Zambia National Malaria Indicator Survey

2008

Government of the
Republic of Zambia
Ministry of Health

National Malaria Control Centre, Lusaka, Zambia

This report summarizes the findings of the 2008 Zambia National Malaria Indicator Survey carried out by the Ministry of Health; Central Statistical Office; Malaria Control and Evaluation Partnership in Africa (MACEPA), a program at PATH; the United States President's Malaria Initiative; the World Bank; UNICEF; the World Health Organization; and the University of Zambia in April–May 2008.

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Cover photos (clockwise from top): National Malaria Control Centre, Lusaka, Zambia (David Jacobs); data collection using personal digital assistants (PATH); indoor residual household sprayer (PATH); beneficiaries of the mass distribution of free insecticide-treated mosquito nets (David Jacobs).

Contents

Acronyms

ANC	Antenatal clinic
ART-LUM	Artemether-lumefantrine
CDC	US Centers for Disease Control and Prevention
CSA	Census supervisory areas
CSO	Central Statistical Office
DHS	Demographic and health survey
GPS	Global positioning system
HSSP	Health Services and Systems Program
IPT	Intermittent preventive treatment
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
LLIN	Long-lasting insecticidal net
M&E	Monitoring and evaluation
MACEPA	Malaria Control and Evaluation Partnership in Africa
MERG	Monitoring and Evaluation Reference Group
MICS	Multiple indicator cluster survey
MiP	Malaria in Pregnancy
MIS	Malaria indicator survey
MOH	Ministry of Health
NMCC	National Malaria Control Centre
NMSP	National Malaria Strategic Plan
PATH	Program for Appropriate Technology in Health
PDA	Personal digital assistant
PMI	President's Malaria Initiative
PSU	Primary sampling unit
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
SEA	Standard enumeration areas
SP	Sulfadoxine-pyrimethamine
UNICEF	United Nations Children's Fund
UNZA	University of Zambia
USAID	United States Agency for International Development
WBC	White blood cell
WHO	World Health Organization

Acknowledgments

This report presents the results of the Zambia National Malaria Indicator Survey 2008, a comprehensive, nationally representative household survey designed to measure progress toward achieving the goals and targets set forth in the National Malaria Strategic Plan 2006–2010. It represents the efforts of several agencies and many individuals. The Ministry of Health, namely the National Malaria Control Centre, has the major responsibility for conducting the survey. Other agencies have been instrumental in this survey including the Central Statistical Office (CSO), the Malaria Control and Evaluation Partnership in Africa (MACEPA) at PATH, the Health Services and Systems Program (HSSP), the US President's Malaria Initiative, the World Bank, the United Nations Children's Fund, the World Health Organization (WHO), and the University of Zambia.

At the Ministry of Health, Dr. Simon K. Miti, Permanent Secretary, and Dr. Victor Mukonka, Director of Public Health and Research, provided overall survey leadership and guidance. At the National Malaria Control Centre, Dr. Elizabeth Chizema-Kawesha, Coordinator; Moonga Hawela, Parasitologist; Mercy Mwanza, Surveillance and Information Officer; Pascalina Chanda, Operations Research Officer; and Pauline K. Wamalume, Information Education Communication Specialist, took primary responsibility for survey operations and coordination. Also within the Ministry of Health, various members assisted with organization, community sensitization efforts, logistics, ordering of supplies, and training. At CSO, Ms. Efreda Chulu, Director, and Ms. Batista Mwale, Survey Statistician, provided support for the sample design, sample selection, and analysis. CSO staff also provided support during the field work for identification of cluster boundaries and household listing. At MACEPA, John Miller, Abdirahman Mohamed, Rick Steketee, Chris Lungu, Msanide Phiri, and Todd Jennings provided logistics support, survey organization, accounting, and support for design and analysis. Cristina Herdman and Jane McDaniels edited and formatted the report. From the President's Malaria Initiative, Mark Maire, Oliver Lulembo, Allen Craig of United States Agency for International Development (USAID) and the United States Center for Disease Control and Prevention (CDC) Zambia offices provided support for the design of the survey, Katherine Tan from CDC Atlanta reviewed the protocol, and Anatoly Frolov from CDC Atlanta took responsibility for development of the programming of the questionnaire and data tabulations. At the HSSP, Brian Chirwa and Moonje Shimukowa provided technical support during training and field work, while Patience Siavwela provided logistical support. Fred Masaninga and Khoti Gausi from WHO provided support for activities, training, and field work. Dr. Rodgers K. Mwale from UNICEF provided technical guidance for protocol review (diagnosis and treatment algorithm) and training of enumerators. Professor Kumah Sridutt Baboo and the students from the Masters of Public Health Program, University of Zambia, provided support during training and field work. The Roll Back Malaria Monitoring and Evaluation Reference Group (RBM MERG) developed the questionnaire and survey instruments used. The training materials, methodology, and questionnaires used in the survey were mostly drawn from the work of the RBM MERG, but especially from the work of ORC Macro, which organizes the Demographic and Health Surveys (DHS).

A complete list of the field teams and individuals involved in the survey is presented in Appendix B.

Preface

The Ministry of Health, in collaboration with Roll Back Malaria Partners, is engaged in a formidable effort to rapidly scale up malaria control interventions throughout Zambia and bring down the toll exacted by the disease on vulnerable populations. These efforts are in accordance with the National Health Strategic Plan 2006–2010 and the National Malaria Strategic Plan 2006–2010.

The Zambia National Malaria Indicator Survey 2008 represents the second nationally representative assessment of the coverage of the key malaria interventions in combination with the measures of malaria-related burden using malaria parasite and anaemia prevalence testing among children under age five years.

We have set for ourselves high coverage targets for these interventions, and we are seeing the fruits of our labour. This report, together with the National Malaria Indicator Survey in 2006 and Demographic and Health Surveys in 2001–2002 and 2007, presents consistently increasing trends in coverage rates of all malaria interventions over the past five years. Malaria prevention services are leading the way in Zambia. Availability of insecticide-treated mosquito nets (ITNs) has reached 60% of Zambian households, and ITN use has more than doubled among children and pregnant women over the last two years. Indoor residual spraying continues to spread throughout targeted districts, and intermittent preventive treatment for pregnant women has made gains on already previously high levels. More importantly, these gains have been realized in the most rural, hard-to-reach, malarious areas of the country, demonstrating a commitment at all levels of the health care system to achieving these remarkable results.

Most notably, this report suggests impressive gains in reducing malaria parasitemia among children across all demographic backgrounds over the last two years. These reductions are coupled with even more impressive reductions in severe anaemia (measured as haemoglobin < 8 g/dl), an indication that Zambia is breaking malaria's chronic grip on the lives of its children.

Despite these impressive gains, the effort is not complete. These results remind us that additional efforts are needed to improve access to and the quality of malarial diagnosis and treatment services. We must strive to take malaria diagnosis and treatment services into communities and households as we have with our prevention services. The National Malaria Control Programme has outlined ambitious plans for the coming months and years. We look forward to working with partners to achieve greater successes and sustain our current gains in the next few years.

Led by the Ministry of Health, these results represent the combined work of numerous agencies contributing to the overall scale-up of malaria interventions. Together we will achieve a malaria-free Zambia.

Dr. S.K. Miti
Permanent Secretary
Ministry of Health

Executive Summary

Tremendous progress has been achieved throughout Zambia toward reaching national targets in malaria control. The National Malaria Strategic Plan 2006–2010 outlines an aggressive approach to reducing malaria and malaria-related burden through the massive scale-up of malaria control interventions. Evaluation of scale-up of key interventions is essential for understanding progress in the fight against malaria.

This report presents the results of the Zambia National Malaria Indicator Survey (MIS) 2008, a nationally representative household survey assessing coverage of key malaria interventions and malaria-related burden among children under age five years. The survey was developed and conducted by the Ministry of Health and several key malaria partners including the Central Statistical Office, the Malaria Control and Evaluation Partnership in Africa (MACEPA) at PATH, the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the United States President's Malaria Initiative (PMI), the Health Services and Systems Program (HSSP), the World Bank, and the University of Zambia (UNZA).

The MIS was based on a nationally representative two-stage cluster sample of 4,525 households surveyed from 181 standard enumeration areas randomly selected from 71 of 72 districts from all nine provinces to provide representative national and urban and rural estimates, as well as the ten Roll Back Malaria (RBM) sentinel districts. Field work was conducted during April and May 2008 by 15 field teams using standardized questionnaires preprogrammed onto hand-held computers (called personal digital assistants or PDAs) to facilitate data entry, extraction, and analysis. Malaria parasite testing was done using ICT Malaria Pf® rapid diagnostic tests (RDTs) and both thick and thin blood smears. Anaemia testing was done using Hemocue® Hb 201 analyzers and microcuvettes.

Insecticide-treated nets (ITNs) and indoor residual spraying (IRS) are the primary control strategies for preventing malaria transmission in Zambia. Results from the 2008 MIS indicate 72% of Zambian households have at least one mosquito net, and 62% of households have at least one insecticide-treated net, representing an increase from 50% and 38%, respectively, in 2006. Forty-eight percent (48%) of all Zambian children under age five years slept under a mosquito net the night before the survey, while among households with at least one net, 61% of children under age five years slept under a mosquito net. Among households within the IRS-targeted districts, more than 40% of households reported spraying in the previous 12 months, with an increasing trend in the rural, more malarious areas of these districts since 2006.

Malaria prevention in pregnancy relies on the use of ITNs and the use of intermittent preventive treatment (IPT) during pregnancy. The night before the survey, 45% of all women ages 15–49 years slept under a mosquito net, and 39% slept under an ITN. For pregnant women, the percentages sleeping under a mosquito net (50%) and ITNs (43%) were higher than percentages for all women (pregnant and non-pregnant) and were also significantly higher than the coverage of these vital prevention methods among pregnant women in 2006 (32% for nets and 25% for ITNs). Eighty-eight percent (88%) of mothers reported taking an antimalarial drug for prevention during their last pregnancy, while 80% reported taking IPT at least once. The WHO-recommended two-treatment dose target was achieved by 66% of pregnant women during their last pregnancy.

Since 2004, the national first-line antimalarial treatment has been artemether-lumefantrine (ART-LUM). In the last two weeks before the survey, 28% of children had a fever, and among them, 43% took an antimalarial drug, and 29% took the drug within 24 hours of symptom onset. Sulfadoxine-pyrimethamine (SP) is the most common antimalarial drug

given for fever: 21% of children with fever in the last two weeks were treated with SP, and only 13% with ART-LUM. Fifteen percent (15%) of the children with fever were given SP and 8% ART-LUM within 24 hours of symptom onset.

Malaria parasite prevalence was found to be 10%, and severe anaemia prevalence was found to be 4% among children under age five years. Malaria parasitemia levels peaked among those children age three years, while severe anaemia prevalence was found to be highest among children age one year. Compared to 2006, which reported malaria parasite prevalence of 22% and severe anaemia prevalence of 14%, these results represent remarkable progress in controlling malaria-related burden in Zambia.

This MIS provides a comprehensive assessment of the coverage of the key malaria interventions and is a useful benchmark against which progress toward scale-up can be measured. Further, it provides a nationally representative measure of both anaemia and malaria parasite prevalence among children under age five years. For evaluating the overall success of malaria scale-up efforts, the MIS should be repeated at regular intervals.

Chapter 1: Introduction

Background

Malaria is endemic throughout Zambia and continues to be a major public health problem. Efforts to control malaria are currently being scaled up through coordinated effort among Roll Back Malaria (RBM) partners. In order to assess national scale-up efforts, effective monitoring and evaluation is needed to measure progress toward select targets and goals.

The Zambian Government has identified malaria control as one of its main public health priorities. This is emphasized in both the National Development Plan 2006–2010 and the National Health Strategic Plan 2006–2010. In this respect, the Government, through the National Malaria Control Centre (NMCC), developed a detailed National Malaria Strategic Plan 2006–2010 (NMSP), aimed at significantly scaling up malaria control interventions toward the achievement of the national vision of "a malaria free Zambia."

The Zambian Ministry of Health (MOH) NMCC, in collaboration with multiple partners, set high targets for coverage of interventions and reductions in malaria burden outlined in the NMSP. Evidence of progress in rolling out malaria interventions to affected communities has come from several partners and sources including the 2001–2002 and 2007 national Demographic and Health Surveys (DHS), the 1999 UNICEF-supported multiple indicator cluster survey (MICS) and smaller scale household surveys such as the Roll Back Malaria (RBM) baseline and follow-up surveys (2001 and 2004), NetMark evaluation surveys (2000 and 2004), and others.

In 2006, the MOH and partners conducted the first nationally representative malaria indicator survey (MIS), measuring the coverage of the core RBM interventions and malaria-related disease burden. This survey was part of a planned national evaluation of malaria control efforts implemented under the NMSP 2006–2010. The results of the survey provided a baseline of key malaria interventions, including prompt effective case management, possession and use of insecticide-treated mosquito nets (ITNs), availability of indoor residual spraying (IRS), and intermittent preventive treatment (IPT) for pregnant women. Further, it reported on national malaria parasite prevalence (22%) and severe anaemia (measured as haemoglobin <8 g/dl) (14%) among children under age five years.

The 2006 MIS was based on a standard set of instruments and protocol developed through the RBM Monitoring and Evaluation Reference Group (MERG), a global technical advisory group providing M&E guidance for malaria control programmes. These tools were largely based on the collective experience of the DHS and MICS and are presented as a package of materials to promote standardized survey sampling methods, questionnaires, and results tabulations as well as to provide assistance with survey logistics, budgeting, and training of survey teams. The package includes standardized measurement of malaria parasite prevalence and anaemia among target populations to derive malaria-related burden at the community level. Further, the RBM MERG recommends the MIS to be conducted every 2 years within 6 weeks of the end of the rainy season in countries with endemic malaria transmission patterns, especially those in sub-Saharan Africa. In Zambia, this corresponds to survey field work during the months of March–May.

Objectives

The follow-up Zambia National Malaria Indicator Survey 2008, a comprehensive nationally-representative household survey designed to evaluate progress toward achieving the goals and targets set forth in the NMSP 2006–2010 had the following specific objectives:

1. To collect up-to-date information, building on the experience of the MIS 2006, on coverage of the core malaria interventions included in the NMSP 2006–2010.

2. To assess malaria parasite prevalence among children under age five years.
3. To assess the status of anaemia among the target populations (children 6–36 months).
4. To assess disparities in malaria intervention coverage and malaria parasite and anaemia prevalence among the surveyed population by location and other background characteristics.
5. To implement standardized, representative household survey methods.
6. To strengthen the capacity of the NMCC and local agencies involved in order to facilitate the implementation of surveys of this type in the future.

Sample design

The MIS 2008 covered household populations in Zambia. The design for the survey was a representative probability sample to produce estimates for the country as a whole, for rural and urban separately, and for the ten RBM sentinel districts combined as one domain. These districts were Chongwe, Chibombo, Kaputa, Chipata, Isoka, Samfya, Senanga, Mwinilunga, Chingola, and Kalomo. They were initially the focus of enhanced malaria control activities prior to national scale-up.

Sampling frame

Zambia is administratively divided into nine provinces, and each province is in turn subdivided into districts. For statistical purposes, each district is subdivided into census supervisory areas (CSAs) and these are in turn subdivided into standard enumeration areas (SEAs). The 1998–2000 mapping exercise, conducted in preparation for the 2000 census of population and housing, demarcated the CSAs within wards, wards within constituencies, and constituencies within districts. In total, Zambia has 72 districts, 150 constituencies, 1,289 wards, about 4,400 CSAs, and about 17,000 SEAs. The listing of SEAs has information on the number of households and the population. The number of households was used as a measure of size for selecting primary sampling units. Therefore, the sample frame for the MIS 2008 was the list of SEAs developed from the 2000 population census.

Sample size and determination

Sample sizes had been calculated with the assumption that future cross-sectional surveys would be conducted for comparison with these results. The sample size determination was based on an expected 33% reduction in anaemia level for children 6–36 months, in accordance with RBM recommendations for areas where malaria-related anaemia burden is concentrated in infancy and early childhood. The MIS conducted in 2006 provided a national severe anaemia (Hb<8 g/dl) prevalence of 13.3% for children under age five years. For children 6–36 months, the overall prevalence of severe anaemia (Hb<8 g/dl) was 15.7% with 17.3% for rural areas. With an estimated 91% of households with at least one child under age five (and assuming 46% with a children aged 6-36 months), the sample size used for the MIS 2008 was determined using 95% confidence limits, 80% power, a design effect of 2.00, and 20% adjustment for non-response (from household refusals, or abandoned households). Based on these criteria, a 15% relative standard error requires at least 2,336 households in the rural domain. Assuming the same distribution of rural, urban and ten- district allocation as was reported in the MIS 2006, a total of 4,525 households were selected for the purpose of the national evaluation of malaria control efforts.

To achieve the sample's total household count of 4,525, twenty-five (25) households were selected in 181 SEAs. A first-stage selection of the 181 SEAs was conducted by the Central Statistical Office (CSO) according to the specified domains. A second-stage sampling was conducted at the time of field work using personal digital assistants (PDAs). All households within a SEA were systematically and digitally listed using PDAs fitted with geopositioning units, and a random sample of 25 households per SEA was selected for interviewing from all households listed. Every attempt was made to conduct interviews in the 25 selected

households and up to three visits were made to ascertain compliance in case of absence of all (or any household members in the case of malaria parasite testing) to minimize potential bias.

Questionnaires

Two questionnaires were used for the MIS 2008: the household questionnaire and the women's questionnaire (see Appendix C). The content of each was based on malaria module questionnaires developed by the MEASURE DHS+ programme and adopted and recommended for use by the RBM MERG Task Force on Household Surveys.

The household questionnaire was used to identify all usual members and visitors of the selected households. Some basic characteristics of each person were collected including his or her age, sex, education, and relationship to the head of the household. The main purpose of the household questionnaire was to identify women who were eligible to answer the individual questionnaire. Eligible women were all women ages 15–49. Malaria-specific issues covered in the household questionnaire related to IRS as well as ITNs, including household possession, net treatment status, and use of nets among all household members.

The women's questionnaire was used to collect information from all eligible women ages 15–49 years. The following topics were included:

- Background characteristics (e.g., education level, asset-based wealth index).
- Reproductive and birth history and pregnancy status.
- General malaria knowledge.
- IPT for pregnant women.
- Fever prevalence among any eligible woman's biologic children under age five years and fever treatment with antimalarial drugs

Questionnaires were programmed into PDAs to eliminate the need for paper transcribing, to allow quicker data tabulation, and to facilitate faster interviewing from available skip patterns. For the purposes of the household listing and to facilitate data entry at the time of the interview, all household names were recorded into the PDA. Each individual was assigned a unique identification code at the time of the questionnaire administration. The names of respondents and households was kept as strictly confidential information and was not to be used in the presentation of results or associated with the results in any way or available to anyone except the survey coordinator (National Malaria Control Program Coordinator).

Personal digital assistants

PDAs were used for the second-stage sampling and recording of questionnaires and for malaria parasite and anaemia testing results. Two types of PDAs were used: Dell Axim X51 and HP iPAQ 459Xs. Programming of the questionnaire was done for the Windows Mobile 5.0 operating system using Visual Basic and SQL Mobile by the US Centers for Disease Control and Prevention, Atlanta, USA (A. Frolov). A further program was used for second-stage household sampling and included a navigation component to facilitate field staff returning to selected households for interviewing.

Data management

Data was collected through questionnaires that were programmed onto PDAs, and individuals were assigned a unique identifier to assist with data confidentiality. Every evening, information collected through PDAs was transferred to a backup storage card external to the PDA. Once all the information was collected and cleaned, analysis was done using relevant statistical programs.

Training, pretest activities, and field work

Data collection for the MIS 2008 took place from April–May 2008. Fifteen interviewing teams carried out the field work. Each team was comprised of at least two health professionals and two lab technicians or microscopists. Health professionals were selected by district health management teams from districts represented within the sampling frame, with the intent of having field staff from or close to selected enumeration areas. These health professionals were primarily registered female nurses and were also responsible for conducting household interviews. Lab technicians and microscopists were certified by the appropriate regulatory agency to perform finger sticks and laboratory testing procedures. Additional health professionals were selected from the Masters of Public Health (MPH) program of the University of Zambia (UNZA) to complement field staff needs. Fifteen field teams were formed for field work and assigned to each of the nine provinces according to the allocation of clusters from the sample.

Training was conducted in Lusaka during the first week of April 2008. The training was coordinated by the NMCC; the Malaria Control and Evaluation Partnership (MACEPA), a program at PATH; the Health Services and Systems Program (HSSP); the World Health Organization (WHO); UNICEF; and other partners as appropriate. The training schedule included sessions on survey background, questioning methods, the questionnaire, testing procedures, and the second-stage cluster-level sampling of households. PDAs were introduced to the field staff on the first day of training and were used through all the training sessions to familiarize participants with each procedure. A select group of field staff—lab technicians—was chosen to perform nightly staining of blood slides. Central and provincial statistical officers were also called upon to provide support in identifying local cluster boundaries.

A field pretest of all survey procedures was scheduled for the end of the training week in a set of census clusters in Chongwe District near the training venue. All participants in the training exercise were prearranged into groups corresponding to their field work assignments. During the pretest, a full enumeration area (an SEA not otherwise included in the survey sample) was listed and interviewed. Each team practiced performing the household listing, combining listed households from multiple PDAs to a single one, and conducting interviews and testing procedures.

Malaria parasite and anaemia testing

All health professionals recruited from the MOH received standardized training to conduct finger pricks for anaemia and malaria parasitemia among children under age 6 years in every household sampled (sampling children under age 6 years ensured that all children under age 5 years in the target population were captured; those over age 5 years we excluded from data analysis). Every effort was made to prevent secondary infection from the finger prick by using sterile lancets for each child and by cleaning the finger with an alcohol swab. Field teams were provided with sufficient supplies for this task throughout the field work. In addition, the field staff were provided with and wore a fresh pair of latex gloves for each child receiving a finger prick. The purpose of the MIS was explained, and if parental consent was given, a finger prick was done. The first drop of blood was wiped from the finger, the second drop was used to prepare a thick blood film, the third drop was used in the Hemocue photometer to determine the child's haemoglobin, and the forth drop was applied to a rapid diagnostic test (RDT). A final drop was placed on a filter paper for confirmation of diagnosis and parasite species with polymerase chain reaction analysis on slides that were found to be mishandled or damaged. The filter paper dried-blood spot specimens were used to confirm the malaria parasite species for these children. Any leftover specimens, including filter papers, were destroyed at the end of the survey analyses.

Results from the anaemia testing and RDTs were made available immediately to the parents or caregivers for the child. Thick smears were fixed after drying, and both smears were stained the same day with Giemsa stain. All stained slides were read by two independent microscopists masked from RDT results. The slide reading began during the field work as slides were relayed back to Lusaka. Slides with discrepant RDT results were reanalyzed by a third microscopist for final validation.

Diagnosis and treatment algorithm

The NMCC in Zambia has a policy of expanding the use of RDTs for malaria diagnosis in conjunction with the use of Coartem® (a fixed dose combination of artemether 20mg and lumefantrine 120mg) for primary treatment of malaria; the Zambian-approved ICT Malaria Pf RDT was used to guide treatment of parasitemic children during the survey. Thick and thin smear blood slides were read within one month, if not sooner, after they were prepared in the field by qualified laboratory technicians and microscopists. Results from positive blood slides that differed from the RDT results were communicated back to the field teams and local facilities for follow up.

Haemoglobin test results were shared with the parent/guardian. For children found with haemoglobin levels of less than 7g/dl and a negative RDT, the parent/guardian was given written results, and the child was given an appropriate two-week dosage of daily iron and folate and mebendazole [chewable] and referred to a health centre. Mebendazole is given as a presumptive treatment of helminthic infections and is only given to children at least 12 months of age as per the WHO/UNICEF guidelines on integrated management of childhood illnesses. Children with a positive RDT and clinically not fitting into the severe malaria classification (severe anaemia, prostration, impaired consciousness, respiratory distress, convulsions, circulatory collapse, abnormal bleeding, jaundice and passing black/brown [dark] urine) received immediate treatment for malaria using an artemisinin-containing combination antimalarial treatment, according to the Zambia national treatment guidelines (currently Coartem®). Treatment was administered by the MOH nurses who were a part of each field team. Further, children with a positive slide and classified as simple malaria with mild to moderate anaemia (Hb between 8–11 g/dL) were treated with Coartem® and given a two-week course of folic acid *only* and no ferrous sulphate. Children clinically assessed by the survey nurse to have severe malaria were transported immediately to the nearest health centre. Children already treated with Coartem® within the past two weeks were referred to the nearest facility for additional evaluation. Children who were found to be seriously ill, as determined by the survey nurses, were provided with transport to the nearest health facility.

Hemocue and RDT testing was done according to manufacturer recommendations. Blood smears were stained with Giemsa stain prepared in advance of the field work by the NMCC. Parasite densities were calculated by counting the number of asexual stage parasites/200+ white blood cells (WBCs), assuming 8,000 WBCs/dl of blood. Where there were less than 10 parasites per 100 fields, the slides were read up to a threshold of 500+ WBCs. Blood smears were considered negative if no parasites were found after counting 200 fields.

Community sensitization

To prepare survey communities for impending field work including a finger prick for anaemia and parasite testing, a series of community sensitization measures was undertaken. These included a general informational letter and an accompanying flyer for districts and local communities. These documents included information about the purpose, the procedures, and the importance of household participation. Further, a series of radio spots was developed in seven local languages and aired on both national and local community radio stations with service areas matching the selected SEAs. The radio spot contained a 45-second message from the MOH introducing the survey, explaining the importance of doing

finger pricks to determine parasitemia and anaemia among children, and encouraging participation.

Ethical approval and confidentiality

Individual consent was obtained before conducting the household and women's questionnaires and blood draws. The attached questionnaires and consent forms (Appendix C) were used. The consent forms used for the MIS 2008 were previously used in the MIS 2006.

Guardians were told the general purpose, possible risks, and benefits in the local language. Participation in the survey was voluntary. The Zambia MOH, PATH, and the US Centers for Disease Control and Prevention (CDC) reviewed the protocol before data collection started for appropriate input and approvals.

In an effort to maintain confidentiality, participant's data were linked to a code number. Personal data collected were only to be accessed by the principal investigators or with permission from the principal investigator.

Any leftover blood specimens from the finger pricks were immediately discarded.

Chapter 2: Characteristics of households and women respondents

Characteristics of households

The Zambia MIS 2008 collected basic demographic and socioeconomic characteristics of the population in the sampled households as well as information on housing facilities and conditions. This information is used in constructing an asset-based wealth index for interpretation of survey results. The criteria used to form the wealth index are based on work done previously by the World Bank and ORC Macro.

For this survey, a household was defined as a person or group of persons, related or unrelated, who live together in the same dwelling unit (under one household head) and share a common source of food. The household questionnaire collected information on all usual residents and visitors who spent the night preceding the survey in the household.

Table 1 presents the de facto household population by five-year age groups according to gender and residence. The data show that there are slightly more women in Zambia than men, comprising 52.7% and 47.3% of the population, respectively. The population under age 15 years makes up about 47.7% of the total population. One important finding is the gap between the percentage of males and females at the 20–24 and the 25–29 age groups (**Figure 1**), especially in urban areas. The gap indicates there are more women than men in both of these age groups.

Table 1. Household population by age, sex, and residence

Percent distribution of the de facto household population by five-year age groups, according to gender and residence (Zambia 2008)

	Urban			Rural			Total		
Age	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
0–4	17.7	14.8	16.2	22.1	19.4	20.6	20.7	17.8	19.1
5–9	13.9	13.6	13.7	15.4	16.4	15.9	14.9	15.5	15.2
10–14	12.4	13.2	12.8	14.1	13.5	13.8	13.5	13.4	13.4
15–19	11.4	11.4	11.4	8.6	8.1	8.4	9.5	9.2	9.3
20–24	8.1	12.0	10.2	6.6	8.4	7.6	7.1	9.6	8.4
25–29	9.2	9.9	9.6	6.9	7.1	7.0	7.6	8.0	7.8
30–34	7.8	6.4	7.0	6.0	5.8	5.9	6.6	6.0	6.2
35–39	5.8	4.6	5.2	5.3	4.5	4.8	5.4	4.5	4.9
40–44	3.7	3.4	3.6	3.3	3.4	3.3	3.4	3.4	3.4
45–49	3.0	2.7	2.8	2.6	2.8	2.7	2.7	2.7	2.7
50–54	2.0	2.7	2.4	2.0	2.5	2.3	2.0	2.6	2.3
55–59	2.0	2.0	2.0	1.9	2.3	2.1	1.9	2.2	2.1
60–64	0.9	1.2	1.1	1.6	1.8	1.7	1.4	1.6	1.5
65–69	1.2	1.0	1.1	1.2	1.7	1.5	1.2	1.5	1.3
70–74	0.6	0.6	0.6	0.9	1.1	1.0	0.8	0.9	0.8
75–79	0.3	0.4	0.3	1.0	1.0	1.0	0.7	0.8	0.8
80+	0.2	0.3	0.3	0.6	0.5	0.5	0.5	0.4	0.5

continued

Table 1. Household population by age, sex, and residence

Percent distribution of the de facto household population by five-year age groups, according to gender and residence (Zambia 2008)

	Urban			Rural			Total		
Age	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	3,126	3,562	6,688	6,529	7,213	13,742	9,655	10,775	20,430

Figure 1: Age pyramid of MIS-sampled population, Zambia 2008.

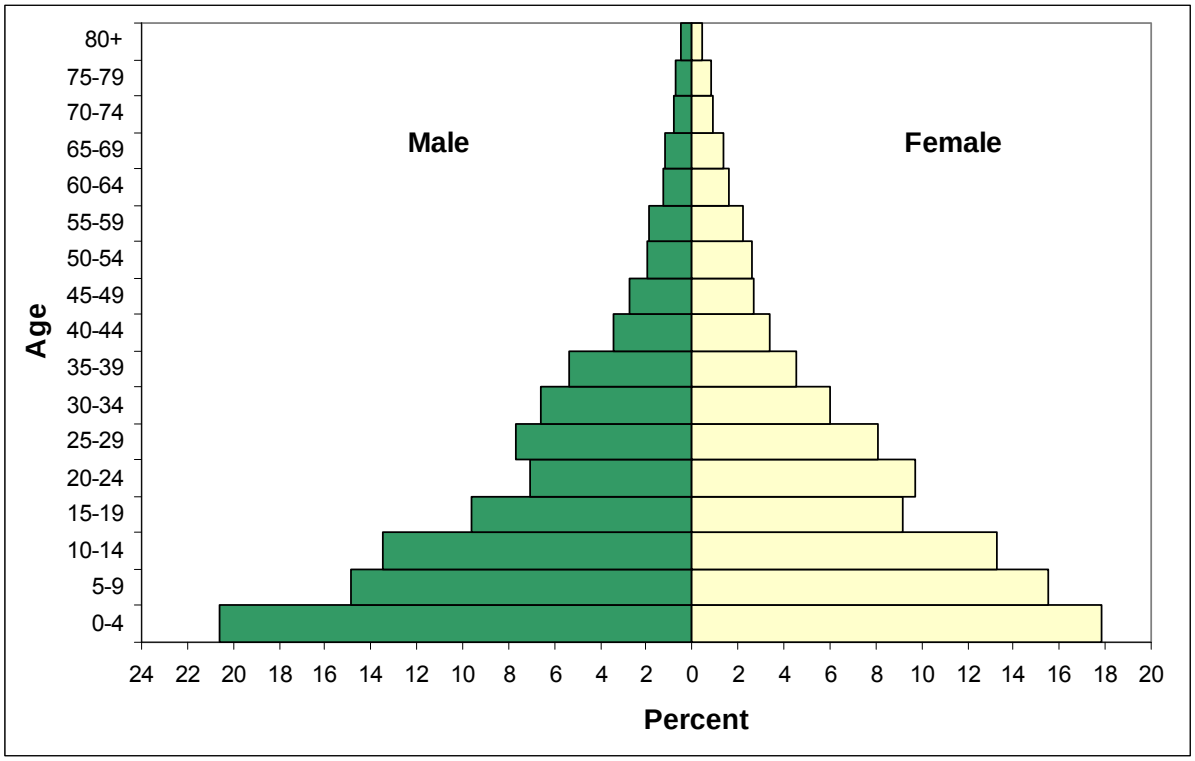


Table 2 presents the household composition among those surveyed. The percent of households headed by men was similar for both rural and urban areas. In the distribution of the number of usual household members, rural and urban areas are also very similar, except for households with one or two members.

Table 2. Household composition

Percent distribution by sex of head of household and by household size, according to residence (Zambia 2008)

	Residence		
Characteristic	**Urban**	**Rural**	**Total**
	(1)	(2)	(3)
Sex of head of household			
Male	71.3	70.2	70.5
Female	28.7	29.8	29.5
Number of usual members			
1	4.8	10.3	8.6
2	9.1	12.3	11.3
3	16.3	15.0	15.4
4	18.2	17.2	17.6
5	16.9	14.8	15.4
6	12.3	11.2	11.5
7	8.6	8.3	8.4
8	5.2	4.9	5.0
9+	8.6	6.0	6.8
Total	100.0	100.0	100.0
Number	1,354	3,051	4,405

Table 3 shows that just under half of urban households reported having electricity, compared to 4.0% of rural households. Nationally, the most common sources of drinking water were unprotected wells (27.3%), tube wells or boreholes (13.5%), and surface water (13.1%) including rivers, dams, lakes, springs, or ponds. In rural areas, the most common sources of drinking water were unprotected wells (34.1%) and tube wells or boreholes (18.1%), while urban households mostly reported using water sources piped into yard or plot (28.9%), public taps or stand pipes (27.0%), or water piped into the dwelling (17.5%). The most common toilet facilities reported in households were open pits or pit latrines without slabs (36.6%) or no facilities (26.9%). The vast majority of both urban and rural households surveyed had earth or sand floors (67.3%) or cement floors (31.0%).

Table 3. Household characteristics

Percent distribution of households by household characteristics, according to residence (Zambia 2008)

	Residence		
Household characteristic	**Urban**	**Rural**	**Total**
	(1)	(2)	(3)
Electricity			
Yes	45.0	4.0	16.6
No	55.0	96.0	83.4
Source of drinking water			
Piped into dwelling	17.5	1.5	6.4
Piped into yard/plot	28.9	0.7	9.4
Public tap/standpipe	27.0	4.8	11.6
Tube well or borehole	3.2	18.1	13.5
Protected well	7.0	15.2	12.7
Unprotected well	12.1	34.1	27.3
Protected spring	0.1	0.7	0.5
Unprotected spring	0.6	6.7	4.8
Rainwater	0.0	0.0	0.0
Surface water (river/dam/lake/spring/pond)	2.9	17.6	13.1
Bottled water	0.1	0.0	0.1
Other	0.2	0.1	0.2
Sanitation facilities			
Flushed to pipe sewer system	26.9	0.4	8.5
Flushed to septic tank	8.8	0.1	2.7
Flushed to pit latrine	0.2	1.7	0.7
Flushed to somewhere else	0.4	0.0	0.1
Ventilated improved pit latrine	0.6	0.9	0.8
Pit latrine with slab	29.0	18.4	21.7
Pit latrine without slab/open pit	25.4	41.6	36.6
Hanging toilet/hanging latrine	0.1	0.2	0.2
No facility/bush/field	3.8	37.2	26.9
Other	0.2	0.4	0.3

continued

Table 3. Household characteristics

Percent distribution of households by household characteristics, according to residence (Zambia 2008)

	Residence		
Household characteristic	**Urban**	**Rural**	**Total**
	(1)	(2)	(3)
Flooring material			
Earth/sand/dung	22.0	87.9	67.3
Wood planks	0.2	0.2	0.2
Parquet or polished wood	0.2	0.2	0.2
Vinyl or asphalt strips	0.0	0.0	0.0
Ceramic tiles	1.6	0.0	0.5
Cement	75.1	11.0	31.0
Carpet	0.7	0.1	0.3
Other	0.3	0.6	0.5
Total	100.0	100.0	100.0
Number	1,354	3,051	4,405

Table 4 shows that just over half of Zambian households (54.1%) possess a radio. One-quarter of households have either a landline telephone or a cell phone, with over half of houses in urban areas possessing either a landline telephone or a cell phone.

Table 4. Household durable goods

Percent of households possessing various durable consumer goods, by residence (Zambia 2008)

	Residence		
Household characteristic	**Urban**	**Rural**	**Total**
	(1)	(2)	(3)
Radio	70.6	46.8	54.1
Television	49.6	6.4	19.7
Telephone or cell phone	54.2	11.4	24.6
Refrigerator	27.6	1.8	9.7
Bicycle	24.9	42.8	37.3
Motorcycle	1.1	0.3	0.5
Car/truck	5.5	0.6	2.1
None of the above	16.8	38.3	31.7
Number	1,354	3,051	4,405

Characteristics of women respondents

Eligible women ages 15-49 were interviewed using the women's questionnaire. **Table 5** shows that nearly two-thirds (61.5%) of women were ages 15–29 years, and the majority of them lived in rural areas (62.9%). Over one-half of women reported at least a primary level of education (51.6%). The women surveyed were mainly Protestants (69.3%) or Catholics (19.2%), and women most often cited belonging to either the Bemba (32.5%) or the Nyanja (16.0%) ethnic groups.

Table 5. Background characteristics of women respondents

Distribution of women ages 15–49 by background characteristics (Zambia 2008)

Characteristic	Percent	Number
	(1)	(2)
Age		
15–19	19.4	783
20–24	22.5	908
25–29	19.6	794
30–34	14.0	564
35–39	10.4	420
40–44	7.6	307
45–49	6.6	266
Residence		
Rural	62.9	2,541
Urban	37.1	1,501
Province		
Central	9.0	362
Copperbelt	18.3	739
Eastern	11.6	470
Luapula	9.9	401
Lusaka	12.4	502
Northern	6.9	437
North-Western	10.8	280
Southern	11.7	473
Western	9.4	379
Education		
No education	13.7	555
Primary	51.6	2,086
Secondary	32.7	1,321
Higher	2.0	81

continued

Table 5. Background characteristics of women respondents

Distribution of women ages 15–49 by background characteristics (Zambia 2008)

Characteristic	Percent	Number
	(1)	(2)
Religion		
Catholic	19.2	777
Protestant	69.3	2,802
Muslim	0.3	12
Traditional	0.6	24
Other	10.6	427
Ethnic group		
Bemba	32.5	1,313
Tonga	14.1	569
North-Western	10.4	419
Baroste	8.9	358
Nyanja	16.0	644
Mambwe	2.98	115
Tumbuku	4.0	163
Other	11.4	460
Total	100.0	4,042

Chapter 3: Coverage of key malaria interventions

Malaria control efforts in Zambia are focused around selected interventions for rapid scale-up. These include providing prompt, effective treatment with artemether-lumefantrine (ART-LUM) within 24 hours of symptom onset. In addition, malaria transmission is prevented through two primary means: 1) the use of ITNs, targeted primarily in rural areas, and 2) IRS, targeted primarily in urban or peri-urban areas in 15 districts. These efforts are complemented by specific interventions for pregnant women—namely provision of low-cost ITNs at antenatal clinics and provision of IPT with sulfadoxine-pyrimethamine (SP).

Ownership of mosquito nets and ITNs

The ownership and use of mosquito nets, both treated and untreated, is the primary prevention strategy for reducing malaria transmission in areas of Zambia where IRS is not targeted. **Table 6** shows that 71.5% of households in Zambia currently have a mosquito net, with 64.8% of households having a net that has been treated with insecticide at some time. More importantly, 62.3% of households have an ITN, which is defined as either a factory-treated net that does not require any treatment, a pretreated net obtained within the past 12 months, or a net that has been soaked with insecticide within the past 12 months. Among households possessing a net, more than half of these have more than one net.

In Northern Province, almost 90% of households reported having at least one mosquito net, and 88.9% of households reported owning at least one ITN. This is the highest percentage of mosquito net and ITN ownership reported among the nine provinces, owing partly to recent mass distribution efforts targeting all districts in Northern, Eastern, and Southern Provinces in mid 2008. These mass distribution campaigns formed part of the rolling mass distribution of ITNs that has been under way since late 2005. North-Western, Lusaka, and Central Provinces reported the lowest household ownership of at least one mosquito net (49.1%, 56.8%, and 57.5%, respectively). Ownership of at least one ITN has dropped in Western Province moving from 67.0% in 2006 to 33.8%. This was largely due to the type of net distributed and the lack of widespread re-treatment of the non-long-lasting insecticidal nets. Mass distribution efforts have not focused on Lusaka, Central, or Copperbelt provinces, but many ITNs have been made available in these areas through the Malaria in Pregnancy (MiP) ITN Distribution Scheme which provides ITNs to antenatal facilities for free distribution to women attending for antenatal care.

In contrast to the 2006 MIS, rural households have surpassed urban households in availability of mosquito nets and those nets which are considered ever-treated. ITN ownership between rural and urban areas is approximately the same. Further, in 2008, there is a more equitable distribution of nets, ever-treated nets, and ITNs compared with the 2006 results across wealth quintiles. More households in the poorest wealth quintile have at least one mosquito net compared with households in the least poor quintile.

Table 6. Ownership of mosquito nets

Households with at least one and more than one mosquito net (treated or untreated), ever-treated mosquito net, and insecticide-treated net (ITN), and average number of nets by each type per household, by background characteristics (Zambia 2008)

Background characteristic	Percentage of households that have at least one net	Percentage of households that have more than one net	Average number of nets per household	Percentage of households that have at least one ever-treated net	Percentage of households that have more than one ever-treated net	Average number of ever-treated nets per household	Percentage of households that have at least one ITN[1]	Percentage of households that have more than one ITN	Average number of ITNs per household	Number of households
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Residence										
Urban	66.2	36.8	1.28	61.8	34.4	1.20	58.8	30.4	1.09	1,354
Rural	73.8	37.5	1.28	71.4	35.4	1.22	63.9	31.1	1.08	3,051
Province										
Central	57.5	29.3	1.02	52.3	26.0	0.92	51.0	24.2	0.88	414
Copperbelt	72.0	36.6	1.29	61.7	31.2	1.11	57.2	25.5	0.97	646
Eastern	77.7	34.4	1.25	77.1	33.8	1.23	74.8	29.8	1.15	577
Luapula	75.2	36.1	1.24	73.3	35.4	1.19	69.8	32.3	1.10	458
Lusaka	56.8	29.3	1.02	55.6	29.1	1.01	55.4	27.0	0.97	478
Northern	89.9	57.2	1.74	89.7	56.7	1.73	88.9	55.3	1.69	538
North-Western	49.1	24.0	0.98	49.1	24.0	0.98	48.4	24.0	0.95	324
Southern	80.0	47.3	1.54	76.6	42.7	1.44	69.9	38.9	1.30	512
Western	71.9	33.5	1.25	68.6	30.4	1.15	33.8	16.0	0.55	458

continued

Table 6. Ownership of mosquito nets

Households with at least one and more than one mosquito net (treated or untreated), ever-treated mosquito net, and insecticide-treated net (ITN), and average number of nets by each type per household, by background characteristics (Zambia 2008)

Background characteristic	Percentage of households that have at least one net	Percentage of households that have more than one net	Average number of nets per household	Percentage of households that have at least one ever-treated net	Percentage of households that have more than one ever-treated net	Average number of ever-treated nets per household	Percentage of households that have at least one ITN[1]	Percentage of households that have more than one ITN	Average number of ITNs per household	Number of households
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Wealth index										
Lowest	76.4	38.3	1.31	74.1	37.1	1.26	62.9	32.3	1.07	965
Second	70.9	30.9	1.12	69.5	29.4	1.08	63.0	26.0	0.98	897
Middle	70.0	34.3	1.18	67.2	32.1	1.12	62.3	27.9	1.02	910
Fourth	66.5	36.0	1.23	62.0	33.6	1.14	58.3	29.8	1.03	831
Highest	73.1	48.1	1.60	68.6	44.1	1.48	65.1	39.2	1.34	801
Total	71.5	37.3	1.28	68.4	35.1	1.21	62.3	30.9	1.08	4,405

[1] An insecticide-treated net (ITN) is 1) a factory-treated net that does not require any treatment, 2) a pretreated net obtained within the past 12 months, or 3) a net that has been soaked with insecticide within the past 12 months.

Table 6b presents the household level possession of long-lasting insecticidal nets (LLINs) among surveyed households. LLINs were identified through the questionnaire as branded long-lasting nets that have been distributed through mass distribution, through the antenatal clinics in the MiP program, or purchased through commercial markets. Of the available nets in households, most of the ITNs are actually LLINs across all areas and provinces, except Western Province.

Table 6b. Household possession of LLINs

Percentage of households with at least one and more than one LLIN, and average number of LLINs per household, by background characteristics (Zambia 2008)

Background characteristic	Percentage of households that have at least one LLIN[1]	Percentage of households that have more than one LLIN	Average number of LLINs per household	Number of households
	(1)	(2)	(3)	(4)
Residence				
Urban	53.9	27.8	0.99	1,354
Rural	56.1	26.6	0.93	3,051
Province				
Central	49.2	23.6	0.85	414
Copperbelt	49.0	20.5	0.81	646
Eastern	64.6	22.9	0.96	577
Luapula	67.6	30.8	1.05	458
Lusaka	53.2	25.7	0.93	478
Northern	88.5	54.6	1.66	538
North-Western	48.1	23.2	0.94	324
Southern	61.6	35.0	1.20	512
Western	8.0	2.7	0.11	458
Wealth index				
Lowest	52.1	26.2	0.87	965
Second	56.0	22.4	0.86	897
Middle	56.5	24.7	0.91	911
Fourth	52.6	26.9	0.91	831
Highest	60.5	34.5	1.23	801
Total	55.4	26.9	0.95	4,405

[1]A long-lasting insecticidal net (LLIN) is a factory-manufactured net that does not require any treatment.

Use of mosquito nets and insecticide-treated nets by children and pregnant women

Use of ITNs, especially among the target populations of children under age five years and pregnant women, has been demonstrated to reduce the occurrence of malaria episodes, all-cause child mortality, and complications associated with malaria during pregnancy. The NMSP 2006–2010 has set out targets of 80% coverage of ITNs, defined as use among these target populations. Attaining and maintaining high usage of ITNs is essential for reducing malaria transmission and contributing to overall reductions in malaria and malaria-related burden in Zambia.

In the MIS 2008, use of ITNs was identified in each household through the use of a complete net roster, in which each net in the household was identified, its current treatment status was determined, and individuals sleeping under each net the night before the survey were recorded.

Table 7 presents information on the use of mosquito nets by children. Nearly forty-eight percent (47.5%) of children under age five years were reported to have slept under a mosquito net the night before the survey, and 41.1% of children were reported to have slept under an ITN. In contrast to the 2006 MIS, usage of both nets and ITNs was higher for children in rural areas (49.3% for mosquito nets and 42.3% for ITNs, respectively) than in urban areas (42.8% for mosquito nets and 37.8% for ITNs, respectively). Also, male children under age five years were equally as likely as females to have slept under a net or ITN. According to the wealth quintiles, children living in poorer households were nearly as likely to have slept under nets and ITNs as children in least poor areas.

Northern and Eastern Province reported the highest percentage of children sleeping under ITNs at 64.4% and 57.3%, respectively. Western and Central Provinces reported the lowest percentage of ITN use among children at 20.4% and 20.8%, respectively. Western province reported a significantly higher percentage of children sleeping under a net, owing to the drop in treatment status of the nets. Central Province had not yet benefited from ITNs through mass distribution at the time of the survey.

Considering only households with at least one mosquito net, use of nets among children under age five years the night before the survey reached 60.6%, and use of ITNs among children in this age group was 52.4% (data not shown). This does not include children in households that did not report having at least one net, as these would not otherwise have had the opportunity to sleep under a net. Overall availability of nets continues to be a significant barrier to reaching optimal levels of net and treated net use among children under age five years.

Table 7. Use of mosquito nets by children

Children under age five years who slept under a mosquito net the night before the survey and percentage who slept under an insecticide-treated net (ITN), by background characteristics (Zambia 2008)

Background characteristic	Percentage of children under age five years who slept under a net last night	Percentage of children under age five years who slept under an ever-treated net last night	Percentage of children under age five years who slept under an ITN[1] last night	Number of children under age five years
	(1)	(2)	(3)	(4)
Age (in years)				
<1	57.8	55.9	49.9	923
1	50.0	47.8	43.9	761
2	46.7	45.2	40.6	701
3	42.0	40.7	36.3	768
4	38.3	37.1	32.3	714
Sex				
Male	47.6	46.0	41.1	1,970
Female	47.4	45.8	41.1	1,896
Residence				
Urban	42.8	40.9	37.8	1,070
Rural	49.3	47.8	42.3	2,796
Province				
Central	25.2	22.6	20.8	375
Copperbelt	42.7	38.5	34.5	515
Eastern	61.0	60.7	57.3	551
Luapula	48.8	47.4	45.4	447
Lusaka	44.2	43.6	42.7	363
Northern	66.4	66.2	64.4	520
North-Western	35.4	35.4	35.1	310
Southern	40.2	37.2	32.3	456
Western	51.4	49.6	20.4	328
Wealth index				
Lowest	45.7	44.8	38.5	1,082
Second	52.3	51.2	45.8	710
Middle	53.4	51.5	46.8	759
Fourth	39.9	38.1	34.8	704
Highest	46.6	43.8	40.3	611
Total	47.5	45.9	41.1	3,866

[1]An insecticide-treated net (ITN) is 1) a factory-treated net that does not require any treatment, 2) a pretreated net obtained within the past 12 months, or 3) a net that has been soaked with insecticide within the past 12 months.

Table 8 presents the percentage of all women ages 15–49 years and pregnant women who reported sleeping under mosquito nets the night before the survey. Forty-five percent (45.0%) of all women ages 15–49 slept under a mosquito net the night before the survey, and 38.9% slept under an ITN. For pregnant women, the percentages sleeping under mosquito nets (50.3%) and ITNs (43.2%) were higher than the percentages for all women (pregnant and non-pregnant).

Rural women ages 15–49 years were more likely to sleep under a net (48.7% vs. urban women at 39.0%), and to sleep under an ITN (41.5% vs. 34.7% for urban women). However, this trend is reversed among pregnant women, with more urban pregnant women reported to have slept under both nets and treated nets than rural pregnant women.

Table 8. Use of mosquito nets by women ages 15–49 years and pregnant women

All women ages 15–49 years and pregnant women years who slept under a mosquito net (treated or untreated), an ever-treated mosquito net, or an insecticide-treated net (ITN) the night before the survey, by background characteristics (Zambia 2008)

	Percentage of women who slept under a net last night	**Percentage of women who slept under an ever-treated net last night**	**Percentage of women who slept under an ITN[1] last night**	**Number of women**	**Percentage of pregnant women who slept under a net last night**	**Percentage of pregnant women who slept under an ever-treated net last night**	**Percentage of pregnant women who slept under an ITN last night**	**Number of pregnant women**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Residence								
Rural	48.7	47.2	41.5	2,795	48.9	47.0	40.5	295
Urban	39.0	37.0	34.7	1,755	53.9	52.5	49.8	121
Province								
Central	28.7	26.6	26.1	394	36.3	35.2	35.2	46
Copperbelt	37.0	32.6	29.8	833	55.3	53.9	52.0	58
Eastern	57.7	57.3	54.3	493	48.2	48.2	46.1	46
Luapula	52.9	51.4	48.6	420	57.6	57.6	52.9	50
Lusaka	37.5	37.6	36.9	631	46.1	46.1	46.1	31

continued

Table 8. Use of mosquito nets by women ages 15–49 years and pregnant women

All women ages 15–49 years and pregnant women years who slept under a mosquito net (treated or untreated), an ever-treated mosquito net, or an insecticide-treated net (ITN) the night before the survey, by background characteristics (Zambia 2008)

	Percentage of women who slept under a net last night	Percentage of women who slept under an ever-treated net last night	Percentage of women who slept under an ITN[1] last night	Number of women	Percentage of pregnant women who slept under a net last night	Percentage of pregnant women who slept under an ever-treated net last night	Percentage of pregnant women who slept under an ITN last night	Number of pregnant women
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Northern	64.3	64.1	62.7	525	66.1	66.1	64.6	62
North-Western	41.5	41.5	40.6	310	32.1	32.1	32.1	32
Southern	40.7	38.1	34.7	520	39.0	33.7	26.2	47
Western	48.4	46.1	18.4	425	59.3	51.3	19.3	43
Wealth Index								
Lowest	48.3	47.1	39.3	992	50.8	47.7	40.2	103
Second	48.5	47.4	42.6	712	52.6	50.5	46.2	93
Middle	52.6	51.3	46.0	769	47.6	47.0	37.6	78
Fourth	38.8	36.9	34.5	917	48.3	47.4	44.5	81
Highest	39.8	37.2	35.0	1160	52.4	51.1	49.3	61
Total	45.0	43.3	38.9	4,550	50.3	51.4	43.2	416

[1]An insecticide-treated net (ITN) is 1) a factory-treated net that does not require any treatment, 2) a pretreated net obtained within the past 12 months, or 3) a net that has been soaked with insecticide within the past 12 months.

Indoor residual spraying

IRS is one of the primary malaria prevention strategies in Zambia and is carried out in 15 target districts, representing mainly urban and peri-urban areas. These districts include Kabwe (Central Province); Chililabombwe, Chingola, Kalulushi, Kitwe, Luanshya, Mufulira, Ndola (Copperbelt Province); Chongwe, Kafue, Lusaka (Lusaka Province); Solwezi (North-Western Province); Kazungula, Livingstone, and Mazabuka (Southern Province).

Table 9 presents the results for IRS reported by households in these target districts. The results indicate that 46.4% of households in the urban areas of these 15 target districts had been sprayed in the previous 12 months, while 33.2% of rural households in these target districts had been sprayed. From the households within the IRS target districts, those in Kabwe district (Central Province) reported the highest percentage (55.9%) of households sprayed within the previous 12 months. Eighty-five percent of this spraying was conducted by the government IRS programme. Copperbelt Province reported the second highest percentage of households sprayed (53.8%), followed by target districts in Southern Province (53.5%). IRS target districts in the Copperbelt Province have the highest percentage (28.1%) of private agents conducting IRS activities, which is largely attributed to the malaria control partnerships in spraying in the mining sector there.

Based on the wealth quintiles, poorer households have a lower percentage of IRS coverage than richer households, although in the highest quintile, IRS coverage drops. This is due to targeting of IRS activities to more urban areas of these districts. Poorer households are more likely to get their IRS through the government programmes than richer houses.

Among households sprayed within the previous 12 months, IRS activities were on average conducted within the past 6 months. Since the survey was conducted during April/May 2008, most houses were reportedly sprayed toward the end of 2007 in line with programmatic efforts to complete the annual spray cycle prior to the onset of the rains in November and December.

Essential for understanding and interpreting IRS coverage results from household surveys is an understanding of whether clusters and households surveyed fall within targeted IRS areas. For the purposes of this analysis, the results from Table 9 are tabulated based on all households within districts if the district is known to conduct IRS campaigns. These percentages do not necessarily represent operational coverage rates.

Table 9. Indoor residual spraying (IRS)

Among all households in IRS targeted districts, the percentage of households reporting indoor residual spraying in the previous 12 months, and among households that reported spraying, the percentage that reported the spraying was conducted by government and private agents and the average number of months ago spraying was conducted, by background characteristics (Zambia 2008)

Background characteristic	Percentage of households sprayed in the previous 12 months	Number of households	Among households sprayed in the previous 12 months:			Number of sprayed houses
			Percentage sprayed by government	Percentage sprayed by private agents	Average number of months ago house sprayed	
	(1)	(2)	(3)	(4)	(5)	(6)
Residence						
Rural	33.2	392	90.5	4.2	6.9	130
Urban	46.4	1020	76.6	16.9	5.5	473

continued

Table 9. Indoor residual spraying (IRS)

Among all households in IRS targeted districts, the percentage of households reporting indoor residual spraying in the previous 12 months, and among households that reported spraying, the percentage that reported the spraying was conducted by government and private agents and the average number of months ago spraying was conducted, by background characteristics (Zambia 2008)

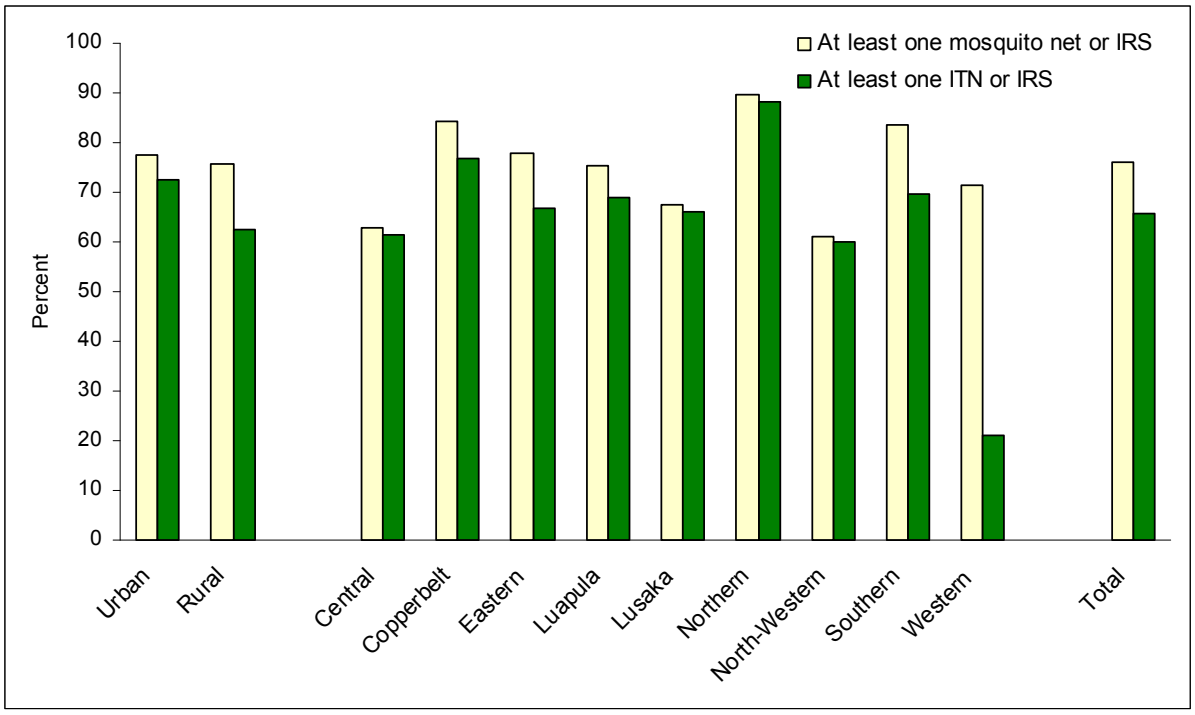
Background characteristic	Percentage of households sprayed in the previous 12 months	Number of households	Among households sprayed in the previous 12 months:			Number of sprayed houses
			Percentage sprayed by government	Percentage sprayed by private agents	Average number of months ago house sprayed	
	(1)	(2)	(3)	(4)	(5)	(6)
Province						
Central	55.9	93	85.0	1.1	5.8	52
Copperbelt	53.8	541	66.2	28.1	5.3	291
Lusaka	29.3	478	90.3	1.1	5.7	140
North-Western	29.1	165	96.9	3.1	7.1	48
Southern	53.5	135	97.9	0.0	7.1	72
Wealth index						
Lowest	20.4	56	*	*	*	11
Second	35.5	104	93.5	4.0	6.7	37
Middle	35.5	153	88.8	6.9	6.6	55
Fourth	38.7	437	88.2	6.0	6.1	169
Highest	50.1	662	71.5	21.0	5.4	332
Total	42.7	1,412	79.6	14.2	5.8	603

*An asterisk indicates that a figure is based on fewer than 25 cases and has been suppressed.

In Zambia, both ITNs and IRS are used as malaria transmission prevention. ITNs have been distributed through various strategies and partners since the beginning of Roll Back Malaria activities in the country. Up to 2007, ITN mass distribution was targeted largely to areas that were not designated as IRS targeted areas. As an indication of combined coverage of ITN and IRS activities, **Figure 2** presents the percentage of households that reported having at least one mosquito net or IRS as well as, among those households, the percentage of households with at least one ITN or IRS.

Seventy-six percent (76%) of households reported having at least one mosquito net or reported having been sprayed within the previous 12 months before the survey. Nearly sixty-six percent (65.5%) of households reported having at least one ITN or reported having been sprayed within the previous 12 months before the survey. Northern Province, followed by Copperbelt, reported the highest levels of coverage of either mosquito nets or IRS.

Figure 2. Percentage of households with at least one mosquito net or insecticide-treated net (ITN) or indoor residual spraying (IRS) (Zambia 2008).



Use of intermittent preventive treatment by pregnant women

The strategy of IPT for prevention of malaria during pregnancy has been implemented in Zambia since 2003. IPT is currently defined as having taken at least two treatment doses of an effective antimalarial drug during routine antenatal care visits. In Zambia, SP, also known as Fansidar, is currently the drug used for IPT.

Table 10 presents the results for the use of IPT by pregnant women during the last birth in the five years preceding the survey. Eighty-eight percent (88.1%) of mothers reported taking an antimalarial drug for prevention during their last pregnancy. Seventy-three percent (73%) of mothers received the antimalarial drug during a routine antenatal clinic (ANC) visit. Among pregnant women, 66.1% took the recommended two or more doses of IPT. Not all of these doses were received through ANC visits. Sixty percent (60.3%) of mothers reported receiving two doses of IPT during the pregnancy where at least one of the doses was received during an ANC visit.

Responses varied by demographic characteristics. For example, urban women were more likely to take an antimalarial drug during their last pregnancy than rural women (92.2% vs. 86.1%, respectively). Urban women were as likely as their rural counterparts to receive IPT during an ANC visit (74.2% vs. 72.4%), although urban women were more likely to take at least two doses (75.1% vs. 62.1%) than rural women.

Regional variations were also observed. Women in the more urban areas of Copperbelt and Lusaka were more likely to have taken two doses of IPT. Women in Western Province reported the lowest levels of two-dose IPT use during pregnancy.

Women in the least poor wealth quintile had the highest rates of antimalarial drug use (93% vs. 81% in the poorest quintile). This trend was consistent across all levels of IPT use regardless of the source of IPT.

Table 10. Use of intermittent preventive treatment (IPT) by pregnant women

For the last birth in the five years preceding the survey, percentage for which the mother took antimalarial drugs for prevention during the pregnancy and percentage for which the mother received IPT during an antenatal visit, by background characteristics (Zambia 2008)

Background characteristic	Percentage of mothers who took any antimalarial drug for prevention during their last pregnancy	Percentage of mothers who took any IPT[1]	Percentage of mothers who took 2+ doses of IPT	Percentage of mothers who received IPT during ANC visit	Percentage of mothers who received 2+ doses of IPT, at least one of which was during an ANC visit	Number of mothers
	(1)	(2)	(3)	(4)	(5)	(6)
Residence						
Urban	92.3	86.0	75.1	74.2	65.2	745
Rural	86.1	77.4	62.1	72.4	58.1	1,646
Province						
Central	91.1	82.6	68.5	65.2	52.7	227
Copperbelt	94.7	92.1	83.3	78.7	72.5	370
Eastern	85.3	80.1	62.3	79.1	61.6	357
Luapula	83.5	79.8	65.8	79.1	65.5	285
Lusaka	91.3	85.2	73.7	82.7	71.8	259
Northern	85.5	80.1	68.3	58.3	50.9	284
North-Western	94.5	87.6	72.4	85.4	70.2	176
Southern	88.4	78.6	58.2	76.2	56.4	277
Western	73.9	46.6	34.4	45.7	33.7	157
Wealth index						
Lowest	81.1	71.2	56.3	67.0	53.1	615
Second	88.3	78.7	64.5	72.6	59.7	426
Middle	87.8	80.3	64.5	73.2	59.3	451
Fourth	92.8	86.5	71.5	77.8	63.6	469
Highest	92.9	86.8	77.6	76.3	68.7	430
Education						
None	77.8	70.6	57.3	66.4	54.0	387
Primary	88.8	80.1	64.9	73.0	58.8	1,358
Secondary	92.4	85.0	73.6	76.7	66.9	616
Higher	98.4	95.4	81.9	77.6	70.4	30
Total	88.1	80.0	66.1	73.0	60.3	2,391

[1]Intermittent preventive treatment (IPT) is intermittent preventive treatment with Fansidar/SP during an antenatal clinic (ANC) visit.

Prevalence and prompt treatment of fever

The treatment component of Zambia's malaria control program focuses on prompt provision of effective drugs. In the face of increasing resistance to chloroquine and SP, the MOH designated ART-LUM (or Coartem®) as first-line therapy for all Zambians over 5 kg in 2003. The specific guidelines, as outlined in the MOH's Guidelines for the Diagnosis and Treatment of Malaria in Zambia, recommend Coartem® as first-line therapy for uncomplicated malaria in children over 5 kg, and SP for uncomplicated malaria in children under 5 kg. Quinine is designated as the lead drug for complicated malaria.

According to the current malaria control strategy, Zambia hopes to treat 80% of patients within 24 hours of symptom onset by December 2008. Prompt presentation of febrile children to health facilities is essential to meeting this target.

Table 11 presents results for prevalence of fever among children under age five years and treatment-seeking behaviour for these children. Twenty-eight percent (28%) of children had a fever in the last two weeks. Of these, 43.3% took an antimalarial drug, and 29% took the drug within 24 hours of symptom onset. Only 64% sought treatment from a health facility/provider within that time period. The highest prevalence of fever was seen in children ages 12–23 months (34.5%), followed by those ages 24–35 months (28.7%).

Among children with fever, 10.9% reported having a heel or finger stick when they sought treatment during their fever episode. North-Western and Lusaka provinces had the highest reported levels of heel or finger sticks with 29.4% and 20.8%, respectively.

Children in rural areas were more likely to suffer from fever (29.5% rural vs. 24.3% in urban areas). However, children in rural areas were less likely to take an antimalarial drug for the febrile episode (39.8% rural vs. 54.6% urban), and were less likely to take an antimalarial drug within 24 hours (27.2% rural vs. 34.4% urban) than children living in urban areas.

In the lowest quintile, 32.1% of children suffered from fever in the last two weeks, and 38.9% of those took an antimalarial drug. Twenty-eight percent (28.4%) were treated promptly within 24 hours and 66.3% were seen by a health provider/facility in that time period.

Table 11. Prevalence and prompt treatment of fever

Children under age five years with fever in the two weeks preceding the survey, and among children with fever, percentage who took antimalarial drugs and who took the drugs the same/next day, by background characteristics (Zambia 2008)

Background characteristic	Percentage of children with fever in last two weeks	Number of children under age five years	Among children with fever*:				Number of children with fever*
			Percentage who reported having finger or heel stick	Percentage who took antimalarial drugs	Percentage who took antimalarial drugs same day/next day	Percentage who sought treatment from a facility/provider same day/next day	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age (in months)							
<12	27.1	815	10.1	39.5	27.9	62.6	203
12–23	34.5	667	7.0	42.5	26.2	64.3	219
24–35	28.7	579	12.4	43.8	31.4	62.8	158
36–47	25.5	588	12.6	42.2	28.7	68.6	138
48–59	24.0	569	15.1	51.5	32.6	61.9	126
Sex							
Male	27.7	1,638	11.8	46.7	31.2	66.2	421
Female	28.4	1,580	10.0	39.9	26.7	61.7	422
Residence							
Urban	24.3	884	15.3	54.6	34.4	64.9	200
Rural	29.5	2,334	9.5	39.8	27.2	63.7	643

continued

Table 11. Prevalence and prompt treatment of fever

Children under age five years with fever in the two weeks preceding the survey, and among children with fever, percentage who took antimalarial drugs and who took the drugs the same/next day, by background characteristics (Zambia 2008)

Background characteristic	Percentage of children with fever in last two weeks	Number of children under age five years	Among children with fever*:				Number of children with fever*
			Percentage who reported having finger or heel stick	Percentage who took antimalarial drugs	Percentage who took antimalarial drugs same day/next day	Percentage who sought treatment from a facility/provider same day/next day	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Province							
Central	26.8	316	3.4	26.5	19.0	75.9	73
Copperbelt	26.1	434	10.4	49.6	25.8	56.3	105
Eastern	29.0	491	6.9	43.9	31.9	49.4	130
Luapula	40.5	396	15.2	39.0	28.1	81.3	154
Lusaka	16.3	295	20.8	47.9	41.0	58.6	45
Northern	28.2	369	5.1	43.5	17.7	64.5	99
North-Western	16.2	268	29.4	60.5	23.2	47.7	43
Southern	28.8	390	17.9	41.2	39.1	72.0	108
Western	36.6	259	0.0	48.1	34.9	54.4	88
Wealth index							
Lowest	32.1	923	9.9	38.9	28.4	66.3	277
Second	31.3	604	8.9	41.5	28.7	60.3	179
Middle	26.7	615	11.1	44.8	25.2	62.2	153

continued

Table 11. Prevalence and prompt treatment of fever

Children under age five years with fever in the two weeks preceding the survey, and among children with fever, percentage who took antimalarial drugs and who took the drugs the same/next day, by background characteristics (Zambia 2008)

Background characteristic	Percentage of children with fever in last two weeks	Number of children under age five years	Among children with fever*:				Number of children with fever*
			Percentage who reported having finger or heel stick	Percentage who took antimalarial drugs	Percentage who took antimalarial drugs same day/next day	Percentage who sought treatment from a facility/provider same day/next day	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fourth	24.4	593	9.0	47.1	27.7	62.7	136
Highest	22.5	484	19.5	51.4	38.4	68.3	99
Total	28.1	3,218	10.9	43.3	28.9	64.0	843

*Excludes children whose fever started less than two days before the interview.

Table 12 represents drugs taken for fever and drugs taken within 24 hours of symptom onset. According to the survey results, SP is the most common antimalarial drug given for fever: 20.6% of children with fever in the last two weeks were treated with SP, 12.7% with Coartem®, and 3.3% with quinine (for severe malaria according to the treatment guidelines). Of the children with fever, 15.2% were given SP and 8.2% Coartem® within 24 hours of symptom onset.

Children in urban areas were more likely to report taking SP than those in rural areas (28.4% urban vs. 18.1% rural, 17.4% urban use within 24 hours vs. 14.0% rural use within 24 hours).

Table 12. Type and timing of antimalarial drugs

Among children under age five who took antimalarial drugs for fever and/or convulsions in the two weeks preceding the survey, percentage who took first-line drug, second-line drug, or other antimalarial drugs and percentage who took each type of drug the same/next day after developing fever and/or convulsions, by background characteristics (Zambia 2008)

	Percentage of children who took drug				**Percentage of children who took drug same/next day**				
Background characteristic	Coartem®[1]	SP[1]	Quinine	Other antimalarial	Coartem®	SP	Quinine	Other antimalarial	**Number of children with fever**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Age (in months)									
<12	9.7	20.3	2.0	7.5	6.6	14.5	1.6	5.1	203
12–23	15.8	17.7	2.5	6.5	9.3	12.6	0.5	3.9	219
24–35	16.1	19.1	1.8	6.7	10.5	13.5	1.3	6.2	158
36–47	11.4	21.5	5.4	3.9	7.3	15.5	2.4	3.3	138
48–59	9.6	26.8	6.5	8.6	5.5	20.1	0.5	6.4	126
Residence									
Urban	16.6	28.4	2.4	7.2	10.5	17.4	0.3	6.3	200
Rural	11.5	18.1	3.6	6.5	7.2	14.0	1.5	4.5	643

continued

Table 12. Type and timing of antimalarial drugs

Among children under age five who took antimalarial drugs for fever and/or convulsions in the two weeks preceding the survey, percentage who took first-line drug, second-line drug, or other antimalarial drugs and percentage who took each type of drug the same/next day after developing fever and/or convulsions, by background characteristics (Zambia 2008)

	Percentage of children who took drug				**Percentage of children who took drug same/next day**				
Background characteristic	Coartem®[1]	SP[1]	Quinine	Other antimalarial	Coartem®	SP	Quinine	Other antimalarial	**Number of children with fever**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Province									
Central	5.6	15.9	3.4	1.7	5.6	12.1	1.3	0.0	73
Copperbelt	14.2	24.0	3.0	8.4	2.9	14.3	1.1	7.4	105
Eastern	12.7	23.6	6.6	0.9	9.1	17.7	4.1	0.9	130
Luapula	11.9	24.4	1.4	1.2	6.8	21.4	0.0	0.0	154
Lusaka	9.0	33.0	0.0	5.9	7.6	29.4	0.0	4.1	45
Northern	9.0	20.6	4.2	9.7	4.8	7.7	0.8	4.3	99
North-Western	28.8	14.4	17.3	0.0	11.3	6.8	5.0	0.0	43
Southern	10.4	10.9	0.0	19.9	9.4	10.9	0.0	18.7	108
Western	19.7	17.6	0.0	10.8	16.8	11.1	0.0	6.9	88
Total	12.7	20.6	3.3	6.5	8.2	15.2	1.3	5.0	843

Note: Table excludes children whose fever started less than two days before the interview.

[1]Coartem® is artemether-lumefantrine (ART-LUM); SP is sulfadoxine-pyrimethamine.

Table 13 represents the source of antimalarial drugs given to children under age five years with fever in the two weeks preceding the survey. The majority of drugs (70.1%) were obtained from a government health facility. Respondents also reported using medications already present in the home (12.5%) or purchased at a shop (7.2%). Nearly eighty-eight percent (87.5%) of Coartem® treatment was obtained through a government health facility as was 67.2% of SP.

Table 13. Source of antimalarial drugs

Percent distribution of antimalarial drugs given to children under age five years with fever in the two weeks preceding the survey, by source of the drugs (Zambia 2008)

Background characteristic	Already had drug at home	Government health facility/ worker	Private health facility/ worker	Shop	Other	Don't know	Total	Number of children who took drug
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Coartem®	6.9	87.5	2.0	0.9	0.9	1.8	100.0	113
SP/Fansidar	11.9	67.2	4.2	10.5	4.6	1.5	100.0	188
Quinine	11.4	73.4	0.0	8.3	6.9	0.0	100.0	31
Other antimalarial	26.0	43.1	10.3	6.9	13.8	0.0	100.0	58
All antimalarial drugs	12.5	70.1	4.0	7.2	4.9	1.2	100.0	390

Note: Table excludes children whose fever started less than two days before the interview. SP is sulfadoxine-pyrimethamine.

Chapter 4: Malaria parasite and anaemia prevalence

Table 14 represents prevalence of malaria and anaemia in children under age five years. For the purposes of the survey, children with malaria parasites are defined as malaria microscopy positive, any anaemia is defined as haemoglobin (Hb) less than 11 grams/decilitre (g/dl) severe anaemia is defined as a haemoglobin level less than 8 grams/decilitre (g/dl).

Overall malaria parasite prevalence was 10.2% with more parasitemia among children in rural areas (12.4%) compared to urban areas (4.3%). Parasitemia prevalence peaked among children age three years and was highest in Luapula Province (21.8%) and in the lowest wealth quintile (13.1%).

Nearly forty-nine percent of children were found with any anaemia, with younger children reporting the highest levels of anaemia. Eastern and Luapula provinces reported the highest levels of anaemia, 56.4% and 55.9%, respectively. Severe anaemia was also found to be the highest in Eastern and Luapula Provinces with 6.2% and 6.9% respectively.

Nationally severe anaemia prevalence in 2008 was found to be 4.3%. There were no differences in severe anaemia among children living in rural vs. urban areas or between males and females.

Table 14. Malaria parasite prevalence and anaemia in children under age five years

Among children, percentage with malaria parasites, mean haemoglobin (Hb) values, standard deviation of haemoglobin values, and percentage with any anaemia (less than 11 grams/decilitre) and severe anaemia (less than 8 grams/decilitre), by background characteristics (Zambia 2008)

Background characteristic	Percentage with malaria parasites	Mean haemoglobin value	Standard error of haemoglobin	Percentage of children with any anaemia	Percentage of children with severe anaemia	Number of children
	(1)	(2)	(3)	(4)	(5)	(6)
Age (in months)						
<12	3.6	10.5	0.08	62.4	6.2	651
12–23	10.2	10.4	0.08	60.5	6.7	628
24–35	11.2	11.0	0.08	46.7	3.9	582
36–47	13.8	11.1	0.08	41.2	3.4	627
48–59	12.5	11.6	0.07	30.7	1.1	598
Sex						
Male	10.5	10.8	0.05	51.5	4.4	1,566
Female	9.8	11.0	0.06	45.6	4.2	1,520
Residence						
Urban	4.3	10.9	0.07	48.8	4.3	859
Rural	12.4	10.9	0.06	48.5	4.3	2,227

continued

Table 14. Malaria parasite prevalence and anaemia in children under age five years

Among children, percentage with malaria parasites, mean haemoglobin (Hb) values, standard deviation of haemoglobin values, and percentage with any anaemia (less than 11 grams/decilitre) and severe anaemia (less than 8 grams/decilitre), by background characteristics (Zambia 2008)

Background characteristic	Percentage with malaria parasites	Mean haemoglobin value	Standard error of haemoglobin	Percentage of children with any anaemia	Percentage of children with severe anaemia	Number of children
	(1)	(2)	(3)	(4)	(5)	(6)
Province						
Central	7.9	10.9	0.12	46.8	3.2	295
Copperbelt	9.9	10.9	0.11	51.0	4.2	438
Eastern	9.3	10.7	0.11	56.4	6.2	429
Luapula	21.8	10.5	0.16	55.9	6.9	356
Lusaka	1.7	10.8	0.13	53.1	4.2	259
Northern	12.0	10.9	0.10	46.5	3.4	445
North-Western	15.2	11.0	0.11	45.9	5.0	224
Southern	7.9	10.9	0.13	47.1	3.5	390
Western	2.6	11.8	0.19	26.6	1.2	250
Wealth index						
Lowest	13.1	10.9	0.10	48.3	3.9	854
Second	13.6	10.9	0.09	50.1	4.1	568
Middle	12.1	11.0	0.08	44.7	4.2	594
Fourth	6.7	10.8	0.09	51.0	6.8	573
Highest	2.8	10.9	0.09	49.3	2.6	498
Total	10.2	10.9	0.05	48.6	4.3	3,086

Chapter 5: General malaria knowledge

Among eligible women ages 15–49 years, a general knowledge of malaria, symptom recognition, and methods of prevention is necessary to ensure appropriate treatment and prevention behaviour. **Table 15** presents data on respondents' awareness of malaria, its primary symptom (fever), its route of transmission, and nets as a tool for prevention.

The majority of women had heard of malaria (99.9%) with little variance across regions, urban and rural areas, wealth index, or education level.

Overall, 71.1% of women recognized fever as a symptom of malaria. Those in rural areas were more likely to report this knowledge (73.6% rural vs. 67% of women in urban areas). Knowledge decreased by increasing wealth quintile (73.9% for the poorest quintile, 68.0% for the least poor). Regional variability was observed, with 89% of women in Luapula Province recognizing this symptom as compared to 60.6% in Copperbelt Province.

Recognition of mosquitoes as the vector for malaria transmission is essential for consistent and successful use of prevention tools. Across Zambia, 85.2% of women reported that mosquito bites cause malaria. Women in urban areas were more likely to recognize this than those in rural areas (92.3% urban vs. 80.8% rural). Women in the poorer wealth quintiles were less likely to be aware of mosquito transmission than less poor women. Knowledge rose with education level, with 70.3% of women with no education recognizing the transmission source and all surveyed women with a higher education recognizing it. Regional differences were also seen—women in Lusaka and Copperbelt Provinces were more likely to note mosquito transmission. Women in Eastern Province showed the lowest knowledge of transmission source (74.3%).

Specific knowledge of prevention methods is also key to effective control. Overall, 81.3% of women reported that use of mosquito nets could prevent malaria. Urban women were more likely to note this than rural women (88.7% urban vs. 76.7% rural).

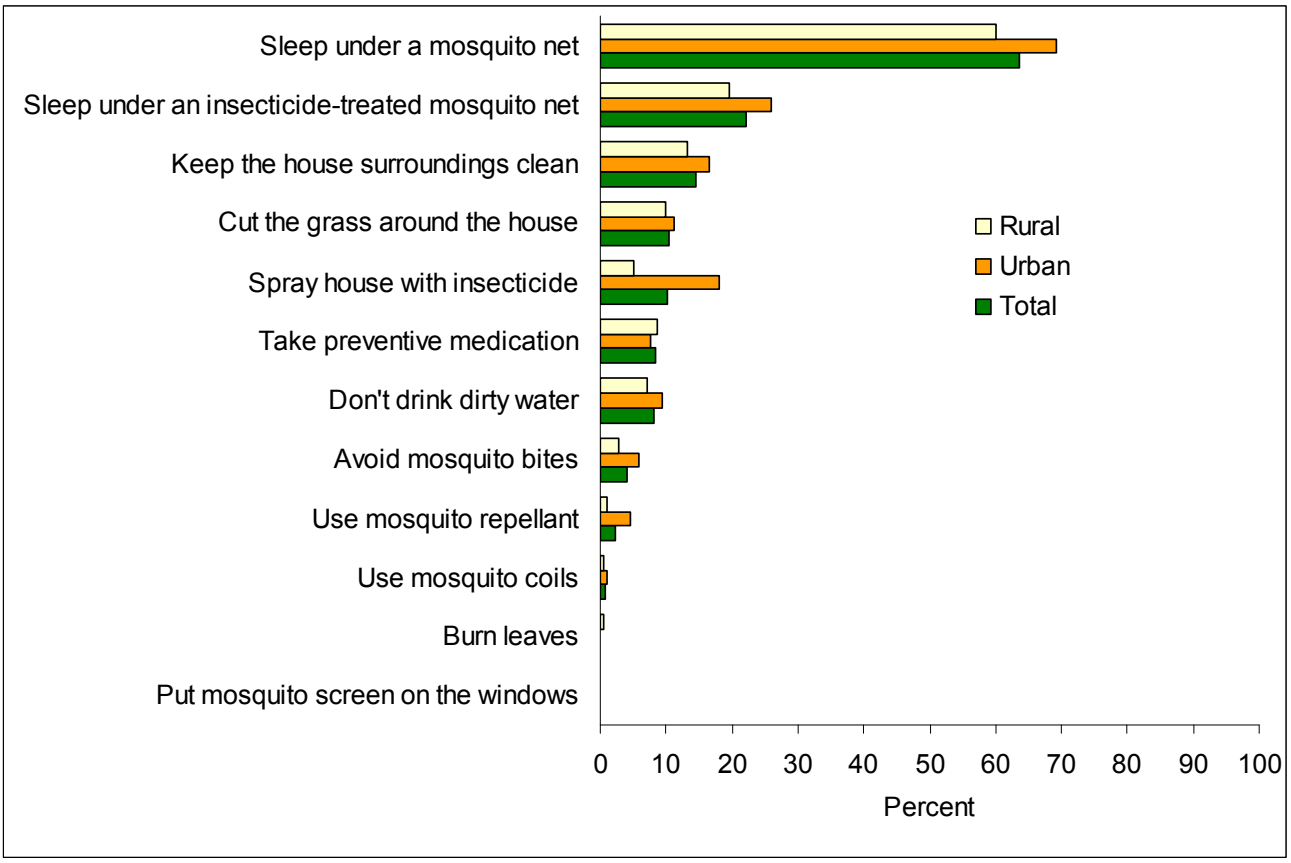
Table 15. General malaria knowledge

Among eligible women ages 15–49 years, the percentage who reported having heard of malaria, recognized fever as a symptom of malaria, reported mosquito bites as a cause of malaria, and reported mosquito nets (treated or untreated) as a prevention method for malaria, by background characteristics (Zambia 2008)

Background characteristic	Percentage who have heard of malaria	Percentage who recognize fever as a symptom of malaria	Percentage who reported mosquito bites as a cause of malaria	Percentage who reported mosquito nets (treated or untreated) as a prevention method	Number of women
	(1)	(2)	(3)	(4)	(5)
Residence					
Urban	99.9	67.0	92.3	88.7	1,449
Rural	99.8	73.6	80.8	76.7	2,378
Province					
Central	100.0	74.9	84.3	84.7	305
Copperbelt	100.0	60.6	92.8	84.5	723
Eastern	99.6	68.7	74.3	67.1	465
Luapula	100.0	89.0	89.0	86.5	397
Lusaka	99.8	69.6	94.5	93.1	496
Northern	99.6	76.7	79.4	74.3	397
North-Western	100.0	85.0	83.7	84.3	272
Southern	100.0	61.4	81.0	80.7	463
Western	99.7	69.6	79.6	72.8	310
Wealth index					
Lowest	99.7	73.9	79.8	75.7	837
Second	99.9	74.8	77.8	70.7	618
Middle	100.0	71.4	80.8	77.7	639
Fourth	99.8	68.6	88.6	88.2	788
Highest	99.9	68.0	94.7	89.7	945
Education					
None	99.9	69.8	70.3	69.2	509
Primary	99.8	72.0	82.5	78.0	1,953
Secondary	99.9	69.6	94.2	90.2	1,284
Higher	100.0	79.7	100.0	94.5	81
Total	99.9	71.1	85.2	81.3	3,827

Figure 3 presents the responses most often reported as methods of prevention of malaria. Women ages 15–49 years reported use of a mosquito net for malaria prevention most often, followed by use of a treated mosquito net. Use of ITNs and house spraying as malaria prevention methods were reported more often in urban areas than in rural areas. Household spraying in urban areas was also a noted malaria prevention method.

Figure 3. Among women ages 15-49 years, knowledge of malaria prevention methods (Zambia 2008).



Communicating important malaria messages to malaria-vulnerable populations is also a key component to improving malaria intervention uptake throughout the country. Messages such as the importance of sleeping under ITNs, seeking treatment for fever promptly, or allowing one's house to be sprayed during spray campaigns are an important part of the information, education, and communication strategy of the NMCP and partner efforts to promote household level utilization and penetration of malaria interventions.

Table 16 presents information on the exposure to malaria messages among women ages 15-49 years. When asked if they had seen or heard malaria messages, 74.5% of women responded positively. More women in urban areas reported to have seen or heard malaria messages than in rural areas, with 89.7% of women in the highest education level reporting to have seen or heard more malaria messages than less educated groups.

Among women who reported to have seen or heard messages, the average number of months ago the messages were seen or heard was 4.4 months. Women in Lusaka had on average reported seeing or hearing messages most recently at 3.0 months ago. Nearly seventy percent (69.9%) of women reported government hospitals or clinics as the source of the messages. When asked about the content of the messages seen or heard, 35.6% reported seeing or hearing messages about the importance of sleeping under mosquito nets.

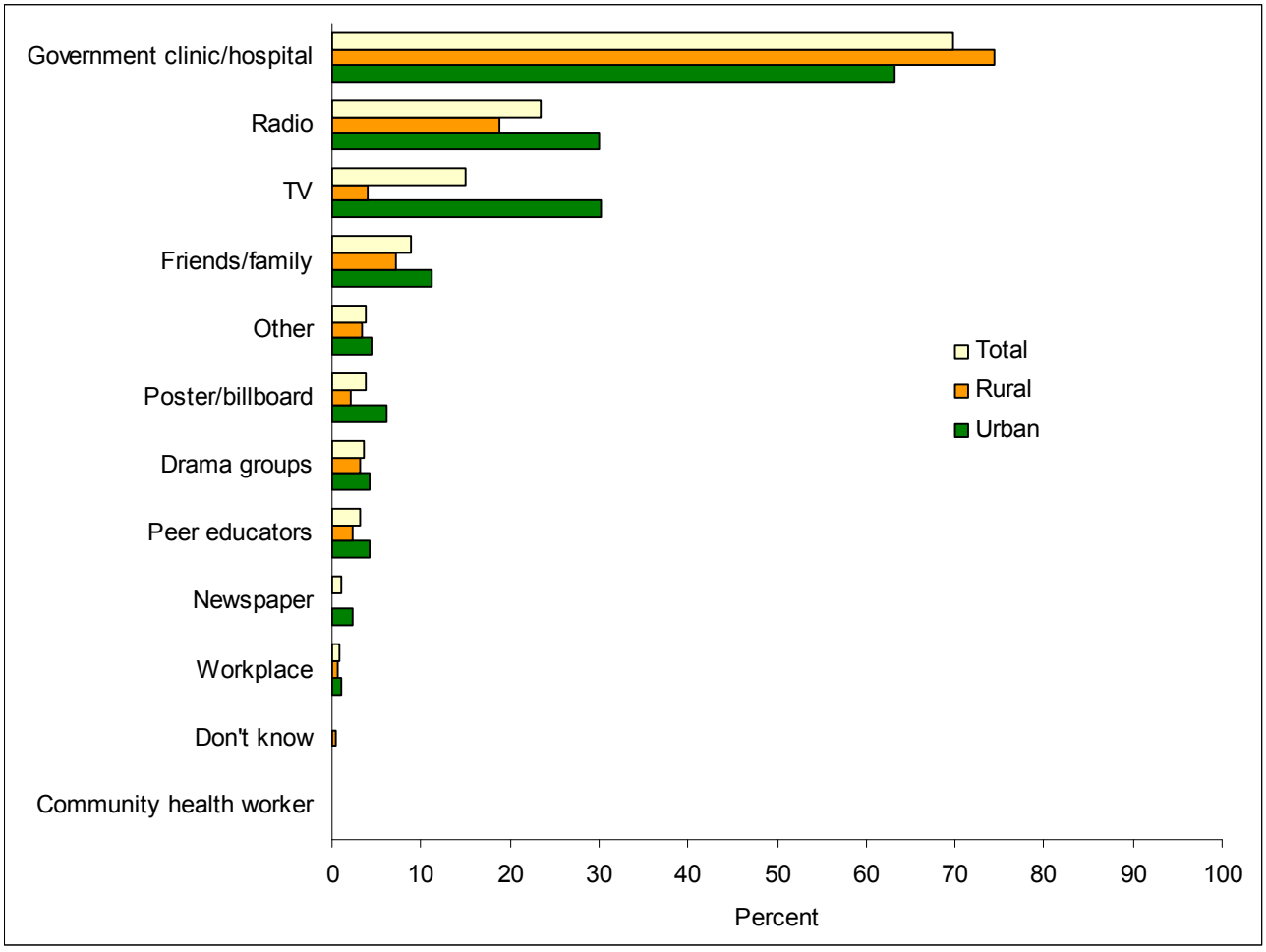
Table 16. Malaria messaging through information, education and communication strategies

Among eligible women ages 15–49 years, the percentage who reported having heard messages about malaria, and the average number of months ago the messages were heard, the percentage who reported a government hospital/clinic as the source of the malaria message, and the percentage who reported seeing/hearing a message about the importance of sleeping under a mosquito net among those who reported seeing/hearing a malaria message, by background characteristics (Zambia 2008)

Background characteristic	Percentage who have seen/heard malaria messages	Number of women	Among women who reported hearing a malaria message:			
			Average number of months ago malaria message heard	Percentage who reported government hospital/clinic as the source of malaria message	Percentage who reported seeing/hearing a message about the importance of sleeping under a mosquito net	Number of women
	(1)	(2)	(3)	(4)	(5)	(6)
Residence						
Urban	80.7	1,449	4.4	63.2	34.5	1,169
Rural	70.8	2,378	4.4	74.6	36.4	1,682
Province						
Central	76.3	305	3.5	56.1	33.0	234
Copperbelt	78.6	723	5.2	67.4	46.1	568
Eastern	63.8	465	3.5	78.8	30.7	297
Luapula	70.8	397	3.8	88.1	61.8	281
Lusaka	85.4	496	3.0	63.0	12.9	424
Northern	74.5	397	4.7	70.2	39.2	296
North-Western	83.8	272	2.7	71.9	41.9	228
Southern	62.5	463	5.0	67.9	19.4	289
Western	76.6	310	8.3	69.3	38.3	237
Wealth index						
Lowest	66.3	837	5.0	79.9	35.9	555
Second	68.8	618	4.6	75.1	37.2	425
Middle	74.2	639	4.0	72.6	34.7	474
Fourth	77.5	788	4.4	67.0	35.6	611
Highest	83.2	945	4.1	60.7	35.2	787
Education						
None	66.0	509	4.9	71.2	25.1	336
Primary	71.7	1,953	4.4	74.1	34.4	1,400
Secondary	81.2	1,284	4.2	64.8	39.6	1,044
Higher	89.7	81	4.3	57.2	52.5	72
Total	74.5	3,827	4.4	69.9	35.6	2,852

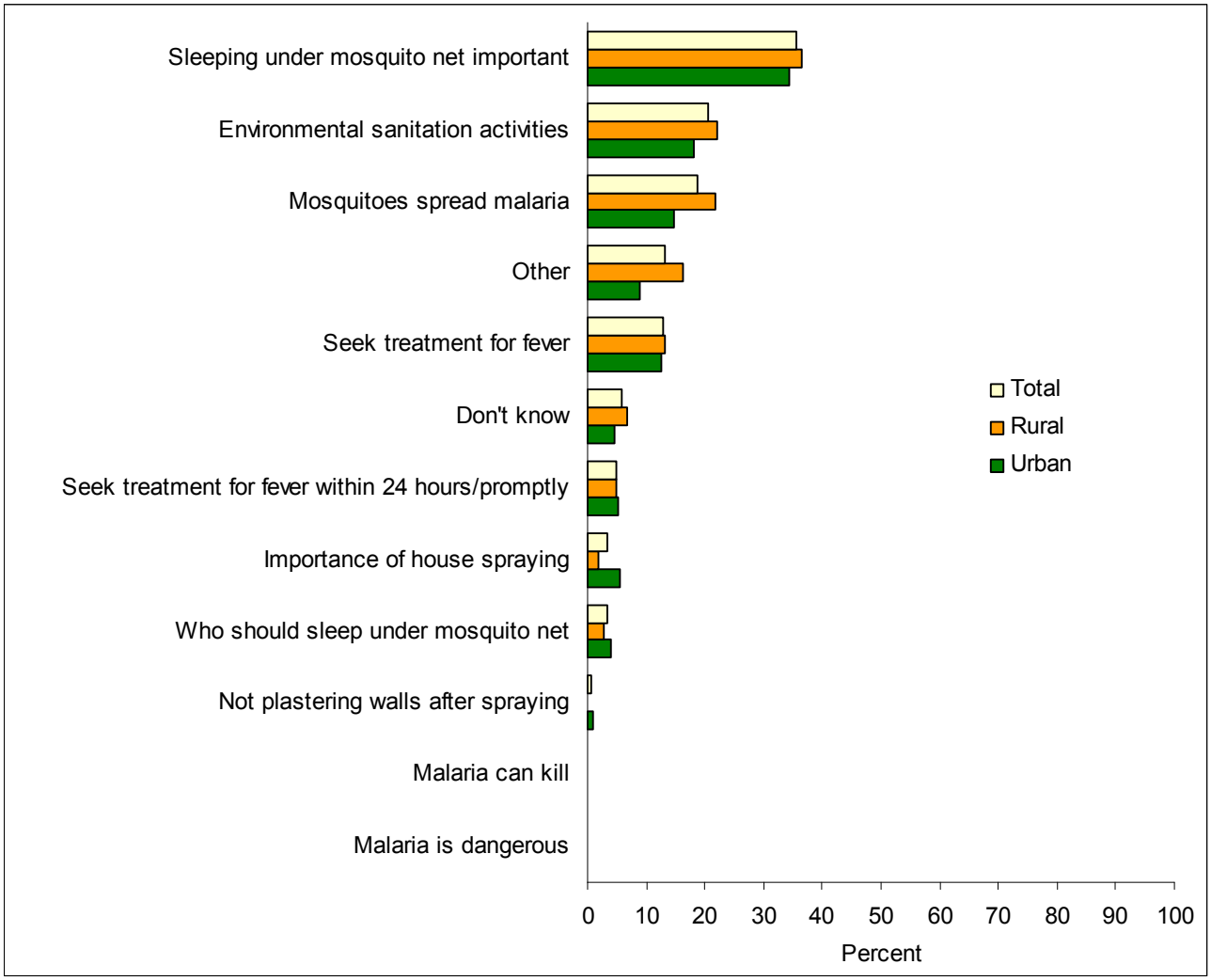
Responses from women ages 15-49 years about the source of malaria messages that they have seen or heard are presented in **Figure 4**. Government hospitals or clinics represented the most common source, followed by radio and television.

Figure 4. Among women ages 15-49 years, source of malaria messages reported seen or heard (Zambia 2008).



Responses from women ages 15-49 years about the type of malaria messages that they have seen or heard are presented in **Figure 5**. The most common messages reported were sleeping under mosquito nets and environmental sanitation activities, followed (in rural areas) by mosquitoes as the cause of malaria..

Figure 5. Among women ages 15-49 years, the type of malaria message seen or heard (Zambia 2008).



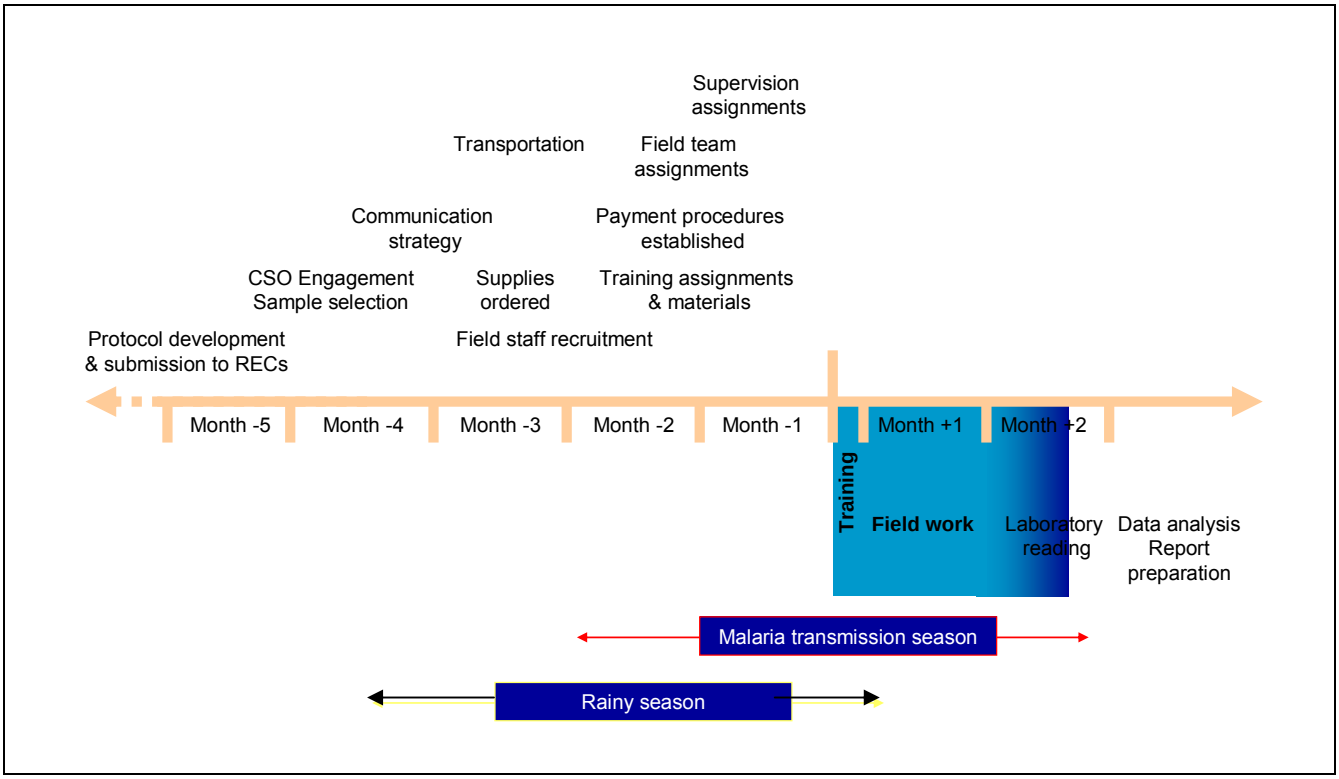
Chapter 6: Lessons learned

The 2008 Zambia MIS has benefited from the guidance, experiences, and leadership of many partners. Further the MIS has now been conducted in at least six additional countries, including Senegal, Angola, Mozambique, Zimbabwe, Kenya, and Ethiopia, three of which also utilized the PDAs for household listing and questionnaire answer recording. These cumulative experiences have enabled a progression in addressing lessons learned. Building on the lessons learned from the MIS 2006 in Zambia and these additional experiences among RBM partners, several key problems were addressed to create a higher quality, more informative survey. Some of these improvements include further refinement, stabilization, and adequate testing of both computer programs used on the PDAs, more robust procedures for taking and handling slide microscopy during field work, and a realignment of field team supervision staff qualifications to improve the quality of testing procedures. These improvements and further lessons learned are detailed below.

Survey planning and preparation

The 2008 MIS planning process was greatly improved from the previous effort and allowed for greater contribution, both financially and technically, by partners. Because the survey was a PDA-based survey and questionnaire development required adequate testing of the questionnaire programs, some last-minute partner requests for changes to the questionnaire were not able to be accommodated. The time frame suggested from the previous MIS report was mostly followed and provided ample time to carry out all activities required. The time frame is again presented in **Figure 6** below.

Figure 6. Time line for malaria indicator survey planning (Zambia 2008).



Questionnaire design

The MIS questionnaire is divided into two sections: the household questionnaire and the women's questionnaire. Questions about transmission prevention are found in the household questionnaire and focus on ownership and use of ITNs and availability of IRS in the previous 12 months. Further, the testing of children under age five years for malaria parasites and anaemia occurs at the end of the household listing. From women ages 15-49 years identified in the household listing, information on fever prevalence and actions taken to respond to the febrile episode is only collected from among biologic children of eligible women. It should be noted that children with fever and those who received antimalarial treatment for a fever episode are not always the same set of children for which malaria prevention and serologic information are available.

Since fever prevalence in Zambia has been measured in the range of 28–30% among children under age five years, the sample of children from whom information about antimalarial medicines can be recorded is small and is even smaller for those who receive treatment promptly. Further, since the biologic children of eligible mothers do not necessarily include the same set of children for whom transmission prevention and serologic information are available, the sample of children for further comparative analysis reduces even further. This reduces the ability of meaningful interpretation as fever prevalence gets lower and as fever that is truly malaria declines. It is recommended that that this line of questioning be reviewed for relevance to the changing environment of malaria control scale-up and implementation that is occurring across countries conducting this survey. A better indicator and measurement of progress in evaluating prompt effective antimalarial treatment is needed to provide a measure of the occurrence of prompt effective antimalarial treatment among those with true malaria as well as guidance for sampling sufficient numbers of children (or additional populations) against which progress can be measured over time.

In addition, for the MIS 2008, an additional question was added about the occurrence of a heel or finger stick received for febrile children under age five years seeking treatment. This was based on the emerging recommendations from the RBM MERG Household Survey Task Force which is deliberating the issue of monitoring changes in diagnostic availability for febrile children. Based on this new question, the results of this survey suggest that diagnostics capacity for febrile children is still low in Zambia. This question also points out additional issues in interpreting prompt effective antimalarial treatment information. The addition of a heel or finger stick to the denominator of those receiving prompt effective treatment may reflect a more accurate denominator for measuring malaria-specific treatment. Potential problems with the interpretation of these results include determining whether levels of finger or heel sticks reflect the mother's knowledge of whether it actually happened; another problem is determining whether diagnostic services were not provided because they were unavailable where care was sought. Regardless, analysing results of finger sticks in combination with fever prevalence, treatment-seeking behaviour and subsequent use of antimalarials for treatment of febrile episode may provide better evidence toward understanding progress in improving true malaria treatment.

Personal digital assistants

Numerous improvements in the household listing and MIS questionnaire programs have been made since the MIS 2006. Both programs performed better, and overall the PDAs were more stable, than was reported in 2006. Having field staff already experienced in using PDAs also meant fewer problems during field work and less time spent responding to requests for support in distant cluster locations.

Field staff and serologic testing procedures

As much as possible, field staff who had participated in the 2006 survey were asked to return for the MIS 2008. This enabled more participatory learning in that facilitators were only one source of training during the training and field work activities. All field team leaders, except two, were returning field staff from 2006. Practice sessions were easier to manage with field teams working in small

groups as at least one, and sometimes two, team members were already familiar with the PDAs and questions and could provide focused assistance to new field staff.

The composition of field staff also changed from 2006. Instead of using only nursing staff (4) for field teams, a lab technician or microscopist was added to each field team pair to improve the quality of slides prepared during household interviews. This approach led to a significant improvement in the quality of thick and thin blood smears.

Field staff from the Central and Provincial Statistical Offices are indispensable in locating and demarking census clusters. One CSO officer is required for each field team. Do not attempt to compose a field team without consideration of CSO staff.

Further, to assist in the collection of information about daily serologic testing, a laboratory registration sheet was implemented for each pair of interviewing field staff. This registration sheet included the date, cluster number/name, child identification number, and the results of the RDTs and Hemocues, as well as whether all labelling had been done. This served as a counter check of use of supplies and provided an additional source of estimating the number of slides that were brought in for reading. In contrast to 2006, slide reading began for each team's slides while they were still in field work. Slides were carried back to Lusaka through the network of supervisory visits organized among partners.

One additional lesson learned in transporting slides back to Lusaka was to also include a slide count by slide box carrier to register each set of slides returned by supervisors for each team. This helps to clarify the quantity of slides returned by each team and is a step that will be implemented during the next survey.

Supervision

With a longer planning period and greater interest among local partners, additional steps were taken to improve the quantity and quality of supervision for field work. Field work supervision was supported by the MOH, MACEPA, HSSP, UNZA, and Tulane University. Field supervision involved troubleshooting PDA- or questionnaire-related problems as well as supervising the quality of finger sticks, slide preparation, and other serologic tests performed.

Additional field supervision, especially on PDA backup and serologic testing quality procedures, is recommended.

Community sensitization

While building on some of the lessons learned in 2006, community sensitization efforts in 2008 were not sufficient to reduce refusals for finger sticks and serologic testing among children under age five years. Field teams reported numerous problems in various locations with refusals. The recommendation for community sensitization is to allocate adequate funding and work at local levels to improve the awareness of forthcoming survey efforts.

Additional Resources

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Appendix A: Sample design

Introduction

The second round of the Malaria Indicator Survey (MIS) adopted a similar sample design to that of the 2006 MIS. The design for the survey called for a representative probability sample to produce estimates for the country as a whole, rural and urban separately, and for the ten intervention districts combined as one domain. Overall, a representative probability sample of 4,525 households was selected for the MIS.

Sampling frame and stratification

Zambia is administratively divided into nine provinces. Each province is in turn subdivided into districts. For statistical purposes each district is subdivided into census supervisory areas (CSAs), and these are in turn subdivided into standard enumeration areas (SEAs). The 1998–2000 mapping exercise in preparation for the 2000 census of population and housing, demarcated the CSAs within wards, wards within constituencies, and constituencies within districts. In total, Zambia has 72 districts, 150 constituencies, 1,289 wards, about 4,400 CSAs and about 17,000 SEAs. The listing of SEAs has information on number of households and the population. The number of households was used as a measure of size for selecting primary sampling units (PSU). Therefore, the sampling frame of this survey is the list of SEAs developed from the 2000 population census.

The SEAs are also stratified by province, urban and rural strata.

Sample allocation and selection

The total sample of 4,525 households was allocated among rural, urban, and the district domains in proportion to the population of each domain according to the 2000 census results. Slight adjustments to the proportional distribution were made as shown in **Table A1**.

Table A1. Sample allocation using proportional allocation

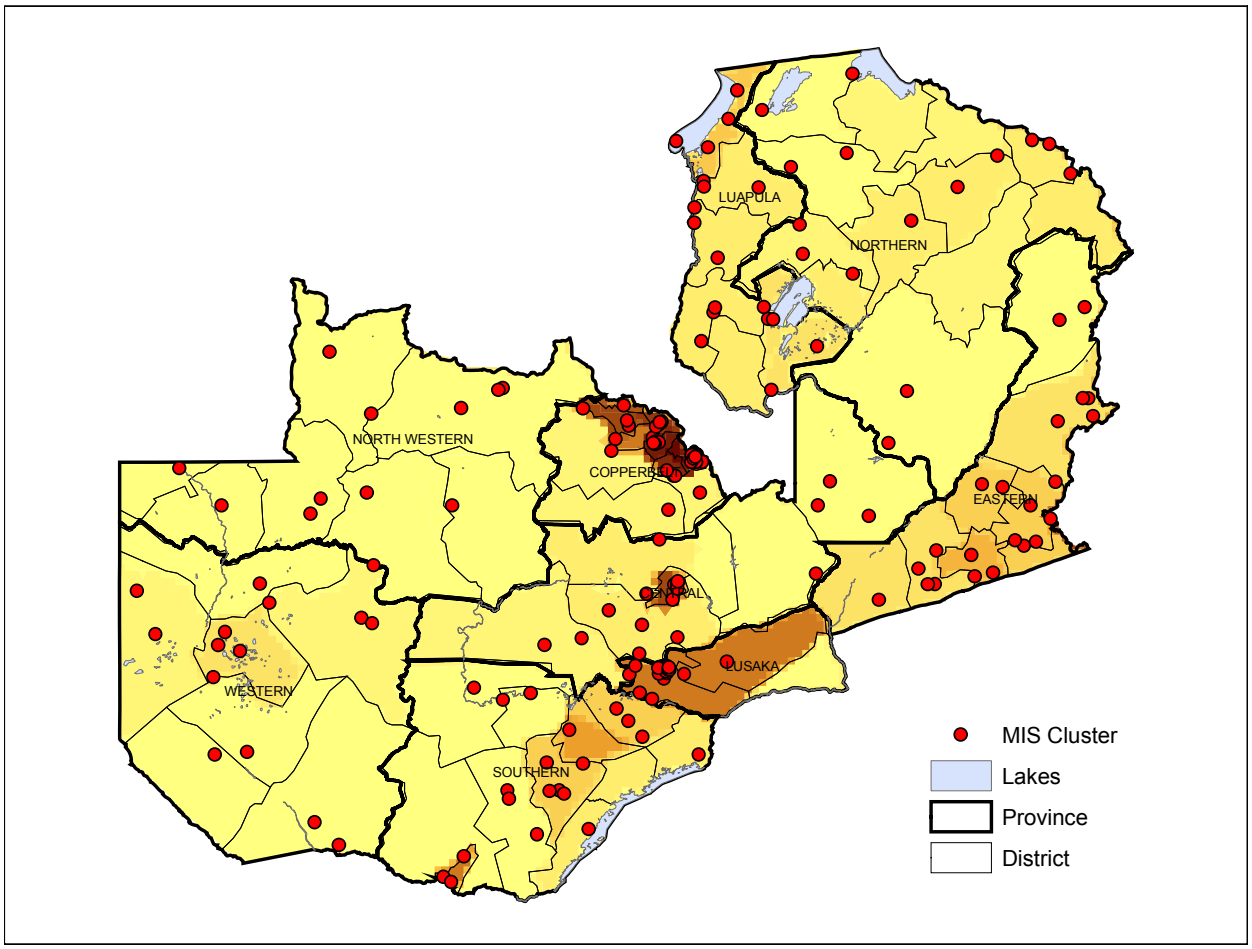
Domain	Proportion of households based on 2000 census frame	Proportional allocation of sample households	Adjusted	Number of clusters based on adjusted allocation
Project districts combined	0.16	724	725	29
Rural	0.52	2,353	2,275	91
Urban	0.32	1,448	1,525	61
Total	1	4,525	4,525	181

The MIS sample was selected using a stratified two-stage cluster design. Once the households were allocated to the different strata, the number of clusters (SEAs) to be selected was calculated based on an average cluster take of 25 completed interviews of all respondents. Clusters were selected systematically with probability proportional to the number of households. **Table A2** shows the distribution of sample clusters by province, and **Table A3** shows the distribution of sample clusters by project districts. A map of the location of the clusters appears in **Figure A1**.

Table A2. Distribution of sample clusters by province	
Province	**Total clusters**
Central	14
Copperbelt	24
Eastern	17
Luapula	14
Lusaka	22
Northern	22
North-Western	9
Southern	17
Western	13
Total	152

Table A3. Distribution of sample clusters by project districts	
District	**Total clusters**
Chibombo	4
Chingola	3
Chipata	5
Samfya	4
Chongwe	2
Kaputa	2
Isoka	2
Mwinilunga	2
Kalomo	3
Senanga	2
Total	29

Figure A1. Location of selected clusters from the 2008 MIS sample.



Selection of clusters

The procedure for selecting clusters (i.e., SEAs) in each stratum involved:

(i) Calculating the sampling interval, *I*, for each stratum

$$I_h = \frac{\sum_{i=1}^{N_h} M_{hi}}{a_h}$$

where M_{hi} is the number of households in SEA (or cluster) *i* and stratum *h,* $\sum_{i=1}^{N_h} M_{hi}$ is the size of the stratum (total number of households in the stratum according to the 2000 census) and *a* is the number of clusters (SEAs) to be selected in the stratum.

(ii) Calculating the cumulated size of each SEA.

(iii) Calculating the sampling numbers

$$R, R+I, R+2I, ..., R + (a\text{-}1)I,$$

where R is a random number between 1 and *I*.

(iv) Comparing each sampling number with the cumulated sizes of the SEAs.

The first SEA (or cluster) whose cumulated size is equal to or greater than the random number generated in (iii) will be selected. The next SEA to be selected is the one with cumulated size equal to or greater than *R+I.* Each of the rest of the SEAs will be selected using the same procedure, making sure to add *I* at each subsequent selection.

Selection of households

A frame of households was determined by listing all the households in all the selected SEAs. Upon completion of household listing, the household lists were given new household numbers, which are sampling serial numbers assigned to each household in the cluster. The sampling numbers were assigned sequentially within each SEA starting from 1. The total number of households in the SEA was equal to the last serial number assigned.

In summary, the following steps were used to select the households:

1. Calculating the sampling interval for each category

$$I = \frac{B}{b}$$

   where *B* is the number of households listed in the selected SEA and *b* is the number of households to be selected in the selected SEA.

2. Generating a random number (R) between 1 and the interval *I*; the first selection was hence R.
3. Adding the interval to the random number to get the next selection.
4. Adding the interval repeatedly until the desired sample size was achieved.

Estimation procedure

Weights

Due to the non-proportional allocation of the sample to the different strata, sampling weights are required to ensure actual representativeness of the sample at national level. The sampling probabilities at first-stage selection of SEAs and probabilities of selecting the households, will be used to calculate the weights. The weights of the sample are equal to the inverse of the probability of selection.

The probability of selecting cluster *i* was calculated as

$$P_{hi} = \frac{a_h M_{hi}}{\frac{N_h}{\sum_{i=1} M_{hi}}}.$$

The weight or boosting factor is, thus, given as

$$w_{hi} = \frac{1}{P_{hi}}$$

where: p_{hi} is the first stage sampling probability of (SEA), a_h is the number of SEAs selected in stratum *h*, M_{hi} is the size (households according to the Census frame) of the i^{th} SEA in stratum *h*, and ΣM_{hi} is the total size of stratum *h*.

The selection probability of the household was calculated as:

$$p_h = \frac{n_h}{N_h}$$

where n_h =the number of households selected from stratum h, N_h=the total number of households in stratum h.

Let y_{hij} be an observation on variable Y for the j^{th} household in the i^{th} SEA of the h^{th} stratum. Then the estimated total for the h-th stratum is:

$$y_h = \sum_{i=1}^{a_h} \sum_{j=1}^{n_h} w_{hi} y_{hij}$$

where, y_h is the estimated total for the h^{-th} stratum., w_{hi} is the weight for the j^{th} household in the I^{-th} SEA of the h^{-th} stratum, i=1-a_h is the number of selected clusters in the stratum, j=1-n_h is the number of sample households in the stratum. The national estimate is given by:

$$y = \sum_{h=1}^{H} y_h$$

where, y is the national estimate, h=1, …, H is the total number of strata. For this survey, H = 3 (the rural/urban and the intervention districts taken as a separate domain).

Appendix B: Survey personnel

Survey coordination and management

Dr. Simon K. Miti	Ministry of Health
Dr. Victor Mukonka	Ministry of Health
Dr. Elizabeth Chizema-Kawesha	Ministry of Health
Efreda Chulu	Central Statistical Office
Mercy Mwanza	Ministry of Health
Moonga Hiwela	Ministry of Health
Christopher Lungu	PATH MACEPA
Brian Chirwa	HSSP
John Miller	PATH MACEPA
Dr. Abdirahman Dirie Mohamed	PATH MACEPA
Dr. Richard Steketee	PATH MACEPA
Dr. Kumar Sridutt Baboo	University of Zambia
Dr. Fred Masaninga	World Health Organization
Khoti Gausi	World Health Organization
Samson Katikiti	World Health Organization

Sample design and selection

Batista Mwale	Central Statistical Office
John Miller	PATH MACEPA

Field work teams

Central Province

Joyce Kabangafyela	Nurse/supervisor
Ellen Zimba	Nurse
Musonda Chansa L.	Lab technician
Nobert Mulilo	Lab technician
Conrad Sikanyiti	Enumerator

Copperbelt Province

Grace M. Kazimoto	Nurse/supervisor
Sibeso Nalumino	Nurse/supervisor
Gladys Yanduli Chinunda	Nurse
Lukwesa Mwape	Nurse
Rose Mbaya	Lab technician
Omar Rehama	Lab technician
Chileshe T. Kaoma	Lab technician
Proscovia Miiye	Lab technician
Collins Kamocha	Enumerator

Eastern Province

Banda Evelyn Kasukumya	Nurse/supervisor
Doris Nkowani Mwanza	Nurse/supervisor
Christine Kabula Chinyama	Nurse
Evalyn Mwale Phiri	Nurse
Elemson Eric Ndhlovu	Lab technician
Mary Namaambo	Lab technician
Phyllis Jere Mbinga	Lab technician
Zephania Nchimunya M.	Lab technician
John Phiri	Enumerator
Davidson Shumba	Enumerator

Luapula Province

Beatrice Kangwa Chirwa	Nurse/supervisor
Josephine Chatama Mumbi	Nurse/supervisor
Nchimunya Kandamba Tecra	Nurse
Joseph Zgambo	Nurse
Mary Nanyangwe	Nurse
Kennedy Muzyamba	Lab technician
Stanley Chinyanta	Lab technician
Joseph Siwiti	Lab technician
Joy Beene	Lab technician
Edward Phiri	Enumerator
Sydney Mweenda Mukumbuta	Enumerator

Lusaka Province

Veronica Mulenga	Nurse/supervisor
Ziwa Lomache	Nurse/supervisor
Febby Phiri Banda	Nurse
Ireen Mubita	Nurse
Carol Manda	Lab technician
Wilson Choongo	Lab technician
Ackson Mkandawire	Lab technician
Sharon Mumba	Lab technician
Gershom Musenge	Enumerator

Northern Province

Pauline Namposya	Nurse/supervisor
Valerie Mambwe Mhango C.	Nurse/supervisor
Joyce Nawakwi	Nurse
Mable Mwaba	Nurse
Mirriam Lupiya	Lab technician
Mary Muyembe	Lab technician
Mpumpi Alic	Lab technician
Michael Kasonde	Lab technician
Rogers Musonda	Enumerator
Joseph Silwavwe	Enumerator

North-Western Province

Jesse Zulu	Nurse/supervisor
Melody Musoyo	Nurse
Laban Kyembe	Lab technician
Namuchimba Namukanze	Lab technician
Fred Chibanda	Enumerator

Southern Province

Ireen Bubala Miyanda	Nurse/supervisor
Olive Samazaka	Nurse/supervisor
Neroh Chilembo	Medical doctor
Sonia Kadakwa	Nurse
Mulele Mavis Chinyezyi	Nurse
Lizzy Chileya	Nurse
Geofrey Chitundu	Lab technician
Gilbert Munsaka	Lab technician
Kanji M. Mukombwe	Lab technician
Mwiche Siame	Lab technician
Darius Sintolongo	Lab technician

Southern Province, cont.

Cassius Lubinda	Lab technician
Clymore Kalyangile	Enumerator
Albert Mukandu	Enumerator

Western Province

Thandiwe Lubasi Lance	Nurse/supervisor
Lilian Maboshe Mulemwa	Nurse
Abigail Lungu	Lab technician
Dingani Chinula	Lab technician
Nawa Lubinda Lubasi	Enumerator
Tabakamulamu Liswaniso	Enumerator

Laboratory training and analysis staff

Moonga Hawela	Ministry of Health
Miriam Simwiinji	Natural Resources Development College
Bertha Nampokolwe	Natural Resources Development College
Muleya Muzyamba	
Derick Makwembo	
Maxiwell Ngulube	
Mandanda Benson	University of Zambia
Mable Mutengo	University Teaching Hospital
Lungowe Sitali	University Teaching Hospital
Banda	

Personal digital assistant (PDA) programming and data tabulations

Dr. Anatoly Frolov	Centers for Disease Control and Prevention, USA

Communication

Pauline Wamalume	Ministry of Health
Morden Mayembe	Zambia Information Service
Todd Jennings	PATH MACEPA
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Jane McDaniels	PATH MACEPA
Laura Newman	PATH MACEPA

Members of the Roll Back Malaria Information, Education, and Communication Working Group

Appendix C: Questionnaires

Zambia Malaria Indicator Survey 2008

Household Questionnaire

ZAMBIA MALARIA INDICATOR SURVEY
HOUSEHOLD QUESTIONNAIRE

IDENTIFICATION[1]

PLACE NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER .....

HOUSEHOLD NUMBER .....

REGION .....

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

LARGE CITY/SMALL CITY/TOWN/COUNTRYSIDE[2].....
(LARGE CITY=1, SMALL CITY=2, TOWN=3, COUNTRYSIDE=4)

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY / MONTH / YEAR
INTERVIEWER'S NAME				NAME
RESULT*				RESULT
NEXT VISIT: DATE				TOTAL NO. 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

LINE NUMBER OF RESPONDENT TO HOUSEHOLD QUESTIONNAIRE

SUPERVISOR	OFFICE EDITOR	KEYED BY
NAME _____		
DATE _____		

[1] This section should be adapted for country-specific survey design.

[2] The following guidelines should be used to categorize urban sample points: "Large cities" are national capitals and places with over 1 million population; "small cities" are places with between 50,000 and 1 million population; the remaining urban sample points are "towns."

HOUSEHOLD LISTING

Now we would like some information about the people who usually live in your household or who are staying with you now.

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	ELIGIBLE WOMEN
	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.	What is the relationship of (NAME) to the head of the household?*	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)?	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			M F	YES NO	YES NO	IN YEARS	
01			1 2	1 2	1 2		01
02			1 2	1 2	1 2		02
03			1 2	1 2	1 2		03
04			1 2	1 2	1 2		04
05			1 2	1 2	1 2		05
06			1 2	1 2	1 2		06
07			1 2	1 2	1 2		07
08			1 2	1 2	1 2		08
09			1 2	1 2	1 2		09
10			1 2	1 2	1 2		10

* CODES FOR Q.3
RELATIONSHIP TO HEAD OF HOUSEHOLD:
01 = HEAD
02 = WIFE/HUSBAND
03 = SON OR DAUGHTER
04 = SON-IN-LAW OR DAUGHTER-IN-LAW
05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW
08 = BROTHER OR SISTER
09 = 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	ELIGIBLE WOMEN
	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.	What is the relationship of (NAME) to the head of the household?*	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)?	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			M F	YES NO	YES NO	IN YEARS	
11			1 2	1 2	1 2		11
12			1 2	1 2	1 2		12
13			1 2	1 2	1 2		13
14			1 2	1 2	1 2		14
15			1 2	1 2	1 2		15
16			1 2	1 2	1 2		16
17			1 2	1 2	1 2		17
18			1 2	1 2	1 2		18
19			1 2	1 2	1 2		19
20			1 2	1 2	1 2		20

TICK HERE IF CONTINUATION SHEET USED ☐

Just to make sure that I have a complete listing:

1) Are there any other persons such as small children or infants that we have not listed? YES ☐→ ENTER EACH IN TABLE NO ☐

2) In addition, 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 ☐→ ENTER EACH IN TABLE NO ☐

3) Are there any guests or temporary visitors staying here, or anyone else who stayed here last night, who have not been listed? YES ☐→ ENTER EACH IN TABLE NO ☐

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
10	What is the main source of drinking water for members of your household?[1]	PIPED WATER PIPED INTO DWELLING .....11 PIPED INTO YARD/PLOT.....12 PUBLIC TAP/STANDPIPE .....13 TUBE WELL OR BOREHOLE.....21 DUG WELL PROTECTED WELL .....31 UNPROTECTED WELL .....32 WATER FROM SPRING PROTECTED SPRING .....41 UNPROTECTED SPRING .....42 RAINWATER..... 51 TANKER TRUCK.....61 CART WITH SMALL TANK .....71 SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ IRRIGATION CHANNEL) ……..81 BOTTLED WATER.....91 OTHER _____ 96 (SPECIFY)	
11	What kind of toilet facility does your household use?[1]	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 (VIP) .....21 PIT LATRINE WITH SLAB .....22 PIT LATRINE WITHOUT SLAB/ OPEN PIT.....23 COMPOSTING TOILET .....31 BUCKET TOILET .....41 HANGING TOILET/HANGING LATRINE .....51 NO FACILITY/BUSH/FIELD .....61 OTHER _____ 96 (SPECIFY)	
12	Does your household have:[2]	YES NO ELECTRICITY .....1 2 RADIO .....1 2 TELEVISION .....1 2 MOBILE TELEPHONE .....1 2 NON-MOBILE TELEPHONE…….1 2 REFRIGERATOR.....1 2	
	Electricity? A radio? A television? A mobile telephone? A non-mobile telephone? A refrigerator?		
13	What type of fuel does your household mainly use for cooking?	ELECTRICITY .....01 LPG/NATURAL GAS.....02 BIOGAS.....03 KEROSENE.....04 COAL/LIGNITE.....05 CHARCOAL.....06 FIREWOOD/STRAW.....07 DUNG.....08 OTHER _____ 96 (SPECIFY)	

[1] Coding categories to be developed locally and revised based on the pretest; however, the broad categories must be maintained.
[2] Additional indicators of socioeconomic status should be added, especially to distinguish among lower socioeconomic classes.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
14b	MAIN MATERIAL OF THE WALL.[1] RECORD OBSERVATION.	NATURAL WALL No walls ..... 11 Cane/sticks/bamboo/reed ..... 12 RUDIMENTARY WALL Bamboo/wood with mud ..... 21 Stone with mud ..... 22 Uncovered abode ..... 23 Plywood ..... 24 Carton ..... 25 FINISHED WALL Cement ..... 31 Stone with lime/cement ..... 32 Bricks ..... 33 Cement blocks ..... 34 Covered Adobe ..... 35 Wood planks/shingles ..... 36 OTHER _____ 96 (SPECIFY)	
14c	MAIN MATERIAL OF THE ROOF.[1] RECORD OBSERVATION.	NATURAL ROOF Thatch/Leaf ..... 11 Sticks and mud ..... 12 RUDIMENTARY ROOF Rustic mat/plastic sheet ..... 21 Reed/bamboo ..... 22 Wood planks ..... 23 FINISHED WALL Corrugated iron ..... 31 Wood ..... 32 Calamine/cement fiber ..... 33 Cement/concrete ..... 34 Roofing shingles ..... 35 OTHER _____ 96 (SPECIFY)	
14d	TYPE OF WINDOWS RECORD OBSERVATION.	YES NO ANY WINDOW……1 2 WINDOWS WITH GLASS..... 1 2 WINDOWS WITH SCREENS...1 2 WINDOWS WITH CURTAINS OR SHUTTERS……...1 2	
14e	How many separate rooms are in this household? INCLUDE ALL ROOMS, INCLUDING KITCHEN, TOILET, SLEEPING ROOMS, SALON, etc.	NUMBER OF ROOMS ☐☐	
14f	How many rooms in this household are used for sleeping? INCLUDE ONLY ROOMS WHICH ARE USUALLY USED FOR SLEEPING.	NUMBER OF SLEEPING ROOMS ☐☐	
14g	How many separate sleeping spaces are there in your household? INCLUDE ALL SLEEPING SPACES, INCLUDING IF THERE IS MORE THAN ONE SLEEPING SPACE IN EACH ROOM USED FOR SLEEPING.	NUMBER OF SLEEPING SPACES ☐☐	
15	Does any member of your household own: A bicycle? A motorcycle or motor scooter? A car or truck?	YES NO BICYCLE ..... 1 2 MOTORCYCLE/SCOOTER ..... 1 2 CAR/TRUCK..... 1 2	

15A	At any time in the past 12 months, has anyone sprayed the interior walls of your dwelling against mosquitoes?[2]	YES.....1 NO.....2 DON'T KNOW.....8	<15D
15B	How many months ago was the house sprayed?[2] IF LESS THAN ONE MONTH, RECORD '00' MONTHS AGO.	MONTHS AGO..... ☐☐	
15C	Who sprayed the house?[2]	GOVERNMENT WORKER/PROGRAM ... 1 PRIVATE COMPANY ..... 2 HOUSEHOLD MEMBER ..... 3 OTHER _____ 6 (SPECIFY) DON'T KNOW..... 8	
15D	At any time in the past 12 months, have the walls in your dwelling been plastered or painted?	YES.....1 NO.....2 DON'T KNOW.....8	16
15E	How many months ago were the walls plastered or painted? IF LESS THAN ONE MONTH, RECORD '00' MONTHS AGO.	MONTHS AGO ☐☐	
16	Does your household have any mosquito nets that can be used while sleeping?	YES..... 1 NO 2	→ 27
17	How many mosquito nets does your household have? IF 7 OR MORE NETS, RECORD '7'.	NUMBER OF NETS..... ▒	
17a	Has anyone in your household ever sold or given away a mosquito net?	YES, SOLD A MOSQUITO NET..... 1 YES, GAVE AWAY A MOSQUITO NET... 2 NO ..... 3 DON'T KNOW..... 4 REFUSED..... 5	

[1] Categories to be developed locally and revised based on the pretest; however, the broad categories must be maintained. In some countries, it may be desirable to ask an additional question on the material of walls or ceilings.

[2] This question should be deleted in countries that do not have an indoor residual spraying program for mosquitoes.

		NET #1	NET #2	NET #3
18	ASK RESPONDENT TO SHOW YOU THE NET(S) IN THE HOUSEHOLD. IF MORE THAN THREE NETS, USE ADDITIONAL QUESTIONNAIRE(S).	OBSERVED ....1 NOT OBSERVED 2	OBSERVED ....1 NOT OBSERVED 2	OBSERVED ....1 NOT OBSERVED 2
19	How long ago did your household obtain the mosquito net?	MOS AGO [ ][ ] MORE THAN 3 YEARS AGO 95	MOS AGO [ ][ ] MORE THAN 3 YEARS AGO 95	MOS AGO [ ][ ] MORE THAN 3 YEARS AGO 95
20	OBSERVE OR ASK THE BRAND OF MOSQUITO NET. IF BRAND IS UNKNOWN, AND YOU CANNOT OBSERVE THE NET, SHOW PICTURES OF TYPICAL NET TYPES/BRANDS TO RESPONDENT.	'PERMANENT' NET[1] Permanet....11 Olyset....12 Other/Don't Know....16 (SKIP TO 24) 'PRETREATED' NET[2] ICONET....21 Fennet....22 KO Nets....23 Safinet....24 Other/Don't Know.... 26 (SKIP TO 22) OTHER....31 DON'T KNOW BRAND....98	'PERMANENT' NET[1] Permanet....11 Olyset....12 Other/Don't Know....16 (SKIP TO 24) 'PRETREATED' NET[2] ICONET....21 Fennet....22 KO Nets....23 Safinet.... 24 Other/Don't Know...26 (SKIP TO 22) OTHER....31 DON'T KNOW BRAND 98	'PERMANENT' NET[1] Permanet....11 Olyset....12 Other/Don't Know....16 (SKIP TO 24) 'PRETREATED' NET[2] ICONET....21 Fennet....22 KO Nets....23 Safinet....24 Other/Don't Know...26 (SKIP TO 22) OTHER.... ....31 DON'T KNOW BRAND....98
20a	Where did you obtain the net?	GOVERNMENT CLINIC/HOSPITAL NEIGHBORHOOD HEALTH COMMITTEE (NHC) COMMUNITY HEALTH WORKER (CHW) / AGENT RETAIL SHOP PHARMACY WORKPLACE OTHER (SPECIFY)__________ DON'T KNOW	GOVERNMENT CLINIC/HOSPITAL NEIGHBORHOOD HEALTH COMMITTEE (NHC) COMMUNITY HEALTH WORKER (CHW) / AGENT RETAIL SHOP PHARMACY WORKPLACE OTHER (SPECIFY)_______ DON'T KNOW	GOVERNMENT CLINIC/HOSPITAL NEIGHBORHOOD HEALTH COMMITTEE (NHC) COMMUNITY HEALTH WORKER (CHW) / AGENT RETAIL SHOP PHARMACY WORKPLACE OTHER (SPECIFY)__________ DON'T KNOW
20b	Did you purchase the net?	YES....1 NO.(skip to 21)....2 NOT SURE.... 8	YES....1 NO.(skip to 21)....2 NOT SURE.... 8	YES....1 NO.(skip to 21)....2 NOT SURE....8
20c	How much did you pay for the net when it was purchased?	In Kwacha [ ][ ]	In Kwacha [ ][ ]	In Kwacha [ ][ ]
21	When you got the net, was it already factory-treated with an insecticide to kill or repel mosquitoes?	YES....1 NO....2 NOT SURE....8	YES ....1 NO ....2 NOT SURE....8	YES....1 NO....2 NOT SURE....8
22	Since you got the mosquito net, was it ever soaked or dipped in a liquid to kill or repel mosquitoes or bugs?	YES....1 NO....2 (SKIP TO 24) NOT SURE....8	YES ....1 NO ....2 (SKIP TO 24) NOT SURE....8	YES....1 NO....2 (SKIP TO 24) NOT SURE....8
23	How long ago was the net last soaked or dipped? IF LESS THAN 1 MONTH AGO, RECORD >00' MONTHS. IF LESS THAN 2 YEARS AGO, RECORD MONTHS AGO. IF '12 MONTHS AGO' OR '1 YEAR AGO,' PROBE FOR EXACT NUMBER OF MONTHS.	MOS AGO [ ][ ] MORE THAN 2 YEARS AGO....95 NOT SURE 98	MOS AGO [ ][ ] MORE THAN 2 YEARS AGO ....95 NOT SURE....98	MOS AGO [ ][ ] MORE THAN 2 YEARS AGO .... 95 NOT SURE 98

23a	Where was the net soaked or dipped?	HOME…………………1 GOVERNMENT CLINIC/HOSPITAL…..2 RETAIL SHOP………..3 PHARMACY…………4 WORKPLACE………..5 OTHER (SPECIFY)_______....6 DON'T KNOW………..7	HOME…………………1 GOVERNMENT CLINIC/HOSPITAL…..2 RETAIL SHOP………..3 PHARMACY…………4 WORKPLACE………..5 OTHER (SPECIFY)_______....6 DON'T KNOW………..7	HOME…………………1 GOVERNMENT CLINIC/HOSPITAL…..2 RETAIL SHOP………..3 PHARMACY…………4 WORKPLACE………..5 OTHER (SPECIFY)_______....6 DON'T KNOW………..7
23b	Did you pay to soak or dip the net?	YES..............................1 NO.(skip to 24).............2 NOT SURE..................8	YES...........................1 NO.(skip to 24)..........2 NOT SURE................8	YES..............................1 NO.(skip to 24).............2 NOT SURE..................8
23c	How much did you pay to soak or dip the net?	In Kwacha [ ][ ][ ]	In Kwacha [ ][ ][ ]	In Kwacha [ ][ ][ ]
23d	PLEASE RECORD OR ASK THE GENERAL CONDITION OF THE NET.	1 Good (no holes) 2 Fair (no holes that fit a torch battery) 3 Poor (1-4 holes that fit a torch battery) 4 Unsafe (>5 Holes that fit a torch battery) 5 Unused (still in package) 98 Unknown	1 Good (no holes) 2 Fair (no holes that fit a torch battery) 3 Poor (1-4 holes that fit a torch battery) 4 Unsafe (>5 Holes that fit a torch battery) 5 Unused (still in package) 98 Unknown	1 Good (no holes) 2 Fair (no holes that fit a torch battery) 3 Poor (1-4 holes that fit a torch battery) 4 Unsafe (>5 Holes that fit a torch battery) 5 Unused (still in package) 98 Unknown
23e	PLEASE RECORD OR ASK THE COLOR OF THE NET.	1. Green 2. Blue 3. Red 4. White 5. Black Other ________	1. Green 2. Blue 3. Red 4. White 5. Black Other ________	1. Green 2. Blue 3. Red 4. White 5. Black Other ________
23f	PLEASE RECORD OR ASK THE SHAPE OF THE NET.	1. Conical 2. Rectangular 3. Other ________	1. Conical 2. Rectangular 3. Other ________	1. Conical 2. Rectangular 3. Other ________
23g	Is the net hanging for sleeping? PLEASE OBSERVE OR ASK IF THE NET IS HANGING	YES..............................1 NO................................2	YES.............................1 NO...............................2	YES..............................1 NO................................2
24	Did anyone sleep under this mosquito net last night?	YES..............................1 NO................................2 (SKIP TO 26) NOT SURE...................8	YES ....1 NO ....2 (SKIP TO 26) NOT SURE 8	YES..............................1 NO................................2 (SKIP TO 26) NOT SURE...................8

1 "Permanent" is a factory- treated net that does not require any further treatment.
2 "Pretreated" is a net that has been pretreated, but requires further treatment after 6–12 months.

		NET #1	NET #2	NET #3
25	Who slept under this mosquito net last night? RECORD THE RESPECTIVE LINE NUMBER FROM THE HOUSEHOLD SCHEDULE.	NAME _____ LINE NO NAME _____ LINE NO NAME _____ LINE NO NAME _____ LINE NO NAME _____ LINE NO	NAME _____ LINE NO NAME _____ LINE NO NAME _____ LINE NO NAME _____ LINE NO NAME _____ LINE NO	NAME _____ LINE NO NAME _____ LINE NO NAME _____ LINE NO NAME _____ LINE NO NAME _____ LINE NO
26		GO BACK TO 18 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 27.	GO BACK TO 18 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 27.	GO BACK TO 18 IN THE FIRST COLUMN OF NEW QUESTIONNAIRE; OR, IF NO MORE NETS, GO TO 27.

HAEMOGLOBIN/MALARIA PARASITE MEASUREMENT

CHECK COLUMN (7) OF HOUSEHOLD LISTING: RECORD THE LINE NUMBER, NAME AND AGE OF ALL CHILDREN UNDER AGE 6. THEN ASK THE DATE OF BIRTH.

CHILDREN UNDER AGE 6 YEARS/HOUSEHOLD MEMBER				CONSENT STATEMENT FOR CHILDREN UNDER SIX (BORN IN 2002 OR AFTER) (AND HOUSEHOLD MEMBERS)	
LINE NUMBER FROM COL. (1)	NAME FROM COL. (2)	AGE FROM COL. (7)	What is (NAME's) date of birth? COPY MONTH AND YEAR OF BIRTH FROM 215 IN MOTHER'S BIRTH HISTORY AND ASK DAY. FOR CHILDREN NOT INCLUDED IN ANY BIRTH HISTORY, ASK DAY, MONTH AND YEAR.	LINE NUMBER OF PARENT/ADULT RESPONSIBLE FOR THE CHILD RECORD '00' IF NOT LISTED IN HOUSEHOLD SCHEDULE	READ CONSENT STATEMENT TO PARENT/ADULT RESPONSIBLE FOR THE CHILD
(27)	(28)	(29)	(30)	(31)	(32)
			DAY MONTH YEAR		GRANTED YES.....1 NO.....2
					YES.....1 NO.....2
					YES.....1 NO.....2
					YES.....1 NO.....2
					YES.....1 NO.....2
					YES.....1 NO.....2

[1] For fieldwork beginning in 2006, 2007 or 2008, the year should be 2001, 2002 or 2003, respectively.

TICK HERE IF CONTINUATION SHEET USED

☐

CONSENT STATEMENT:

Introduction

The National Malaria Control Centre, Ministry of Health, PATH Malaria Control and Evaluation Partnership in Africa (MACEPA), the World Health Organization and malaria control partners want to learn how well malaria prevention program is working in Zambia. We would like to ask you some questions about bednet use in your home, and also some general questions about your child[ren]'s health.

We are also doing a survey of malaria in children. To do this, we will test children for malaria parasites in the blood. One way to test for malaria parasites in the blood includes taking a small sample of blood by fingerprick and examining under a microscope and in a laboratory. Another way is to look at anaemia (low levels of blood), by taking a small sample of blood by fingerprick and examining with a hemocue machine. The World Health Organization (WHO) has set up a guide for us to look at both. We are using this guide to help with the malaria program in Zambia.

NOTE:

In countries where some enumeration areas are higher than 1,000 meters, altitude information should be collected in a separate form for each enumeration area higher than 1,000 meters so that the anaemia estimates can be adjusted appropriately.

		Purpose of the survey We want to use the WHO guide to see if your country's malaria program works. We also want to test if a communication campaign increases bednet use among children in this community. We will ask you some questions about bednet use in your home, and also about your child[ren]'s health. We will also see how common malaria is among young children in the community by testing for parasites in the blood and also by testing for low levels of blood. We will visit people in their homes and look at people that come to health facilities. This will help us learn how best to measure the effects of malaria control in the community. Procedures If you agree to take part, we will ask you a few questions and a nurse will take a small amount of blood from your child's finger. We will ask you questions about bednet use in your home, and about other things that are linked to malaria. We will also ask some questions about your health and about your child[ren]'s health. This should only take about 30 minutes. We will take only up to 5 drops of blood from your child. One drop of blood will be wiped off. The second drop of blood will be used to test for malaria in the lab using a microscope. The third drop of blood will be used to test for low levels of blood (anemia) here in the house. The fourth drop will be used for a rapid malaria diagnostic test here in the house. The remaining drop of blood may be put on paper for additional laboratory analysis of malaria. The results for low levels of blood and for the rapid malaria diagnostic test will be given to you today. If your child has low levels of blood, malaria or history of fever, we will give you treatment. This will be the same treatment your child would get if you went to your health center. This will cost you and your family nothing. If the nurse thinks that your child is very ill, we will give you transportation to the nearest health clinic and assure that the child is provided with the necessary health care. Lab test results will be ready after one week. If your child has malaria, a survey staff member will return to your house to give treatment for malaria to your child. This will only happen if your child has not already been treated today. Even if you do not wish to take part, you can still ask to see the nurse and get the correct treatment. Even if you do not agree to take part, if your child is ill, you should visit the nearest health clinic if your child is not better in 3 days or is worse over time. Risks and Benefits Your child will feel a pinch that lasts a few seconds when we take the blood tests. For any malaria health problem that we find, the nurse will give the treatments that the Ministry of Health suggests. These drugs are proven safe and effective but any drugs can cause side effects in a small number of patients. The nurse will discuss these with you. Voluntariness It is your choice to be in this survey. It will not affect the care that the nurse will give you or your child[ren] should you wish to receive it. If you do agree to take part, your answers to all questions and your child's test results will be kept private to the extent the law allows. If you agree to take part, you can also decide not to answer any of the questions that you do not want to, and you can refuse the blood tests. If you have any questions or clarification pertaining to this survey please feel free to ask the field nurse or the medical officer in charge in the field whose name and contact information is given below. You may also contact Dr. Elizabeth Chizema-Kawesha, Coordinator, National Malaria Control Centre, Ministry of Health, Lusaka. Tel: +26 0211 282455. (field nurse name here) . Thank you very much for your time. Would you like to take part in this survey?	

LINE NUMBER FROM COL. (1)	HAEMOGLOBIN LEVEL (G/DL)	RESULT 1 MEASURED 2 NOT PRESENT 3 REFUSED 4 OTHER	ANEAMIA TREATMENT	RDT RESULT	TREATMENT	BLOODSLIDE 1 DONE 2 NOT PRESENT 3 REFUSED 4 OTHER	BLOODSLIDE NUMBER
(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
	.		CoArtem..............1 Iron....................2 Albendazole..........3	Pf positive..............1 NEGATIVE............2 NOT VALID...........3 NOT DONE...........4	CoArtem.................1 SP.........................2 Quinine...................3 No treatment............4		A / / B / /
	.		CoArtem..............1 Iron....................2 Albendazole..........3	Pf positive..............1 NEGATIVE............2 NOT VALID...........3 NOT DONE...........4	CoArtem.................1 SP.........................2 Quinine...................3 No treatment............4		A / / B / /
	.		CoArtem..............1 Iron....................2 Albendazole..........3	Pf positive..............1 NEGATIVE............2 NOT VALID...........3 NOT DONE...........4	CoArtem.................1 SP.........................2 Quinine...................3 No treatment............4		A / / B / /
	.		CoArtem..............1 Iron....................2 Albendazole..........3	Pf positive..............1 NEGATIVE............2 NOT VALID...........3 NOT DONE...........4	CoArtem.................1 SP.........................2 Quinine...................3 No treatment............4		A / / B / /
	.		CoArtem..............1 Iron....................2 Albendazole..........3	Pf positive..............1 NEGATIVE............2 NOT VALID...........3 NOT DONE...........4	CoArtem.................1 SP.........................2 Quinine...................3 No treatment............4		A / / B / /
	.		CoArtem..............1 Iron....................2 Albendazole..........3	Pf positive..............1 NEGATIVE............2 NOT VALID...........3 NOT DONE...........4	CoArtem.................1 SP.........................2 Quinine...................3 No treatment............4		A / / B / /

41	CHECK 34: NUMBER OF CHILDREN WITH HAEMOGLOBIN LEVEL BELOW 7 G/DL ONE OR MORE ☐ → GIVE EACH PARENT/ADULT RESPONSIBLE FOR THE CHILD THE RESULT OF THE HAEMOGLOBIN MEASUREMENT, AND CONTINUE WITH 36.[1] NONE ☐ → GIVE EACH PARENT/ADULT RESPONSIBLE FOR THE CHILD THE RESULT OF THE HAEMOGLOBIN MEASUREMENT AND END THE HOUSEHOLD INTERVIEW.
42	We detected a low level of haemoglobin in the blood of [NAME OF CHILD(REN)]. This indicates that (NAME OF CHILD(REN) has/have developed severe anaemia, which is a serious health problem. We would like to inform the doctor at _____ about the condition of [NAME OF CHILD(REN)]. This will assist you in obtaining appropriate treatment for the condition. Do you agree that the information about the level of haemoglobin in the blood of [NAME OF CHILD(REN)] may be given to the doctor?

NAME OF CHILD WITH HAEMOGLOBIN BELOW 7 G/DL	NAME OF PARENT/RESPONSIBLE ADULT	AGREES TO REFERRAL?
		YES……..1 NO……2
		YES……..1 NO……2
		YES……..1 NO……2
		YES……..1 NO……2
		YES……..1 NO……2
		YES……..1 NO……2
		YES……..1 NO……2
		YES……..1 NO……2
		YES……..1 NO……2
		YES……..1 NO……2

[1]If more than one child is below 7 g/dl, read statement in Q.42 to each parent/adult responsible for a child who is below the cutoff point..

Zambia Malaria Indicator Survey 2008

Women's Questionnaire

WOMEN'S QUESTIONNAIRE

IDENTIFICATION[1]	
PLACE NAME _____	
NAME OF HOUSEHOLD HEAD _____	
CLUSTER NUMBER.....	
HOUSEHOLD NUMBER.....	
REGION.....	
URBAN/RURAL (URBAN=1, RURAL=2).....	
LARGE CITY/SMALL CITY/TOWN/COUNTRYSIDE[2] ..... (LARGE CITY=1, SMALL CITY=2, TOWN=3, COUNTRYSIDE=4)	
NAME AND LINE NUMBER OF WOMAN _____	

INTERVIEWER VISITS				
	1	2	3	FINAL VISIT
DATE				DAY MONTH YEAR
INTERVIEWER'S NAME				NAME
RESULT*				RESULT
NEXT VISIT: DATE				TOTAL NO. OF VISITS
TIME				

*RESULT CODES:
1 COMPLETED
2 NOT AT HOME
3 POSTPONED
4 REFUSED
5 PARTLY COMPLETED
6 INCAPACITATED
7 OTHER _____ (SPECIFY)

COUNTRY-SPECIFIC INFORMATION: LANGUAGE OF QUESTIONNAIRE, LANGUAGE OF INTERVIEW, NATIVE LANGUAGE OF RESPONDENT, AND WHETHER TRANSLATOR USED

SUPERVISOR	OFFICE EDITOR	KEYED BY
NAME _____		
DATE _____		

[1] This section should be adapted for country-specific survey design.
[2] The following guidelines should be used to categorize urban sample points: "Large cities" are national capitals and places with over 1 million population; "small cities" are places with between 50,000 and 1 million population; and the remaining urban sample points are "towns".

SECTION 1: RESPONDENT'S BACKGROUND

INTRODUCTION AND CONSENT

INFORMED CONSENT

Hello. My name is _____ and I am working with Ministry of Health. The National Malaria Control Centre, Ministry of Health, PATH Malaria Control and Evaluation Partnership in Africa (MACEPA), the World Health Organization, and malaria control partners want to learn how well the malaria prevention program is working in Zambia. We would like to ask you some questions about you and your children, the history of children to whom you may have given birth, bednet use in your home, and also some general questions about your child[ren]'s health. We would appreciate your participation in this survey. The information you provide will help the government to plan health services. The survey usually takes between 10 and 20 minutes to complete. Whatever information you provide will be kept confidential and will not be shown to other persons who are not investigators as part of this survey.

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions.

At this time, do you want to ask me anything about the survey? If you have any questions or clarification pertaining to this survey please feel free to ask the field nurse or the medical officer in charge in the field whose name and contact information is given below. (field nurse name and telephone here) . or Study Coordinator: Dr. Elizabeth Chizema-Kawesha, Coordinator, National Malaria Control Centre, Chainama Hospital College Grounds, Lusaka, Zambia, Tel: 282455; Fax: 282427.

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, secondary, or higher?[1]	PRIMARY ..... 1 SECONDARY ..... 2 HIGHER 3	
106	What is the highest (grade/form/year) you completed at that level?[1]	GRADE ..... ▒▒	
107	CHECK 105: PRIMARY ↓ SECONDARY OR HIGHER		—<109

[1] Revise according to the local education system.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
108	Now I would like you to read this sentence to me. SHOW CARD TO RESPONDENT.[1] 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 PROTESTANT MUSLIM TRADITIONAL OTHER _____(specify)	
110	What tribe do you belong to?	BEMBA……1 TONGA……2 NORTH-WESTERN……..3 BAROSTE……..4 NYANJA……..5 MAMBWE……..6 TUMBUKU……..7 OTHER _____(specify)	

[1]Each card should have four simple sentences appropriate to the country (e.g., “Parents love their children”, “Farming is hard work”, “The child is reading a book”, “Children work hard at school”). Cards should be prepared for every language in which respondents are likely to be literate.

Section 2: REPRODUCTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
201	Now I would like to ask about all the births you have had during your life. Have you ever given birth?	YES ..... 1 NO 2	—<206
202	Do you have any sons or daughters to whom you have given birth who are now living with you?	YES ..... 1 NO 2	—<204
203	How many sons live with you? And how many daughters live with you? IF NONE, RECORD '00'.	SONS AT HOME..... ▒▒ DAUGHTERS AT HOME..... ▒▒	
204	Do you have any sons or daughters to whom you have given birth who are alive but do not live with you?	YES ..... 1 NO 2	—<206
205	How many sons are alive but do not live with you? And how many daughters are alive but do not live with you? IF NONE, RECORD '00'.	SONS ELSEWHERE..... ▒▒ DAUGHTERS ELSEWHERE... ▒▒	
206	Have you ever given birth to a boy or girl who was born alive but later died? IF NO, PROBE: Any baby who cried or showed signs of life but did not survive?	YES ..... 1 NO 2	—<208
207	How many boys have died? And how many girls have died? IF NONE, RECORD '00'.	BOYS DEAD ..... ▒▒ GIRLS DEAD ..... ▒▒	
208	SUM ANSWERS TO 203, 205, AND 207, AND ENTER TOTAL.	NONE.....00 TOTAL..... ▒▒	—<345
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	CHECK 208: ONE BIRTH ☐↓ Was this child born in the last six years? IF NO, CIRCLE '00.' TWO OR MORE BIRTHS ☐↓ How many of these children were born in the last six years?	NONE.....00 TOTAL IN LAST SIX YEARS..... ▒▒	—<345

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 BIRTHS IN THE LAST 6 YEARS IN 212. RECORD TWINS AND TRIPLETS ON SEPARATE LINES.

212	213	214	215	216	217 IF ALIVE:	218 IF ALIVE	219 IF ALIVE:	220
What name was given to your (most recent/previous) birth? (NAME)	Were any of these births twins?	Is (NAME) a boy or a girl?	In what month and year was (NAME) born? PROBE: What is his/her birthday?	Is (NAME) still alive?	How old was (NAME) at his/her last birthday? RECORD AGE IN COMPLETED YEARS.	Is (NAME) living with you?	RECORD HOUSEHOLD LINE NUMBER OF CHILD (RECORD '00' IF CHILD NOT LISTED IN HOUSEHOLD).	Were there any other live births between (NAME) and (NAME OF BIRTH ON PREVIOUS LINE)?
01	SING... 1 MULT.. 2	BOY .. 1 GIRL.. 2	MONTH ☐☐ YEAR ☐☐☐☐	YES .... 1 NO ..... 2 ↓ (NEXT BIRTH)	AGE IN YEARS ☐☐	YES .....1 NO 2	LINE NUMBER ☐☐ ↓ (NEXT BIRTH)	
02	SING... 1 MULT.. 2	BOY .. 1 GIRL.. 2	MONTH ☐☐ YEAR ☐☐☐☐	YES .... 1 NO ..... 2 ↓ (GO TO 220)	AGE IN YEARS ☐☐	YES .....1 NO 2	LINE NUMBER ☐☐	YES.....1 NO 2
03	SING... 1 MULT.. 2	BOY .. 1 GIRL.. 2	MONTH ☐☐ YEAR ☐☐☐☐	YES .... 1 NO ..... 2 ↓ (GO TO 220)	AGE IN YEARS ☐☐	YES .....1 NO 2	LINE NUMBER ☐☐	YES.....1 NO 2
04	SING... 1 MULT.. 2	BOY .. 1 GIRL.. 2	MONTH ☐☐ YEAR ☐☐☐☐	YES .... 1 NO ..... 2 ↓ (GO TO 220)	AGE IN YEARS ☐☐	YES .....1 NO 2	LINE NUMBER ☐☐	YES.....1 NO 2
05	SING... 1 MULT.. 2	BOY .. 1 GIRL.. 2	MONTH ☐☐ YEAR ☐☐☐☐	YES .... 1 NO ..... 2 ↓ (GO TO 220)	AGE IN YEARS ☐☐	YES .....1 NO 2	LINE NUMBER ☐☐	YES.....1 NO 2
06	SING... 1 MULT.. 2	BOY .. 1 GIRL.. 2	MONTH ☐☐ YEAR ☐☐☐☐	YES .... 1 NO ..... 2 ↓ (GO TO 220)	AGE IN YEARS ☐☐	YES .....1 NO 2	LINE NUMBER ☐☐	YES.....1 NO 2
07	SING... 1 MULT.. 2	BOY .. 1 GIRL.. 2	MONTH ☐☐ YEAR ☐☐☐☐	YES .... 1 NO ..... 2 ↓ (GO TO 220)	AGE IN YEARS ☐☐	YES .....1 NO 2	LINE NUMBER ☐☐	YES.....1 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 BIRTH 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) CHECK: FOR EACH BIRTH: YEAR OF BIRTH IS RECORDED. FOR EACH LIVING CHILD: CURRENT AGE IS RECORDED.		
223	CHECK 215 AND ENTER THE NUMBER OF BIRTHS IN 2003[1] OR LATER. IF NONE, RECORD '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 2003[1] OR LATER NO BIRTHS IN 2003 OR LATER		<345

[1]For fieldwork beginning in 2006, 2007, or 2008, the year should be 2001, 2002, or 2003, respectively.

SECTION 3: GENERAL MALARIA KNOWLEDGE / PRACTICES

250	HAVE YOU EVER HEARD OF AN ILLNESS CALLED MALARIA?	YES.....1 NO.....2	IF 2, SKIP TO 264
251	CAN YOU TELL ME THE MAIN SIGNS OR SYMPTOMS OF MALARIA? MULTIPLE RESPONSES POSSIBLE PROBE ONCE (ANYTHING ELSE?)	FEVER……1 FEELING COLD…… ....2 HEADACHE…… ..3 NAUSEA AND VOMITING……..…4 DIARRHEA……5 DIZZINESS……6 LOSS OF APPETITE……7 BODY ACHE OR JOINT PAIN .....8 PALE EYES……9 SALTY TASTING PALMS……...10 BODY WEAKNESS……..11 REFUSING TO EAT OR DRINK……12 OTHER (SPECIFY)_____ _____...13 DON'T KNOW……..14	
252	IN YOUR OPINION, WHAT CAUSES MALARIA? MULTIPLE RESPONSES POSSIBLE PROBE ONCE (ANYTHING ELSE?)	MOSQUITO BITES……1 EATING IMMATURE SUGARCANE……...2 EATING COLD NSHIMA……...3 EATING OTHER DIRTY FOOD……...4 DRINKING DIRTY WATER……..5 GETTING SOAKED WITH RAIN……6 COLD OR CHANGING WEATHER……..7 WITCHCRAFT……8 OTHER (SPECIFY)_____ _____.....9 DON'T KNOW.....10	
253	HOW CAN SOMEONE PROTECT THEMSELVES AGAINST MALARIA? MULTIPLE RESPONSES POSSIBLE PROBE ONCE (ANYTHING ELSE?)	SLEEP UNDER A MOSQUITO NET……..1 SLEEP UNDER A INSECTICIDE TREATED MOSQUITO NET……..2 USE MOSQUITO REPELLANT……...3 AVOID MOSQUITO BITES……..4 TAKE PREVENTIVE MEDICATION……..5 SPRAY HOUSE WITH INSECTICIDE……6 USE MOSQUITO COILS……..7 CUT THE GRASS AROUND THE HOUSE……8 FILL IN PUDDLES (STAGNANT WATER)……9 KEEP HOUSE SURROUNDINGS CLEAN……...10 BURN LEAVES……11 DON'T DRINK DIRTY WATER……...12 DON'T EAT BAD FOOD (IMMATURE SUGARCANE/LEFTOVER FOOD)……..13 PUT MOSQUITO SCREENS ON THE WINDOWS……14 DON'T GET SOAKED WITH RAIN……..15 OTHER (SPECIFY)_____ _____.....16 DON'T KNOW……..17	
254	WHAT ARE THE DANGER SIGNS AND SYMPTOMS OF MALARIA? MULTIPLE RESPONSES POSSIBLE PROBE ONCE (ANYTHING ELSE?)	SEIZURE / CONVULSIONS……..1 GOES UNCONSCIOUS……..2 ANY FEVER……..3 VERY HIGH FEVER……4 STIFF NECK……..5 WEAKNESS……...6 NOT ACTIVE……..7 CHILLS/SHIVERING……8 NOT ABLE TO EAT……..9 VOMITING……...10 FAINTING……11 CRYING ALL THE TIME……..12 RESTLESS, WON'T STAY STILL……..13 DIARRHEA……14 OTHER	

		(SPECIFY:_____) ……..15 DON'T KNOW……..16	
255	IN YOUR OPINION, WHICH PEOPLE ARE MOST AFFECTED BY MALARIA IN YOUR COMMUNITY? MULTIPLE RESPONSES POSSIBLE PROBE ONCE (ANYTHING ELSE?)	CHILDREN……..1 ADULTS……..2 PREGNANT WOMEN……..3 OLDER ADULTS……..4 EVERYONE……..5 OTHER (SPECIFY)_____ _____.....6 DON'T KNOW.....7	
256	HAVE YOU EVER HEARD OR SEEN ANY MESSAGES / INFORMATION ABOUT MALARIA?	YES.....1 NO.....2	IF 2, SKIP TO 260
257	WHERE DID YOU SEE OR HEAR THESE MESSAGES/INFORMATION? MULTIPLE RESPONSES POSSIBLE PROBE ONCE (ANYTHING ELSE?)	GOVERNMENT CLINIC/HOSPITAL……..1 COMMUNITY HEALTH WORKER……..2 FRIENDS/FAMILY……..3 WORKPLACE……..4 DRAMA GROUPS……..5 PEER EDUCATORS……..6 POSTERS/BILLBOARDS……..7 ON TV……..8 ON THE RADIO…… ..9 IN THE NEWSPAPER…… …10 OTHER (SPECIFY) _____ _____... ...11 DON'T KNOW……..12	
258	HOW LONG AGO DID YOU SEE OR HEAR THESE MESSAGES?	MONTHS..... ☐☐	
259	WHAT TYPE OF MALARIA MESSAGES/INFORMATION DID YOU SEE OR HEAR? MULTIPLE RESPONSES POSSIBLE PROBE ONCE (ANYTHING ELSE?)	MALARIA IS DANGEROUS……..1 MALARIA CAN KILL……..2 MOSQUITOES SPREAD MALARIA……..3 SLEEPING UNDER MOSQUITO NET IMPORTANT……..4 WHO SHOULD SLEEP UNDER MOSQUITO NET……..5 SEEK TREATMENT FOR FEVER……..6 SEEK TREATMENT FOR FEVER WITHIN 24 HOURS/PROMPTLY……..7 IMPORTANCE OF HOUSE SPRAYING…8 NOT PLASTERING WALLS AFTER SPRAYING……..9 ENVIRONMENTAL SANITATION ACTIVITIES……..10 OTHER(SPECIFY)……..11 DON'T KNOW……..12	
260	HAS ANYONE EVER PROVIDED YOU WITH EDUCATION / INFORMATION ON MALARIA **AT YOUR HOME**?	YES……..1 NO……..2	IF 2, SKIP TO 264
261	FROM WHOM DID YOU RECEIVE THIS EDUCATION / INFORMATION **AT YOUR HOME**? PROBE, BUT DO NOT PROVIDE ANSWERS	HEALTH CARE WORKER……..1 COMMUNITY HEALTH WORKER……..2 FRIENDS/FAMILY……..3 EMPLOYER……..4 PEER EDUCATORS……..5 OTHER (SPECIFY)_____.....6 DON'T KNOW……..7	
262	HOW LONG AGO DID SOMEONE VISIT YOUR HOME TO PROVIDE EDUCATION / INFORMATION **AT YOUR HOME**?	MONTHS..... ☐☐	
263	WHAT TYPE OF INFORMATION/EDUCATION ABOUT MALARIA DID YOU RECEIVE **AT YOUR HOME**? PROBE, BUT DO NOT PROVIDE ANSWERS. MULTIPLE ANSWERS POSSIBLE. POSSIBLE ANSWERS INCLUDE:	MALARIA IS DANGEROUS……..1 MALARIA CAN KILL……..2 MOSQUITOES SPREAD MALARIA……..3 SLEEPING UNDER MOSQUITO NET IMPORTANT……..4 WHO SHOULD SLEEP UNDER MOSQUITO NET……..5 SEEK TREATMENT FOR FEVER……..6 SEEK TREATMENT FOR FEVER WITHIN 24 HOURS/PROMPTLY……..7	

		IMPORTANCE OF HOUSE SPRAYING…8 NOT PLASTERING WALLS AFTER SPRAYING……9 ENVIRONMENTAL SANITATION ACTIVITIES……..…10 OTHER(SPECIFY)……..…11 DON'T KNOW……..…12	
264	HAS THE COMMUNITY HEALTH WORKER IN YOUR VILLAGE EVER HELPED HANG A MOSQUITO NET IN THIS HOUSE?	YES.....1 NO.....2 DON'T KNOW……3	
265	HAVE ANY MOSQUITO NETS IN THIS HOUSE BEEN USED FOR ANY REASON OTHER THAN SLEEPING?	YES.....1 NO.....2	IF 2 SKIP TO 267
266	WHAT WAS IT USED FOR? PROBE, BUT DO NOT PROVIDE ANSWERS. MULTIPLE ANSWERS POSSIBLE. POSSIBLE ANSWERS INCLUDE:	FISHING……..…1 COVERING / PROTECTION……..…..2 SCREENS FOR WINDOWS……..…3 CLOTHING, WEDDING VEILS……..…4 OTHER_____.....5 DON"T KNOW……..…6	
267	WHAT MOSQUITO NET COLOR DO YOU PREFER? PROBE, BUT DO NOT PROVIDE ANSWERS. MULTIPLE ANSWERS POSSIBLE. POSSIBLE ANSWERS INCLUDE:	BLUE……..…1 GREEN……2 RED……..3 WHITE……..…4 BLACK……..5 OTHER _____.....6	
268	WHAT MOSQUITO NET SHAPE DO YOU PREFER? PROBE, BUT DO NOT PROVIDE ANSWERS. MULTIPLE ANSWERS POSSIBLE. POSSIBLE ANSWERS INCLUDE:	CONICAL……..…1 RECTANGULAR……..…2 OTHER _____.....3	
269	IN GENERAL, HOW OFTEN DO YOUR CHILDREN SLEEP UNDER A MOSQUITO NET?	ALWAYS ……1 SOMETIMES…..……2 NEVER……..…3	
270	WHY DO THE CHILDREN WHO SLEEP IN THIS HOUSE SOMETIMES NOT SLEEP UNDER A MOSQUITO NET? MULTIPLE RESPONSES PROBE ONCE (ANYTHING ELSE?)	THEY ALWAYS DO SLEEP UNDER NET……..1 TOO HOT……..2 TOO COLD……..3 CHILD CRIES……4 CHILD AFRAID……..5 NOT ENOUGH NETS……..…6 NET NOT HUNG UP……..7 USED BY ADULTS……..8 NET NOT USED WHEN TRAVELING……9 NET WORN OUT / POOR CONDITION..10 NETS BAD FOR CHILDERS' HEALTH…11 OTHER (SPECIFY)_____ _____...12 DON'T KNOW……..…13	

Section 3A. PREGNANCY AND INTERMITTENT PREVENTIVE TREATMENT

301	ENTER IN 302 THE NAME AND SURVIVAL STATUS OF THE MOST RECENT BIRTH. Now I would like to ask you some questions about your last pregnancy that ended in a live birth, in the last 6 years.		
302	FROM QUESTIONS 212 AND 216 (LINE 01)	LAST BIRTH NAME _____ LIVING ☐ (1) DEAD ☐	
303	When you were pregnant with (NAME), did you see anyone for antenatal care?[1] IF YES: Whom did you see? Anyone else? PROBE FOR THE TYPE OF PERSON AND RECORD ALL PERSONS SEEN.	HEALTH PROFESSIONAL DOCTOR ..... A NURSE/MIDWIFE ..... B AUXILIARY MIDWIFE ..... C OTHER PERSON TRADITIONAL BIRTH ATTENDANT……D COMMUNITY/VILLAGE HEALTH WORKER……E OTHER _____ X (SPECIFY) NO ONE ..... Y	
304	During this pregnancy, did you take any drugs in order to prevent you from getting malaria?	YES ..... 1 NO ..... 2 DON'T KNOW 8	☐ →310
305	Which drugs did you take to prevent malaria?[2] 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: DRUGS TAKEN FOR MALARIA PREVENTION	CODE 'A' CIRCLED ☐ (1) CODE 'A' NOT CIRCLED ☐	→310
307	How many times did you take SP/Fansidar during this pregnancy?	TIMES ..... ☐☐	

[1]Coding categories to be developed locally and revised based on the pretest; however, the broad categories must be maintained. Include all drugs or drug combinations that are commonly given as separate categories.

[2] Add response categories for additional drugs used to prevent malaria during pregnancy, if any. Repeat Questions 306-309 for any other recommended IPT drugs.

		LAST BIRTH NAME _____	
308	CHECK 303: ANTENATAL CARE FROM A HEALTH PROFESSIONAL RECEIVED DURING THIS PREGNANCY?	CODE 'A', 'B', OR 'C' CIRCLED ☐ (2) ˇ OTHER ☐_____	→310
309	Did you get the SP/Fansidar during an antenatal visit, during another visit to a health facility, or from some other source?	ANTENATAL VISIT ..... 1 ANOTHER FACILITY VISIT ..... 2 OTHER SOURCE _____ 6 (SPECIFY)	
	Did you purchase the SP/Fansidar?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→310
	How much did you pay for the SP/Fansidar?	In Kwacha ☐☐☐☐	
310	CHECK 215 AND 216: ONE OR MORE LIVING CHILDREN BORN IN 2003[1] OR LATER ☐ ˇ NO LIVING CHILDREN BORN IN 2003[1] OR LATER ☐_____		→345

[1] For fieldwork beginning in 2006, 2007, or 2008, the year should be 2001, 2002, or 2003, respectively.

SECTION 4. FEVER IN CHILDREN

311	ENTER IN THE TABLE THE LINE NUMBER AND NAME OF EACH LIVING CHILD BORN IN 2003[1] OR LATER. (IF THERE ARE MORE THAN 2 LIVING CHILDREN BORN IN 2003[1] OR LATER, USE ADDITIONAL QUESTIONNAIRES). Now I would like to ask you some questions about the health of all your children less than 5 years old. (We will talk about each one separately.)		
312	NAME AND LINE NUMBER FROM 212	YOUNGEST CHILD LINE NUMBER ..... ▒▒ NAME _____	NEXT-TO-YOUNGEST CHILD LINE NUMBER ..... ▒▒ NAME _____
313	Has (NAME) been ill with a fever at any time in the last 2 weeks?	YES ..... 1 NO ..... 2 (GO TO 313 FOR NEXT CHILD OR, IF NO MORE CHILDREN, SKIP TO 345) = DON'T KNOW 8	YES ..... 1 NO ..... 2 (GO BACK TO 313 FOR NEXT CHILD OR, IF NO MORE CHILDREN, SKIP TO 345) = DON'T KNOW 8
314	How many days ago did the fever start? IF LESS THAN ONE DAY, RECORD '00'.	DAYS AGO ..... ▒▒ DON'T KNOW 98	DAYS AGO ..... ▒▒ DON'T KNOW 98
315	Did you seek advice or treatment for the fever from any source?	YES ..... 1 NO ..... 2 (SKIP TO 317) =	YES ..... 1 NO ..... 2 (SKIP TO 317) =
316	Where did you seek advice or treatment?[2] Anywhere else? RECORD ALL SOURCES MENTIONED.	PUBLIC SECTOR GOVT. HOSPITAL ..... A GOVT. HEALTH CENTER ..... B GOVT. HEALTH POST ..... C MOBILE CLINIC ..... D FIELD WORKER ..... F OTHER PUBLIC _____ G (SPECIFY) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC ..... H PHARMACY ..... I PRIVATE DOCTOR ..... J MOBILE CLINIC ..... K FIELD WORKER ..... L OTHER PVT. MEDICAL _____ M (SPECIFY) OTHER SOURCE SHOP ..... N TRAD. PRACTITIONER ..... O OTHER _____ X (SPECIFY)	PUBLIC SECTOR GOVT. HOSPITAL ..... A GOVT. HEALTH CENTER ..... B GOVT. HEALTH POST ..... C MOBILE CLINIC ..... D FIELD WORKER ..... F OTHER PUBLIC _____ G (SPECIFY) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC ..... H PHARMACY ..... I PRIVATE DOCTOR ..... J MOBILE CLINIC ..... K FIELD WORKER ..... L OTHER PVT. MEDICAL _____ M (SPECIFY) OTHER SOURCE SHOP ..... N TRAD. PRACTITIONER ..... O OTHER _____ X (SPECIFY)
316a	How many days after the fever began did you first seek advice or treatment for (NAME)? IF THE SAME DAY, RECORD '00'.	DAYS ..... ▒▒	DAYS ..... ▒▒

[1] For fieldwork beginning in 2006, 2007, or 2008, the year should be 2001, 2002, or 2003, respectively.

[2] Coding categories to be developed locally and revised based on the pretest; however, the broad categories must be maintained.

		YOUNGEST CHILD NAME _____	NEXT-TO-YOUNGEST CHILD NAME _____
316b	Did (NAME) receive a finger stick or heal stick to test the fever/illness?	YES ..... 1 NO ..... 2 DON'T KNOW 8	YES ..... 1 NO ..... 2 DON'T KNOW 8
317	Is (NAME) still sick with a fever?	YES ..... 1 NO ..... 2 DON'T KNOW 8	YES ..... 1 NO ..... 2 DON'T KNOW 8
318	At any time during the illness, did (NAME) take any drugs for the fever?	YES ..... 1 NO ..... 2 (SKIP 344) =——┤ DON'T KNOW 8	YES ..... 1 NO ..... 2 (SKIP 344) =——┤ DON'T KNOW 8
319	What drugs did (NAME) take?[1] Any other drugs? RECORD ALL MENTIONED. ASK TO SEE DRUG(S) IF TYPE OF DRUG IS NOT KNOWN. IF TYPE OF DRUG IS STILL NOT DETERMINED, SHOW TYPICAL ANTIMALARIAL DRUGS TO RESPONDENT.	ANTIMALARIAL SP/FANSIDAR ..... A CHLOROQUINE ..... B AMODIAQUINE ..... C QUININE ..... D COARTEM / ACT ..... E OTHER ANTIMALARIAL _____ F (SPECIFY) OTHER DRUGS ASPIRIN ..... G ACETAMINOPHEN/ PARACETAMOL ..... H IBUPROFEN ..... I OTHER _____ X (SPECIFY) DON'T KNOW ..... Z	ANTIMALARIAL SP/FANSIDAR ..... A CHLOROQUINE ..... B AMODIAQUINE ..... C QUININE ..... D COARTEM / ACT ..... E OTHER ANTIMALARIAL _____ F (SPECIFY) OTHER DRUGS ASPIRIN ..... G ACETAMINOPHEN/ PARACETAMOL ..... H IBUPROFEN ..... I OTHER _____ X (SPECIFY) DON'T KNOW ..... Z
320	CHECK 319: ANY CODE A-F CIRCLED?	YES ☐ →	NO ☐ (GO BACK TO 313 IN NEXT COLUMN; OR IF NO MORE BIRTHS, SKIP TO 344)	YES ☐ →	NO ☐ (GO BACK TO 313 IN NEXT COLUMN; OR IF NO MORE BIRTHS, SKIP TO 344)
320A	CHECK 319: SP/FANSIDAR ('A') GIVEN?	CODE 'A' CIRCLED ☐ →	CODE 'A' NOT CIRCLED ☐ (SKIP TO 324)	CODE 'A' CIRCLED ☐ →	CODE 'A' NOT CIRCLED ☐ (SKIP TO 324)
321	How long after the fever started did (NAME) first take SP/Fansidar?	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8

[1] Revise list of drugs as appropriate; however, the broad categories must be maintained. Include all drugs or drug combinations that are commonly given as separate categories.

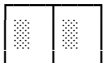
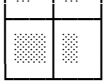
		YOUNGEST CHILD NAME _____	NEXT-TO-YOUNGEST CHILD NAME _____
322	For how many days did (NAME) take the SP/Fansidar? IF 7 OR MORE DAYS, RECORD '7'.	DAYS ..... ▒▒ DON'T KNOW 8	DAYS..... ▒▒ DON'T KNOW 8
323	Did you have the SP/Fansidar at home or did you get it from somewhere else? IF SOMEWHERE ELSE, PROBE FOR SOURCE. IF MORE THAN ONE SOURCE MENTIONED, ASK: Where did you get the SP/Fansidar first?	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____6 (SPECIFY) DON'T KNOW 8	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____6 (SPECIFY) DON'T KNOW 8
323a	Did you purchase the SP/Fansidar?	YES ..... 1 NO ..... 2 If NO, Skip to 340	YES ..... 1 NO ..... 2 If NO, Skip to 340
323b	How much did you pay for the SP/Fansidar?	In Kwacha ▒▒▒	In Kwacha ▒▒▒
324	CHECK 319: WHICH MEDICINES?	CODE 'B' CIRCLED ☐ CODE 'B' NOT CIRCLED ☐ (SKIP TO 328)	CODE 'B' CIRCLED ☐ CODE 'B' NOT CIRCLED ☐ (SKIP TO 328)
325	How long after the fever started did (NAME) first take chloroquine?	SAME DAY..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER..... 2 THREE DAYS AFTER THE FEVER 3 FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8	SAME DAY..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER..... 4 DON'T KNOW 8
326	For how many days did (NAME) take chloroquine? IF 7 OR MORE DAYS, RECORD '7'.	DAYS ..... ▒▒ DON'T KNOW 8	DAYS..... ▒▒ DON'T KNOW 8
327	Did you have the chloroquine at home or did you get it from somewhere else? IF SOMEWHERE ELSE, PROBE FOR SOURCE. IF MORE THAN ONE SOURCE MENTIONED, ASK: Where did you get the chloroquine first?	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____6 (SPECIFY) DON'T KNOW 8	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____ 6 (SPECIFY) DON'T KNOW 88

		YOUNGEST CHILD NAME _____	NEXT-TO-YOUNGEST CHILD NAME _____
327a	Did you purchase the cholorquine?	YES ..... 1 NO ..... 2 If NO, Skip to 340	YES ..... 1 NO ..... 2 If NO, Skip to 340
327b	How much did you pay for the choloquine	In Kwacha	In Kwacha
328	CHECK 319: WHICH MEDICINES?	CODE 'C' CIRCLED CODE 'C' NOT CIRCLED (SKIP TO 332)	CODE 'C' CIRCLED CODE 'C' NOT CIRCLED (SKIP TO 332)
329	How long after the fever started did (NAME) first take Amodiaquine?	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8

		YOUNGEST CHILD NAME _____	NEXT-TO-YOUNGEST CHILD NAME _____
330	For how many days did (NAME) take Amodiaquine? IF 7 OR MORE DAYS, RECORD '7'.	DAYS ..... DON'T KNOW 8	DAYS ..... DON'T KNOW 8
331	Did you have the Amodiaquine at home or did you get it from somewhere else? IF SOMEWHERE ELSE, PROBE FOR SOURCE. IF MORE THAN ONE SOURCE MENTIONED, ASK: Where did you get the Amodiaquine first?	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____ 6 (SPECIFY) DON'T KNOW 8	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____ 6 (SPECIFY) DON'T KNOW 8
331a	Did you purchase the Amodiaquine?	YES ..... 1 NO ..... 2 If NO, Skip to 340	YES ..... 1 NO ..... 2 If NO, Skip to 340

331b	How much did you pay for the Amodiaquine?	In Kwacha ☐☐☐	In Kwacha ☐☐☐
332	CHECK 319: WHICH MEDICINES?	CODE 'D' CIRCLED ☐ CODE 'D' NOT CIRCLED ☐ (SKIP TO 336)	CODE 'D' CIRCLED ☐ CODE 'D' NOT CIRCLED ☐ (SKIP TO 336)
333	How long after the fever started did (NAME) first take Quinine?	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8
334	For how many days did (NAME) take Quinine? IF 7 OR MORE DAYS, RECORD '7'.	DAYS ..... ☐☐ DON'T KNOW 8	DAYS ..... ☐☐ DON'T KNOW 8
335	Did you have the Quinine at home or did you get it from somewhere else? IF SOMEWHERE ELSE, PROBE FOR SOURCE. IF MORE THAN ONE SOURCE MENTIONED, ASK: Where did you get the Quinine first?	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____ 6 (SPECIFY) DON'T KNOW 8	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____ 6 (SPECIFY) DON'T KNOW 8
335a	Did you purchase the Quinine?	YES ..... 1 NO ..... 2 If NO, Skip to 340	YES ..... 1 NO ..... 2 If NO, Skip to 340
335b	How much did you pay for the Quinine?	In Kwacha ☐☐☐	In Kwacha ☐☐☐
336	CHECK 319: WHICH MEDICINES?	CODE 'E' CIRCLED ☐ CODE 'E' NOT CIRCLED ☐ (SKIP TO 340)	CODE 'E' CIRCLED ☐ CODE 'E' NOT CIRCLED ☐ (SKIP TO 340)
337	How long after the fever started did (NAME) first take COARTEM / ACT?	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8

		YOUNGEST CHILD NAME _____	NEXT-TO-YOUNGEST CHILD NAME _____
338	For how many days did (NAME) take COARTEM / ACT? IF 7 OR MORE DAYS, RECORD '7'.	DAYS ..... ▒▒ DON'T KNOW 8	DAYS..... ▒▒ DON'T KNOW 8
339	Did you have the Coartem/ACT at home or did you get it from somewhere else? IF SOMEWHERE ELSE, PROBE FOR SOURCE. IF MORE THAN ONE SOURCE MENTIONED, ASK: Where did you get the ACT first?	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____ 6 (SPECIFY) DON'T KNOW 8	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____ 6 (SPECIFY) DON'T KNOW 8
339a	Did you purchase the Coartem / ACT?	YES ..... 1 NO ..... 2 If NO, Skip to 340	YES ..... 1 NO ..... 2 If NO, Skip to 340
339b	How much did you pay for the Coartem / ACT?	In Kwacha ▒▒▒	In Kwacha ▒▒▒
340	CHECK 319: WHICH MEDICINES?	CODE 'F' CIRCLED ▒ CODE 'F' NOT CIRCLED ▒ (SKIP TO 344)	CODE 'F' CIRCLED ▒ CODE 'F' NOT CIRCLED ▒ (SKIP TO 344)
341	How long after the fever started did (NAME) first take (NAME OF OTHER ANTIMALARIAL)?	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3 FOUR OR MORE DAYS AFTER THE FEVER..... 4 DON'T KNOW 8
342	For how many days did (NAME) take (NAME OF OTHER ANTIMALARIAL)? IF 7 OR MORE DAYS, RECORD '7'.	DAYS ..... ▒▒ DON'T KNOW 8	DAYS..... ▒▒ DON'T KNOW 8
343	Did you have the (NAME OF OTHER ANTIMALARIAL) at home or did you get it from somewhere else? IF SOMEWHERE ELSE, PROBE FOR SOURCE. IF MORE THAN ONE SOURCE MENTIONED, ASK: Where did you get the (NAME OF OTHER ANTIMALARIAL) first?	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____ 6 (SPECIFY) DON'T KNOW 8	AT HOME ..... 1 COMMUNITY HEALTH WORKER....2 GOVERNMENT HEALTH FACILITY/WORKER ..... 3 PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____ 6 (SPECIFY) DON'T KNOW 8
344		GO BACK TO 313 IN NEXT COLUMN, OR, IF NO MORE CHILDREN, GO TO 345.	GO BACK TO 313 IN FIRST COLUMN OF NEW QUESTIONNAIRE, OR, IF NO MORE CHILDREN, GO TO 345.

345	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 THE SUPERVISOR:_____ DATE: _____

Consent document for the household survey.

Introduction

The National Malaria Control Centre, Ministry of Health; PATH Malaria Control and Evaluation Partnership in Africa (MACEPA); the World Health Organization; and malaria control partners want to learn how well the malaria prevention program is working in Zambia. We would like to ask you some questions about bednet use in your home, and also some general questions about your child[ren]'s health.

We are also doing a survey of malaria in children. To do this, we will test children for malaria parasites in the blood. One way to test for malaria parasites in the blood includes taking a small sample of blood by fingerprick and examining under a microscope and in a laboratory. Another way is to look at anaemia (low levels of blood), by taking a small sample of blood by fingerprick and examining with a hemocue machine. The World Health Organization (WHO) has set up a guide for us to look at both. We are using this guide to help with the malaria program in Zambia.

Purpose of the survey

We want to use the WHO guide to see if your country's malaria program works. We also want to test if a communication campaign increases bednet use among children in this community. We will ask you some questions about bednet use in your home, and also about your child[ren]'s health. We will also see how common malaria is among young children in the community by testing for parasites in the blood and also by testing for low levels of blood. We will visit people in their homes and look at people that come to health facilities. This will help us learn how best to measure the effects of malaria control in the community.

Procedures

If you agree to take part, we will ask you a few questions and a nurse will take a small amount of blood from your child's finger.

We will ask you questions about bednet use in your home, and about other things that are linked to malaria. We will also ask some questions about your health and about your child[ren]'s health. This should only take about 30 minutes.

We will take only up to 5 drops of blood from your child. One drop of blood will be wiped off. The second drop of blood will be used to test for malaria in the lab using a microscope. The third drop of blood will be used to test for low levels of blood (anemia) here in the house. The fourth drop will be used for a rapid malaria diagnostic test here in the house. The remaining drop of blood will be put on paper for additional laboratory analysis to confirm the type of malaria found, if needed. The last drop will be used in case the slides become damaged or unreadable and it will be discarded after the survey results have been analyzed.

The results for low levels of blood and for the rapid malaria diagnostic test will be given to you today. If your child has low levels of blood, malaria, or history of fever, we will give you treatment. This will be the same treatment your child would get if you went to your health center. This will cost you and your family nothing. If the nurse thinks that your child is very ill, we will give you transportation to the nearest health clinic and assure that the child is provided with the necessary health care.

Lab test results will be ready after one week. If your child has malaria, a survey staff member will return to your house to give treatment for malaria to your child. This will only happen if your child has not already been treated today. Even if you do not wish to take part, you can still ask to see the nurse and get the correct treatment. Even if you do not agree to take part, if your child is ill, you should visit the nearest health clinic if your child is not better in 3 days or is worse over time.

Risks and Benefits
Your child will feel a pinch that lasts a few seconds when we take the blood tests. For any malaria health problem that we find, the nurse will give the treatments that the Ministry of Health suggests. These drugs are proven safe and effective but any drugs can cause side effects in a small number of patients. The nurse will discuss these with you.

Voluntariness
It is your choice to be in this survey. It will not affect the care that the nurse will give you or your child[ren] should you wish to receive it. If you do agree to take part, your answers to all questions and your child's test results will be kept private to the extent the law allows. If you agree to take part, you can also decide not to answer any of the questions that you do not want to, and you can refuse the blood tests.

If you have any questions or clarification pertaining to this survey please feel free to ask the field nurse or the medical officer in charge in the field whose name and contact information is given below. (field nurse name and telephone here) _____. or Study Coordinator: Dr. Elizabeth Chizema-Kawesha, Coordinator, National Malaria Control Centre, Chainama Hospital College Grounds, Lusaka, Zambia, Tel: 282455; Fax: 282427.

Thank you very much for your time. Would you like to take part in this survey?

Statement of Parental Permission for malaria surveillance (signature or thumbprint required)
The above has been read to me, and I agree to let my child take part.

Signature: _____ Date: _____

Thumb print:

Participant's name: _____

For persons who cannot sign
The above consent was read and the person agreed to take part.

Signature: _____ Date: _____

Witness's name: _____

Statement of consent (signature or thumbprint required):
The above has been read to me and I agree to take part.

Signature: _____ Date: _____

Thumb print:

Participant's name: _____

For persons who cannot sign
The above consent was read and the person agreed to take part.

Signature: _____ Date: _____

Witness's name: _____

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