 BURNT BRICKS WITH CEMENT . . . . . 33 CEMENT BLOCKS . . . . . 34 WOOD PLANKS/SHINGLES . . . . . 36 OTHER _____ 96 (SPECIFY)	
112	How many rooms in this household are used for sleeping?	ROOMS . . . . . [ ][ ]	
113	Does any member of this household own: a) A watch? b) A bicycle? c) A motorcycle or motor scooter? d) An animal-drawn cart? e) A car or truck? f) A boat with a motor? g) A boat without a motor?	YES NO a) WATCH . . . . . 1 2 b) BICYCLE . . . . . 1 2 c) MOTORCYCLE/SCOOTER . . . . . 1 2 d) ANIMAL-DRAWN CART . . . . . 1 2 e) CAR/TRUCK . . . . . 1 2 f) BOAT WITH MOTOR . . . . . 1 2 g) BOAT WITH NO MOTOR 1 2	
114	Does any member of this household own any agricultural land?	YES . . . . . 1 NO 2	→ 116
115	How many acres of agricultural land do members of this household own? IF 95 OR MORE, CIRCLE '950'. (1 DECIMAL = 00.1 ACRES)	ACRES . . . . . [ ][ ] . [ ] 95 OR MORE ACRES . . . . . 950 DON'T KNOW 998	
116	Does this household own any livestock, herds, other farm animals, or poultry?	YES . . . . . 1 NO 2	→ 118
117	How many of the following animals does this household own? IF NONE, ENTER '00'. IF 95 OR MORE, ENTER '95'. IF UNKNOWN, ENTER '98'. a) Cattle? b) Milk cows or bulls? c) Horses, donkeys, or mules? d) Goats? e) Sheep? f) Chickens? g) Pigs?	a) CATTLE . . . . . [ ][ ] b) COWS/BULLS . . . . . [ ][ ] c) HORSES/DONKEYS/MULES . . . . . [ ][ ] d) GOATS . . . . . [ ][ ] e) SHEEP . . . . . [ ][ ] f) CHICKENS . . . . . [ ][ ] g) PIGS . . . . . [ ][ ]	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
118	Does any member of this household have a bank account?	YES . . . . . 1 NO 2	
119	At any time in the past 6 months, has anyone come into your dwelling to spray the interior walls against mosquitoes?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 120B
119A	How many months ago was the dwelling last sprayed? IF LESS THAN ONE MONTH, RECORD '0' MONTHS AGO.	MONTHS AGO . . . . . [ ]	
120	Who sprayed the dwelling?	GOVERNMENT WORKER/PROGRAM . . . . . A PRIVATE COMPANY . . . . . B NONGOVERNMENTAL ORGANIZATION (NGO) . . . . . C OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
120A	Did you pay for your dwelling to be sprayed?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
120B	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	→ 121
120C	Does the community health worker currently have malaria medicines available?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
121	Does your household have any mosquito nets that can be used while sleeping?	YES . . . . . 1 NO 2	→ 201
122	How many mosquito nets does your household have? IF 7 OR MORE NETS, RECORD '7'.	NUMBER OF NETS . . . . . [ ]	

		NET #1	NET #2	NET #3
123	ASK THE RESPONDENT TO SHOW YOU ALL THE NETS IN THE HOUSEHOLD IF MORE THAN 3 NETS, USE ADDITIONAL QUESTIONNAIRE(S).	OBSERVED . . . . . 1 NOT OBSERVED . . . 2	OBSERVED . . . . . 1 NOT OBSERVED . . . 2	OBSERVED . . . . . 1 NOT OBSERVED . . . 2
124	How many months ago did your household get the mosquito net? IF LESS THAN ONE MONTH AGO, RECORD '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
124A	Where did you get the mosquito net from?	PUBLIC SECTOR (GOV'T) GOV'T HOSPITAL . . 01 GOV'T HEALTH CENTER . . . . . 02 PUBLIC SECTOR(PNFP/NGO) HOSPITAL . . . . . 03 HEALTH CENTER . 04 PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/ CLINIC . . . . . 05 PHARMACY . . . . . 06 OTHER SOURCE SHOP . . . . . 07 OPEN MARKET . . . 08 HAWKER . . . . . 09 CAMPAIGN . . . . . 10 CHURCH . . . . . 11 OTHER . . . . . 96 DOES NOT KNOW . . . 98	PUBLIC SECTOR (GOV'T) GOV'T HOSPITAL . . 01 GOV'T HEALTH CENTER . . . . . 02 PUBLIC SECTOR(PNFP/NGO) HOSPITAL . . . . . 03 HEALTH CENTER . 04 PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/ CLINIC . . . . . 05 PHARMACY . . . . . 06 OTHER SOURCE SHOP . . . . . 07 OPEN MARKET . . . 08 HAWKER . . . . . 09 CAMPAIGN . . . . . 10 CHURCH . . . . . 11 OTHER . . . . . 96 DOES NOT KNOW . . . 98	PUBLIC SECTOR (GOV'T) GOV'T HOSPITAL . . 01 GOV'T HEALTH CENTER . . . . . 02 PUBLIC SECTOR(PNFP/NGO) HOSPITAL . . . . . 03 HEALTH CENTER . 04 PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/ CLINIC . . . . . 05 PHARMACY . . . . . 06 OTHER SOURCE SHOP . . . . . 07 OPEN MARKET . . . 08 HAWKER . . . . . 09 CAMPAIGN . . . . . 10 CHURCH . . . . . 11 OTHER . . . . . 96 DOES NOT KNOW . . . 98
124B	CHECK 124A. THE NET WAS OBTAINED THROUGH THE CAMPAIGN?	CODE '10' CIRCLED [ ] CODE '10' NOT CIRCLED [ ] (SKIP TO 125)	CODE '10' CIRCLED [ ] CODE '10' NOT CIRCLED [ ] (SKIP TO 125)	CODE '10' CIRCLED [ ] CODE '10' NOT CIRCLED [ ] (SKIP TO 125)
124C	What is the campaign's date?	DAY . . . . . [ ][ ] MONTH . . . . . [ ][ ] YEAR [ ][ ][ ][ ] DON'T KNOW 98	DAY . . . . . [ ][ ] MONTH . . . . . [ ][ ] YEAR [ ][ ][ ][ ] DON'T KNOW 98	DAY . . . . . [ ][ ] MONTH . . . . . [ ][ ] YEAR [ ][ ][ ][ ] DON'T KNOW 98

		NET #1	NET #2	NET #3
125	OBSERVE OR ASK THE BRAND/ TYPE OF MOSQUITO NET. IF BRAND IS UNKNOWN AND YOU CANNOT OBSERVE THE NET, SHOW PICTURES OF TYPICAL NET TYPES/BRANDS	LONG-LASTING INSECTICIDE-TREATED NET (LLIN) PERMANET . . . . . 11 DURANET . . . . . 12 INTERCEPTOR . . 13 NETPROTECT . . 14 OLYSET . . . . . 15 DAWNET . . . . . 16 ICONLIFE . . . . . 17 YORKOOL . . . . . 18 DK BRAND . . . . . 19 OTHER_____ 20 (SPECIFY) (SKIP TO 128) OTHER BRAND . . . 96 DK BRAND 98	LONG-LASTING INSECTICIDE-TREATED NET (LLIN) PERMANET . . . . . 11 DURANET . . . . . 12 INTERCEPTOR . . 13 NETPROTECT . . 14 OLYSET . . . . . 15 DAWNET . . . . . 16 ICONLIFE . . . . . 17 YORKOOL . . . . . 18 DK BRAND . . . . . 19 OTHER_____ 20 (SPECIFY) (SKIP TO 128) OTHER BRAND . . . 96 DK BRAND 98	LONG-LASTING INSECTICIDE-TREATED NET (LLIN) PERMANET . . . . . 11 DURANET . . . . . 12 INTERCEPTOR . . 13 NETPROTECT . . 14 OLYSET . . . . . 15 DAWNET . . . . . 16 ICONLIFE . . . . . 17 YORKOOL . . . . . 18 DK BRAND . . . . . 19 OTHER_____ 20 (SPECIFY) (SKIP TO 128) OTHER BRAND . . . 96 DK BRAND 98
126	Since you got the net, was it ever soaked or dipped in a liquid to kill or repel mosquitoes?	YES . . . . . 1 NO . . . . . 2 (SKIP TO 128) NOT SURE 8	YES . . . . . 1 NO . . . . . 2 (SKIP TO 128) NOT SURE 8	YES . . . . . 1 NO . . . . . 2 (SKIP TO 128) NOT SURE 8
127	How many months ago was the net last soaked or dipped? IF LESS THAN ONE MONTH AGO, RECORD '00'.	MONTHS AGO . . . [ ][ ] MORE THAN 24 MONTHS AGO . . . 95 NOT SURE 98	MONTHS AGO . . . [ ][ ] MORE THAN 24 MONTHS AGO . . . 95 NOT SURE 98	MONTHS AGO . . . [ ][ ] MORE THAN 24 MONTHS AGO . . . 95 NOT SURE 98
128	Did anyone sleep under this mosquito net last night?	YES . . . . . 1 (SKIP TO 129) NO . . . . . 2 NOT SURE . . . . . 8 (SKIP TO 130)	YES . . . . . 1 (SKIP TO 129) NO . . . . . 2 NOT SURE . . . . . 8 (SKIP TO 130)	YES . . . . . 1 (SKIP TO 129) NO . . . . . 2 NOT SURE . . . . . 8 (SKIP TO 130)
128A	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 HUNG . . E OTHER_____ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 130)	TOO HOT . . . . . A DON'T LIKE SMELL . . B NO MOSQUITOES . . C NET TOO OLD/TOO MANY HOLES . . D NET NOT HUNG . . E OTHER_____ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 130)	TOO HOT . . . . . A DON'T LIKE SMELL . . B NO MOSQUITOES . . C NET TOO OLD/TOO MANY HOLES . . D NET NOT HUNG . . E OTHER_____ X (SPECIFY) DON'T KNOW . . . . . Z (ALL SKIP TO 130)

		NET #1	NET #2	NET #3
129	Who slept under this mosquito net last night? RECORD THE PERSON'S NAME AND LINE NUMBER FROM THE HOUSEHOLD SCHEDULE.	NAME_____ LINE NO. . . . . [ ][ ]	NAME_____ LINE NO. . . . . [ ][ ]	NAME_____ LINE NO. . . . . [ ][ ]
		NAME_____ LINE NO. . . . . [ ][ ]	NAME_____ LINE NO. . . . . [ ][ ]	NAME_____ LINE NO. . . . . [ ][ ]
		NAME_____ LINE NO. . . . . [ ][ ]	NAME_____ LINE NO. . . . . [ ][ ]	NAME_____ LINE NO. . . . . [ ][ ]
		NAME_____ LINE NO. . . . . [ ][ ]	NAME_____ LINE NO. . . . . [ ][ ]	NAME_____ LINE NO. . . . . [ ][ ]
130		GO BACK TO 123 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 131.	GO BACK TO 123 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 131.	GO TO 123 IN FIRST COLUMN OF A NEW QUESTIONNAIRE; OR, IF NO MORE NETS, GO TO 131.
131	RECORD THE TIME	HOURS . . . . . [ ][ ] MINUTES . . . . . [ ][ ]		

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5				
201	CHECK COLUMN 9 IN HOUSEHOLD SCHEDULE. RECORD THE LINE NUMBER AND NAME FOR ALL ELIGIBLE CHILDREN 0-5 YEARS IN QUESTION 202. IF MORE THAN SIX CHILDREN, USE ADDITIONAL QUESTIONNAIRE(S).			
		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 MONTH AND YEAR OF BIRTH 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 2009 OR LATER?	YES . . . . . 1 NO . . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE CHILDREN, END INTERVIEW)	YES . . . . . 1 NO . . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE CHILDREN, END INTERVIEW)	YES . . . . . 1 NO . . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE CHILDREN, END INTERVIEW)
206	LINE NUMBER OF PARENT/ OTHER ADULT RESPONSIBLE FOR THE CHILD (FROM COLUMN 1 OF HOUSEHOLD SCHEDULE). RECORD '00' IF NOT LISTED.	LINE NUMBER . . . . . [ ][ ]	LINE NUMBER . . . . . [ ][ ]	LINE NUMBER . . . . . [ ][ ]
207	ASK CONSENT FOR ANEMIA TEST FROM PARENT/OTHER ADULT IDENTIFIED IN 206 AS RESPONSIBLE FOR CHILD.	As part of this survey, we are asking children all over the country to take an anemia test. Anemia is a serious health problem that usually results from poor nutrition, infection, or chronic disease. This survey will assist the government to develop programs to prevent and treat anemia. We ask that all children born in 2009 or later take part in anemia testing in this survey and give a few drops of blood from a finger or heel. The equipment used to take 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 strictly confidential and will not be shared with anyone other than members of our survey team. Do you have any questions? You can say yes to the test, or you can say no. It is up to you to decide. Will you allow (NAME OF CHILD) to participate in the anemia test?		
208	CIRCLE THE APPROPRIATE CODE AND SIGN YOUR NAME.	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6

		CHILD 1	CHILD 2	CHILD 3
	NAME FROM COLUMN 2	NAME _____	NAME _____	NAME _____
209	ASK CONSENT FOR MALARIA TEST FROM PARENT/OTHER ADULT IDENTIFIED IN 206 AS RESPONSIBLE FOR CHILD.	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 ask that all children born in 2009 or later take part in malaria testing in this survey and give a few drops of blood from a finger or heel. The equipment used to take 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 or heel prick made for the anemia test). One blood drop will be tested for malaria immediately, and the result will be told to you right away. A few blood drops will be collected on a slide(s) and taken to a laboratory for testing. You will not be told the results of the laboratory testing. All results will be kept strictly confidential and will not be shared with anyone other than members of our survey team. Do you have any questions? You can say yes to the test, or you can say no. It is up to you to decide. Will you allow (NAME OF CHILD) to participate in the malaria testing?		
210	CIRCLE THE APPROPRIATE CODE AND SIGN YOUR NAME.	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6
211	PREPARE EQUIPMENT AND SUPPLIES ONLY FOR THE TEST(S) FOR WHICH CONSENT HAS BEEN OBTAINED AND PROCEED WITH THE TEST(S).			
212	BAR CODE LABEL FOR MALARIA TEST	PUT THE 1ST BAR CODE LABEL HERE. NOT PRESENT 99994 REFUSED . . . . . 99995 OTHER . . . . . 99996 PUT THE 2ND BAR CODE ON THE RDT, THE 3RD ON THE THICK SMEAR SLIDE, THE 4TH ON THE THIN SMEAR SLIDE AND THE 5TH ON THE TRANSMITTAL FORM.	PUT THE 1ST BAR CODE LABEL HERE. NOT PRESENT 99994 REFUSED . . . . . 99995 OTHER . . . . . 99996 PUT THE 2ND BAR CODE ON THE RDT, THE 3RD ON THE THICK SMEAR SLIDE, THE 4TH ON THE THIN SMEAR SLIDE AND THE 5TH ON THE TRANSMITTAL FORM.	PUT THE 1ST BAR CODE LABEL HERE. NOT PRESENT 99994 REFUSED . . . . . 99995 OTHER . . . . . 99996 PUT THE 2ND BAR CODE ON THE RDT, THE 3RD ON THE THICK SMEAR SLIDE, THE 4TH ON THE THIN SMEAR SLIDE AND THE 5TH ON THE TRANSMITTAL FORM.
213	RECORD HEMOGLOBIN LEVEL HERE AND IN THE ANEMIA AND MALARIA BROCHURE.	G/DL [ ][ ]. [ ] NOT PRESENT . . . . . 994 REFUSED . . . . . 995 OTHER 996	G/DL [ ][ ]. [ ] NOT PRESENT . . . . . 994 REFUSED . . . . . 995 OTHER 996	G/DL [ ][ ]. [ ] NOT PRESENT . . . . . 994 REFUSED . . . . . 995 OTHER 996
214	RECORD RESULT CODE OF THE MALARIA RDT.	TESTED . . . . . 1 NOT PRESENT . . . . . 2 REFUSED . . . . . 3 OTHER . . . . . 6 (SKIP TO 216)	TESTED . . . . . 1 NOT PRESENT . . . . . 2 REFUSED . . . . . 3 OTHER . . . . . 6 (SKIP TO 216)	TESTED . . . . . 1 NOT PRESENT . . . . . 2 REFUSED . . . . . 3 OTHER . . . . . 6 (SKIP TO 216)
215	RECORD THE RESULT OF THE MALARIA RDT HERE AND IN THE ANEMIA AND MALARIA BROCHURE.	POSITIVE . . . . . 1 (SKIP TO 218) NEGATIVE . . . . . 2 OTHER 6	POSITIVE . . . . . 1 (SKIP TO 218) NEGATIVE . . . . . 2 OTHER 6	POSITIVE . . . . . 1 (SKIP TO 218) NEGATIVE . . . . . 2 OTHER 6
216	CHECK 213: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER . . . . . 6 (SKIP TO 229)	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER . . . . . 6 (SKIP TO 229)	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 8.0 G/DL OR ABOVE . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER . . . . . 6 (SKIP TO 229)

		CHILD 1	CHILD 2	CHILD 3
	NAME FROM COLUMN 2	NAME _____	NAME _____	NAME _____
217	**SEVERE ANEMIA REFERRAL** STATEMENT	The anemia test shows that (NAME OF CHILD) has severe anemia. Your child is very ill and must be taken to a health facility immediately. SKIP TO 229		
218	Does (NAME) suffer from the any of following illnesses or symptoms:			
a)	Extreme weakness?	EXTREME WEAKNESS . A	EXTREME WEAKNESS . A	EXTREME WEAKNESS . A
b)	Heart problems?	HEART PROBLEMS . . . B	HEART PROBLEMS . . . B	HEART PROBLEMS . . . B
c)	Loss of consciousness?	LOSS OF CONSCIOUSNESS . . C	LOSS OF CONSCIOUSNESS . . C	LOSS OF CONSCIOUSNESS . . C
d)	Rapid or difficult breathing?	RAPID BREATHING . . . D	RAPID BREATHING . . . D	RAPID BREATHING . . . D
e)	Seizures?	SEIZURES . . . . . E	SEIZURES . . . . . E	SEIZURES . . . . . E
f)	Abnormal bleeding?	BLEEDING . . . . . F	BLEEDING . . . . . F	BLEEDING . . . . . F
g)	Jaundice or yellow skin?	JAUNDICE . . . . . G	JAUNDICE . . . . . G	JAUNDICE . . . . . G
h)	Dark urine?	DARK URINE . . . . . H	DARK URINE . . . . . H	DARK URINE . . . . . H
	IF NONE OF THE ABOVE SYMPTOMS, CIRCLE CODE Y	NONE OF ABOVE SYMPTOMS . . . . . Y	NONE OF ABOVE SYMPTOMS . . . . . Y	NONE OF ABOVE SYMPTOMS . . . . . Y
219	CHECK 218: ANY CODE A-H CIRCLED?	ONLY CODE Y CIRCLED . . . . . 1 ANY CODE A-H CIRCLED . . . . . 2 (SKIP TO 222)	ONLY CODE Y CIRCLED . . . . . 1 ANY CODE A-H CIRCLED . . . . . 2 (SKIP TO 222)	ONLY CODE Y CIRCLED . . . . . 1 ANY CODE A-H CIRCLED . . . . . 2 (SKIP TO 222)
220	CHECK 213: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 (SKIP TO 222) 8.0 G/DL OR ABOVE 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER 6	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 (SKIP TO 222) 8.0 G/DL OR ABOVE 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER 6	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 (SKIP TO 222) 8.0 G/DL OR ABOVE 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER 6
221	In the past two weeks has (NAME) taken or is taking COARTEM/ACT given by a doctor or health center to treat the malaria? VERIFY BY ASKING TO SEE TREATMENT.	YES . . . . . 1 (SKIP TO 223) NO . . . . . 2 (SKIP TO 223A)	YES . . . . . 1 (SKIP TO 223) NO . . . . . 2 (SKIP TO 223A)	YES . . . . . 1 (SKIP TO 223) NO . . . . . 2 (SKIP TO 223A)
222	**SEVERE MALARIA REFERRAL** STATEMENT	The malaria test shows that (NAME OF CHILD) has malaria. Your child also has symptoms of severe malaria. The malaria treatment I have will not help your child, and I cannot give you the medication. Your child is very ill and must be taken to a health facility right away. SKIP TO 228		
223	**ALREADY TAKING [FIRST LINE MEDICATION] REFERRAL STATEMENT**	You have told me that (NAME OF CHILD) has already received COARTEM/ACT for malaria. Therefore, I cannot give you additional COARTEM/ACT. However, the test shows that he/she has malaria. If your child has a fever for two days after the last dose of COARTEM/ACT, you should take the child to the nearest health facility for further examination. SKIP TO 228		

		CHILD 1	CHILD 2	CHILD 3
	NAME FROM COLUMN 2	NAME _____	NAME _____	NAME _____
223A	CHECK 203: IS CHILD AGE 0-3 MONTHS, I.E., WAS CHILD BORN IN MONTH OF INTERVIEW OR THREE PREVIOUS MONTHS?	0-3 MONTHS . . . . . 1 OLDER . . . . . 2 SKIP TO 224	0-3 MONTHS . . . . . 1 OLDER . . . . . 2 SKIP TO 224	0-3 MONTHS . . . . . 1 OLDER . . . . . 2 SKIP TO 224
223B	**UNDER 4 MONTHS MALARIA REFERRAL STATEMENT**	The malaria test shows that (NAME OF CHILD) has malaria. Your child is also younger than 4 months old and therefore requires special treatment from a health facility. Your child is ill and must be taken to a health facility right away. SKIP TO 228		
224	READ INFORMATION FOR MALARIA TREATMENT AND CONSENT STATEMENT TO PARENT OR OTHER ADULT RESPONSIBLE FOR THE CHILD.	The malaria test shows that your child has malaria. We can give you free medicine. The medicine is called COARTEM/ACT. COARTEM/ACT is very effective and in a few days it should get rid of the fever and other symptoms. 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.		
225	CIRCLE THE APPROPRIATE CODE AND SIGN YOUR NAME.	ACCEPTED MEDICINE . . 1 _____ (SIGN) REFUSED . . . . . 2 OTHER 6	ACCEPTED MEDICINE . . 1 _____ (SIGN) REFUSED . . . . . 2 OTHER 6	ACCEPTED MEDICINE . . 1 _____ (SIGN) REFUSED . . . . . 2 OTHER 6
226	CHECK 225: MEDICATION ACCEPTED	ACCEPTED MEDICINE . . 1 REFUSED . . . . . 2 OTHER . . . . . 6 (SKIP TO 228)	ACCEPTED MEDICINE . . 1 REFUSED . . . . . 2 OTHER . . . . . 6 (SKIP TO 228)	ACCEPTED MEDICINE . . 1 REFUSED . . . . . 2 OTHER . . . . . 6 (SKIP TO 228)
227	TREATMENT FOR CHILDREN WITH POSITIVE MALARIA TESTS	TREATMENT WITH COARTEM/ACT **Weight (in Kg) – Approximate age** — **Dosage *** Under 4 months — Refer to health facility 5 kgs. to 14 kgs. (from 4 months up to 3 years) — 1 tablet twice daily for 3 days 15 kgs. to 24 kgs. (from 3 years up to 7 years) — 2 tablets twice daily for 3 days * Co-formulated tablets containing 20 mg Artemether and 120 mg Lumefantrine per tablet 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 additional tablets and repeat the dose. ALSO TELL THE PARENT/ADULT RESPONSIBLE FOR THE CHILD: If [NAME] has a high fever, fast or difficult breathing, is not able to drink or breastfeed, gets sicker or does not get better in two days, you should take him/her to a health professional for treatment right away.		
228	RECORD THE RESULT CODE OF **MALARIA TREATMENT OR REFERRAL.**	MEDICATION GIVEN . . . 1 MEDS REFUSED . . . . . 2 SEVERE MALARIA REFERRAL . . . . . 3 ALREADY TAKING ACTS REFERRAL . . . . . 4 UNDER 4 MONTHS REFERRAL . . . . . 5 OTHER 6	MEDICATION GIVEN . . . 1 MEDS REFUSED . . . . . 2 SEVERE MALARIA REFERRAL . . . . . 3 ALREADY TAKING ACTS REFERRAL . . . . . 4 UNDER 4 MONTHS REFERRAL . . . . . 5 OTHER 6	MEDICATION GIVEN . . . 1 MEDS REFUSED . . . . . 2 SEVERE MALARIA REFERRAL . . . . . 3 ALREADY TAKING ACTS REFERRAL . . . . . 4 UNDER 4 MONTHS REFERRAL . . . . . 5 OTHER 6
229	GO BACK TO 202 IN NEXT COLUMN OF THIS QUESTIONNAIRE OR IN THE FIRST COLUMN OF THE NEXT PAGE; IF NO MORE CHILDREN, END INTERVIEW.			

HEMOGLOBIN MEASUREMENT AND MALARIA TESTING FOR CHILDREN AGE 0-5				
201	CHECK COLUMN 9 IN HOUSEHOLD SCHEDULE. RECORD THE LINE NUMBER AND NAME FOR ALL ELIGIBLE CHILDREN 0-5 YEARS IN QUESTION 202. IF MORE THAN SIX CHILDREN, USE ADDITIONAL QUESTIONNAIRE(S).			
		CHILD 4	CHILD 5	CHILD 6
202	LINE NUMBER FROM COLUMN 9 NAME FROM COLUMN 2	LINE NUMBER . . . . . [ ][ ] NAME _____	LINE NUMBER . . . . . [ ][ ] NAME _____	LINE NUMBER . . . . . [ ][ ] NAME _____
203	IF MOTHER INTERVIEWED, COPY MONTH AND YEAR OF BIRTH 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 2009 OR LATER?	YES . . . . . 1 NO . . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE CHILDREN, END INTERVIEW)	YES . . . . . 1 NO . . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE CHILDREN, END INTERVIEW)	YES . . . . . 1 NO . . . . . 2 (GO TO 203 FOR NEXT CHILD OR, IF NO MORE CHILDREN, END INTERVIEW)
206	LINE NUMBER OF PARENT/ OTHER ADULT RESPONSIBLE FOR THE CHILD (FROM COLUMN 1 OF HOUSEHOLD SCHEDULE). RECORD '00' IF NOT LISTED.	LINE NUMBER . . . . . [ ][ ]	LINE NUMBER . . . . . [ ][ ]	LINE NUMBER . . . . . [ ][ ]
207	ASK CONSENT FOR ANEMIA TEST FROM PARENT/OTHER ADULT IDENTIFIED IN 206 AS RESPONSIBLE FOR CHILD.	As part of this survey, we are asking children all over the country to take an anemia test. Anemia is a serious health problem that usually results from poor nutrition, infection, or chronic disease. This survey will assist the government to develop programs to prevent and treat anemia. We ask that all children born in 2009 or later take part in anemia testing in this survey and give a few drops of blood from a finger or heel. The equipment used to take 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 strictly confidential and will not be shared with anyone other than members of our survey team. Do you have any questions? You can say yes to the test, or you can say no. It is up to you to decide. Will you allow (NAME OF CHILD) to participate in the anemia test?		
208	CIRCLE THE APPROPRIATE CODE AND SIGN YOUR NAME.	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6

		CHILD 4	CHILD 5	CHILD 6
	NAME FROM COLUMN 2	NAME _____	NAME _____	NAME _____
209	ASK CONSENT FOR MALARIA TEST FROM PARENT/OTHER ADULT IDENTIFIED IN 206 AS RESPONSIBLE FOR CHILD.	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 ask that all children born in 2009 or later take part in malaria testing in this survey and give a few drops of blood from a finger or heel. The equipment used to take 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 or heel prick made for the anemia test). One blood drop will be tested for malaria immediately, and the result will be told to you right away. A few blood drops will be collected on a slide(s) and taken to a laboratory for testing. You will not be told the results of the laboratory testing. All results will be kept strictly confidential and will not be shared with anyone other than members of our survey team. Do you have any questions? You can say yes to the test, or you can say no. It is up to you to decide. Will you allow (NAME OF CHILD) to participate in the malaria testing?		
210	CIRCLE THE APPROPRIATE CODE AND SIGN YOUR NAME.	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6	GRANTED . . . . . 1 _____ (SIGN) REFUSED . . . . . 2 NOT PRESENT . . . . . 5 OTHER 6
211	PREPARE EQUIPMENT AND SUPPLIES ONLY FOR THE TEST(S) FOR WHICH CONSENT HAS BEEN OBTAINED AND PROCEED WITH THE TEST(S).			
212	BAR CODE LABEL FOR MALARIA TEST	PUT THE 1ST BAR CODE LABEL HERE. NOT PRESENT 99994 REFUSED . . . . . 99995 OTHER . . . . . 99996 PUT THE 2ND BAR CODE ON THE RDT, THE 3RD ON THE THICK SMEAR SLIDE, THE 4TH ON THE THIN SMEAR SLIDE AND THE 5TH ON THE TRANSMITTAL FORM.	PUT THE 1ST BAR CODE LABEL HERE. NOT PRESENT 99994 REFUSED . . . . . 99995 OTHER . . . . . 99996 PUT THE 2ND BAR CODE ON THE RDT, THE 3RD ON THE THICK SMEAR SLIDE, THE 4TH ON THE THIN SMEAR SLIDE AND THE 5TH ON THE TRANSMITTAL FORM.	PUT THE 1ST BAR CODE LABEL HERE. NOT PRESENT 99994 REFUSED . . . . . 99995 OTHER . . . . . 99996 PUT THE 2ND BAR CODE ON THE RDT, THE 3RD ON THE THICK SMEAR SLIDE, THE 4TH ON THE THIN SMEAR SLIDE AND THE 5TH ON THE TRANSMITTAL FORM.
213	RECORD HEMOGLOBIN LEVEL HERE AND IN THE ANEMIA AND MALARIA BROCHURE.	G/DL [ ][ ]. [ ] NOT PRESENT . . . . . 994 REFUSED . . . . . 995 OTHER 996	G/DL [ ][ ]. [ ] NOT PRESENT . . . . . 994 REFUSED . . . . . 995 OTHER 996	G/DL [ ][ ]. [ ] NOT PRESENT . . . . . 994 REFUSED . . . . . 995 OTHER 996
214	RECORD RESULT CODE OF THE MALARIA RDT.	TESTED . . . . . 1 NOT PRESENT . . . . . 2 REFUSED . . . . . 3 OTHER . . . . . 6 (SKIP TO 216)	TESTED . . . . . 1 NOT PRESENT . . . . . 2 REFUSED . . . . . 3 OTHER . . . . . 6 (SKIP TO 216)	TESTED . . . . . 1 NOT PRESENT . . . . . 2 REFUSED . . . . . 3 OTHER . . . . . 6 (SKIP TO 216)
215	RECORD THE RESULT OF THE MALARIA RDT HERE AND IN THE ANEMIA AND MALARIA BROCHURE.	POSITIVE . . . . . 1 (SKIP TO 218) NEGATIVE . . . . . 2 OTHER 6	POSITIVE . . . . . 1 (SKIP TO 218) NEGATIVE . . . . . 2 OTHER 6	POSITIVE . . . . . 1 (SKIP TO 218) NEGATIVE . . . . . 2 OTHER 6
216	CHECK 213: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 8.0 G/DL OR ABOVE . . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER . . . . . 6 (SKIP TO 229)	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 8.0 G/DL OR ABOVE . . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER . . . . . 6 (SKIP TO 229)	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 8.0 G/DL OR ABOVE . . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER . . . . . 6 (SKIP TO 229)

		CHILD 4	CHILD 5	CHILD 6
	NAME FROM COLUMN 2	NAME _____	NAME _____	NAME _____
217	**SEVERE ANEMIA REFERRAL** STATEMENT	The anemia test shows that (NAME OF CHILD) has severe anemia. Your child is very ill and must be taken to a health facility immediately. SKIP TO 229		
218	Does (NAME) suffer from the any of following illnesses or symptoms:			
a)	Extreme weakness?	EXTREME WEAKNESS . A	EXTREME WEAKNESS . A	EXTREME WEAKNESS . A
b)	Heart problems?	HEART PROBLEMS . . . B	HEART PROBLEMS . . . B	HEART PROBLEMS . . . B
c)	Loss of consciousness?	LOSS OF CONSCIOUSNESS . . . C	LOSS OF CONSCIOUSNESS . . . C	LOSS OF CONSCIOUSNESS . . . C
d)	Rapid or difficult breathing?	RAPID BREATHING . . . D	RAPID BREATHING . . . D	RAPID BREATHING . . . D
e)	Seizures?	SEIZURES . . . . . E	SEIZURES . . . . . E	SEIZURES . . . . . E
f)	Abnormal bleeding?	BLEEDING . . . . . F	BLEEDING . . . . . F	BLEEDING . . . . . F
g)	Jaundice or yellow skin?	JAUNDICE . . . . . G	JAUNDICE . . . . . G	JAUNDICE . . . . . G
h)	Dark urine?	DARK URINE . . . . . H	DARK URINE . . . . . H	DARK URINE . . . . . H
	IF NONE OF THE ABOVE SYMPTOMS, CIRCLE CODE Y	NONE OF ABOVE SYMPTOMS . . . . . Y	NONE OF ABOVE SYMPTOMS . . . . . Y	NONE OF ABOVE SYMPTOMS . . . . . Y
219	CHECK 218: ANY CODE A-H CIRCLED?	ONLY CODE Y CIRCLED . . . . . 1 ANY CODE A-H CIRCLED . . . . . 2 (SKIP TO 222)	ONLY CODE Y CIRCLED . . . . . 1 ANY CODE A-H CIRCLED . . . . . 2 (SKIP TO 222)	ONLY CODE Y CIRCLED . . . . . 1 ANY CODE A-H CIRCLED . . . . . 2 (SKIP TO 222)
220	CHECK 213: HEMOGLOBIN RESULT	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 (SKIP TO 222) 8.0 G/DL OR ABOVE . . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER 6	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 (SKIP TO 222) 8.0 G/DL OR ABOVE . . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER 6	BELOW 8.0 G/DL, SEVERE ANEMIA . . . . 1 (SKIP TO 222) 8.0 G/DL OR ABOVE . . . . 2 NOT PRESENT . . . . . 4 REFUSED . . . . . 5 OTHER 6
221	In the past two weeks has (NAME) taken or is taking COARTEM/ACT given by a doctor or health center to treat the malaria? VERIFY BY ASKING TO SEE TREATMENT.	YES . . . . . 1 (SKIP TO 223) NO . . . . . 2 (SKIP TO 223A)	YES . . . . . 1 (SKIP TO 223) NO . . . . . 2 (SKIP TO 223A)	YES . . . . . 1 (SKIP TO 223) NO . . . . . 2 (SKIP TO 223A)
222	**SEVERE MALARIA REFERRAL** STATEMENT	The malaria test shows that (NAME OF CHILD) has malaria. Your child also has symptoms of severe malaria. The malaria treatment I have will not help your child, and I cannot give you the medication. Your child is very ill and must be taken to a health facility right away. SKIP TO 228		
223	**ALREADY TAKING [FIRST LINE MEDICATION] REFERRAL STATEMENT**	You have told me that (NAME OF CHILD) has already received COARTEM/ACT for malaria. Therefore, I cannot give you additional COARTEM/ACT. However, the test shows that he/she has malaria. If your child has a fever for two days after the last dose of COARTEM/ACT, you should take the child to the nearest health facility for further examination. SKIP TO 228		

		CHILD 4	CHILD 5	CHILD 6
	NAME FROM COLUMN 2	NAME _____	NAME _____	NAME _____
223A	CHECK 203: IS CHILD AGE 0-3 MONTHS, I.E., WAS CHILD BORN IN MONTH OF INTERVIEW OR THREE PREVIOUS MONTHS?	0-3 MONTHS . . . . . 1 OLDER . . . . . 2 SKIP TO 224 ↵	0-3 MONTHS . . . . . 1 OLDER . . . . . 2 SKIP TO 224 ↵	0-3 MONTHS . . . . . 1 OLDER . . . . . 2 SKIP TO 224 ↵
223B	**UNDER 4 MONTHS MALARIA REFERRAL STATEMENT**	The malaria test shows that (NAME OF CHILD) has malaria. Your child is also younger than 4 months old and therefore requires special treatment from a health facility. Your child is ill and must be taken to a health facility right away. SKIP TO 228		
224	READ INFORMATION FOR MALARIA TREATMENT AND CONSENT STATEMENT TO PARENT OR OTHER ADULT RESPONSIBLE FOR THE CHILD.	The malaria test shows that your child has malaria. We can give you free medicine. The medicine is called COARTEM/ACT. COARTEM/ACT is very effective and in a few days it should get rid of the fever and other symptoms. 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.		
225	CIRCLE THE APPROPRIATE CODE AND SIGN YOUR NAME.	ACCEPTED MEDICINE . . 1 _____ ← (SIGN) REFUSED . . . . . 2 OTHER 6	ACCEPTED MEDICINE . . 1 _____ ← (SIGN) REFUSED . . . . . 2 OTHER 6	ACCEPTED MEDICINE . . 1 _____ ← (SIGN) REFUSED . . . . . 2 OTHER 6
226	CHECK 225: MEDICATION ACCEPTED	ACCEPTED MEDICINE . . 1 REFUSED . . . . . 2 OTHER . . . . . 6 (SKIP TO 228) ←	ACCEPTED MEDICINE . . 1 REFUSED . . . . . 2 OTHER . . . . . 6 (SKIP TO 228) ←	ACCEPTED MEDICINE . . 1 REFUSED . . . . . 2 OTHER . . . . . 6 (SKIP TO 228) ←
227	TREATMENT FOR CHILDREN WITH POSITIVE MALARIA TESTS	TREATMENT WITH COARTEM/ACT **Weight (in Kg) – Approximate age** / **Dosage *** Under 4 months — Refer to health facility 5 kgs. to 14 kgs. (from 4 month up to 3 years) — 1 tablet twice daily for 3 days 15 kgs. to 24 kgs. (from 3 years up to 7 years) — 2 tablets twice daily for 3 days * Co-formulated tablets containing 20 mg Artemether and 120 mg Lumefantrine per tablet 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 additional tablets and repeat the dose. ALSO TELL THE PARENT/ADULT RESPONSIBLE FOR THE CHILD: If [NAME] has a high fever, fast or difficult breathing, is not able to drink or breastfeed, gets sicker or does not get better in two days, you should take him/her to a health professional for treatment right away.		
228	RECORD THE RESULT CODE OF **MALARIA TREATMENT OR REFERRAL.**	MEDICATION GIVEN . . . 1 MEDS REFUSED . . . . . 2 SEVERE MALARIA REFERRAL . . . . . 3 ALREADY TAKING ACTS REFERRAL . . . . . 4 UNDER 4 MONTHS REFERRAL . . . . . 5 OTHER 6	MEDICATION GIVEN . . . 1 MEDS REFUSED . . . . . 2 SEVERE MALARIA REFERRAL . . . . . 3 ALREADY TAKING ACTS REFERRAL . . . . . 4 UNDER 4 MONTHS REFERRAL . . . . . 5 OTHER 6	MEDICATION GIVEN . . . 1 MEDS REFUSED . . . . . 2 SEVERE MALARIA REFERRAL . . . . . 3 ALREADY TAKING ACTS REFERRAL . . . . . 4 UNDER 4 MONTHS REFERRAL . . . . . 5 OTHER 6
229	GO BACK TO 202 IN NEXT COLUMN OF THIS QUESTIONNAIRE OR IN THE FIRST COLUMN OF THE NEXT PAGE; IF NO MORE CHILDREN, END INTERVIEW.			

2014 UGANDA MALARIA INDICATOR SURVEY
WOMAN'S QUESTIONNAIRE

UGANDA
IDRC/MOH/UBOS

FORMATTING DATE: 19 November 2014
LANGUAGE DATE: 19 November 2014

IDENTIFICATION (1)

REGION _____

DISTRICT _____

COUNTY _____

SUBCOUNTY/TOWN _____

PARISH/LC2 NAME _____

EA NAME _____

UMIS NUMBER .....

URBAN=1, PERI URBAN=2, RURAL=3 .....

NAME AND LINE NUMBER OF WOMAN _____

HOUSEHOLD NUMBER .....

HOUSEHOLD SAMPLE NUMBER .....

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

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 OF THE QUESTIONNAIRE **English**

LANGUAGE USED:

1 ATESO-KARAMOJONG
2 LUGANDA
3 LUGBARA
4 LUO
5 RUNYANKORE-RUKIGA
6 RUNYORO-RUTORO
7 ENGLISH
8 OTHER _____ (SPECIFY)

SUPERVISOR	OFFICE EDITOR	KEYED BY
NAME _____		

SECTION 1. RESPONDENT'S BACKGROUND

INTRODUCTION AND CONSENT

INFORMED CONSENT

Hello. My name is _____. I am working with MOH. We are conducting a survey about malaria all over UGANDA The information we collect will help the government to plan health services. Your household was selected for the survey. The questions usually take about 10-20 minutes. All of the answers you give will be confidential and will not be shared with anyone other than members of our survey team. You don't have to be in the survey, but we hope you will agree to answer the questions since your views are important. If I ask you 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.

In case you need more information about the survey, you may contact the person listed on the card that has already been given to your household.
Do you have any questions? 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

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	RECORD THE TIME.	HOUR . . . . . [ ][ ] MINUTES . . . . . [ ][ ]	
102	In what month and year were you born?	MONTH . . . . . [ ][ ] DON'T KNOW MONTH . . . . . 98 YEAR . . . . . [ ][ ][ ][ ] DON'T KNOW YEAR 9998	
103	How old were you at your last birthday? COMPARE AND CORRECT 102 AND/OR 103 IF INCONSISTENT.	AGE IN COMPLETED YEARS [ ][ ]	
104	Have you ever attended school?	YES . . . . . 1 NO 2	→ 108
105	What is the highest level of school you attended: primary, 'O' 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	CHECK 105: PRIMARY ↓ SECONDARY OR HIGHER →		109

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
108	Now I would like you to read this sentence to me. SHOW CARD TO RESPONDENT. IF RESPONDENT CANNOT READ WHOLE SENTENCE, PROBE: Can you read any part of the sentence to me?	CANNOT READ AT ALL . . . . . 1 ABLE TO READ ONLY PARTS OF SENTENCE . . . . . 2 ABLE TO READ WHOLE SENTENCE . . . 3 NO CARD WITH REQUIRED LANGUAGE _____ 4 (SPECIFY LANGUAGE) BLIND/VISUALLY IMPAIRED 5	
109	What is your religion?	CATHOLIC . . . . . 01 ANGLICAN/PROTESTANT . . . . . 02 SDA . . . . . 03 ORTHODOX . . . . . 04 PENTECOSTAL . . . . . 05 OTHER CHRISTIAN . . . . . 06 MOSLEM . . . . . 07 BAHAI . . . . . 08 TRADITIONAL . . . . . 09 HINDU . . . . . 10 NONE . . . . . 11 OTHER _____ 96 (SPECIFY)	
110	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)	
111	In the past six months, have you seen or heard any messages about malaria?	YES . . . . . 1 NO 2	→ 201
112	Have you seen or heard these messages: a) On the radio? b) On the television? c) On a poster or billboard? d) From a community health worker? e) At a community event? f) Anywhere else?	YES NO a) RADIO . . . . . 1 2 b) TELEVISION . . . . . 1 2 c) POSTER OR BILLBOARD . . 1 2 d) COMMUNITY HEALTH WORKER . . . . . 1 2 e) COMMUNITY EVENT . . . . . 1 2 f) ANYWHERE ELSE 1 2	

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	a) How many sons live with you? b) And how many daughters live with you? IF NONE, RECORD '00'.	a) SONS AT HOME . . . . . [ ][ ] b) DAUGHTERS AT HOME . . . . . [ ][ ]	
204	Do you have any sons or daughters to whom you have given birth who are alive but do not live with you?	YES . . . . . 1 NO 2	→ 206
205	a) How many sons are alive but do not live with you? b) And how many daughters are alive but do not live with you? IF NONE, RECORD '00'.	a) SONS ELSEWHERE . . . . . [ ][ ] b) 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	a) How many boys have died? b) And how many girls have died? IF NONE, RECORD '00'.	a) BOYS DEAD . . . . . [ ][ ] b) GIRLS DEAD . . . . . [ ][ ]	
208	SUM ANSWERS TO 203, 205, AND 207, AND ENTER TOTAL. IF NONE, RECORD '00'.	TOTAL BIRTHS . . . . . [ ][ ]	
209	CHECK 208: Just to make sure that 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	Now I'd like to ask you about your more recent births. How many births have you had in the last 6 years? IF NONE, CIRCLE '00.'	TOTAL IN THE LAST 6 YEARS . . . . . [ ][ ] NONE 00	→ 224

211 Now I would like to record the names of all your births in the last six years, whether still alive or not, starting with the most recent one you had.
RECORD NAMES OF ALL THE BIRTHS IN THE LAST 6 YEARS IN 212. RECORD TWINS AND TRIPLETS ON SEPARATE ROWS.

212 What name was given to your (most recent/previous) baby? RECORD NAME. BIRTH HISTORY NUMBER	213 Is (NAME) a boy or a girl?	214 Were any of these births twins?	215 In what month and year was (NAME) born? PROBE: When is his/her birthday?	216 Is (NAME) still alive?	217 IF ALIVE: How old was (NAME) at his/her last birthday? RECORD AGE IN COMPLETED YEARS.	218 IF ALIVE: Is (NAME) living with you?	219 IF ALIVE: RECORD HOUSE-HOLD LINE NUMBER OF CHILD (RECORD '00' IF CHILD NOT LISTED IN HOUSE-HOLD).	220 Were there any other live births between (NAME) and (NAME OF PREVIOUS BIRTH), including any children who died after birth?
01	BOY 1 GIRL 2	SING 1 MULT 2	MONTH [ ][ ] YEAR [ ][ ][ ][ ]	YES . . . . 1 NO . . . . 2 (NEXT BIRTH)	AGE IN YEARS [ ][ ]	YES . . . 1 NO 2	HOUSEHOLD LINE NUMBER [ ][ ] (NEXT BIRTH)	
02	BOY 1 GIRL 2	SING 1 MULT 2	MONTH [ ][ ] YEAR [ ][ ][ ][ ]	YES . . . . 1 NO . . . . 2 → 220	AGE IN YEARS [ ][ ]	YES . . . 1 NO 2	HOUSEHOLD LINE NUMBER [ ][ ]	YES . . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
03	BOY 1 GIRL 2	SING 1 MULT 2	MONTH [ ][ ] YEAR [ ][ ][ ][ ]	YES . . . . 1 NO . . . . 2 → 220	AGE IN YEARS [ ][ ]	YES . . . 1 NO 2	HOUSEHOLD LINE NUMBER [ ][ ]	YES . . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
04	BOY 1 GIRL 2	SING 1 MULT 2	MONTH [ ][ ] YEAR [ ][ ][ ][ ]	YES . . . . 1 NO . . . . 2 → 220	AGE IN YEARS [ ][ ]	YES . . . 1 NO 2	HOUSEHOLD LINE NUMBER [ ][ ]	YES . . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
05	BOY 1 GIRL 2	SING 1 MULT 2	MONTH [ ][ ] YEAR [ ][ ][ ][ ]	YES . . . . 1 NO . . . . 2 → 220	AGE IN YEARS [ ][ ]	YES . . . 1 NO 2	HOUSEHOLD LINE NUMBER [ ][ ]	YES . . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
06	BOY 1 GIRL 2	SING 1 MULT 2	MONTH [ ][ ] YEAR [ ][ ][ ][ ]	YES . . . . 1 NO . . . . 2 → 220	AGE IN YEARS [ ][ ]	YES . . . 1 NO 2	HOUSEHOLD LINE NUMBER [ ][ ]	YES . . . . . 1 ADD BIRTH NO . . . . . 2 NEXT BIRTH
07	BOY 1 GIRL 2	SING 1 MULT 2	MONTH [ ][ ] YEAR [ ][ ][ ][ ]	YES . . . . 1 NO . . . . 2 → 220	AGE IN YEARS [ ][ ]	YES . . . 1 NO 2	HOUSEHOLD LINE NUMBER [ ][ ]	YES . . . . . 1 ADD BIRTH NO 2

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
221	Have you had any live births since the birth of (NAME OF MOST RECENT BIRTH)? IF YES, RECORD BIRTH(S) IN TABLE.	YES . . . . . 1 NO 2	
222	COMPARE 210 WITH NUMBER OF BIRTHS IN HISTORY ABOVE AND MARK: NUMBERS ARE SAME ☐ ↓ NUMBERS ARE DIFFERENT ☐ → (PROBE AND RECONCILE.)		
223	CHECK 215: ENTER THE NUMBER OF BIRTHS IN 2008 OR LATER.	NUMBER OF BIRTHS . . . . . ☐ NONE 0	
224	Are you pregnant now?	YES . . . . . 1 NO . . . . . 2 UNSURE . . . . . 8 → 226	
225	How many months pregnant are you? RECORD NUMBER OF COMPLETED MONTHS.	MONTHS . . . . . ☐☐	
226	CHECK 223: ONE OR MORE BIRTHS IN 2008 OR LATER ☐ ↓ NO BIRTHS IN 2008 OR LATER ☐ → 426 Q. 223 IS BLANK ☐ → 426		

SECTION 3. PREGNANCY AND INTERMITTENT PREVENTATIVE TREATMENT

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
301	CHECK 215: ENTER IN THE TABLE THE NAME AND SURVIVAL STATUS OF THE MOST RECENT BIRTH. Now I would like to ask some questions about your last pregnancy that resulted in a live birth.		
301A	FROM 212 AND 216 IN BIRTH HISTORY NUMBER 01:	MOST RECENT BIRTH NAME _____ LIVING ☐ DEAD ☐	
302	When you were pregnant with (NAME), did you see anyone for antenatal care for this pregnancy?	YES . . . . . 1 NO 2	→ 303A
303	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)	→ 304
303A	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	
304	During this pregnancy, did you take any drugs to keep you from getting malaria?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 305 → 310
304A	What was the main reason why you did not did take any drugs to keep you from getting malaria during this pregnancy?	CLINIC TOO FAR . . . . . 1 HAD NO MONEY . . . . . 2 SIDE EFFECTS . . . . . 3 NOT AWARE HAD TO TAKE ANY . . . 4 DID NOT WANT TO TAKE . . . . . 5 OTHER _____ 6 (SPECIFY) DON'T KNOW . . . . . 8 (ALL SKIP TO 310)	
305	What drugs did you take? RECORD ALL MENTIONED. IF TYPE OF DRUG IS NOT DETERMINED, SHOW TYPICAL ANTIMALARIAL DRUGS TO RESPONDENT.	SP/FANSIDAR . . . . . A CHLOROQUINE . . . . . B OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
306	CHECK 305: SP/FANSIDAR TAKEN FOR MALARIA PREVENTION.	CODE 'A' CIRCLED ☐ CODE 'A' NOT CIRCLED ☐	→ 310

307	How many times did you take (SP/Fansidar) during this pregnancy?	TIMES . . . . . [ ][ ]	
307A	CHECK 307: TOOK SP ONLY 1 TIME DURING THIS PREGNANCY CODE '01' TIMES ENTERED [ ]	OTHER [ ] →	308
307B	Why did you take (SP/Fansidar) only one time during this pregnancy?	CLINIC TOO FAR . . . . . 1 HAD NO MONEY . . . . . 2 SIDE EFFECTS . . . . . 3 NOT AWARE HAD TO TAKE MORE . . . 4 DID NOT WANT TO TAKE . . . . . 5 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
308	CHECK 303: ANTENATAL CARE FROM HEALTH PERSONNEL DURING THIS PREGNANCY CODE 'A', 'B', 'C', OR 'D' CIRCLED [ ]	OTHER [ ] →	310
309	Did you get the (SP/Fansidar) during any antenatal care visit, during another visit to a health facility or from another source?	ANTENATAL VISIT . . . . . 1 ANOTHER FACILITY VISIT . . . . . 2 OTHER SOURCE 6	
310	CHECK 215 AND 216: ONE OR MORE LIVING CHILDREN BORN IN 2008 OR LATER [ ] → GO TO 401	NO LIVING CHILDREN BORN IN 2008 OR LATER [ ] →	426

SECTION 4. FEVER IN CHILDREN

401	CHECK 215: ENTER IN THE TABLE THE BIRTH HISTORY NUMBER, NAME, AND SURVIVAL STATUS OF EACH BIRTH IN 2008 OR LATER. ASK THE QUESTIONS ABOUT ALL OF THESE BIRTHS. BEGIN WITH THE MOST RECENT BIRTH. (IF THERE ARE MORE THAN 3 BIRTHS, USE AN ADDITIONAL QUESTIONNAIRE). Now I would like to ask some questions about the health of your children born since January 2008. (We will talk about each separately.)			
402	BIRTH HISTORY NUMBER FROM 212 IN BIRTH HISTORY	MOST RECENT BIRTH BIRTH HISTORY NUMBER ☐☐	SECOND MOST RECENT BIRTH BIRTH HISTORY NUMBER ☐☐	THIRD MOST RECENT BIRTH BIRTH HISTORY NUMBER ☐☐
403	FROM 212 AND 216	NAME _____ LIVING ☐ DEAD ☐ (GO TO 403 IN NEXT COLUMN OR, IF NO MORE BIRTHS, GO TO 426)	NAME _____ LIVING ☐ DEAD ☐ (GO TO 403 IN NEXT COLUMN OR, IF NO MORE BIRTHS, GO TO 426)	NAME _____ LIVING ☐ DEAD ☐ (GO TO 403 IN MOST RECENT COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 426)
404	Has (NAME) been ill with a fever at any time in the last 2 weeks?	YES . . . . . 1 NO . . . . . 2 (GO TO 403 IN NEXT COLUMN OR, IF NO MORE BIRTHS, GO TO 426) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 (GO TO 403 IN NEXT COLUMN OR, IF NO MORE BIRTHS, GO TO 426) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 (GO TO 403 IN MOST RECENT COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 426) DON'T KNOW 8
405	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
406	Did you seek advice or treatment for the illness from any source?	YES . . . . . 1 (SKIP TO 407) NO 2	YES . . . . . 1 (SKIP TO 407) NO 2	YES . . . . . 1 (SKIP TO 407) NO 2
406A	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 410	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 410	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 410

NO.	QUESTIONS AND FILTERS	MOST RECENT BIRTH NAME _____	SECOND MOST RECENT BIRTH NAME _____	THIRD MOST RECENT BIRTH NAME _____
407	Where did you seek advice or treatment? Anywhere else? PROBE TO IDENTIFY EACH TYPE OF SOURCE. IF UNABLE TO DETERMINE IF PUBLIC OR PRIVATE SECTOR, WRITE THE NAME OF THE PLACE. _____ (NAME OF PLACE(S))	PUBLIC SECTOR (GOVERNMENT) GOVT HOSPITAL . . A GOVT HEALTH CENTER . . . . . B GOVT HEALTH POST . . . . . C MOBILE CLINIC . . . D COMMUNITY HEALTH WORKER(VHT) . E OTHER PUBLIC SECTOR _____ F (SPECIFY) PUBLIC SECTOR (PNFP) HOSPITAL . . . . . G HEALTH CENTER . . H PRIVATE MEDICAL SECTOR PVT HOSPITAL/ CLINIC . . . . . I PHARMACY . . . J MOBILE CLINIC . . . K FIELDWORKER . . L OTHER PRIVATE MED. SECTOR _____ M (SPECIFY) OTHER SOURCE SHOP . . . . . N TRADITIONAL PRACTITIONER . O MARKET . . . . . P OTHER _____ X (SPECIFY)	PUBLIC SECTOR (GOVERNMENT) GOVT HOSPITAL . . A GOVT HEALTH CENTER . . . . . B GOVT HEALTH POST . . . . . C MOBILE CLINIC . . . D COMMUNITY HEALTH WORKER(VHT) . E OTHER PUBLIC SECTOR _____ F (SPECIFY) PUBLIC SECTOR (PNFP) HOSPITAL . . . . . G HEALTH CENTER . . H PRIVATE MEDICAL SECTOR PVT HOSPITAL/ CLINIC . . . . . I PHARMACY . . . J MOBILE CLINIC . . . K FIELDWORKER . . L OTHER PRIVATE MED. SECTOR _____ M (SPECIFY) OTHER SOURCE SHOP . . . . . N TRADITIONAL PRACTITIONER . O MARKET . . . . . P OTHER _____ X (SPECIFY)	PUBLIC SECTOR (GOVERNMENT) GOVT HOSPITAL . . A GOVT HEALTH CENTER . . . . . B GOVT HEALTH POST . . . . . C MOBILE CLINIC . . . D COMMUNITY HEALTH WORKER(VHT) . E OTHER PUBLIC SECTOR _____ F (SPECIFY) PUBLIC SECTOR (PNFP) HOSPITAL . . . . . G HEALTH CENTER . . H PRIVATE MEDICAL SECTOR PVT HOSPITAL/ CLINIC . . . . . I PHARMACY . . . J MOBILE CLINIC . . . K FIELDWORKER . . L OTHER PRIVATE MED. SECTOR _____ M (SPECIFY) OTHER SOURCE SHOP . . . . . N TRADITIONAL PRACTITIONER . O MARKET . . . . . P OTHER _____ X (SPECIFY)
408	CHECK 407:	TWO OR MORE CODES CIRCLED ☐ / ONLY ONE CODE CIRCLED ☐ (SKIP TO 410)	TWO OR MORE CODES CIRCLED ☐ / ONLY ONE CODE CIRCLED ☐ (SKIP TO 410)	TWO OR MORE CODES CIRCLED ☐ / ONLY ONE CODE CIRCLED ☐ (SKIP TO 410)
409	Where did you first seek advice or treatment? USE LETTER CODE FROM 407.	FIRST PLACE . . . ☐	FIRST PLACE . . . ☐	FIRST PLACE . . . ☐
410	At any time during the illness, did (NAME) take any drugs for the illness?	YES . . . . . 1 NO . . . . . 2 (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 426) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 426) DON'T KNOW 8	YES . . . . . 1 NO . . . . . 2 (GO TO 403 IN MOST RECENT COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 426) DON'T KNOW 8

NO.	QUESTIONS AND FILTERS	MOST RECENT BIRTH NAME _____	SECOND MOST RECENT BIRTH NAME _____	THIRD MOST RECENT BIRTH NAME _____
NO.	QUESTIONS AND FILTERS	MOST RECENT BIRTH NAME _____	SECOND MOST RECENT BIRTH NAME _____	THIRD MOST RECENT BIRTH NAME _____
411	What drugs did (NAME) take? Any other drugs? RECORD ALL MENTIONED.	ANTIMALARIAL DRUGS SP/FANSIDAR . . . A CHLOROQUINE . . B AMODIAQUINE . . C QUININE . . . . . D COARTEM/ACT . . E OTHER ANTI-MALARIAL _____ . . . F (SPECIFY) ANTIBIOTIC DRUGS PILL/SYRUP . . . G INJECTION . . . . . H OTHER DRUGS ASPIRIN . . . . . I PANADOL . . . . . J IBUPROFEN . . . . . K OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	ANTIMALARIAL DRUGS SP/FANSIDAR . . . A CHLOROQUINE . . B AMODIAQUINE . . C QUININE . . . . . D COARTEM/ACT . . E OTHER ANTI-MALARIAL _____ . . . F (SPECIFY) ANTIBIOTIC DRUGS PILL/SYRUP . . . G INJECTION . . . . . H OTHER DRUGS ASPIRIN . . . . . I PANADOL . . . . . J IBUPROFEN . . . K OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	ANTIMALARIAL DRUGS SP/FANSIDAR . . . A CHLOROQUINE . . B AMODIAQUINE . . C QUININE . . . . . D COARTEM/ACT . . E OTHER ANTI-MALARIAL _____ . . . F (SPECIFY) ANTIBIOTIC DRUGS PILL/SYRUP . . . G INJECTION . . . . . H OTHER DRUGS ASPIRIN . . . . . I PANADOL . . . . . J IBUPROFEN . . . . . K OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z
412	CHECK 411: ANY CODE A-F CIRCLED?	YES ☐ ↓ NO ☐ → (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 426)	YES ☐ ↓ NO ☐ → (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 426)	YES ☐ ↓ NO ☐ → (GO TO 403 IN MOST RECENT COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 426)
413	CHECK 411: SP/FANSIDAR ('A') GIVEN	CODE 'A' CIRCLED ☐ ↓ CODE 'A' NOT CIRCLED ☐ → (SKIP TO 415)	CODE 'A' CIRCLED ☐ ↓ CODE 'A' NOT CIRCLED ☐ → (SKIP TO 415)	CODE 'A' CIRCLED ☐ ↓ CODE 'A' NOT CIRCLED ☐ → (SKIP TO 415)
414	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
415	CHECK 411: CHLOROQUINE ('B') GIVEN	CODE 'B' CIRCLED ☐ ↓ CODE 'B' NOT CIRCLED ☐ → (SKIP TO 417)	CODE 'B' CIRCLED ☐ ↓ CODE 'B' NOT CIRCLED ☐ → (SKIP TO 417)	CODE 'B' CIRCLED ☐ ↓ CODE 'B' NOT CIRCLED ☐ → (SKIP TO 417)

NO.	QUESTIONS AND FILTERS	MOST RECENT BIRTH NAME _____	SECOND MOST RECENT BIRTH NAME _____	THIRD MOST RECENT BIRTH NAME _____
NO.	QUESTIONS AND FILTERS	MOST RECENT BIRTH NAME _____	SECOND MOST RECENT BIRTH NAME _____	THIRD MOST RECENT BIRTH NAME _____
416	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
417	CHECK 411: AMODIAQUINE ('C') GIVEN	CODE 'C' CIRCLED ☐ CODE 'C' NOT CIRCLED ☐ (SKIP TO 419)	CODE 'C' CIRCLED ☐ CODE 'C' NOT CIRCLED ☐ (SKIP TO 419)	CODE 'C' CIRCLED ☐ CODE 'C' NOT CIRCLED ☐ (SKIP TO 419)
418	How long after the fever started did (NAME) first take amodiaquine?	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
419	CHECK 411: QUININE ('D') GIVEN	CODE 'D' CIRCLED ☐ CODE 'D' NOT CIRCLED ☐ (SKIP TO 421)	CODE 'D' CIRCLED ☐ CODE 'D' NOT CIRCLED ☐ (SKIP TO 421)	CODE 'D' CIRCLED ☐ CODE 'D' NOT CIRCLED ☐ (SKIP TO 421)
420	How long after the fever started did (NAME) first take quinine?	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
421	CHECK 411: COMBINATION WITH COARTEM/ACT ('E') GIVEN	CODE 'E' CIRCLED ☐ CODE 'E' NOT CIRCLED ☐ (SKIP TO 423)	CODE 'E' CIRCLED ☐ CODE 'E' NOT CIRCLED ☐ (SKIP TO 423)	CODE 'E' CIRCLED ☐ CODE 'E' NOT CIRCLED ☐ (SKIP TO 423)
422	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

NO.	QUESTIONS AND FILTERS	MOST RECENT BIRTH NAME _____	SECOND MOST RECENT BIRTH NAME _____	THIRD MOST RECENT BIRTH NAME _____
NO.	QUESTIONS AND FILTERS	MOST RECENT BIRTH NAME _____	SECOND MOST RECENT BIRTH NAME _____	THIRD MOST RECENT BIRTH NAME _____
422A	For how many day did (NAME) take COATREM/ACT?	DAYS . . . [ ][ ] STILL TAKING . . . . . 95 DON'T KNOW 98	DAYS . . . [ ][ ] STILL TAKING . . . . . 95 DON'T KNOW 98	DAYS . . . [ ][ ] STILL TAKING . . . . . 95 DON'T KNOW 98
423	CHECK 411: OTHER ANTIMALARIAL ('F') GIVEN	CODE 'F' CIRCLED [ ] CODE 'F' NOT CIRCLED [ ] → (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 426)	CODE 'F' CIRCLED [ ] CODE 'F' NOT CIRCLED [ ] → (GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 426)	CODE 'F' CIRCLED [ ] CODE 'F' NOT CIRCLED [ ] → (GO TO 403 IN MOST RECENT COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 426)
424	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
425		GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 426.	GO BACK TO 403 IN NEXT COLUMN; OR, IF NO MORE BIRTHS, GO TO 426.	GO TO 403 IN MOST RECENT COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE BIRTHS, GO TO 426.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
426	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	
427	In your opinion, what causes malaria? PROBE: Anything else? RECORD ALL MENTIONED	MOSQUITO BITES . . . . . A PARASITE . . . . . B EATING MAIZE . . . . . C EATING MANGOES . . . . . D EATING DIRTY FOOD . . . . . E DRINKING UNBOILED WATER . . . . . F GETTING SOAKED WITH RAIN . . . . . G COLD/CHANGING WEATHER . . . . . H WITCHCRAFT . . . . . I CONTACT WITH INFECTED PERSON . . J GERM . . . . . K OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Z	
428	Are there ways to avoid getting malaria?	YES . . . . . 1 NO 2	→ 431
429	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	
430	What medicine may be given to a pregnant woman to help her 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	
431	CHECK 430 SP/FANSIDAR MENTIONED CODE 'A' CIRCLED ☐ ↓ CODE 'A' NOT CIRCLED ☐		→ 433
432	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	
433	RECORD THE TIME.	HOUR . . . . . ☐☐ MINUTES . . . . . ☐☐	

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ABOUT RESPONDENT:

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S OBSERVATIONS

NAME OF SUPERVISOR: _____ DATE: _____