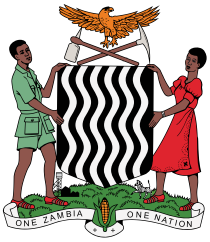

REPUBLIC OF ZAMBIA
MINISTRY OF HEALTH

MIS 2018

ZAMBIA MALARIA INDICATOR SURVEY

Zambia National Malaria Indicator Survey 2018

This report summarises the findings of the 2018 Zambia National Malaria Indicator Survey carried out between April and May 2018 by the Ministry of Health, Central Statistics Office, PATH Malaria Control and Elimination Partnership in Africa, United States President's Malaria Initiative including the United States Agency for International Development (USAID) and the Centers for Disease Control and Prevention (CDC), United Nations Children's Fund, and the World Health Organization.

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Abbreviations and acronyms

ANC	Antenatal clinic
AL	Artemether-lumefantrine
BCC	Behaviour change communication
CDC	US Centers for Disease Control and Prevention
CHW	Community health worker
CI	Confidence interval
CSA	Census supervisory areas
CSO	Central Statistical Office
DHAp	Dihydroartemisinin-piperaquine
DHS	Demographic and Health Survey
Hb	Haemoglobin
iCCM	Integrated community case management
IEC	Information, education, and communication
IPTp	Intermittent preventive treatment during pregnancy
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
LLIN	Long-lasting insecticide-treated net
MACEPA	PATH Malaria Control and Elimination Partnership in Africa
MERG	Monitoring and Evaluation Reference Group
MIS	Malaria indicator survey
MOH	Ministry of Health
NMEC	National Malaria Elimination Centre
NMEP	National Malaria Elimination Programme
NMESP	National Malaria Elimination Strategic Plan
ORS	Oral rehydration solution
PAMO	Programme for the Advancement of Malaria Outcomes
PMI	President’s Malaria Initiative
PSU	Primary sampling units
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
SBC	Social behaviour communication
SEA	Standard enumeration areas
SP	Sulfadoxine-pyrimethamine
UNICEF	United Nations Children’s Fund
WBC	White blood cell
WHO	World Health Organization

Acknowledgements

This report presents the results of the Zambia National Malaria Indicator Survey (MIS) 2018, a comprehensive, nationally representative household survey designed to measure progress towards achieving the goals and targets set forth in the National Malaria Elimination Strategic Plan 2017–2021. The survey represented the efforts of several agencies and many individuals. The Ministry of Health, namely the National Malaria Elimination Centre (NMEC), had the major responsibility of conducting the survey and was responsible for organizing field staff and local coordination and sensitization efforts. Other agencies were instrumental in the survey, including the Central Statistical Office (CSO), the PATH Malaria Control and Elimination Partnership in Africa (MACEPA), the United States President's Malaria Initiative (PMI) including the United States Agency for International Development (USAID) and the Centers for Disease Control and Prevention (CDC), the United Nations Children's Fund (UNICEF), and the World Health Organization (WHO).

At the Ministry of Health, Dr Jabbin Mulwanda, Permanent Secretary; Dr Kennedy Malama, Permanent Secretary, provided overall survey leadership and guidance. At the NMEC, Dr Elizabeth Chizema Kawesha, Director; Dr Anthony Yeta, Deputy Director; Dr Mutinta Mudenda, Deputy Director; Moonga Hawela, Chief Parasitologist; Jacob Chirwa, Parasitologist; Mercy Mwanza Ingwe, Surveillance and Information Officer; Dr Busiku Hamainza, Epidemiologist; Japhet Chiwaula, Biostatistician; and Ignatius Banda, Surveillance Officer, took primary responsibility for survey operations and coordination. Also within the Ministry of Health, various members assisted with the organization, community sensitization efforts, logistics, ordering of supplies, and training. At the CSO, Ngawo Banda, Survey Statistician, provided support for the sample design, sample selection, and analysis. CSO staff also provided support during field work for the identification of cluster boundaries and household listing. Their names are included with the field teams in Appendix B.

At PATH MACEPA, Dr John Miller, Maya Fraser, Chris Lungu, Kafula Silumbe, Belendia Serda, Marie Reine Rutagwera, Mulenga Mwenda, Dr Abdi Mohamed, Dr Dan Bridges, Muleba Mwatafwali, Sosenna Assefa, Cassi Flint, Hazel Chabala, and Kedrick Katongo provided support for logistics, training, survey organization, accounting, design, analysis, and report writing. Manny Lewis edited and formatted the report. From PMI, Dr Paul Psychas and Dr Chomba Sinyangwe of the United States Agency for International Development (USAID) and Dr Carrie Neilsen of the Centers for Disease Control and Prevention (CDC) provided support for the MIS planning and design, project supervision, and report writing. Mwila Kangwa of USAID and Dr Caroline Phiri, Chansa Katongo, and Maurice Pengele of the PMI project the Program for the Advancement of Malaria Outcomes (PAMO) supported the training and field work activities. Dr Fred Masaninga of WHO provided support for coordination activities, 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 organises the Demographic and Health Surveys (DHS).

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

Foreword

The Zambia National Malaria Indicator Survey (MIS) 2018 is the sixth such malaria-focused household survey undertaken to benchmark the progress of malaria burden reduction and coverage of key malaria interventions in Zambia.

The MIS 2018 brings good news across the country, with reductions in malaria parasite prevalence and increased coverage of nearly all the indicators for insecticide-treated nets, indoor residual spraying, case management, and knowledge and community empowerment. This is certainly the result of the focused and dedicated work of many partners and communities throughout Zambia since the last report in 2015. For this we are grateful and ask you to continue supporting national malaria elimination efforts.

In 2018, the format of the MIS report changed compared to previous MISs conducted in Zambia. Because of the long history of the MISs in the country, the organization of the data now focuses on the 2018 results, followed by a closer look at the trends over time in each section. The change in format is meant to better align better the national malaria technical working groups which support vector control, case management and treatment interventions, and social behavioural change.

This report was supported by a number of partners and individuals noted in the previous section. We are grateful for the tireless efforts by our Ministry of Health colleagues and malaria partners to make this survey happen.

Again, we are grateful for your support in the fight against malaria and we ask you to remain a steadfast partner and participant until we achieve a malaria-free Zambia.

Dr. Kennedy Malama
Permanent Secretary – Technical Services
Ministry of Health

Preface

Health is a key economic investment to produce a healthy and productive citizenry. In this regard the Republic of Zambia has embarked on a national health sector transformation agenda as outlined in the 2017-2021 National Health Strategic Plan (NHSP). This will be achieved through a framework of building a robust and resilient health system enshrined in a primary health care approach across the continuum of care to deliver universal health coverage as close to the family as possible. Malaria still remains a major public health concern and its elimination has been included in the national universal health coverage agenda through deployment of cost effective interventions. It is important to periodically assess the coverage of these key malaria interventions and measure the impact they may have on malaria-related burden to guide malaria programming. It is in this regard that the Ministry of Health and its partners conduct nationally-representative assessments such as the Malaria Indicator Surveys (MIS).

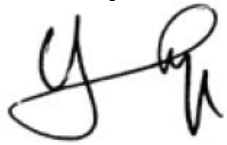
The Zambia MIS 2018 has shown encouraging findings in the fight against malaria in Zambia. Insecticide-treated net (ITN) coverage increased, indoor residual spraying (IRS) coverage increased in rural, more malaria-prone areas, and malaria patients continued to benefit from an ever increasing network of community health workers reaching farther into our communities to extend vital health care delivery as close to homes as possible. The MIS 2018 recorded the lowest malaria prevalence ever reported in a national malaria prevalence survey since Zambia started conducting them. Nine percent of Zambian children are infected with the malaria parasite, a decrease from 17% observed in the 2015 MIS. While this is progress, it is still 9% too many. Elimination is our goal.

Much of this progress has occurred as a result of intensified efforts to distribute ITNs, scale up IRS, and expand case management to the community level in the past two years, and since the launch of the National Malaria Elimination Strategic Plan 2017–2021. During this time, Zambia conducted its largest-ever mass ITN distribution (from mid-2017 to early 2018) through all provinces and also created the expectation of better IRS coverage throughout the country. This progress is particularly evident in areas where the malaria burden is highest with increases in vector control coverage especially in rural areas. We must sustain this and strive for further improvement to realise the target of malaria elimination.

We have also recognised that the fight against malaria will not be won without the dedication of everyone at all levels including the communities. Malaria ends with me.

We are thankful to the National Malaria Elimination Centre for coordinating this survey, to our partners for providing the resources and assistance necessary to complete the exercise, and to our teams of survey staff who took on the most challenging part of the survey: visiting the households, asking the questions, and testing the children for malaria. Over the years, these malaria indicator surveys have inspired us to both change course by prioritizing elimination and now to the stay the course towards that goal. Let us celebrate the progress made so far, but let us remain steadfast until we are through with malaria in Zambia.

We thank you all for your support.



Hon. Dr. Chitalu Chilufya (MP)
Minister of Health

Executive summary

The Zambia National Malaria Indicator Survey (MIS) 2018 was conducted by the Ministry of Health through the National Malaria Elimination Centre in April and May 2018 with the support of its partners. The MIS is a nationally representative household survey designed to assess the coverage of key malaria interventions and the malaria and anaemia prevalence of children under five years of age. The 2018 MIS is the sixth MIS conducted by the Ministry of Health. Previously, MISs were completed in 2006, 2008, 2010, 2012, and 2015. All MISs, including the 2018 MIS, have been timed to coincide with the end of the malaria transmission season during April and May each year.

In conducting the 2018 MIS, the Ministry of Health was supported by several partners including Central Statistical Office (CSO), the PATH Malaria Control and Elimination Partnership in Africa (MACEPA), the United States President's Malaria Initiative (PMI) including the United States Agency for International Development (USAID), the Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO), and the United Nations Children's Fund (UNICEF). Resources for the 2018 MIS were provided by the Global Fund to Fight AIDS, Tuberculosis and Malaria through the Ministry of Health.

The 2018 MIS was based on a nationally representative two-stage cluster sample of 4,475 households selected from 179 standard enumeration areas. A total of 4,177 households were interviewed in the survey, along with 3,680 women of reproductive age, and 2,883 children under the age of five had their fingers pricked for malaria testing. Consenting households and household members were asked a series of questions about their household dwelling as well as standardised questions about malaria interventions including insecticide-treated bednet (ITN) coverage and use, indoor residual spraying (IRS), prevention of malaria during recent pregnancies, and management of fever among children. Children were asked to provide a finger stick blood sample to be tested for malaria and anaemia. Any children found to have malaria or anaemia were treated according to the standard of care offered by the Ministry of Health.

Overall, national malaria parasite prevalence by microscopy was 9% among children under five years of age in 2018, compared to 17% in 2015. A reduction was seen in all provinces compared to 2015, but provinces varied markedly in their malaria prevalence, roughly following the expected north-south gradient and a rural-urban gradient. Thus, Luapula remained the province with the highest malaria prevalence in Zambia at 30% while Southern Province and Lusaka Province reported the lowest malaria prevalence, at less than 0.1%. Severe anaemia prevalence among children under five years of age was 5% in 2018 compared with 6% in 2015. This indicator has shown a steady decline since 2010.

Zambia has achieved high coverage (80%) of at least one ITN per household, a basic availability indicator, with eight of ten provinces having greater than 80% coverage. Forty-five percent of households reported having at least one ITN for every two household members. ITN use the night before the survey among children under age five and pregnant women was 69% and 71%, respectively. Among all household members, 65% reported using an ITN the previous night. This represents an increase across all ITN indicators since 2015.

Thirty-five percent of Zambian households reported IRS within the previous 12 months. Rural areas of Zambia reported 43% of households sprayed while urban areas reported 24% of households sprayed. This represents an increase overall and in rural areas since 2015. Nearly all spraying was reported as done by the public sector and spraying on average was done 5.1 months prior to the survey.

Among women of reproductive age, 81% reported receiving at least two doses of intermittent preventive treatment (IPTp) during their most recent pregnancy and 67% reported receiving three doses. Only 5% of women reported taking at least four doses of IPTp during their most recent

pregnancy, although this survey was asking about pregnancies on average 2.5 years before the survey and therefore just prior to the adoption of 4+ IPTp treatment dose policy during pregnancy. Zambia continues to lead in IPTp coverage for two and three doses in the region and has shown improvement since 2015.

In 2018, 32% of children with reported fever also reported to have taken an antimalarial drug for this fever, although only 21% reported to have taken the antimalarial promptly (the same day or the next day). Both of these indicators declined slightly since the 2015 MIS. While the Ministry of Health encourages prompt access to treatment for malaria, not all fevers are indicative of malaria and in many areas of Zambia malaria represents a declining percentage of febrile illness. The majority of all febrile children received treatment from government facilities while 22% of febrile children received antimalarial treatment from a community health worker as part of an effort to expand access to care in hard-to-reach communities. Ninety-six percent of antimalarial drugs provided to febrile children in Zambia were reported as artemether-lumefantrine, the national first-line drug for uncomplicated malaria. Fifty-five percent of Zambian febrile children who sought care were reported as having a finger or heel stick for their fever episode, a significant increase since 2015.

Knowledge of malaria, malaria interventions, and where to access services are important indicators to monitor at the community level for malaria elimination. Ninety percent of women aged 15 to 49 years had heard of malaria and 72% reported fever as an important symptom of malaria. Eighty-two percent reported mosquito bites as the cause of malaria and 86% reported ITNs a prevention method for malaria. Thirty-five percent of women reported knowing the location and role of their local community health worker. Among women 15 to 49 years of age, 52% reported hearing messaging about malaria recently and 30% of these messages were reported as coming from the local government health clinic. Twelve percent of the messages were reported from community health workers.

The 2018 MIS represents significant progress across nearly all key indicators since 2015 and is based on a foundation of solid programming and implementation efforts by a range of partners supporting the National Malaria Elimination Programme.

Summary of key indicators

Indicator	DHS 2001/ 2002[1]	MIS 2006[2]	DHS 2007[3]	MIS 2008[4]	MIS 2010[5]	MIS 2012[6]	DHS 2013/ 2014[7]	MIS 2015[8]*	MIS 2018
% of households with at least one insecticide-treated net (ITN)	14	38	53	62	64	68	68	74	80
% of children ages 0–59 months who slept under an ITN the previous night	7	24	29	41	50	57	41	56	69
% pregnant women who splept under an ITN the previous night	8	24	33	43	46	58	41	NA	71
% of household members who slept under an ITN the previous night	N/A	19	N/A	34	42	49	35	53	64
% of households with at least one ITN per sleeping space	N/A	N/A	N/A	33	34	55	N/A	62	47
% of households receiving indoor residual spraying (IRS) in the previous 12 months	N/A	10	16	15	23	29	28	28	35
% of households covered by at least one ITN or recent IRS	N/A	43	N/A	68	73	73	75	78	84
% of women ages 15-49 years who received two doses of IPTp during most recent pregnancy	N/A	59	66	66	70	72	73	79	81
% of children ages 0-59 months who reported fever in the previous two weeks	N/A	33	18	28	34	24	21	16	19
% of children ages 0-59 months with fever taking antimalarial drugs which were ACTs	N/A	39	NA	30	76	85	91	92	96
% of children ages 0-59 months with fever reporting a finger/heel stick	N/A	N/A	N/A	11	17	32	49	36	55
% of women ages 15–49 years who recognise fever as a symptom of malaria	N/A	65	N/A	71	75	78	N/A	77	71
% of women ages 15–49 years who reported knowledge of mosquito bites as a cause of malaria	N/A	80	N/A	85	85	89	N/A	85	82
% of women ages 15–49 years who reported knowledge of mosquito nets/ITNs as a prevention method	N/A	78	N/A	81	82	86	N/A	91	86
% of children ages 0–59 months with malaria parasitaemia by microscopy	N/A	22	N/A	10	16	15	NA	17	9
% of children ages 0–59 months with severe anaemia (Hb<8 g/dl)	N/A	14	N/A	4	9	7	NA	6	5

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* MIS 2015 results reflect updated weighting allocations for some indicator estimates since the publication of the 2015 MIS report.

Chapter 1: Introduction and methods

Malaria is endemic throughout Zambia and continues to be a significant public health problem in many areas of the country. Efforts to control malaria, such as the use of long-lasting insecticide-treated nets (LLINs) and prompt, effective case management, have been scaled up through coordinated efforts among RBM Partnership To End Malaria partners. In order to assess national scale-up efforts, effective monitoring and evaluation is needed to measure progress towards select targets and goals.

The Zambian Government has identified malaria elimination as one of its main public health priorities. This is emphasised in successive national development plans and national health strategic plans. In this respect, the Government, through the National Malaria Elimination Centre, has developed a detailed National Malaria Elimination Strategic Plan 2017–2021 (NMESP), aimed at significantly scaling up malaria elimination interventions towards the achievement of the national vision of "a malaria-free Zambia" [9]. This plan aims to consolidate the gains made during the previous national strategic plan (2011–2016) and continue to advance towards the goals of a malaria-free country.

In addition to its national plans, Zambia has committed to achieving regional and international targets for malaria elimination. Notably, just as the country was committed to United Nations Millennium Development Goals, which ended in 2015, Zambia is now committed to the Sustainable Development Goals, the current United Nations benchmark for malaria progress.

Key to benchmarking progress in malaria towards national strategic goals is assessing progress in malaria intervention coverage and malaria-related burden. National malaria indicator surveys (MISs) are designed to help countries do this. The MIS has become a cornerstone for country progress reporting around the region [10-13] by helping countries assess and monitor changes in parasite prevalence and anaemia levels in children over time, and understand the complexities of mosquito net use and availability, patterns in fever treatment for malaria, and many malaria prevention issues for malaria during pregnancy. Zambia has conducted an MIS every two or three years since 2006 [8]. These surveys have been timed to coincide with the end of the malaria transmission period in Zambia—April and May—to understand the peak period of malaria transmission, prevalence, and likely uptake of interventions at household level.

Objectives

The specific objectives of the Zambia National Malaria Indicator Survey 2018 were:

1. To collect up-to-date information, building on the experience of the previous MISs (2006, 2008, 2010, 2012, and 2015), on the coverage of the core malaria interventions included in the current National Malaria Elimination Strategic Plan 2017–2021.
2. To assess malaria parasite prevalence.
3. To assess the status of anaemia among the target populations (in particular, children 6–36 months of age).
4. To assess disparities in malaria intervention coverage, malaria parasite prevalence, and anaemia prevalence among the surveyed population by location and other background characteristics.
5. To implement standardised, representative household survey methods.
6. To strengthen the capacity of the National Malaria Elimination Centre (NMEC) and local agencies involved in order to facilitate the implementation of surveys of this type in the future.

Timing of the survey

The 2018 MIS was timed so that data collection took place from mid-April to late May 2018, which corresponds to the latter portion of the rainy season. This timing is standard practice for MISs in Zambia dating back to the first, in 2006. It is also considered a best practice, as that timing corresponds roughly to the expected peak prevalence of parasitaemia and severe anaemia in most provinces. The timing of the MIS is important for interpreting several kinds of findings, including comparisons across years, peak expected insecticide-treated net (ITN) use, and timing of indoor residual spraying (IRS).

Sample design

The 2018 MIS covered household populations in Zambia. The design for the survey was a representative probability sample to produce estimates for the country as a whole, and for rural and urban populations separately.

Zambia is administratively divided into ten 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 most recent census was conducted in 2010 with a resulting population of 13,045,508 [14]. This population was divided and demarcated with CSAs within wards, wards within constituencies, and constituencies within districts. Information on the number of households and the population was based on the list of SEAs from the 2010 population census. The number of households was used as a measure of size for selecting primary sampling units. Therefore, the sample frame of this survey was the list of SEAs in the census.

Sample sizes were calculated with the assumption that future cross-sectional surveys will be conducted for comparison with these results. Sample size determination was based on an expected reduction in parasitaemia levels among rural populations from the 2015 MIS results and according to the MIS Sampling Guidelines [15]. The MIS conducted in Zambia in 2015 provided a national severe anaemia prevalence, measured as haemoglobin less than 8 g/dl in the context of malaria evaluation [16], of 6%, and a malaria parasite prevalence of 17% for children under age five. For rural areas, the estimates were 7% and 22.0%, respectively. With an estimated 77% 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 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 10% relative standard error required at least 2,176 households in the rural domain. The 2018 MIS targeted 2,250 households for the national rural domain. The survey also planned for an additional 375 households in Luapula Province, 350 households in Eastern Province, and 400 households in Western Province for oversampling to provide additional precision of the survey estimates obtained.

For urban areas of Zambia, a separate domain was based on the remaining budgetary constraints and population proportional to size sample allocation, yielding additional urban SEAs. This was based on allocating 800 households from among 32 clusters to detect changes in ITN use among children from the estimated coverage of 53% in 2015 MIS [8] and similar sample size parameters for rural domain except using a response rate of 90% and a 7.5% relative standard error.

To achieve the sample's total household count, no more than 4,475 households were planned to be selected from no more than 179 SEAs. From these households, 4,900 children under the age of six years were expected for malaria testing. In addition, Western Province testing was extended to children under ten years of age to add an additional 720 children for a total of 5,620 children being tested. From the women's questionnaire, no more than 3,975 women of reproductive ages 15 to 49 years were expected for inclusion.

A first-stage selection of SEAs was conducted by the Central Statistical Office according to the specified domains. Second stage sampling was conducted at the time of field work using hand-held smart phones. All households within an SEA were digitally listed using smart phones fitted with geo-positioning units and a random sample of 25 households from each SEA was selected for interviewing from all households listed during the field visit by a programme called ODK EpiSample developed by the PATH Malaria Control and Elimination Partnership in Africa (MACEPA) and based on a programme originally developed by the Centers for Disease Control and Prevention (CDC) [17, 18]. 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 household members (or any household members in the case of malaria parasite testing) to minimise potential bias.

Questionnaires

Two questionnaires were used for the 2018 MIS: the household questionnaire and the women's questionnaire. The content of each was based on model questionnaires developed by the MEASURE DHS programme and adopted and recommended for use by the RBM Monitoring and Evaluation Reference Group (MERG) Task Force on Household Surveys [19].

The household questionnaire was used to list 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 15 to 49 years of age. Malaria-specific issues covered in the household questionnaire included:

- Fever prevalence and treatment-seeking behaviour for all household members.
- IRS, including whether the household in question was sprayed in the previous year, and who performed the spraying.
- ITNs, including household possession, net treatment status, and the use of nets among all household members.

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

- Background characteristics (e.g., education level, asset-based wealth index).
- Reproductive and birth history, pregnancy status.
- General malaria knowledge.
- Intermittent preventive treatment during pregnancy (IPTp), including usage for their most recent birth in the last two years, number of doses, and whether the mother received IPTp during an antenatal clinic (ANC) visit.
- Fever prevalence among children under five years of age and fever treatment with antimalarial drugs.

Questionnaires were programmed into hand-held smart phones to eliminate the need for paper transcription, allow quicker data tabulation, and 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 hand-held smart phones. Each individual was assigned a unique identification code at the time of questionnaire administration.

Malaria parasite and anaemia testing

All health professionals recruited from the Ministry of Health (MOH) received standardised training to conduct finger pricks for anaemia and malaria parasitaemia among children under six years of age in every household sampled [20]. Every effort was made to prevent secondary infection from the finger stick 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 throughout the field work. Sampling in

children under six ensured that all children under five—the target population—were captured. 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 fourth 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 the tested children.

Results from the anaemia testing and RDTs were available immediately to the parents or caregivers for the child and to the eligible women participating. Thick smears were collected by survey-assigned laboratory supervisors and stained with Giemsa stain at the National Malaria Elimination Centre Reference Laboratory in Lusaka. All stained slides were read by two independent microscopists masked from RDT results. Slides with discrepant RDT results were re-analysed by a third microscopist for final validation.

Diagnosis and treatment algorithm

The NMEC has a policy of expanding the use of RDTs for malaria diagnosis in conjunction with the use of dihydroartemisinin-piperaquine (DHAp) (branded as Eurartesim®, a fixed dose combination of dihydroartemisinin and piperaquine), an artemisinin-containing combination antimalarial treatment, for the primary treatment of uncomplicated malaria. Standard Diagnostics' Bioline P.f HRP2 RDT was used to guide treatment of parasitemic children during the survey. Thick blood slides were read within one month, if not sooner, after they were prepared in the field by qualified laboratory technicians and microscopists.

Haemoglobin results were shared with the parent/guardian or participant. Children found with haemoglobin levels of less than 7g/dl and a negative RDT were given an appropriate two-week dosage of daily iron and folate and mebendazole (chewable) and referred to a health centre and their parent/guardian was given the written results. Mebendazole was given as a presumptive treatment of helminthic infections and was only given to children at least 12 months of age.

Children with a positive RDT and clinically not fitting into the severe malaria classification (severe aneamia, prostration, impaired consciousness, respiratory distress, convulsions, circulatory collapse, abnormal bleeding, jaundice, and passing black/brown [dark] urine) received immediate treatment for malaria with DHAp according to Zambia's national treatment guidelines [21]. Treatment was administered by the MOH nurses who were part of the field team. Furthermore, children with a positive RDT and classified as simple malaria with mild to moderate anaemia (Haemoglobin [Hb] between 8–11.5 g/dl) were treated with DHAp 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 an antimalarial within the previous 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 transportation to the nearest health facility.

Hemocue and RDT testing was done according to manufacturer recommendations. Blood smears were stained with Giemsa stock stain prepared in advance of the field work by the NMEC Reference Laboratory. 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 ten 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.

Data collection and programming

Smart phones were used for the second-stage sampling and recording of questionnaires and for malaria parasite and anaemia testing results. Programming of the questionnaires was done using ODK Survey developed for the Android platform [18]. Motorola Android-based smart phones were used to carry out field sampling and data collection. A programme called EpiSample, developed from a programme designed by the CDC, Atlanta, USA, was used for second-stage household sampling and was similar to previous software used in Zambia for the 2015 MIS and included a navigation component to facilitate field staff returning to selected households for interviewing [17, 18].

Community sensitization

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

Training, pre-test activities, and field work

Data collection for the MIS took place from April to May 2018. Sixteen interviewing teams were used to carry out the field work. Each team was composed of at least two health professionals and two laboratory technicians. 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 near the selected enumeration areas. Teams were assigned to each of the provinces with an additional team allocated for use among provinces as appropriate.

Training was conducted in Chongwe during April 2018. The training was coordinated by the NMEC, President's Malaria Initiative (PMI), PATH MACEPA, World Health Organization (WHO), 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. Smart phones were introduced to the field staff on the first day of training and were used in all training sessions to familiarise participants with each procedure.

A field pre-test of all survey procedures was programmed for the end of the training week in clusters near the training centre. All participants in the training exercise were pre-arranged into groups corresponding to their field work assignments. During the pre-test, a full enumeration area (an SEA not otherwise included in the survey sample) was listed and interviewed. Each team practiced performing the household listing, joining listed households from distinct surveyors' listings, and conducting interviews and testing procedures.

Data analysis

Data manipulation and analysis were conducted in Stata 13.1 and R 3.4.1. Data were extracted from each phone and combined into master data files, then cleaned and merged together as needed. Data from microscopy were merged on to this dataset after results became available. Indicators were created based upon the standard MIS indicator definitions. The wealth index was created using the standard Demographic and Health Survey (DHS) procedure from questions about ownership of household goods, ownership of livestock and agricultural land, and household infrastructure (construction materials, toilet facilities, water access) [22]. Point estimates for summary statistics and their 95% confidence intervals (CIs) were calculated using the survey package in R, version 3.33-2.

Tableau 2018.3 was also used to visualise geographic data. Confidence intervals for indicator point estimates were updated in several charts for previous MIS survey years, although not all.

Ethical approval

Individual consent was obtained before starting the household and women's questionnaires and finger sticks for blood samples. This consent was based on previously approved and field-tested consent documents used in prior MISs.

The research ethics committees of the University of Zambia (Ref: 011-02-18), on behalf of the MOH in Zambia; PATH, on behalf of the MACEPA project; and the CDC reviewed and either approved the protocol or approved it as a non-research evaluation. The survey was also authorised by the National Health Research Authority.

Chapter 2: Characteristics of households and women respondents

Characteristics of households

The 2018 Zambia MIS collected data on basic demographic and socioeconomic characteristics of the population in the sampled households as well as information on housing facilities and conditions. This information was used in constructing an asset-based wealth index for interpretation of survey results. The criteria used to form the wealth index were based on work done previously by the World Bank and ORC Macro through the MEASURE DHS project [22].

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 sex and urban and rural designation. The population under 15 years of age makes up about 46% of the total population. For rural populations, nearly 50% of the population is under 15 years of age while for urban populations 41% of the population is under age 15. **Figure 1** shows the population age-distribution pyramid for Zambia by gender.

Table 1. Household population by age, sex, and urban and rural designation
Percent distribution of the de facto household population by five-year age groups, according to gender and urban and rural designation (Zambia 2018).

	Urban			Rural			Total		
Age	***Female***	***Male***	***Total***	***Female***	***Male***	***Total***	***Female***	***Male***	***Total***
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
0–4	16.2	19.6	17.8	18.6	19.2	18.9	17.6	19.4	18.4
5–9	13.6	13.7	13.7	16.1	17.7	16.9	15.1	16.1	15.6
10–14	10.8	8.0	9.5	14.0	13.7	13.8	12.6	11.5	12.1
15–19	6.6	10.1	8.2	7.2	8.6	7.9	7.0	9.2	8.0
20–24	12.0	7.5	9.9	8.3	6.3	7.3	9.8	6.8	8.4
25–29	8.6	8.1	8.4	6.7	5.7	6.2	7.5	6.7	7.1
30–34	7.2	7.7	7.4	5.2	5.3	5.2	6.0	6.3	6.1
35–39	6.7	6.8	6.7	5.5	5.7	5.6	6.0	6.2	6.1
40–44	4.3	5.0	4.6	4.3	4.8	4.5	4.3	4.9	4.6
45–49	2.8	3.1	2.9	3.1	3.4	3.3	3.0	3.3	3.1
50–54	4.9	3.7	4.4	2.9	2.7	2.8	3.8	3.1	3.5
55–59	2.0	1.1	1.5	2.0	1.6	1.8	2.0	1.4	1.7
60–64	2.6	2.9	2.7	1.9	1.6	1.7	2.2	2.1	2.1
65–69	0.6	1.5	1.0	1.7	1.0	1.3	1.2	1.2	1.2
70–74	0.6	0.3	0.5	0.9	1.0	1.0	0.8	0.7	0.8
75+	0.6	0.5	0.6	1.6	1.7	1.6	1.2	1.2	1.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	2,080	1,765	3,845	7,556	6,983	14,539	9,636	8,748	18,384

Figure 1. Age pyramid of sampled population of Malaria Indicator Survey (Zambia 2018)

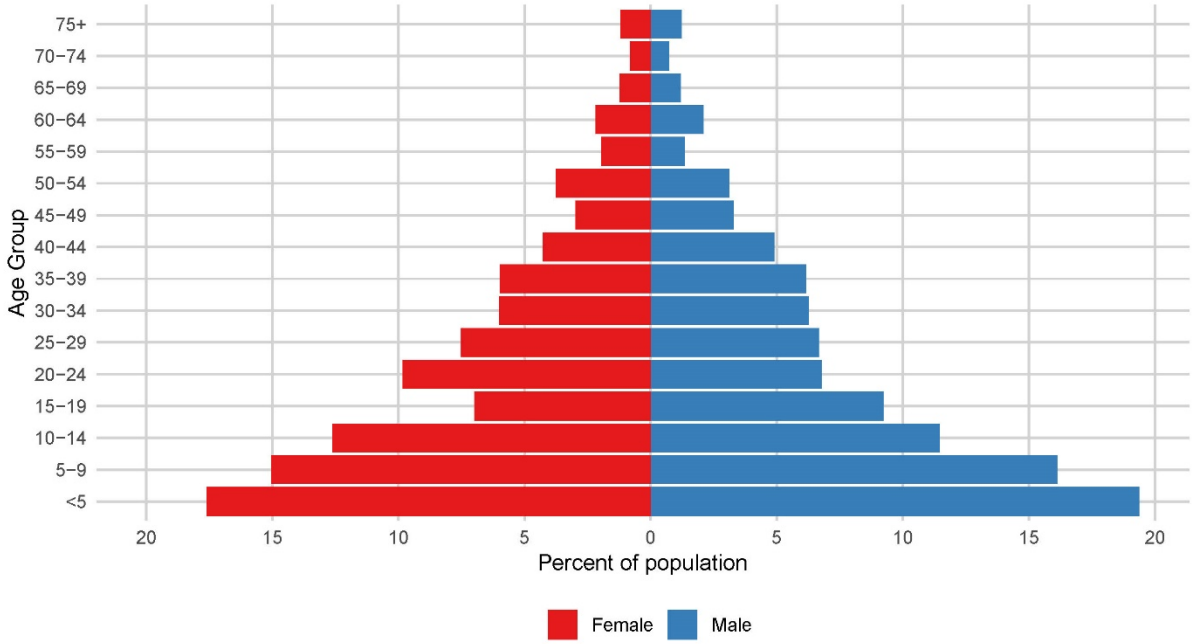


Table 2 shows that the percentage of households headed by men is slightly less in rural areas compared to urban areas. In the distribution of the number of usual household members, rural households tend to have a slightly higher number of usual members and are less likely to report fewer than three members.

Table 2. Household composition

Percent distribution by sex of head of household and by household size, according to rural and urban designation (Zambia 2018).

Characteristic			
	Urban	**Rural**	**Total**
Sex of head of household	(1)	(2)	(3)
Male	63.4	71.7	68.1
Female	36.6	28.3	31.9
Number of usual members			
1	8.1	9.3	8.8
2	16.3	11.7	13.7
3	22.0	15.7	18.5
4	17.5	16.6	17.0
5	13.4	15.3	14.4
6	10.4	12.5	11.6
7	6.8	8.4	7.7
8	2.6	4.6	3.7

continued

Characteristic			
	Urban	**Rural**	**Total**
9+	2.9	5.7	4.5
Number	916	3261	4177

Table 3 shows that a sizeable proportion (69.4%) of urban households report having electricity, compared to only 6.9% of rural households. Nationally, the most common sources of drinking water are tube wells or boreholes (22.2%), unprotected wells (20.3%), and water piped into yard or plot (17.4%). In rural areas, the most common sources of drinking water are wells, including protected, unprotected, and tube wells or boreholes. Urban households more often reported using water sources piped into their yard or plot (37.5%).

The most common toilet facilities reported in all households were open pits or pit latrines (36.6%) or pit latrines with slabs (32.2%). Nationally, the majority of households surveyed had natural floors (46.8%) or cement floors (48.7%). Taken as a whole, the average rural household has no electricity, draws their water from an unprotected well, and has a natural floor. The average urban household might have electricity, water piped in, and a cement floor.

Table 3. Household characteristics

Percent distribution of households by household characteristics, according to rural and urban designation (Zambia 2018).

Household characteristic	Urban	Rural	Total
	(1)	(2)	(3)
Electricity			
Yes	69.4	6.9	34.0
No	30.6	93.1	66.0
Source of drinking water			
Piped into dwelling	9.7	1.0	4.8
Piped into yard/plot	37.5	2.0	17.4
Public tap/standpipe	24.3	2.5	12.0
Tube well or borehole	10.8	31.2	22.2
Protected well	8.4	20.2	15.1
Unprotected well	8.5	29.3	20.3
Surface water	0.3	13.7	7.9
Other	0.5	0.2	0.3
Sanitation facilities			
Flush to sewer system	21.0	1.0	9.7
Flush to septic tank	18.5	1.5	8.9
Latrine (with slab or ventilated)	42.9	24.0	32.2
Open pit/latrine	15.9	52.5	36.6
No facility/bush/field	1.6	18.4	11.1
Other	0.2	2.5	1.5
Flooring material			

continued

Household characteristic	Urban	Rural	Total
	(1)	(2)	(3)
Natural floor	11.6	73.8	46.8
Dung	0.2	2.0	1.2
Palm/bamboo	0.0	1.7	1.0
Cement	84.2	21.7	48.7
Other	4.0	4.6	4.4
Number	916	3,261	4,177

Table 4 shows that nearly half of Zambian households possess a radio while two-thirds (68.7%) of households have a mobile phone.

Table 4. Household durable goods, livestock, and land ownership
Percent of households possessing various durable consumer goods, any livestock, and land ownership, by rural and urban designation (Zambia 2018).

Household characteristic	Urban	Rural	Total
	(1)	(2)	(3)
Radio	65.7	36.2	49.0
TV	65.8	13.0	35.9
Refrigerator	44.7	4.7	22.1
Mobile phone	88.6	53.5	68.7
Non-mobile phone	1.8	0.4	1.0
Land	14.2	70.2	45.9
Cattle/livestock	8.8	51.0	32.7
Bicycle	18.0	44.5	33.0
Motorcycle	2.4	3.2	2.9
Car	6.9	2.8	4.6
None	9.2	38.5	25.8
Number	916	3,261	4,177

Wealth index

The “wealth index” is used to present results in this survey and is a proxy measure of the relative standard of living. In the 2018 MIS, the wealth index is based on the reported household ownership of consumer goods and assets, household characteristics such as the type of household toilet facilities and available source of drinking water, and other characteristics that may relate to the household’s relative socioeconomic status. The wealth index was created by assigning a factor weight to each asset or characteristic generated through principal component analysis. The factors were summed for each household, creating a total score, which was subsequently ranked and divided into quintiles from one (lowest) to five (highest). The index was based on data from each household for the entire sample and the wealth index is presented for each set of indicators in the report.

Characteristics of women respondents

Eligible women ages 15 to 49 were interviewed using the women's questionnaire. **Table 5** shows that a majority (55.6%) of women are 15 to 29 years of age, and 53.7% live in rural areas. More than half of the women have less than secondary education (56.4%).

The women surveyed were mainly Protestants (58.3%) or Catholics (23.5%), and women most often cited belonging to either the Bemba (30.8%) or Tonga (16.0%) ethnic groups. A large percentage of respondents reported ethnic group as "Other" and the responses for this question varied widely, representing the diversity of Zambia's tribal groups.

Table 5. Background characteristics of women respondents
Distribution of women ages 15 to 49 years by background characteristics, unweighted (Zambia 2018).

Characteristic	Number	Percent
	(1)	(2)
Age		
15–19	646	15.6
20–24	769	23.0
25–29	646	17.0
30–34	524	13.8
35–39	494	14.0
40–44	387	10.3
45–49	214	6.2
Designation		
Rural	2,795	53.7
Urban	885	46.3
Province		
Central	246	11.5
Copperbelt	180	13.0
Eastern	629	4.1
Luapula	620	9.1
Lusaka	291	24.2
Muchinga	260	5.6
Northern	295	11.1
North-Western	266	4.5
Southern	255	10.8
Western	638	6.1
Education		
No education	721	15.7
Primary	1,652	40.7
Secondary	1,144	37.9
Higher	163	5.6
Religion		
Catholic	864	23.5
Protestant	2,058	58.3

continued

Characteristic	Number	Percent
	(1)	(2)
Muslim	9	0.4
Traditional	30	0.6
Other	719	17.1
Ethnic group		
Bemba	1,079	30.8
Tonga	375	16.0
Lunda	113	2.3
Luvale	131	2.5
Kaonde	90	3.5
Mbunda	102	1.1
Ngoni	174	7.8
Lozi	391	5.3
Chewa	380	7.1
Mambwe	124	4.6
Tumbuka	159	4.4
Other	562	14.7
Total	3,680	100.0

Chapter 3: Coverage of key malaria interventions—vector control

Overview of vector control

Vector control interventions are the primary method of reducing malaria transmission in Zambia. The principal interventions for vector control are LLINs, IRS, and, where applicable, larval source management delivered within the framework of integrated vector management. The NMESP 2017–2021 strives for universal coverage of vector control tools, primarily LLINs and IRS. These interventions complement each other in that universal coverage is defined as having either full coverage of LLINs or IRS within a household. The Zambia National Malaria Elimination Programme (NMEP) provides annual IRS campaigns in targeted areas to eligible structures as well as periodic mass ITN campaigns and routine ITN distribution channels to achieve the intended coverage levels. Throughout this chapter and the report, the terms LLINs, ITNs, and ever-treated nets are used interchangeably as virtually all nets currently available and used in Zambia are LLINs.

A national mass distribution campaign of ITNs was conducted in 2013–2014, during which 9,400,000 ITNs were distributed. Another 10,060,000 ITNs were distributed between 2017 and 2018 with all provinces receiving ITNs. Zambia has increased the number of districts in which IRS is deployed—from 15 districts in 2005–2006 to over 100 districts in the 2017–2018 spray season.

This chapter presents vector control coverage and use indicators for ITNs and IRS and compares results from 2018 to previous surveys. In the 2018 MIS, the use of ITNs was identified in each household by a complete net roster. The net roster identified and listed each mosquito net available in the house, contained questions ascertaining the nets' insecticide treatment status as well as questions about each individual that slept under a net the night before the survey. From this net roster method, the questionnaire gathered data on the use of nets the night before the survey for children, pregnant women, and all other household members.

Ownership of mosquito nets and ITNs in 2018

Table 6 shows ownership of mosquito nets and ITNs in Zambia. The survey found that 80.4% of households in Zambia own a mosquito net, 80.1% of households have at least one ITN, and 54.4% have more than one ITN. The average number of ITNs per household is 1.7. The ITN ownership in rural areas was 86.9% and in urban areas 72.0%. Rural areas also reported a slightly higher average number of ITNs per household than urban areas due to the emphasis of distribution channels towards areas with more malaria. Many areas of Lusaka District, for example, are infrequently targeted for LLIN distributions as the malaria burden is very low and largely received (imported) from other areas of Zambia. Eastern Province had the highest ITN ownership rates, with 92.4% of households reporting at least one ITN and the average household reporting 2.0 ITNs. Copperbelt Province has the lowest net ownership rate with 55.3%. **Table 7** presents a comparison of household ownership of at least one net, an ever-treated net, an ITN, and an LLIN. As Zambia implements the global policy on LLINs, the distinction between ITNs and LLINs may be weak due to a lack of recognition of brands used to identify nets as long-lasting during survey interviews.

Table 6. Household 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 2018).

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 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)
Designation							
Urban	72.0	50.2	1.6	71.5	50.0	1.6	916
Rural	86.9	57.8	1.8	86.7	57.7	1.8	3,261
Province							
Central	82.8	51.2	1.8	82.8	51.0	1.8	292
Copperbelt	55.3	37.8	1.2	55.3	37.8	1.2	284
Eastern	92.5	68.1	2.0	92.4	68.1	2.0	655
Luapula	88.4	71.7	2.2	88.2	71.6	2.2	666
Lusaka	81.7	55.1	1.7	80.7	55.1	1.7	307
Muchinga	89.2	64.8	1.9	89.2	64.8	1.9	304
Northern	90.5	64.6	2.0	90.5	64.3	2.0	299
North-Western	88.8	63.2	2.1	87.9	62.7	2.1	293
Southern	81.1	48.4	1.6	80.9	48.4	1.6	295
Western	85.1	47.3	1.6	84.7	46.9	1.6	782

continued

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 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)
Wealth index							
Lowest	81.0	40.9	1.4	80.8	40.9	1.4	836
Second	82.6	50.5	1.6	82.6	50.5	1.6	835
Middle	83.8	56.7	1.8	83.5	56.6	1.8	836
Fourth	78.6	54.4	1.7	78.4	54.3	1.7	835
Highest	78.9	59.7	1.9	78.3	59.5	1.8	835
Total	80.4	54.5	1.7	80.1	54.4	1.7	4,177

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

Table 7. Household possession of long-lasting insecticide-treated nets (LLINs)
Percentage of households with at least one and more than one LLIN, and average number of LLINs per household, by background characteristics (Zambia 2018).

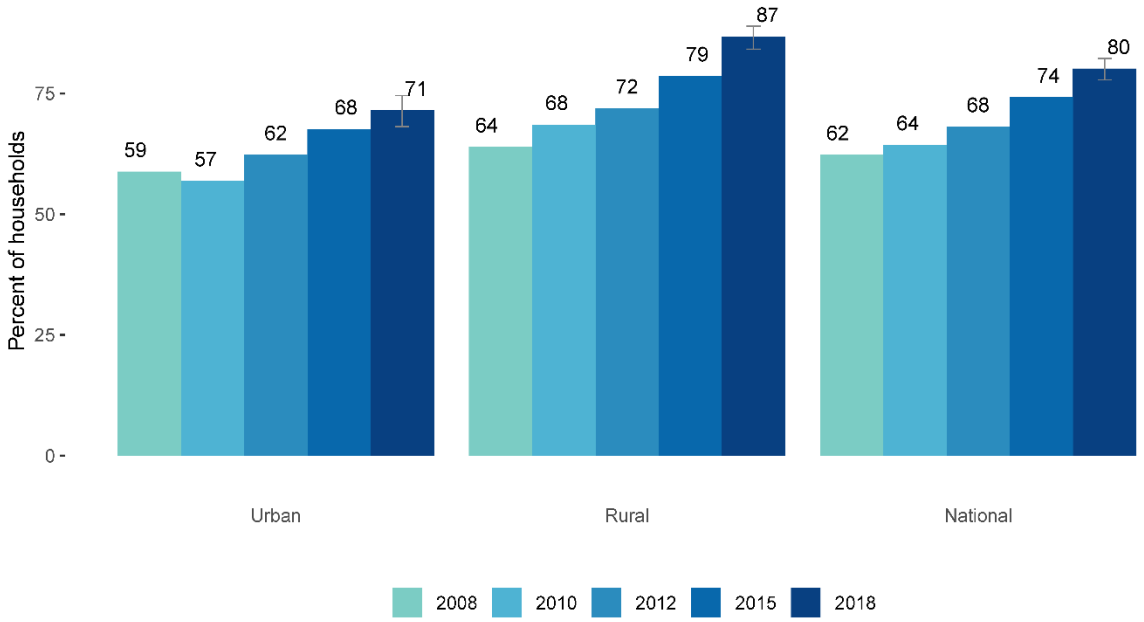
Background characteristic	Percentage of households that have at least one net	Percentage of households that have at least one ever-treated net	Percentage of households that have at least one ITN	Percentage of households that have at least one LLIN[1]	Number of households
	(1)	(2)	(3)	(4)	(5)
Designation					
Urban	72.0	71.5	71.5	66.1	916
Rural	86.9	86.7	86.7	77.4	3,261
Province					
Central	82.8	82.8	82.8	75.8	292
Copperbelt	55.3	55.3	55.3	53.2	284
Eastern	92.5	92.4	92.4	79.4	655
Luapula	88.4	88.2	88.2	86.8	666
Lusaka	81.7	80.7	80.7	77.5	307
Muchinga	89.2	89.2	89.2	79.8	304
Northern	90.5	90.5	90.5	88.5	299
North-Western	88.8	87.9	87.9	86.1	293
Southern	81.1	80.9	80.9	48.8	295
Western	85.1	84.7	84.7	76.4	782
Wealth index					
Lowest	81.0	80.8	80.8	72.8	836
Second	82.6	82.6	82.6	76.7	835
Middle	83.8	83.5	83.5	73.8	836
Fourth	78.6	78.4	78.4	67.7	835
Highest	78.9	78.3	78.3	72.8	835
Total	80.4	80.1	80.1	72.5	4,177

[1] A long-lasting insecticide-treated net is a factory-treated net that does not require any treatment, obtained within the last three years.

Trends in household possession of at least one ITN

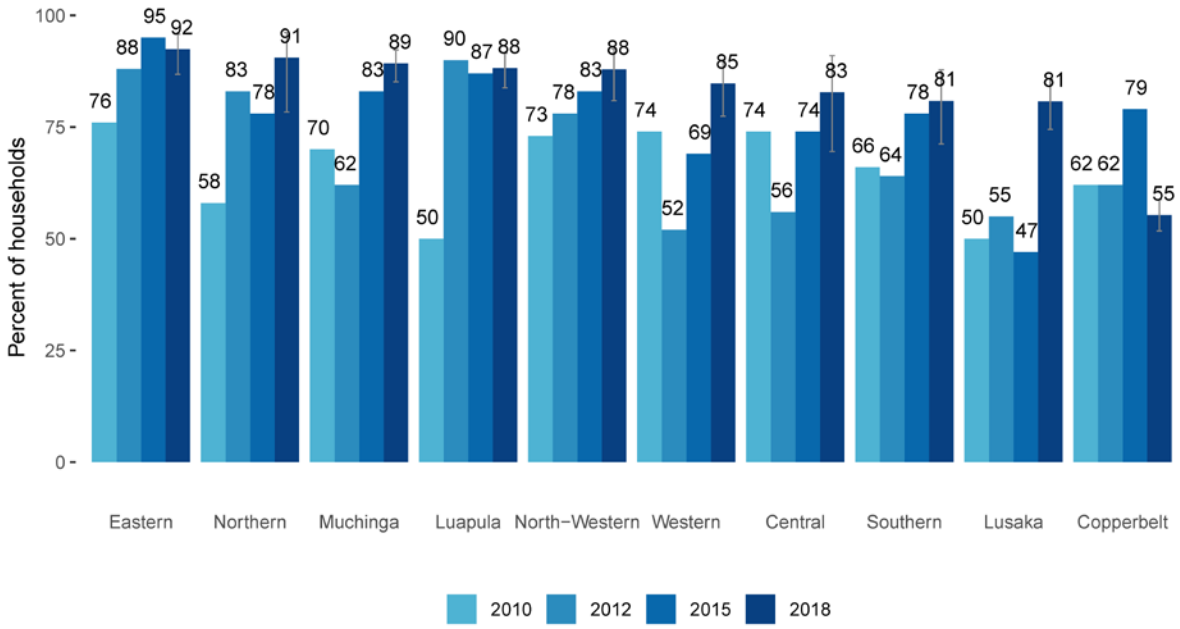
Overall household-level possession of at least one ITN has risen nationally and in rural areas since 2008 **(Figure 2)**. Coverage has risen about 20% since 2008 in rural areas, from 64% in 2008 to 87% in 2018. In urban areas, household-level possession of at least one ITN increased slightly in 2018 compared to 2015, going from 68% in 2015 to 71% in 2018. When compared to 2008, there has been a general increase in coverage in urban areas but this increase has not matched the increase reported in rural areas.

Figure 2. Household possession of at least one insecticide-treated net (Zambia 2008–2018)



At the provincial level, household-level possession of at least one ITN increased or stayed approximately the same in nine of ten provinces in 2018 compared to 2015. However, Copperbelt Province had a decrease in ownership from 79% in 2015 to 55% in 2018 **(Figure 3)**. The largest ITN distribution campaign ever to occur in Zambia occurred in 2017 and early 2018, just prior to the MIS 2018, contributing to the uniformly high coverage levels reported across nearly all areas of the country by 2018.

Figure 3. Household ownership of at least one insecticide-treated net by province (Zambia 2010–2018)



Use of ITNs by children and women of reproductive age

The results show that 69.3% of children under five years of age were reported to have slept under a mosquito net the night before the survey and 69.0% of children under five years of age were reported to have slept under an ITN **(Table 8)**. In general, the results showed a higher ITN usage among younger age groups (one year old) compared to older children, while there was no reported difference by gender. The proportion of children under five that slept under an ITN was higher in rural areas (77.2%) than urban areas (56.5%), likely due to greater availability of ITNs in rural areas. Muchinga Province had the highest usage of ITNs in this age group at 86.5% and Copperbelt Province had the lowest at 52.1%. The highest wealth quintile reported the least use of ITNs among children at 60.4%, while the lowest wealth quintile had the most at 77.7%.

Table 8. Use of mosquito nets by children

Percentage of children under age five years of age who, the night before the survey, slept under a mosquito net, slept under an ever-treated net, and slept under an insecticide-treated net (ITN), by background characteristics (Zambia 2018).

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 months)				
<12	76.2	75.9	75.9	598
12-23	70.0	69.4	69.4	683
24-35	70.9	70.6	70.6	584
36-47	69.3	69.1	69.1	709
48-59	62.4	62.3	62.3	788

continued

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)
Sex				
Female	69.1	68.9	68.9	1,657
Male	69.5	69.1	69.1	1,705
Designation				
Urban	56.8	56.5	56.5	630
Rural	77.4	77.2	77.2	2,732
Province				
Central	71.1	70.6	70.6	221
Copperbelt	52.1	52.1	52.1	189
Eastern	82.2	82.2	82.2	532
Luapula	79.9	79.9	79.9	595
Lusaka	53.2	53.2	53.2	225
Muchinga	86.9	86.5	86.5	236
Northern	77.8	77.8	77.8	270
North-Western	69.3	69.0	69.0	264
Southern	79.4	78.7	78.7	223
Western	76.5	75.0	75.0	607
Wealth index				
Lowest	77.9	77.7	77.7	676
Second	70.9	70.9	70.9	727
Middle	77.1	76.5	76.5	747
Fourth	69.3	69.3	69.3	660
Highest	60.7	60.4	60.4	552
Total	69.3	69.0	69.0	3,362

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

In 2018, 65.3% of women reported sleeping under a net the night before and a very similar number reported usage with an insecticide-treated net (64.9%) **(Table 9)**. Muchinga Province reported the highest percentage of ITN use among women at 83.7%, while the lowest was Lusaka with 49.9%. Usage by wealth quintile was generally higher in the lower wealth quintiles compared to the higher wealth quintiles. Among women who reported being pregnant during the survey, 71.1% reported having slept under an ITN the previous net, slightly higher than the coverage among all women of reproductive age. Rural women were more likely to report ITN use the night before the survey than urban women and women in the lowest wealth quintile were also more likely to use an ITN.

Table 9. Use of mosquito nets by women ages 15 to 49 years

All women ages 15 to 49 years and pregnant women 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 2018).

	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	Percent of pregnant women who slept under a net previous night	Percent of pregnant women who slept under an ever-treated net previous night	Percent of pregnant women who slept under an ITN previous night	Total pregnant women
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Designation								
Urban	57.3	56.7	56.6	1,016	63.2	63.1	63.1	34
Rural	72.3	72.1	72.1	3,083	74.1	74.1	74.1	198
Province								
Central	58.6	58.4	58.4	299	*	*	*	18
Copperbelt	59.0	59.0	59.0	201	*	*	*	13
Eastern	75.0	74.9	74.9	686	71.6	71.6	71.6	29
Luapula	77.5	77.0	77.0	666	81.9	81.9	81.9	59
Lusaka	50.7	49.9	49.9	336	*	*	*	9
Muchinga	84.1	83.7	83.7	275	92.9	92.9	92.9	25
Northern	76.1	76.1	76.1	323	*	*	*	21
North-Western	65.0	64.8	64.8	349	*	*	*	11
Southern	77.2	77.0	77.0	265	*	*	*	12
Western	68.0	66.8	66.7	699	77.6	77.6	77.6	35
Wealth index								
Lowest	70.4	70.1	70.1	657	87.1	87.1	87.1	59
Second	67.5	67.5	67.5	735	79.0	79.0	79.0	55
Middle	72.2	71.8	71.8	832	72.8	72.8	72.8	47
Fourth	65.8	65.8	65.8	869	62.1	62.1	62.1	41
Highest	60.6	59.8	59.8	1,006	56.8	56.8	56.8	30
Total	65.3	64.9	64.9	4,099	71.1	71.1	71.1	232

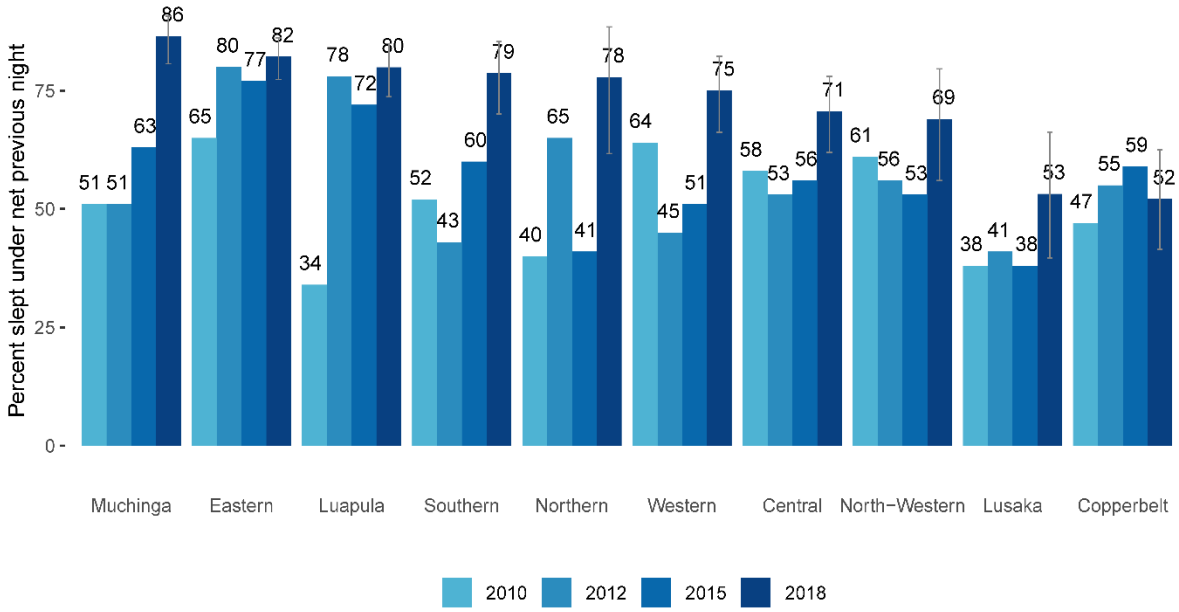
Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been supressed.

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

Trends in ITN use among children and women of reproductive age 2006–2018

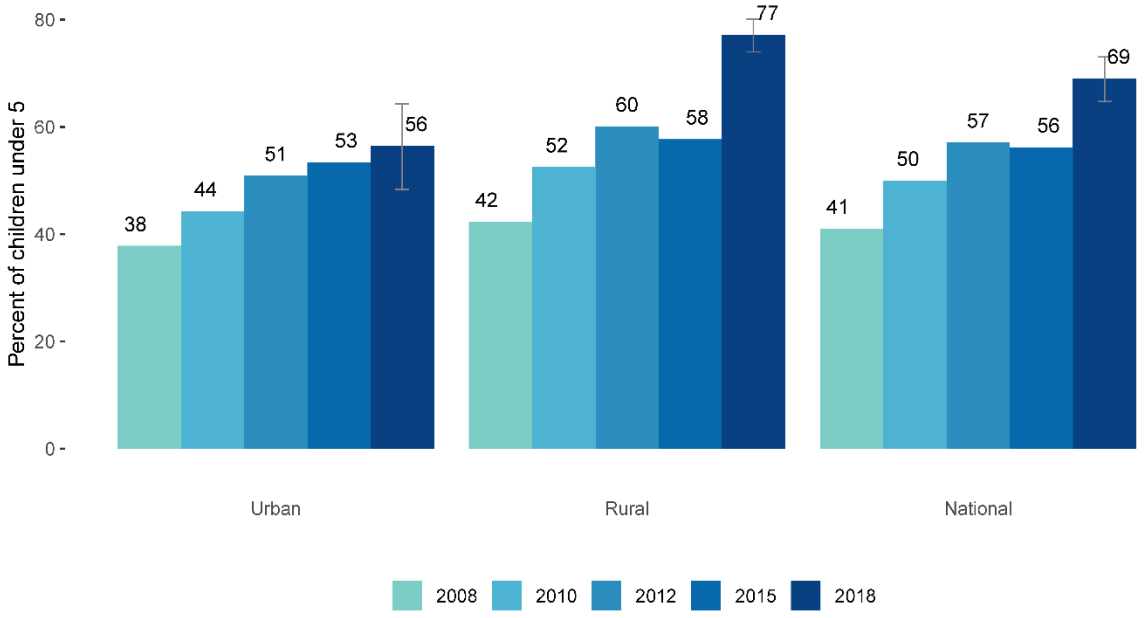
ITN use among children has varied by province since 2010. All provinces except Copperbelt had an increase in usage of ITNs in 2018 compared to 2015, with the largest increase between 2015 (41%) and 2018 (78%) in Northern Province **(Figure 4)**.

Figure 4. Insecticide-treated net use by children under age five years by province (Zambia 2010–2018)



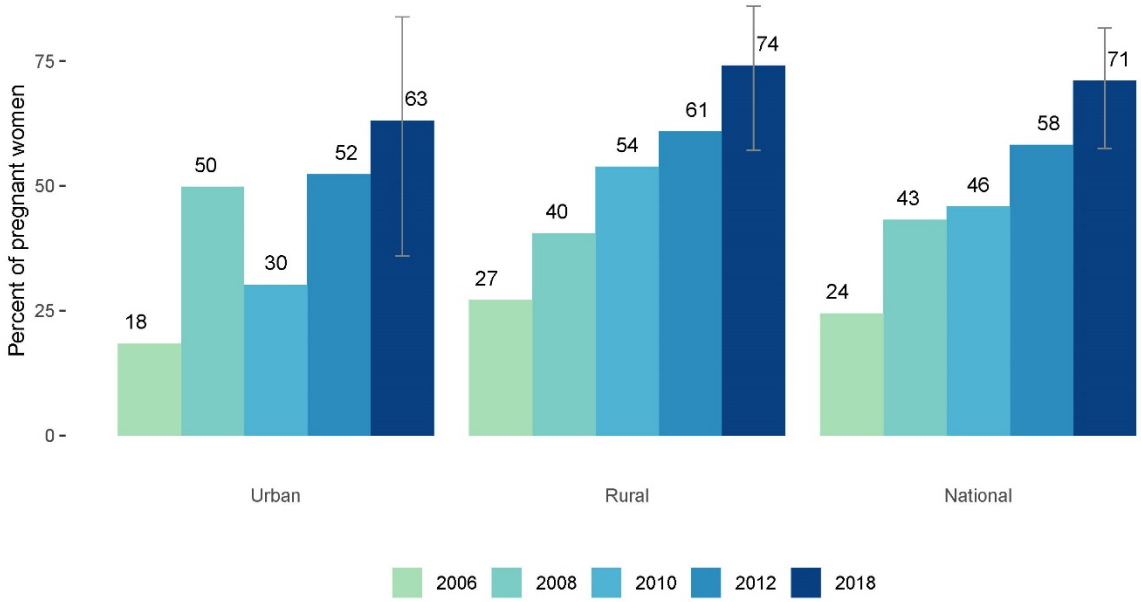
Use of ITNs the previous night among children in rural and urban areas also tended to increase in the past ten years. The largest increase in ITN use among children between 2008 and 2018 was observed in rural areas, with the biggest increase between surveys occurring from 2015 (58%) to 2018 (77%).

Figure 5. Insecticide-treated net use by children under age five years by rural and urban (Zambia 2008–2018)



Pregnant women also reported a similar increase in ITN use between 2006 and 2018 **(Figure 6)**. Rural areas have experienced a steady increase since 2006 while the change in coverage in urban areas has been mixed. Between 2010 and 2018, all areas rural or urban experienced an increase in ITN use for pregnant women.

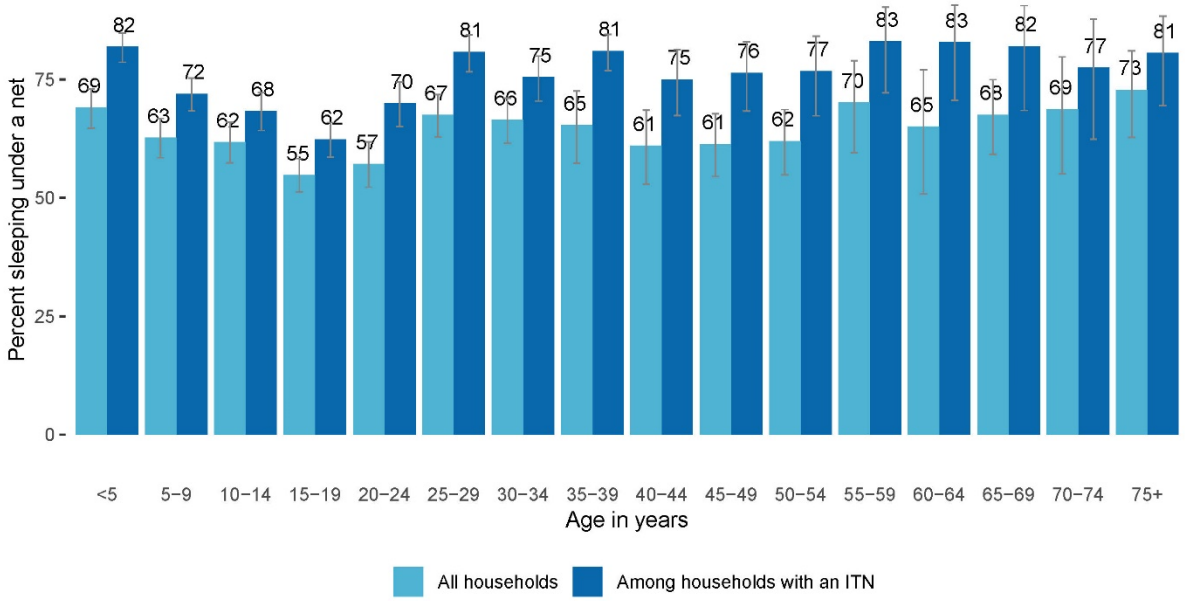
Figure 6. Insecticide-treated net use among pregnant women (Zambia 2006–2018)



Equity in ITN ownership and use by age, gender, rural/urban status, and wealth

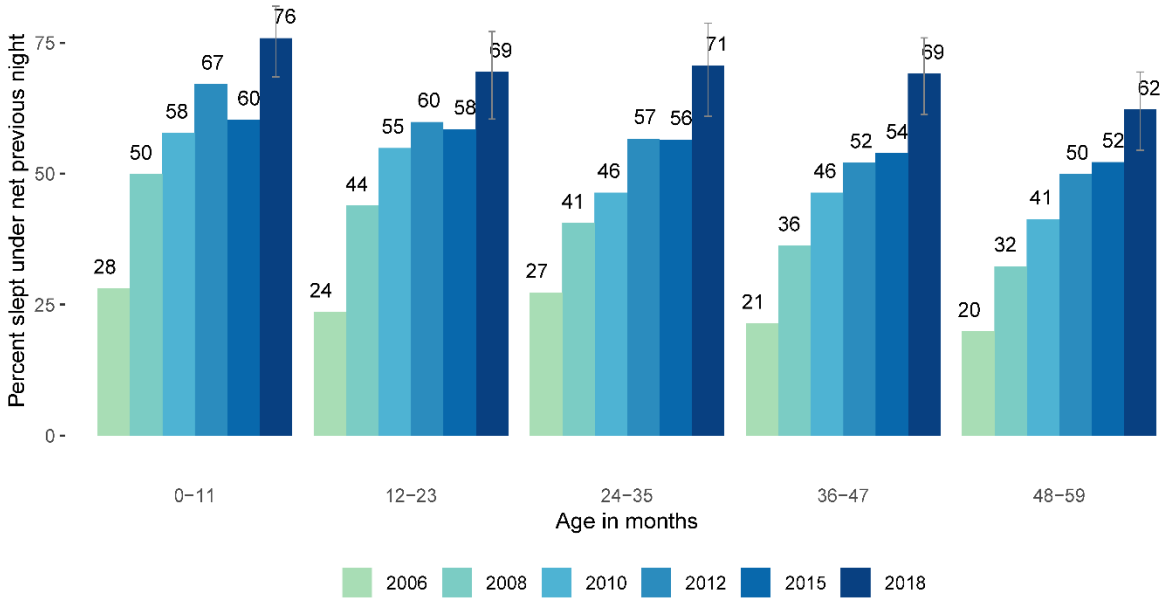
As has been reported in previous MISs in Zambia, ITN use among older children and young adults between the ages of 5 and 19 is consistently reported as the lowest among all age groups. The 2018 MIS shows that ITN usage declined from age 5 until around age 19 and then began to rise again, reaching approximately 70% usage in people over age 30 **(Figure 7)**. This pattern remains even when considering only those households who reported at least one net.

Figure 7. Insecticide-treated net use among all household members by age (Zambia 2018)



ITN use among children under age five has been increasing over the twelve years, especially among the youngest children under 12 months of age, who had the highest use at 76% in 2018, and the 48–59 month age group, reporting the least use at 62% in 2018 **(Figure 8)**. While all age groups showed an increase, the largest increase in the during the period between 2006 and 2018 was observed in the 0-11 months and 36-47 months age groups.

Figure 8. Insecticide-treated net use by children under age five years by age (Zambia 2006–2018)



ITN use in children under five by wealth quintile has somewhat reversed in equity since 2010, with lower wealth quintiles originally having less use of ITNs and but now having greater use of ITNs **(Figure 9)**. In contrast, the higher wealth quintiles now have lower levels of use. Between 2010 and 2018, the highest increase in ITN use was observed in the lowest wealth quintile, from 44% in 2010 to

78% in 2018, while the lowest change was observed in the highest wealth quintile from 51% to 60% from 2010 to 2018. This could be attributed to distribution strategies which have targeted poorer, more malarious households in rural areas.

Figure 9. Insecticide-treated net use by children under age five years by wealth quintile (Zambia 2010–2018)

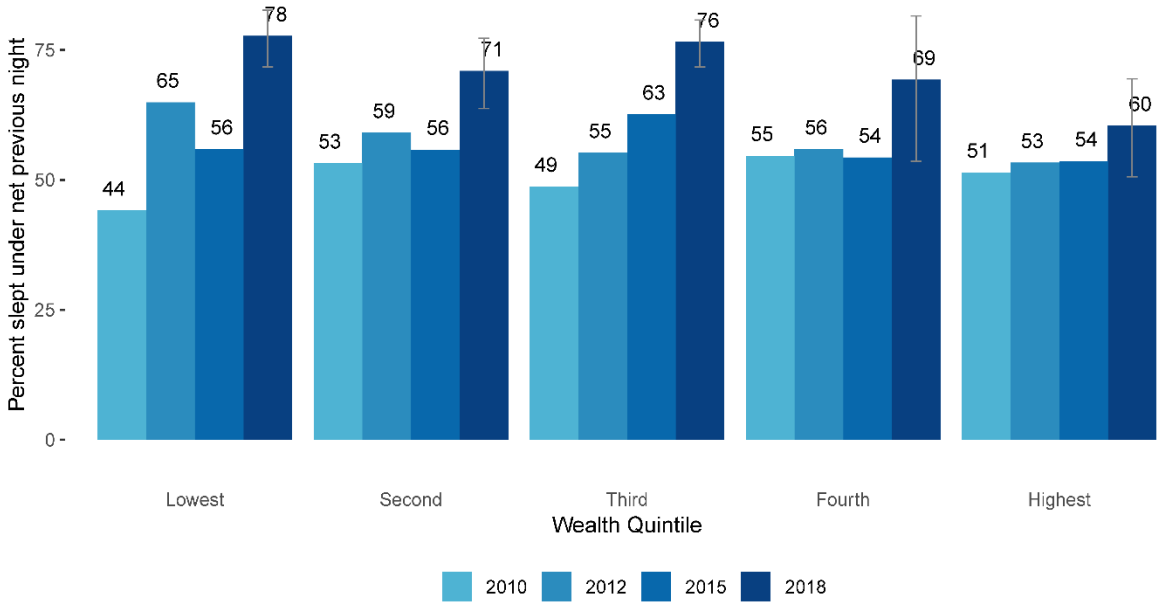
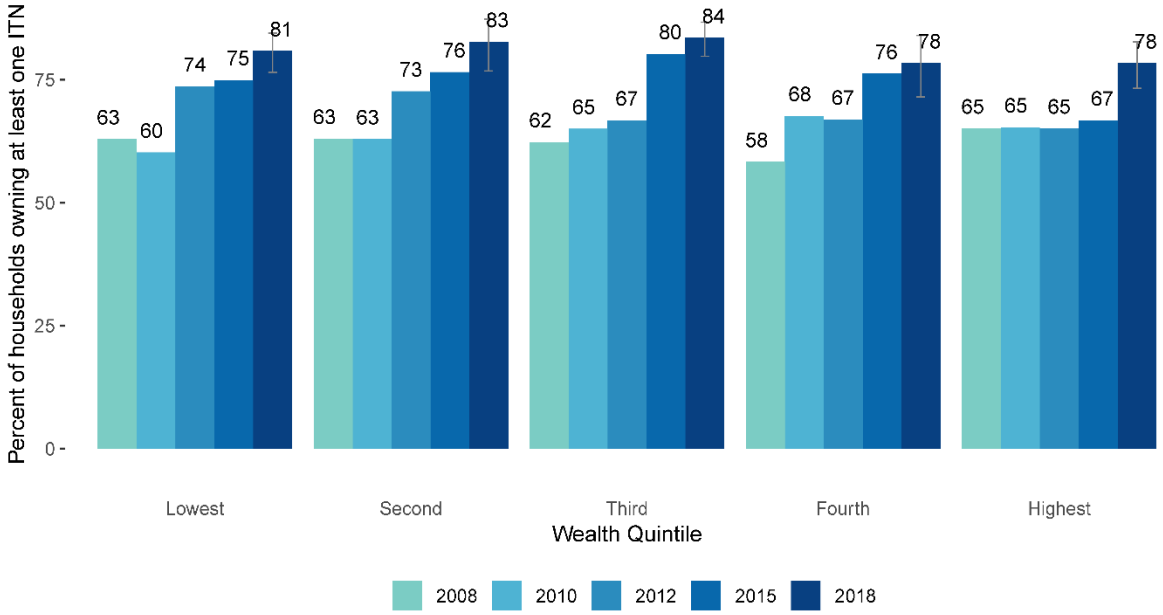


Figure 10 shows household possession of at least one ITN by wealth quintile from 2008 to 2018. Across wealth status, possession of at least one ITN has risen over time while at the same time remaining balanced across quintiles.

Figure 10. Household ownership of at least one insecticide-treated net by wealth quintile (Zambia 2008–2018)



Full coverage of ITNs and use among all household members

Full coverage, including the availability and use of ITNs among all households and their members, is a priority for the NMEP. In order to assess progress in achieving full coverage, this section examines the availability of ITNs to cover all sleeping spaces in households and the use of ITNs among all household members beyond just those most vulnerabl, such as children under five years of age and pregnant women.

Two indicators are presented in **Figure 11** to reflect the level of ITN penetration within households. These are the percentage of households with an ITN to sleeping space ratio of 1:1 and the percentage of households with at least one ITN per two household members. To assess full coverage within a household, the first relies on the number of sleeping spaces reported and the number of ITNs reported available within the household. The second relies on the number people in the household and the number of ITNs reported available within the household. When considering possession of at least one net and ITN, full coverage of ITNs within the household, and ITN use among children in households and all household members, the largest drop occurs between having one ITN and having sufficient ITNs to cover all sleeping spaces or all household members. **Figure 11** is based on denominators of households, not people, so the indicator for use among children reflects the percentage of households where all children under age five in the household reported sleeping under an ITN the previous night. In comparing all these, the largest gap in ITN service delivery exists with availability of ITNs to support the needs of all household members.

Figure 11. Cascade of net and ITN possession, full coverage, and use among children and all household members by national, urban, and rural areas (Zambia 2018)

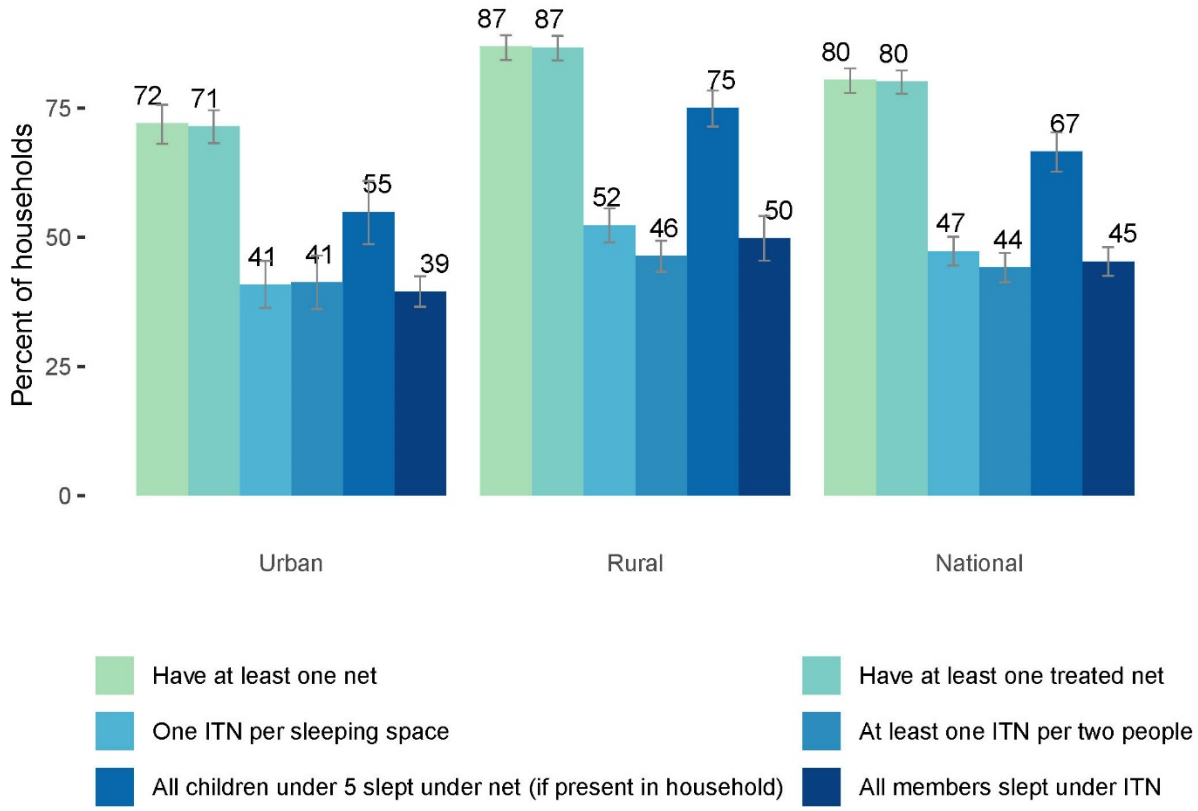
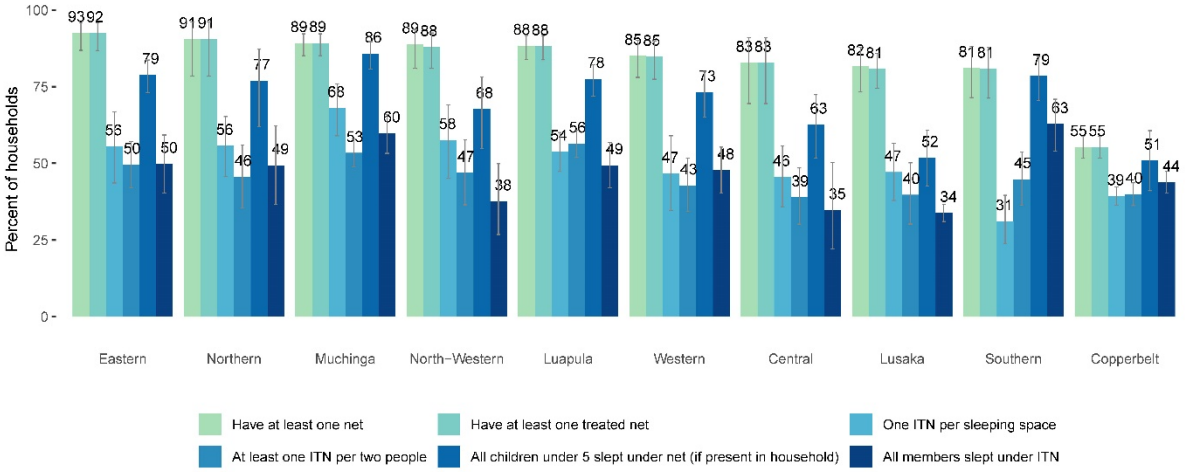


Figure 12 presents the cascade of possession of at least one net, one ITN, full coverage of ITNs within the household, and ITN use among children and all household members by province. The largest drop occurs between having one ITN and having sufficient ITNs to reach the full coverage

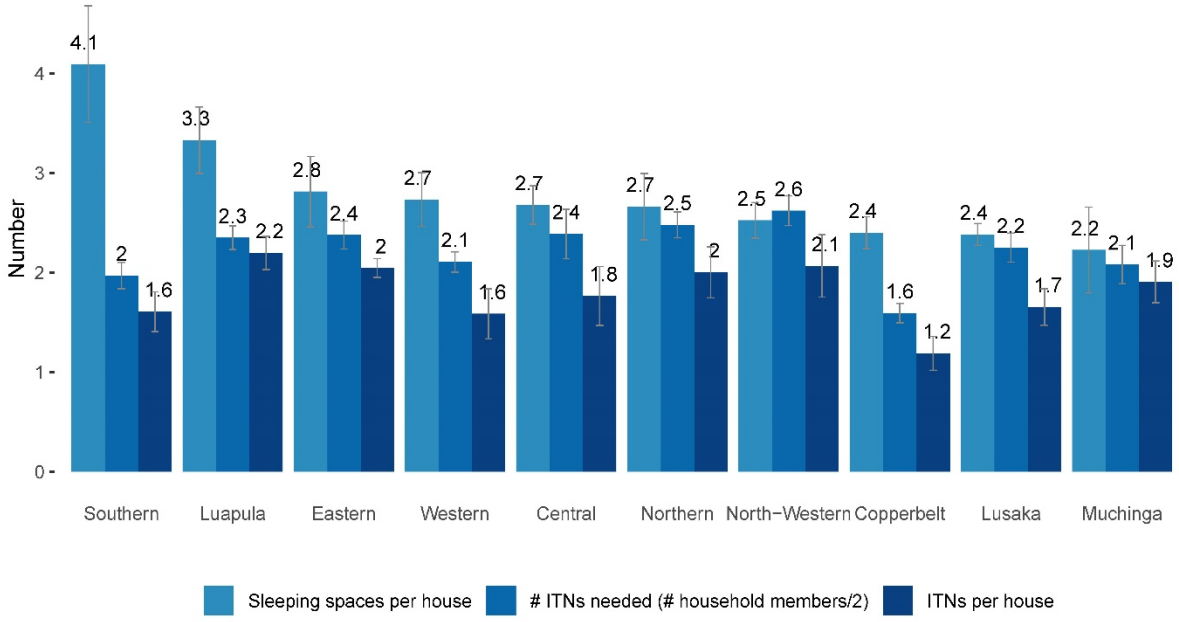
indicators, whether it be to cover all sleeping spaces, having at least one ITN for every two household members or having use of ITNs among all household members. The drop in coverage from households with at least one ITN per household and the full coverage indicators is consistent across provinces but with Central, Eastern, and Southern provinces having the largest drops. Copperbelt Province reported the lowest coverage of having at least one ITN but does not have the lowest level of full coverage indicators suggesting that when nets are available in Copperbelt they are covering the households well. As in **Figure 11**, the use of ITNs among children under age five in **Figure 12** reflects the percentage of households with all children under five in the household sleeping under an ITN the previous night.

Figure 12. Cascade of net and ITN possession, full coverage, and use among children, and all household members by province (Zambia 2018)



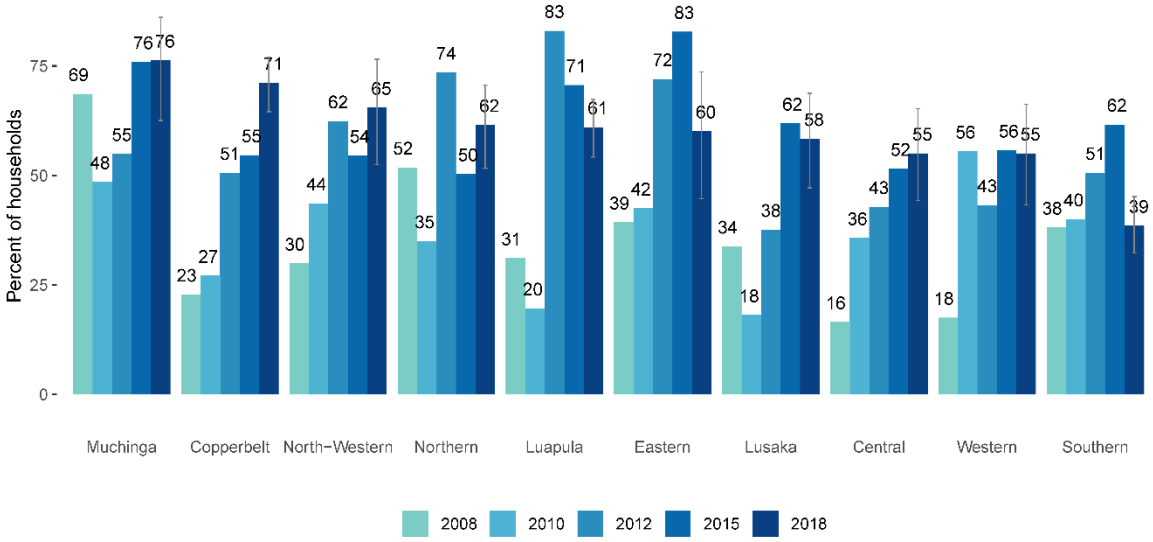
The indicator of at least one ITN per sleeping space was reported at similar levels as the indicator of one ITN per two household members **(Figure 11 and 12)**. This was largely due to higher numbers of sleeping spaces reported in a few provinces, notably Southern and Luapula **(Figure 13)**. For all provinces except North-Western Province, the average number of sleeping spaces was reported as higher than the number of ITNs needed to meet the needs of one ITN per two household members. Most important, the provinces closest to reporting a sufficient average number of ITNs within households to meet the full coverage target of one ITN per two household members were Luapula and Muchinga provinces.

Figure 13. Average number of sleeping spaces, number of ITNs needed to meet the needs of one ITN per two household members, and average number of ITNs per household by province (Zambia 2018)



From 2015 to 2018, four provinces—North-Western, Northern, Copperbelt, and Central—reported increases in the percentage of households with an ITN to sleeping space ratio of at least one while Southern, Lusaka, Eastern, and Luapula reported decreases in the ITN to sleeping space ratio **(Figure 14)**. Muchinga and Western provinces largely remained unchanged. Muchinga Province had the highest percentage of households with sufficient ITNs, as measured by having a household ITN to sleeping space ratio of at least one to one in 2018 of 76%, while the lowest was Southern Province with 39%.

Figure 14. Percentage of households with an insecticide-treated net-to-sleeping-space ratio of least one to one (Zambia 2008–2018)



Nearly 64% (63.6%) of all household members slept under an ITN the night before the survey **(Table 10)**. Females (65.1%) reported a slightly higher ITN use than males (62.0%)**.** The highest ITN use

among all household members was reported in Muchinga Province with 80.7% of members having used an ITN the night prior to the survey. The lowest was Lusaka Province with 48.3% ITN use among all household members. Rural areas reported a higher use of ITNs among all household members at 69.7% than urban areas, which had 54.8%. Usage by wealth status was slightly higher among poorer households and was reported as 65.7% (lowest), 66.6% (second), 69.9% (middle), 63.3% (fourth), and 59.2% (highest) by quintile.

Table 10. Use of mosquito nets among all household members

Among all household members, the percentage 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 2018).

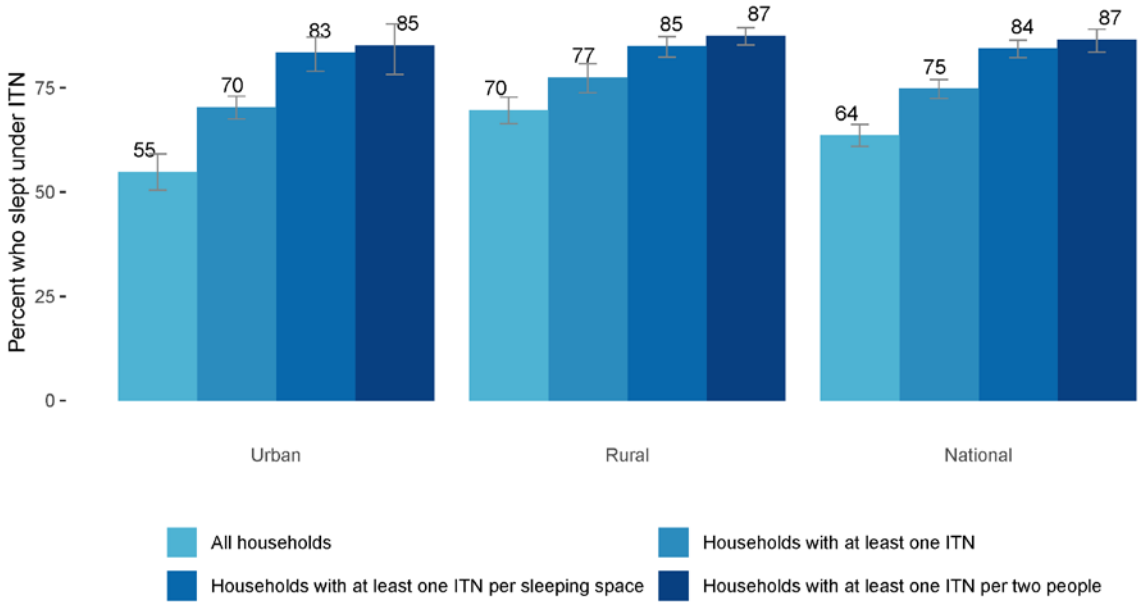
Background characteristic	Percentage of all household members who slept under a net last night	Percentage of all household members who slept under an ever-treated net last night	Percentage of all household members who slept under an ITN[1] last night	Number of all household members
	(1)	(2)	(3)	(4)
Sex				
Female	65.4	65.1	65.1	9,636
Male	62.3	62.0	62.0	8,748
Designation				
Urban	55.3	54.8	54.8	3,845
Rural	69.8	69.7	69.7	14,539
Province				
Central	58.0	57.9	57.9	1,358
Copperbelt	60.0	59.7	59.7	889
Eastern	71.5	71.5	71.5	2,994
Luapula	74.0	73.5	73.5	3,124
Lusaka	48.7	48.3	48.3	1,337
Muchinga	81.0	80.7	80.7	1,244
Northern	70.5	70.4	70.4	1,510
North-Western	61.3	61.0	61.0	1,508
Southern	75.9	75.6	75.6	1,180
Western	67.8	67.0	66.9	3,240
Wealth index				
Lowest	65.9	65.7	65.7	3,115
Second	66.6	66.6	66.6	3,539
Middle	70.1	69.9	69.9	3,905
Fourth	63.4	63.3	63.3	4,012
Highest	59.8	59.2	59.2	3,813
Total	63.9	63.6	63.6	18,384

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

Sufficient availability of ITNs within a household is essential for increased use among all household members. **Figure 15** suggests high use of ITNs (>85%) could be obtained among all household members if sufficient ITNs are available in the household. Among all households, regardless of ITN possession, 64% of household members reported using an ITN. If we exclude households with no ITNs, use among household members increases to 75%. Among households with at least one ITN per sleeping space, 84% of all household members slept under an ITN the previous night. Where

households reported having at least one net per two people, 87% of household members also reported having slept under an ITN.

Figure 15. Percentage of household members using an ITN the night before the survey by level of household ownership of ITNs (Zambia 2018)



Households sprayed in the previous 12 months

Indoor residual spraying (IRS) is another key vector control intervention for reducing malaria transmission. It is targeted to kill female, anopheline mosquitoes who primarily bite and subsequently rest indoors. IRS is applied to the interior walls of household structures in spray campaigns that set high operational coverage targets in targeted areas to achieve maximum impact (typically a minimum of 85% of eligible structures in a local area). Sampling of households in surveys such as the MIS is not necessarily designed to understand targeted area operational coverage but does provide a wider picture of population-based coverage at provincial and national levels.

IRS involves government or, in some cases, privately organised spray teams who identify target and eligible structures for IRS campaigns. In Zambia, IRS campaigns are ideally organised just prior to the rainy season, and before anopheline mosquito populations surge. The MIS provides estimates of coverage, reported source of the spray campaigns, and the length of time in months since the spraying occurred.

The 2018 MIS reported 34.8% of Zambian households to have been sprayed in the previous 12 months **(Table 11)**. Rural areas reported a higher spray coverage (43.2%), than urban areas (23.8%). Northern Province had the highest coverage at 64.9% while Lusaka Province had the lowest at 19.0%. IRS coverage was highest among the lowest wealth quintile and lowest amongst the highest wealth quintile. This reflects the targeting of more malarious, rural, and usually least wealthy areas of the country. The public sector was responsible for the majority of spraying in most areas. North-Western Province reported the highest percentage of private sector IRS with 16.7%. Only small amounts of private sector spraying (<2%) were conducted in other provinces.

The average number of months between the time that IRS activities were conducted and when the survey was held ranged from 3.3 to 6.4 by province. Muchinga, Luapula, and Northern provinces reported the longest period of time since IRS with 6.4, 6.2, and 6.0 months, respectively, corresponding with spraying at the onset of the rains in October–November. Copperbelt and North-

Western province had on average been sprayed most recently, 3.3 months since the survey, corresponding to spraying in the middle of the rainy season.

Table 11. Indoor residual spraying (IRS)

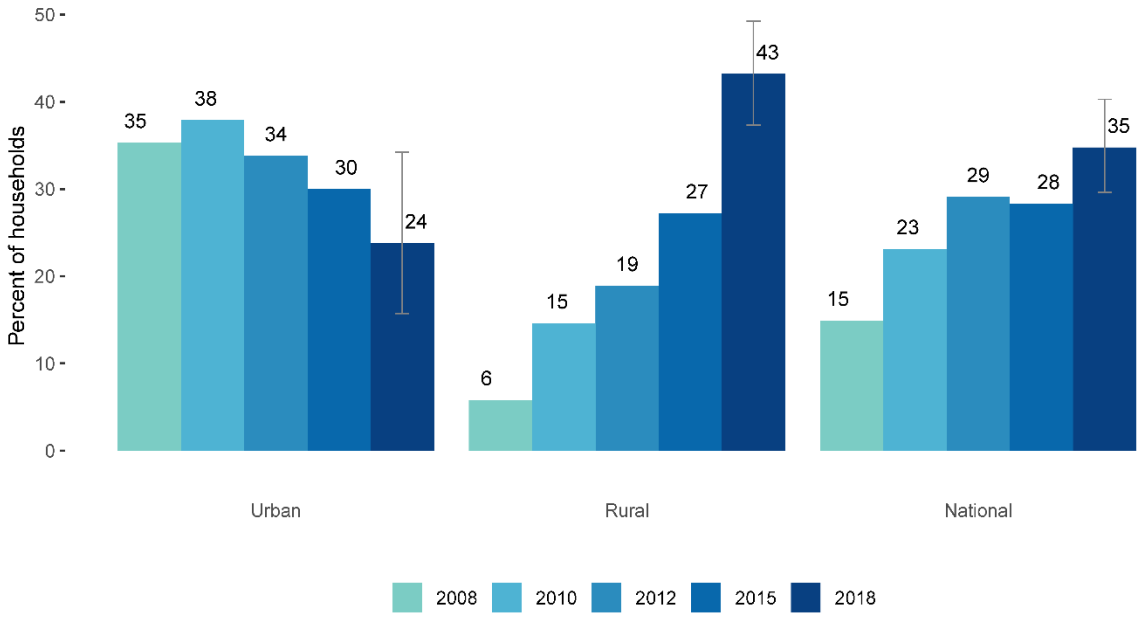
Among all households surveyed, the percentage of households reporting indoor residual spraying in the previous 12 months, and among households that reported spraying, the percentage that reported that the spraying was conducted by public sector and private agents and the average number of months that spraying was conducted prior to the survey, by background characteristics (Zambia 2018).

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 public sector	Percentage sprayed by private agents	Average number of months ago house sprayed	
	(1)	(2)	(3)	(4)	(5)	(6)
Designation						
Urban	23.8	916	96.2	0.3	4.5	283
Rural	43.2	3261	97.7	1.8	5.3	1,470
Province						
Central	19.9	292	97.0	1.9	5.8	55
Copperbelt	22.3	284	99.0	1.0	3.3	60
Eastern	53.5	655	99.9	0.0	5.2	371
Luapula	64.2	666	99.2	0.0	6.0	434
Lusaka	19.0	307	90.6	0.4	4.4	73
Muchinga	45.4	304	100.0	0.0	6.4	120
Northern	64.9	299	99.7	0.3	6.2	190
North-Western	47.4	293	83.3	16.7	3.3	129
Southern	31.3	295	97.7	0.8	4.1	87
Western	30.0	782	99.8	0.2	4.1	234
Wealth index						
Lowest	42.5	836	99.7	0.0	5.5	341
Second	49.5	835	100.0	0.0	5.2	400
Middle	37.8	836	99.0	0.6	5.1	371
Fourth	38.9	835	99.4	0.6	5.2	365
Highest	22.8	835	89.9	4.6	4.5	276
Total	**34.8**	**4177**	**97.2**	**1.4**	**5.1**	**1,753**

Trends in IRS coverage

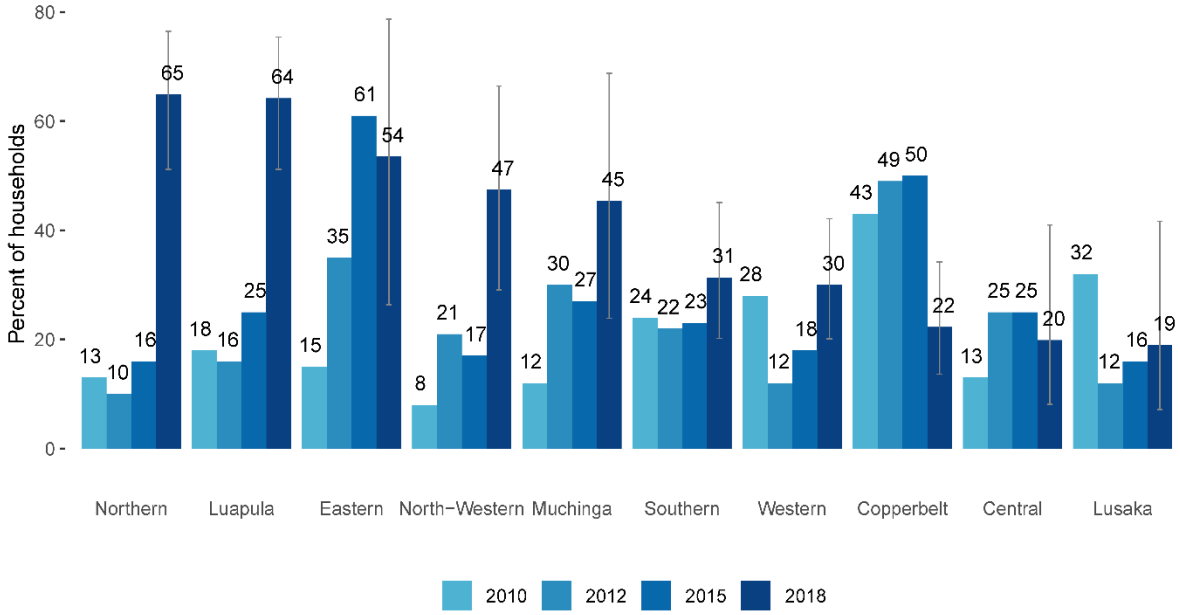
Nationally, reported IRS coverage rates have increased from 15% in 2008 to 35% in 2018 **(Figure 16)**. This increase is more pronounced in rural areas, which increased from 6% in 2008 to 43% in 2018. In contrast, IRS in urban areas decreased from a peak of 38% in 2010 to a low of 24% in 2018.

Figure 16. Households sprayed within the previous 12 months (Zambia 2008–2018)



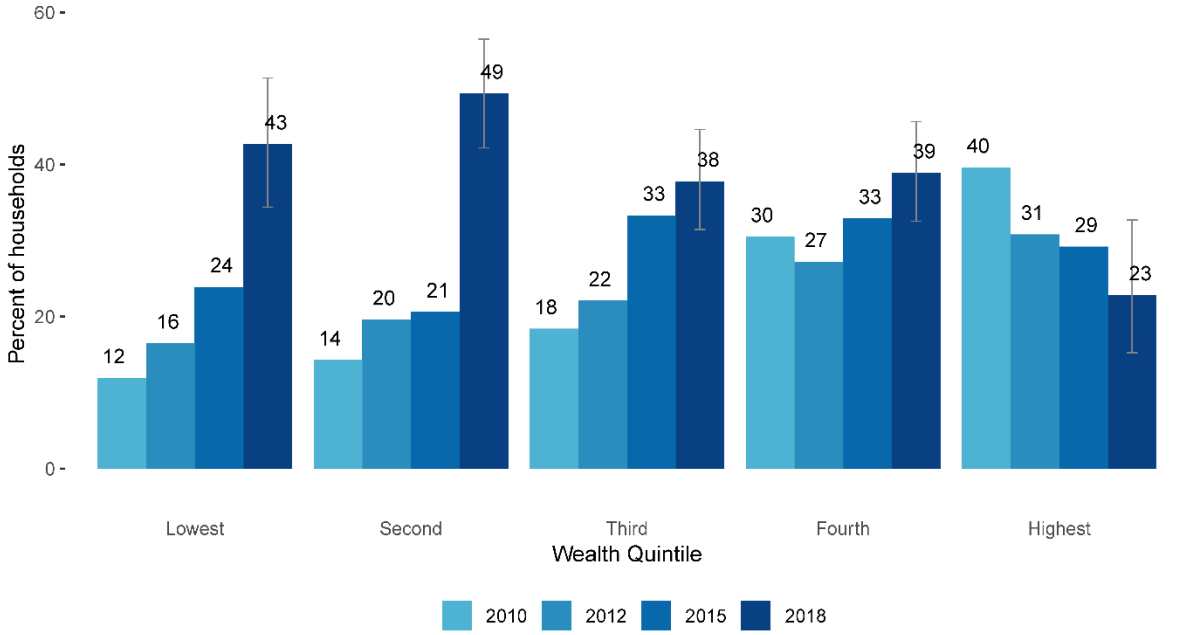
Since 2010, IRS coverage has varied by province **(Figure 17)**. Luapula and Northern provinces reported the highest coverage in 2018 and the overall largest increase in IRS coverage since 2010. Nearly all provinces reported an increase in IRS coverage since 2015 with the exception of Eastern, Copperbelt, and Central. Copperbelt reported the largest drop in IRS coverage since 2015 from 50% of households sprayed to 22% in 2018. It should be noted that the level of IRS coverage in Copperbelt reported as sprayed by the private sector dropped considerably in 2018 compared to what was reported in the 2015 MIS.

Figure 17. Households sprayed within the previous 12 months, by province (Zambia 2010–2018)



IRS coverage by wealth quintile has changed considerably since 2010 **(Figure 18)**. The lowest wealth quintiles reported the lowest spray coverage in 2010 and 2012. Since 2015 this trend has reversed and now the lowest wealth quintiles report the highest IRS coverage. This reflects a deliberate change in operational approach to IRS, which has deemphasised large urban areas in favor of the more malaria-prone rural areas.

Figure 18. Households sprayed in the previous 12 months by wealth quintile (Zambia 2010–2018)



Vector control with ITNs and/or IRS

Since ITNs and IRS are largely targeting similar malaria vectors inside of households, it is helpful to present overall vector control as having either ITNs, IRS, or both interventions. Nationally, 84% of households reported having either at least one ITN, or IRS in 2018 **(Figure 19)**. The percentage of households that reported having both at least one ITN and IRS in 2018 was 31%. Both of these indicators have shown a steady increase since 2008.

Figure 19. Percentage of households with at least one insecticide-treated net and/or indoor residual spraying (Zambia 2008–2018)

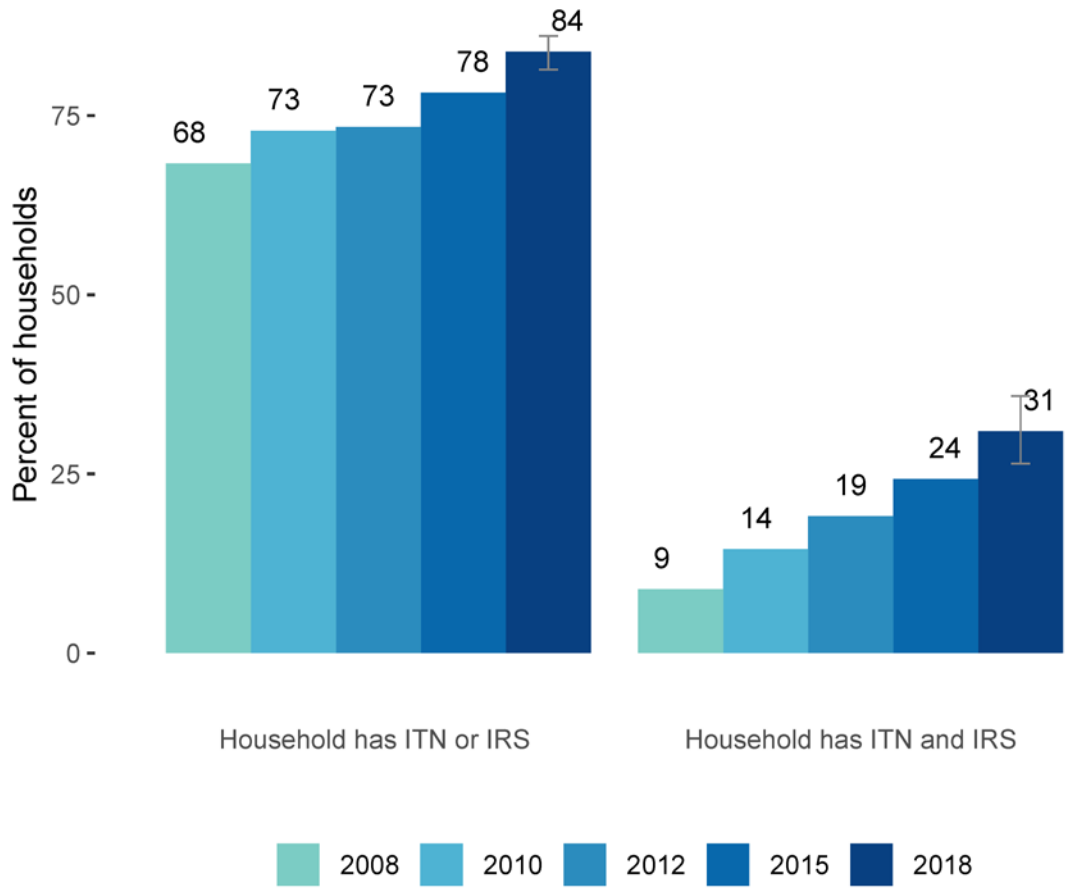
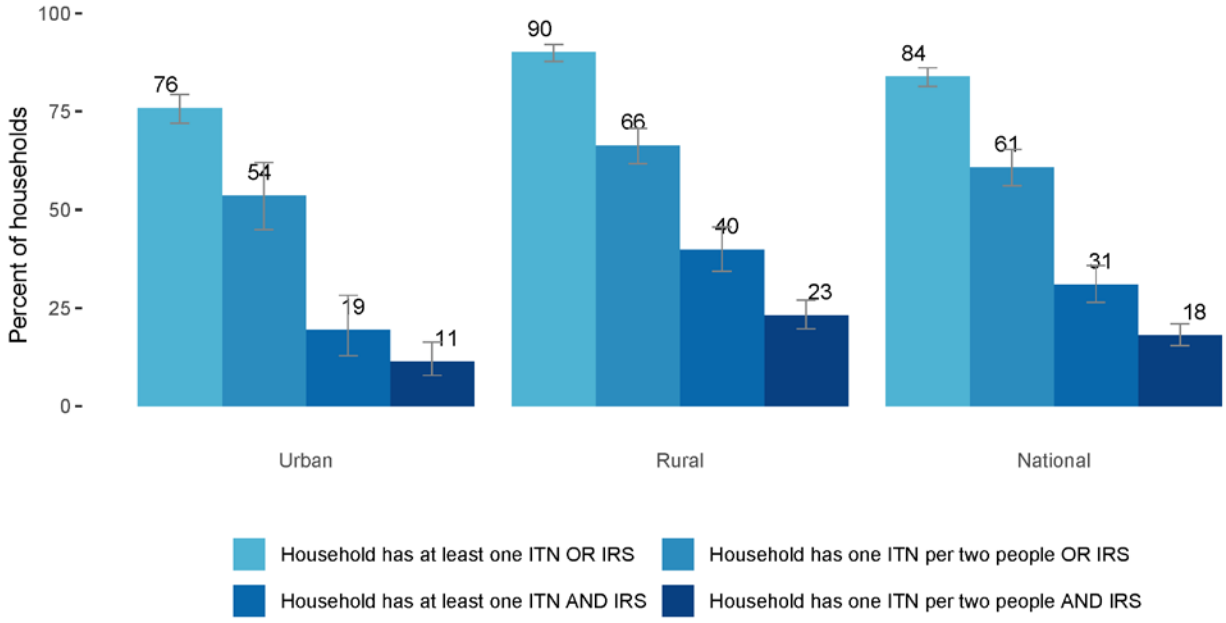


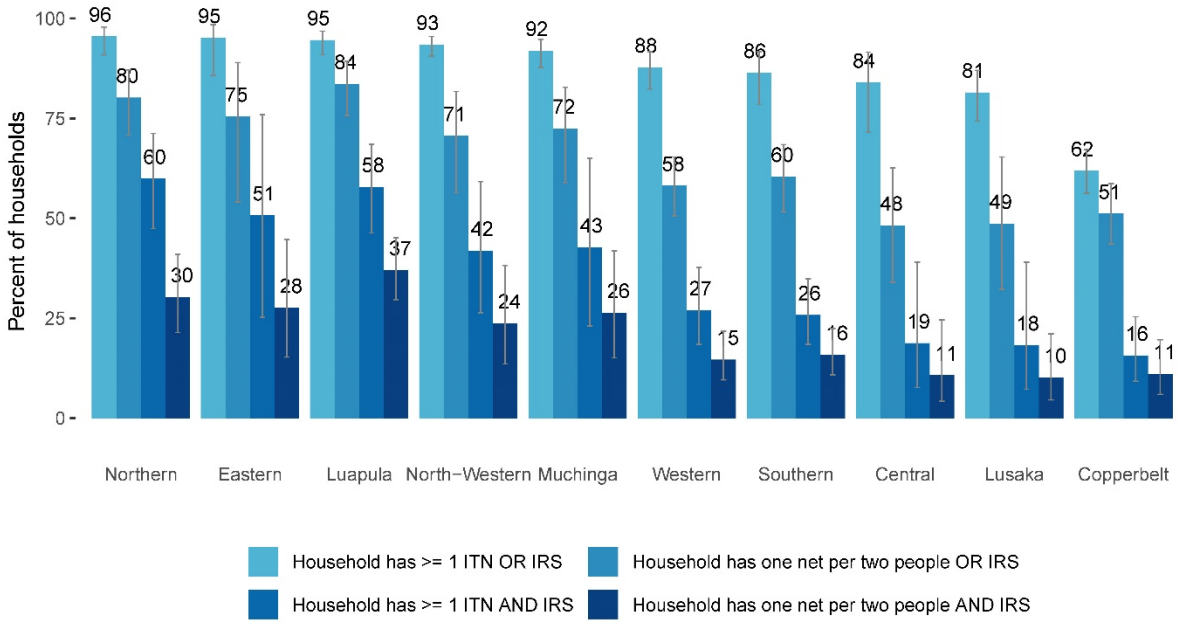
Figure 20 presents the percentage of households with at least one ITN and/or IRS, as compared to the percentage of households that had full coverage of ITNs (as measured by at least one ITN per two household members) and/or IRS. In 2018, nationally 61% of households reported either full coverage of ITNs or IRS while 18% reported full coverage of ITNs and IRS. These numbers reached 66% and 23%, respectively, in rural areas of Zambia.

Figure 20. Households reporting either at least one ITN or IRS or both and households with at least one ITN per two people or IRS or both (Zambia 2018)



For the indicator of at least one ITN and/or IRS, by province, nearly all provinces reported high coverage (>80%) with the exception of Copperbelt Province **(Figure 21)**. Northern, Eastern, and Luapula provinces had the highest coverage at 96%, 95% and 95%, respectively, whereas Copperbelt was the lowest with 62%. Northern Province had the highest coverage of both at least one ITN and IRS (at 60%) compared to Copperbelt with the lowest (at 16%). Among households with at least one ITN for two people, indicating full coverage with ITNs, or IRS, 84% of households in Luapula reported at least full coverage with at least one vector control tool whereas Central reported the lowest at 48%.

Figure 21. Households reporting either at least one ITN or IRS or both and households with at least one ITN per two people or IRS or both, by province (Zambia 2018)



Chapter 4: Coverage of key malaria interventions—intermittent preventive treatment during pregnancy and case management

Prompt, effective treatment with safe and efficacious antimalarial drugs and the associated diagnostic services for parasitological confirmation are the pillars of malaria case management in Zambia. These services have historically been delivered at health facilities as outpatient services or among a subset of facilities offering inpatient services or acting as referral centres for severe malaria patients. Increasingly, Zambia is scaling malaria case management for uncomplicated malaria to community levels through community health assistants and community health workers (CHWs) who are trained in both malaria testing and services, but also malaria surveillance and reporting.

The national treatment guidelines specify the use of artemether-lumefantrine (AL) for the treatment of uncomplicated malaria episodes. Dihydroartemisinin-piperaquine (DHAP) has been adopted as the alternate first-line treatment for uncomplicated malaria. DHAP has been reserved for use in mass drug administration activities underway in Southern and Western provinces. The preferred treatment of more severe cases of malaria has been updated from the use of quinine to injectable artesunate where available. Where injectable artesunate is not available, quinine is still used.

In addition to the use of curative services, antimalarial treatments are used for prevention of malaria in pregnancy as part of the WHO recommendations for intermittent prevention treatment during pregnancy (IPTp). The drug for IPTp in Zambia remains sulfadoxine-pyramethamine (SP), offered to pregnant women during antenatal care visits with the target of achieving at least four doses of IPTp during pregnancy.

The NMESP 2017–2021 calls for universal access to malaria treatment and IPTp. To achieve hgh coverage, Zambia's strategic plans advocate for four doses of IPTp. The 2018 MIS reports on the prevalence of fever among children, source of care, as well as the type and source of antimalarial treatments provided during a febrile episode. The reported prevalence of fever and care-seeking behaviours among children in the previous two weeks limits the number of respondents to many demographic divisions presented in the following tables. To obtain information on IPTp, the MIS asked women of reproductive age about their most recent pregnancy, if any, within the previous five years and asked about preventive treatments received during that pregnancy.

In addition to malaria treatments and IPTp, the MIS asked the women of reproductive age about diarrhoea episodes among their biologic children in the previous two weeks and the types and sources of treatments provided for these episodes. The MOH, through the NMEP, seeks to improve malaria case management at the community level, offers an integrated approach to managing childhood illness through integrated community case management (iCCM), which includes management of diarrhoea, pneumonia, and malaria. Therefore, the MIS also reports on the status of the management of diarrhoea as part of this integrated package.

Intermittent preventive treatment during pregnancy (IPTp) coverage in 2018

Table 12 shows a high number of women reported taking IPTp in 2018, with 87.9% of all women reporting at least a first dose. The high coverage in achieving the first dose of IPTp was fairly even across provinces, with even the lowest province, Copperbelt, still reporting a robust 72.8% coverage. The reported national coverage of the second dose of IPTp was also high at 81.3%, and was slightly higher among mothers in higher wealth quintiles. There was more variation in coverage of the third dose by province, with North-Western Province reporting 81.8% coverage of the third dose and Western reporting only 57.6%. The fourth dose of IPTp had very low coverage throughout the country with only 4.8% of women reporting taking four doses during their pregnancy. This figure rose to 6.7% in rural areas. In general, IPTp coverage for the first, second, and third doses rose with the education

level of the women, but the forth dose showed the opposite trend.

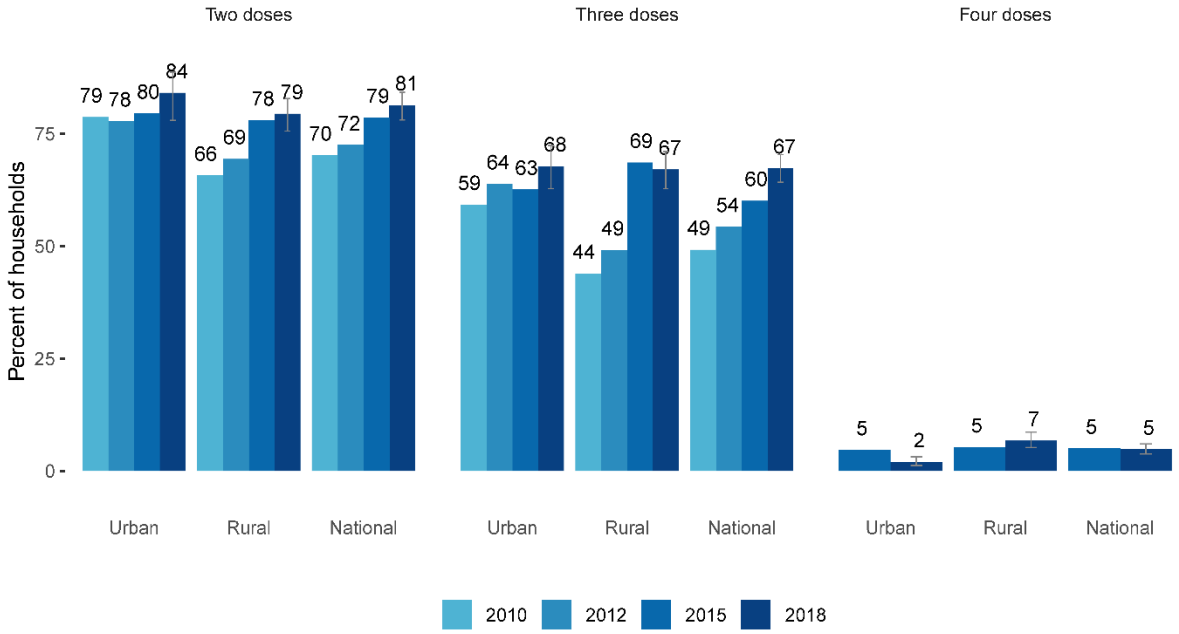
Table 12. Use of intermittent preventive treatment (IPTp) by pregnant women
For the last birth in the five years preceding the survey, percentage for which the mother took antimalarial drugs for prevention during the pregnancy, by background characteristics (Zambia 2018).

Background characteristic	Percentage of mothers who took any antimalarial drug for prevention during their last pregnancy	Percentage of mothers who took any IPTp[1]	Percentage of mothers who took 2+ doses of IPTp	Percentage of mothers who took 3+ doses of IPTp	Percentage of mothers who took 4+ doses of IPTp	Number of mothers
	(1)	(2)	(3)	(4)	(5)	(6)
Designation						
Urban	89.5	89.0	84.1	67.8	2.0	885
Rural	93.5	87.1	79.4	67.0	6.7	2,795
Province						
Central	97.4	96.2	84.7	73.9	3.1	246
Copperbelt	72.8	72.8	71.5	60.3	1.0	180
Eastern	97.3	92.2	83.6	74.0	3.0	629
Luapula	92.7	75.7	72.1	63.2	13.2	620
Lusaka	93.3	92.5	86.0	67.8	0.0	291
Muchinga	91.9	86.9	76.8	60.0	15.0	260
Northern	96.4	93.0	89.4	73.5	12.0	295
North-Western	97.1	93.8	88.3	81.8	3.1	266
Southern	93.7	92.1	81.9	65.8	1.9	255
Western	90.8	81.2	74.8	57.6	1.0	638
Wealth index						
Lowest	88.0	72.9	65.6	52.4	8.7	609
Second	89.1	82.6	74.5	62.4	11.2	670
Middle	94.2	90.7	86.2	71.9	4.1	753
Fourth	96.9	95.4	86.8	73.5	3.5	768
Highest	90.0	89.4	83.8	68.5	1.8	880
Education						
None	93.5	85.6	80.3	64.3	5.1	721
Primary	93.0	88.3	81.4	69.0	6.9	1,652
Secondary	89.2	87.9	81.4	66.4	2.4	1,144
Higher	94.0	93.6	84.6	69.9	0.9	163
Total	91.8	87.9	81.3	67.3	4.8	3,680

[1]IPTp is intermittent preventive treatment during pregnancy with Fansidar/SP.

Figure 22 presents IPT coverage results from 2010 through 2018 for second, third, and fourth doses of IPTp for rural areas, urban areas and nationally. Data on the fourth dose are presented only for the 2015 and 2018 MISs. An increasing percentage of women reported taking two and three doses in 2018 with 81% of pregnant women reporting at least two doses. The percentage of women reporting taking a fourth dose stayed the same at 5% between 2015 and 2018.

Figure 22. Women with recent births reporting coverage of at least two, three, and four doses of intermittent preventive treatment during pregnancy, by urban and rural areas (Zambia 2010–2018)



Fever prevalence and fever management among children in 2018

Table 13 presents results for prevalence of reported fever among children under five years of age and treatment-seeking behaviour for those who had a reported fever. Nearly one-fifth (19.2%) of children had a reported fever in the two weeks prior to the survey. Children in rural areas were more likely to suffer from fever than those in urban areas (22.1% versus 14.2%). By province, the highest rates of reported fever were found in Luapula (33.4%) and Muchinga (29.6%) with the lowest in Southern (3.5%) and Copperbelt (2.7%). The highest prevalence of fever was seen in children ages 24 to 35 months (28.4%), followed by ages 12 to 23 months (19.4%).

Among children with fever, 54.9% were reported to have had a heel or finger stick when they sought treatment during their fever episode **(Table 13)**. This indicator is a proxy measure for malaria testing rates, although it may not be specific for malaria testing.

Table 13. Prevalence and prompt treatment of fever among children

Children under five years of age 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 2018).

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	12.1	529	53.0	27.1	19.1	33.5	93
12–23	19.4	594	55.5	26.2	14.7	14.1	127
24–35	28.4	482	54.1	29.0	18.9	13.2	129
36–47	17.9	570	49.0	33.8	21.2	13.8	106
48–59	19.3	593	60.9	42.6	29.3	29.5	114
Sex							
Male	22.0	1,433	56.2	27.8	18.5	16.4	296
Female	16.4	1,335	53.2	37.6	23.6	24.1	273
Designation							
Urban	14.2	485	52.0	15.3	13.6	22.1	62
Rural	22.1	2,283	56.0	38.1	23.3	18.8	507
Province							
Central	16.2	180	*	*	*	*	18
Copperbelt	2.7	131	*	*	*	*	10
Eastern	21.1	450	68.5	25.6	16.6	34.5	86
Luapula	33.4	527	50.4	44.2	20.5	17.2	169

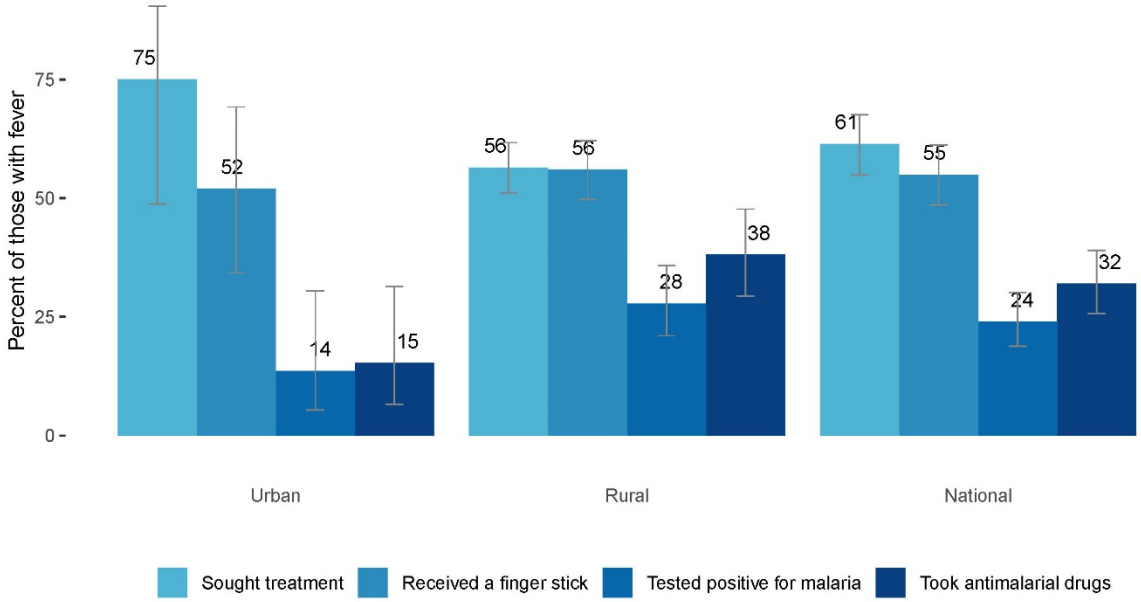
continued

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)
Lusaka	23.0	164	49.7	8.5	8.5	16.4	26
Muchinga	29.6	204	47.1	42.3	38.2	21.6	56
Northern	26.9	238	68.3	57.0	36.0	17.7	63
North-Western	17.3	200	73.9	53.8	32.8	35.7	29
Southern	3.5	190	*	*	*	*	8
Western	21.5	484	50.2	33.1	20.7	24.7	104
Wealth index							
Lowest	29.0	582	49.0	39.8	24.4	21.3	161
Second	17.7	604	55.0	40.8	25.6	18.0	126
Middle	21.2	629	57.5	42.4	26.3	25.3	133
Fourth	20.3	534	71.5	24.3	14.1	15.6	96
Highest	13.5	419	42.4	14.7	14.1	17.3	53
National	19.2	2,768	54.9	32.0	20.7	19.7	569

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been supressed.

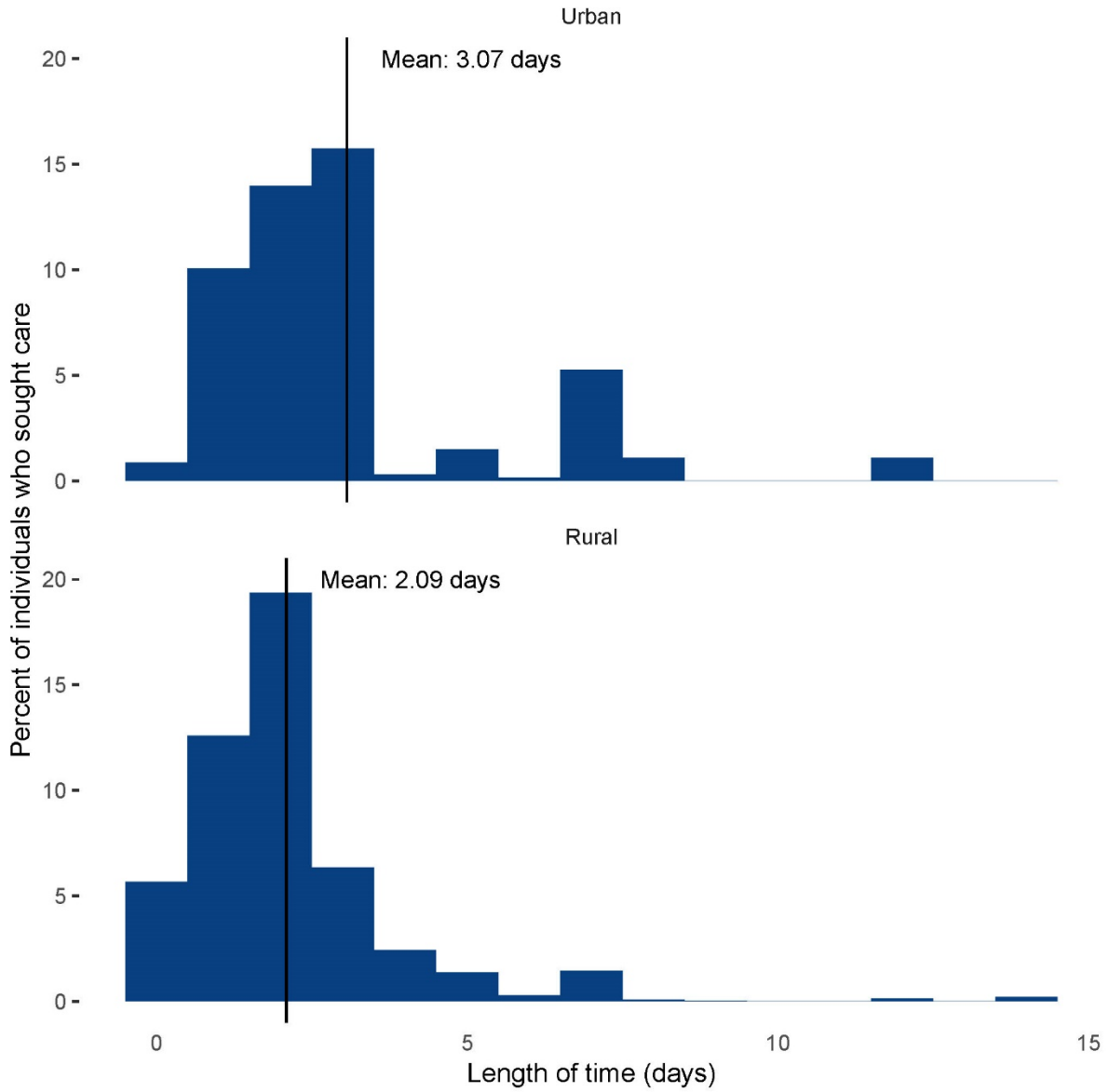
Figure 23 provides a cascade of fever management among children reported by their mothers. Of children with fever, 61% reported to have sought treatment, 55% reported receiving a finger or heel stick, 24% reported having a positive test for malaria, and 32% reported receiving an antimalarial drug. Twenty one percent of children received their antimalarial drug promptly. In the MIS, prompt care or treatment is defined as the same day or next day from the reference point of when the fever started. Prompt care-seeking for children with fever also remained low, as only 19.7% sought treatment from a health facility/provider on the same day or next day. Promptness of treatment seeking was moderately higher in urban (24.1%) than in rural areas (16.4%) **(Table 13)**.

Figure 23. Cascade of treatment seeking, reported finger stick, reported malaria test positive and taking antimalarials among febrile children under age five years (Zambia 2018)



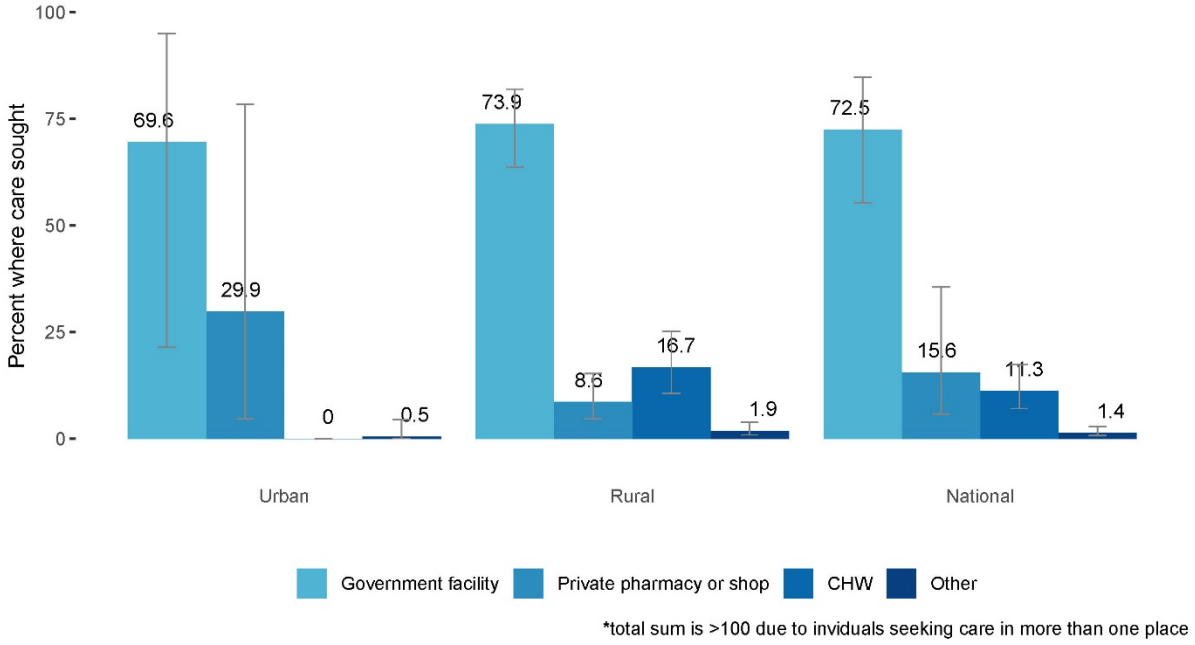
Promptness of treatment is critical in many settings of childhood illness but particularly so in malaria, which can lead to severe malaria or death very quickly, especially among children and those whose immune systems are not accustomed to parasite exposure. **Figure 24** shows the average length of time it took for children with fever to receive their antimalarial treatment for urban and rural areas. On average, it took a day longer for febrile children in urban areas compared with rural areas to receive antimalarial treatment. The majority of children seek treatment within the first five days.

Figure 24. Average length of time reported before treatment was sought among febrile children under age five years (Zambia 2018)



Among children who sought care, **Figure 25** presents the source of the care sought. The vast majority of care for febrile children was sought through a government health facility (72.5%), followed next by a private pharmacy or shop (15.6%), and then community health workers (11.3%). Urban areas reported a higher percentage of care sought from a pharmacy or shop than rural areas and, conversely, rural areas sought care more from CHWs than from urban areas.

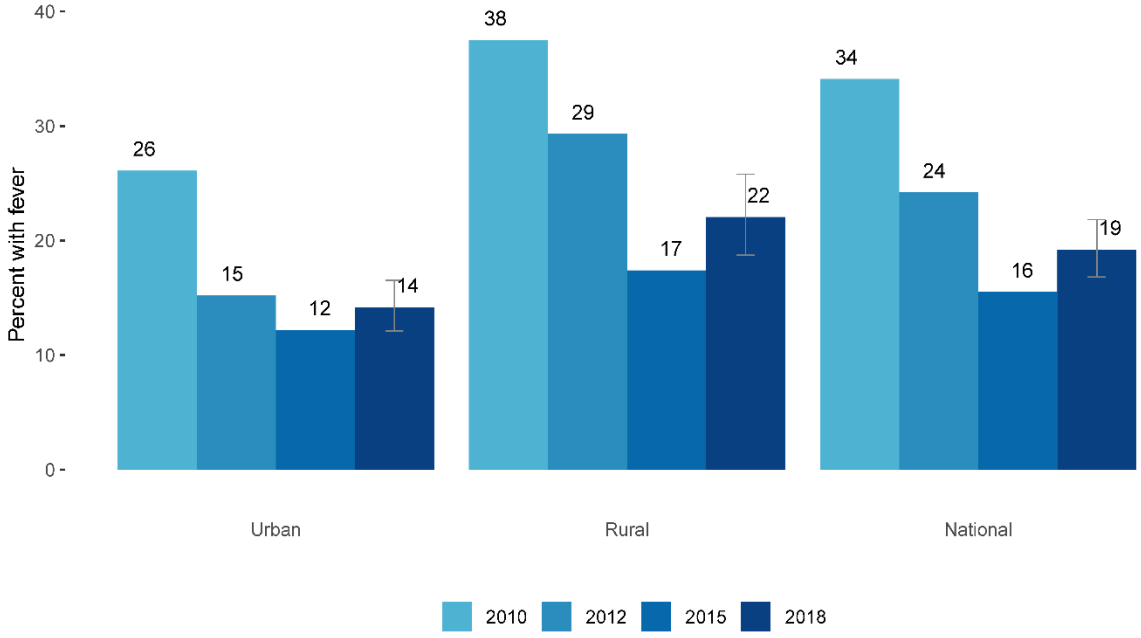
Figure 25. Percentage of febrile children under age five years who sought care by source of care (Zambia 2018)



Trends in fever prevalence

Figure 26 represents prevalence of reported fever among children during the two weeks preceding the survey by age and by urban and rural areas from 2010 to 2018. Fever prevalence remains higher in rural areas (22%) than urban areas (14%) and has declined markedly in both rural and urban areas since 2010 and 2012, but slightly increased from 2015 to 2018.

Figure 26. Reported fever prevalence in the preceding two weeks among children under age five years (Zambia 2010–2018)



Antimalarial drug type, timing, and source in 2018

Table 14 presents drugs taken for fever and the percentage taken within 24 hours of symptom onset. AL remains the dominant antimalarial in use in Zambia with 30.6% of children with fever in the last two weeks treated with AL. Use of SP was reported at less than 1% among children and use of artesunate or quinine, which are the available treatment options for severe malaria, remains very low, also at less than 1%. Within 24 hours of onset of symptoms, 19.5% of people reported taking AL. Rural areas reported more prompt treatment for fever than urban areas. Few other drugs were reported in 2018 and among those that were reported, SP, quinine, and artesunate were among them. Future communication campaigns should emphasise that malaria is a common cause of fever and that prompt healthcare seeking and treatment is best for any type of fever.

Table 15 presents the source of antimalarial drugs given to children under five years of age with reported fever in the two weeks preceding the survey. The majority of AL was obtained from a public health facility (59.3%) followed by community health workers (22.3%). Nearly 8% of children were reported to have had the drug at home already. The source of antimalarial drugs apart from AL was more difficult to determine reliably in 2018 due to the lower reported prevalence of fevers among children and the correspondingly lower numbers of treatments that were reported for those febrile children.

Table 14. Type and timing of antimalarial drugs

Among under-five children with fever in the two weeks preceding the survey, percentage who took artemether-lumefantrine (AL), other antimalarials, and who took those drugs same/next day

	Percent of children who took drug					Percentage of children who took drug the next day					
Background characteristic	AL	Artesunate	SP	Quinine	Other antimalarial	AL	Artesunate	SP	Quinine	Other antimalarial	# of children with fever
Age (in months)											
< 12	26.6	0.0	0.0	0.0	1.8	19.1	0.0	0.0	0.0	0.0	93
12-23	24.6	0.0	0.9	0.0	2.5	13.6	0.0	0.9	0.0	0.2	127
24-35	28.0	0.0	1.0	0.0	0.0	17.9	0.0	1.0	0.0	0.0	129
36-47	32.6	1.4	0.0	0.2	0.0	20.5	0.8	0.0	0.2	0.0	106
48-59	40.2	0.1	0.0	0.1	5.2	26.9	0.1	0.0	0.1	2.2	114
Designation											
Urban	14.4	0.1	0.9	0.0	0.0	12.7	0.1	0.9	0.0	0.0	62
Rural	36.5	0.3	0.3	0.1	2.5	22.0	0.2	0.3	0.1	0.7	507
Province											
Central	*	*	*	*	*	*	*	*	*	*	18
Copperbelt	*	*	*	*	*	*	*	*	*	*	10
Eastern	24.8	0.4	0.0	0.9	0.0	15.8	0.4	0.0	0.9	0.0	86
Luapula	41.6	0.0	1.1	0.0	3.4	18.4	0.0	1.1	0.0	1.0	169
Lusaka	8.5	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0	0.0	26
Muchinga	42.3	0.0	0.0	0.0	0.0	38.2	0.0	0.0	0.0	0.0	56
Northern	55.0	0.0	0.0	0.0	3.5	34.0	0.0	0.0	0.0	2.0	63
North-Western	53.8	0.0	0.0	0.0	0.0	32.8	0.0	0.0	0.0	0.0	29
Southern	*	*	*	*	*	*	*	*	*	*	8
Western	29.3	3.3	0.0	0.0	2.4	19.2	1.9	0.0	0.0	0.0	104
National	**30.6**	**0.3**	**0.4**	**0.0**	**2.2**	**19.5**	**0.2**	**0.4**	**0.0**	**0.6**	**569**

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been supressed. [1]AL is artemether-lumefantrine; SP is sulfadoxine-pyrimethamine.

Table 15. 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 2018).

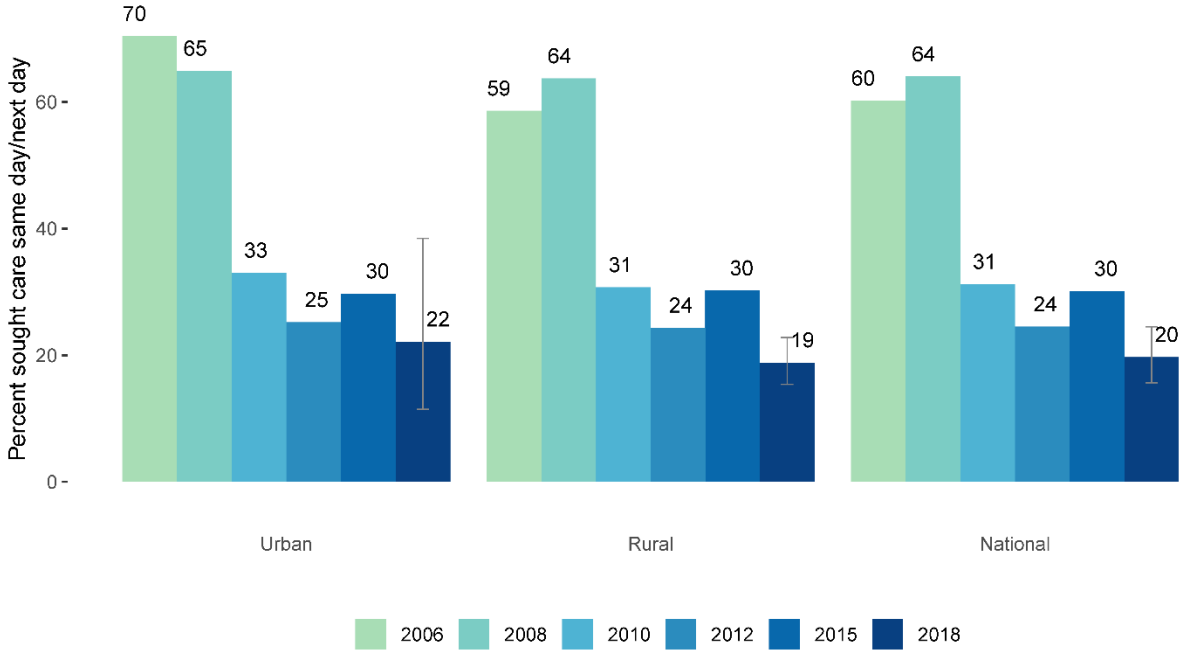
Background characteristic	Already had drug at home	Community health worker	Government health facility/ worker	Private health facility/ worker	Shop	Other	Total	Number of children who took drug
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AL	7.0	23.3	60.6	1.1	6.7	1.4	100.0	214
Artesunate	*	*	*	*	*	*	*	5
SP	*	*	*	*	*	*	*	2
Quinine	*	*	*	*	*	*	*	2
Other antimalarial	*	*	*	*	*	*	*	5
All antimalarial drugs	**7.7**	**22.3**	**59.3**	**1.4**	**6.4**	**2.5**	100.0	**226**

Note: Table excludes children whose fever started less than two days before the interview. AL is Artemether-Lumefantrine. SP is sulfadoxine-pyrimethamine. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been supressed.

Trends in antimalarial care seeking, source of drugs, and drugs used

Figure 27 shows the trends in promptness of care seeking. Over time, promptness to care has decreased since 2006, which is not the desired outcome. This requires further data exploration but could be due both to a declining percentage of fever cases among children and a declining percentage of fever reported as malaria.

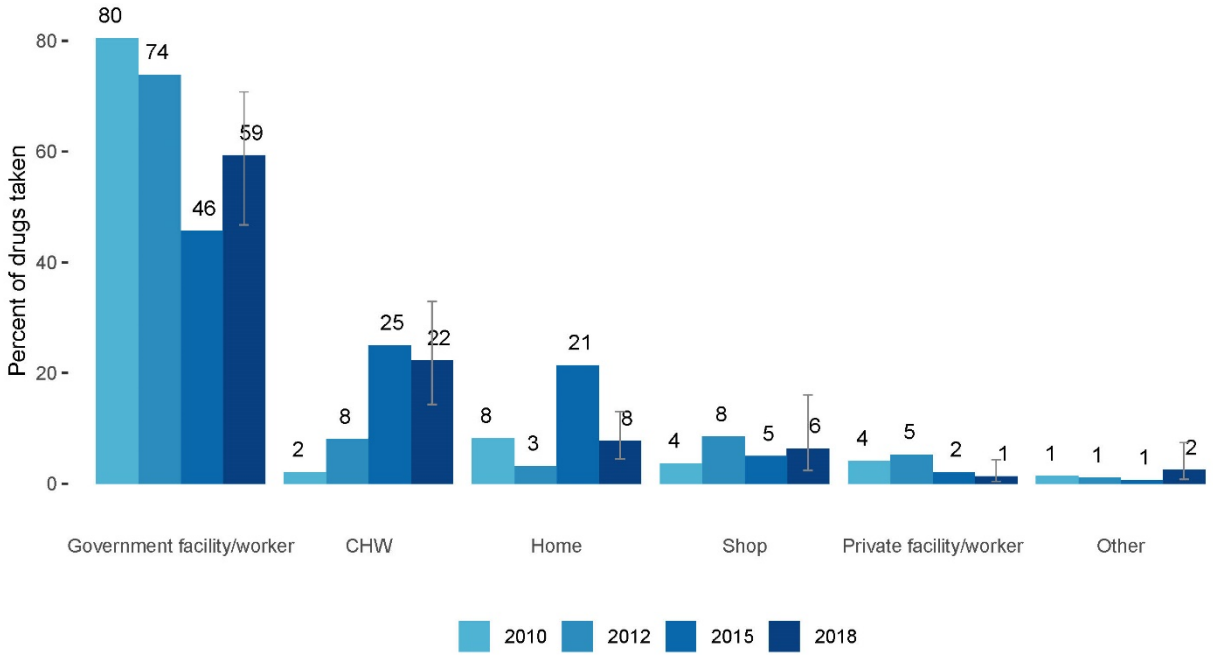
Figure 27. Among children with fever, trend in promptness of care seeking (Zambia 2006–2018)



In **Figure 28** the change in source of antimalarial treatment over time suggests the percentage of medication received from CHWs has increased across previous MIS surveys, from 2% in 2010 to 8% in 2012 to 25% in 2015. In 2018, the number has decreased slightly to 22% but with small sample sizes of children with fever, this is a non-significant decline.

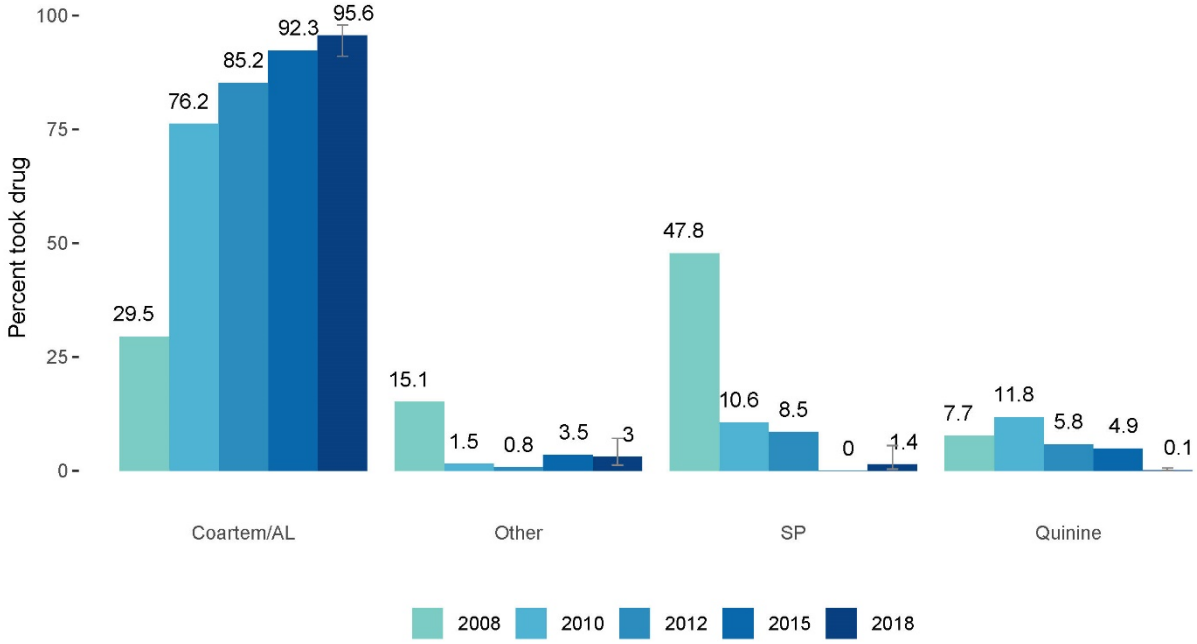
Antimalarial treatment practices among febrile children have seen a slight decrease since 2008. Overall, treatment of febrile children with antimalarial drugs varied, from 43.1% in 2008, 34.0% in 2010, 36.9% in 2012, 36.1% in 2015, to 32.0% in 2018 (2018 data is from Table 13). This historically important indicator remains standard in an MIS, but has become difficult to interpret. Due to the increasing availability of malaria RDTs, it is assumed that this declining percentage of antimalarial treatments offered to children with fever is largely due to health care providers offering more appropriate treatment advice as a result of parasitological confirmation of clinical diagnoses. In short, it may be that fewer patients with symptomatic fever are being given antimalarial drugs in part because RDT results indicate that they do not have malaria.

Figure 28. Source of antimalarial drugs among febrile children under age five years (Zambia 2010–2018), unweighted due to low sample size



Also encouraging are the trends in which antimalarial treatments are given. **Figure 29** shows that since 2010 AL, the first-line treatment of malaria in Zambia, has been the antimalarial drug most often taken by febrile children. This was initially largely at the expense of SP, whose use for malaria cases in children was not reported in 2015 and which was reported as used by only two children in 2018. The reported use of other antimalarials remains negligible.

Figure 29. Among febrile children taking antimalarial drugs, the percentage of each drug taken (Zambia 2008–2018), unweighted due to low sample size



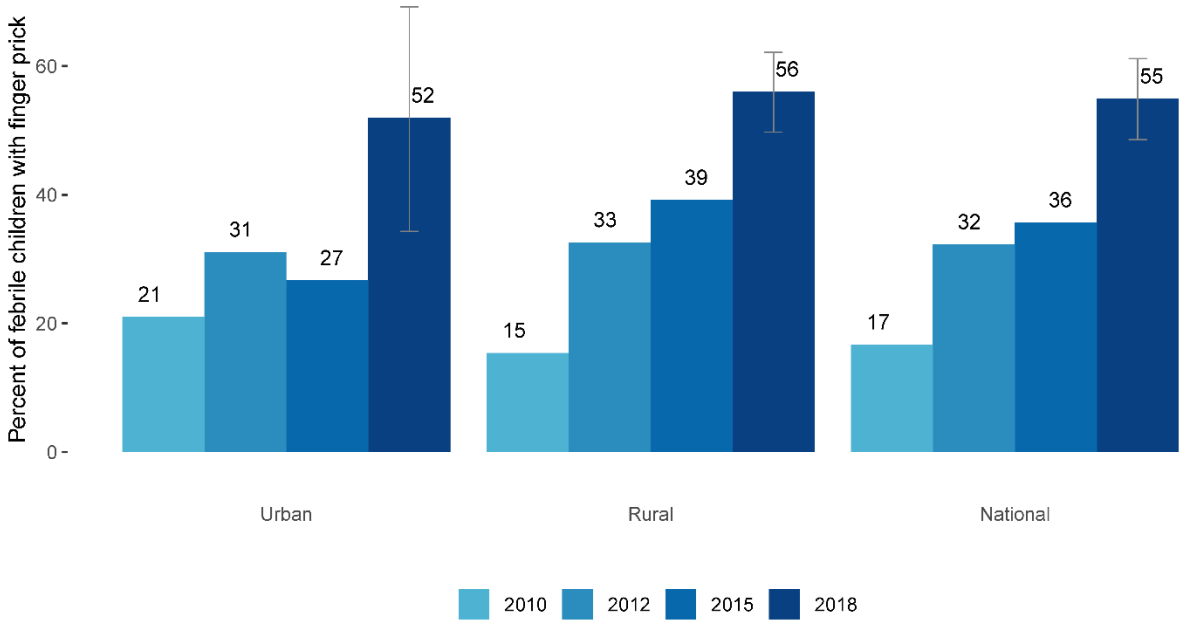
Diagnostic testing in 2018 and trends

The MISs ask questions about the prevalence of a finger/heel stick for febrile children who sought care for fever. This provides insight as to the availability of diagnostic testing services and thus parasitologic confirmation for children with malaria symptoms. **Figure 30** shows that the percentage of febrile children receiving finger/heel sticks during care-seeking generally increased since 2010. While it is difficult to ascertain local clinical practices from household surveys, it is assumed that many of the finger/heel sticks are likely malaria RDTs, which have been scaled up throughout the country since 2007.

Figure 30 shows trends at the national level. In 2018, 55% of febrile children were reported to have received a finger or heel stick. This represents significant improvement from the 36% in 2015, and shows a trend from previous years: 32% 2012, and 17% in 2010. This also implies that approximately 90% of children seen by health care workers for fever received a diagnostic test, which reflects favourably on the quality of care. There continues to be equity between testing rates by gender of the children, namely 53% in females and 56% in males in 2018 as compared to 36.5% in females and 35.0% in males in 2015.

In Luapula, where the oversampling permitted an adequate sample size to analyse provincial-level trends, the percentage of febrile children who received a finger or heel stick rose from 30.6% in 2015 to 50.4% in 2018. The number of febrile children in Western Province was also large enough (>25) to permit comparison. Western Province saw a striking increase in testing rates from 25.8% in 2015 to 50.2% in 2018. Additional provinces with adequate sample size in 2018 (but not 2015) include Eastern, with 68.5% of febrile children reported to have received a finger or heel stick, Lusaka with 49.7%, Muchinga with 47.1%, Northern with 68.3%, and North-Western with 73.9%.

Figure 30. Percentage of reported febrile children under age five years with a reported finger/heel stick for diagnostic testing (Zambia 2010–2018)



Prevalence and treatment of diarrhoea

Table 16 presents findings related to children who were reported to have had diarrhoea in the two weeks preceeding the survey. Overall, 10.2% of children had diarrhoea in the two weeks preceding the survey. Children were the most likely to have diarrhoea between 12–23 months of age. More than half (61.8%) of those children received appropriate care for reported diarrhoea, including 52.5% who reported receiving oral rehydration solution (ORS). These compare with 2015 findings that showed 4.6% of children having diarrhoea in the two weeks preceding the survey, 46.6% receiving appropriate care, and 33.9% receiving treatment with ORS. This suggests that treatment may be improving modestly in a setting of unchanging prevalence.

Slightly more children with diarrhoea received appropriate care in rural areas (64.3%) than in urban areas (60.4%), despite the generally shorter distances to care in urban areas. The percentage of rural children accessing appropriate care increased from 2015 (48.9%). Only a small percentage of appropriate care for diarrhoea was provided by community agents—5.2% in 2018, compared to 1.6% in 2015.

Table 16. Prevalence and treatment of reported diarrhoea among children
Children under age five years of age with diarrhoea in the two weeks preceding the survey, and among children with diarrhoea, percentage who received appropriate care, received care from a CHW, or received ORS, by background characteristics (Zambia 2018).

Background characteristic	Percentage of children with diarrhoea in last two weeks	Number of children under age five years	Among children with diarrhoea:				Number of children with diarrhoea
			Percentage who received care	Percentage who received appropriate care[1]	Percentage who received care from a CHW	Percentage who received ORS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age (in months)							
<12	13.1	529	54.9	54.1	2.5	55.2	66
12–23	16.9	594	60.3	58.8	4.2	54.8	82
24–35	13.3	482	76.5	73.2	13.7	57.4	47
36–47	4.3	570	*	*	*	*	24
48–59	3.5	593	60.1	56.8	0.0	37.3	28
Sex							
Male	10.1	1,433	75.3	72.5	4.3	56.2	127
Female	10.4	1,335	52.1	51.3	6.1	48.9	120
Designation							
Rural	9.9	485	64.9	64.3	0.0	53.9	36
Urban	10.4	2,283	62.8	60.4	8.1	51.8	211
Wealth index							
Lowest	12.7	582	61.4	57.7	2.5	48.7	67
Second	6.5	604	46.2	46.2	2.1	45.3	50
Middle	9.4	629	72.1	71.1	0.5	53.0	48
Fourth	10.7	534	65.4	60.8	22.5	49.4	48

continued

Background characteristic	Percentage of children with diarrhoea in last two weeks	Number of children under age five years	Among children with diarrhoea:				Number of children with diarrhoea
			Percentage who received care	Percentage who received appropriate care[1]	Percentage who received care from a CHW	Percentage who received ORS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Highest	11.3	419	63.7	63.7	0.0	58.1	34
Total	10.2	2,768	63.5	61.8	5.2	52.5	247

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been supressed.

[1] Appropriate care includes public or private healthcare providers but excludes traditional healers

Chapter 5: Coverage of key malaria interventions—social behaviour change

Overview of social behaviour change

The NMESP 2017–2021 emphasises the role of social behaviour change (SBC) in achieving Zambia's malaria elimination goals. Zambia's approach has evolved from malaria control to elimination, and SBC is changing to reflect the current epidemiological profile and political commitments. The role of SBC is fully captured in the national communication strategy which provides guidance on applying SBC with malaria interventions, and the people who provide them, with information delivered by a trusted source and in a language and format that is suitable to the audience.

Status of SBC indicators in 2018

The survey found that, overall, the vast majority of women of child-bearing age (15–49 years) had heard of malaria (90.2%) although a smaller percentage of women understood that nets were used for the prevention of malaria (85.7%) **(Table 17)**. Women with higher education reported better knowledge of malaria prevention and those who reported no education scored the lowest in almost all knowledge categories. This was true except for the knowledge of the location and role of the CHW in their communities where less educated women and poorer households were more knowledgeable than wealthier and more educated women.

The connection between fever and malaria was well understood. In total, 71.5% of women reported fever as a symptom of malaria. Southern Province reported the lowest percentage of women recognizing fever as a symptom of malaria (45.9%) and Western reported the highest at 82.1%. Less educated women reported less knowledge of fever as a symptom of malaria than more educated women.

Knowledge of the location and role of their CHW was lowest among the indicators presented in **Table 17**. Only 35.3% of women reported knowing the location and role of their CHW. The percentage aware of their CHW was greater in rural areas (52.8%) than in urban areas (15.0%) and was highest in Western province at 65.8%, followed by Eastern Province at 60.9%. Women in Copperbelt Province had the lowest knowledge of the location and role of CHWs at 10.7%. By wealth quintile, knowledge of CHWs was highest in the lowest and second quintiles and lowest in the highest quintile.

Table 17. General malaria knowledge

Among eligible women ages 15 to 49 years, the percentage who reported having heard of malaria, recognised fever as a symptom of malaria, reported mosquito bites as a cause of malaria, reported mosquito nets (treated or untreated) as a prevention method for malaria, and knew location and role of local CHW, by background characteristics (Zambia 2018).

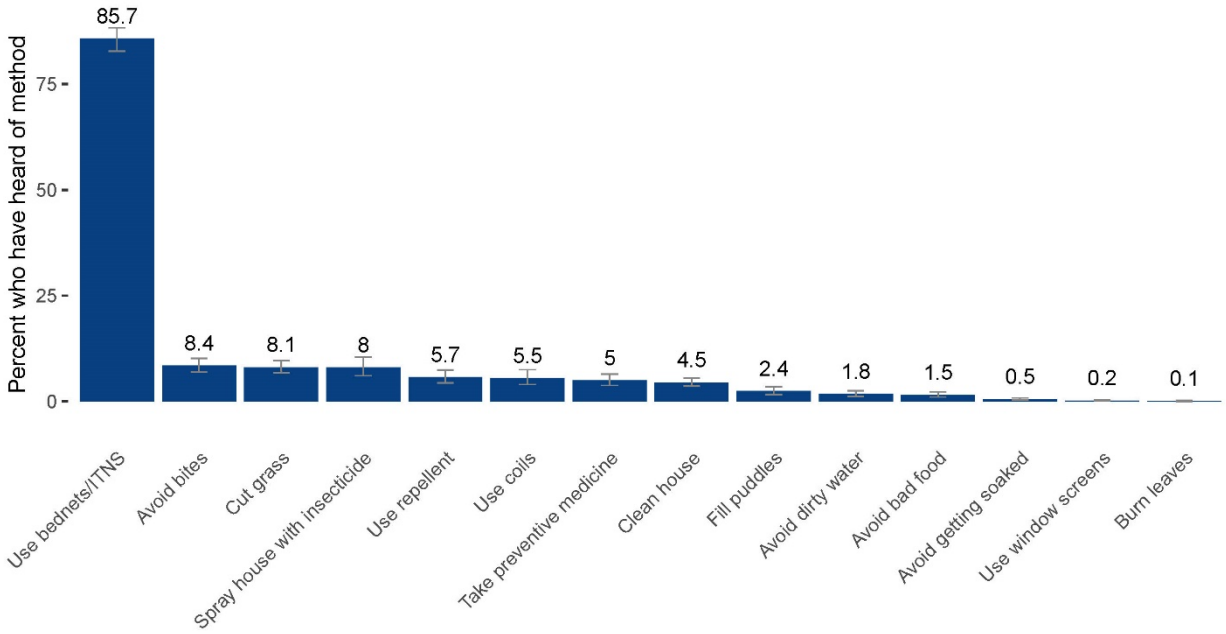
Background characteristic	Percentage who had heard of malaria	Percentage who recognised fever as a symptom of malaria	Percentage who reported mosquito bites as a cause of malaria	Percentage who reported mosquito nets as a prevention method	Percentage who know location and role of CHW in their community	Number of women
	(1)	(2)	(3)	(4)	(5)	(6)
Designation						
Urban	90.3	74.0	85.5	86.2	15.0	885
Rural	90.1	69.3	78.8	85.3	52.8	2,795
Province						
Central	94.6	74.5	88.6	89.0	48.7	246
Copperbelt	78.6	74.5	76.8	78.6	10.7	180
Eastern	90.7	78.9	85.0	87.9	60.9	629

continued

Background characteristic	Percentage who had heard of malaria	Percentage who recognised fever as a symptom of malaria	Percentage who reported mosquito bites as a cause of malaria	Percentage who reported mosquito nets as a prevention method	Percentage who know location and role of CHW in their community	Number of women
	(1)	(2)	(3)	(4)	(5)	(6)
Luapula	94.7	70.8	75.9	85.4	48.9	620
Lusaka	96.6	72.5	91.3	89.8	16.2	291
Muchinga	97.4	73.9	73.9	91.2	42.0	260
Northern	95.1	75.7	81.2	90.9	49.1	295
North-Western	96.1	77.4	93.0	95.8	28.8	266
Southern	66.6	45.9	59.8	65.5	39.9	255
Western	95.8	82.1	90.0	91.4	65.8	638
Wealth index						
Lowest	93.0	69.6	68.4	84.6	50.0	609
Second	89.2	69.9	77.5	84.9	50.6	670
Middle	86.1	67.6	77.7	82.3	48.1	753
Fourth	90.1	70.9	82.3	84.0	40.2	768
Highest	91.5	74.2	88.0	88.5	19.8	880
Education						
None	82.8	57.9	71.7	74.4	41.2	721
Primary	90.9	69.1	78.3	86.5	41.8	1,652
Secondary	92.1	78.1	88.6	88.6	27.5	1,144
Higher	93.0	81.5	92.2	92.4	23.7	163
Total	90.2	71.5	81.9	85.7	35.3	3,680

The survey found that women ages 15 to 49 were most knowledgeable about the use of a mosquito net or treated net (85.7%), avoiding mosquito bites (8.4%), and house spraying (8.0%) as malaria prevention methods **(Figure 31)**. There were few women who had traditional beliefs about malaria prevention such as avoiding bad food and dirty water (1.5–1.8%) or cutting grass (8.1%). Given the importance of screening doors and windows in the global history of malaria control (e.g. in the American south), it is remarkable that only 0.2% of Zambian respondents mentioned screening of windows.

Figure 31. Among women ages 15 to 49 years, knowledge of malaria prevention methods (Zambia 2018)

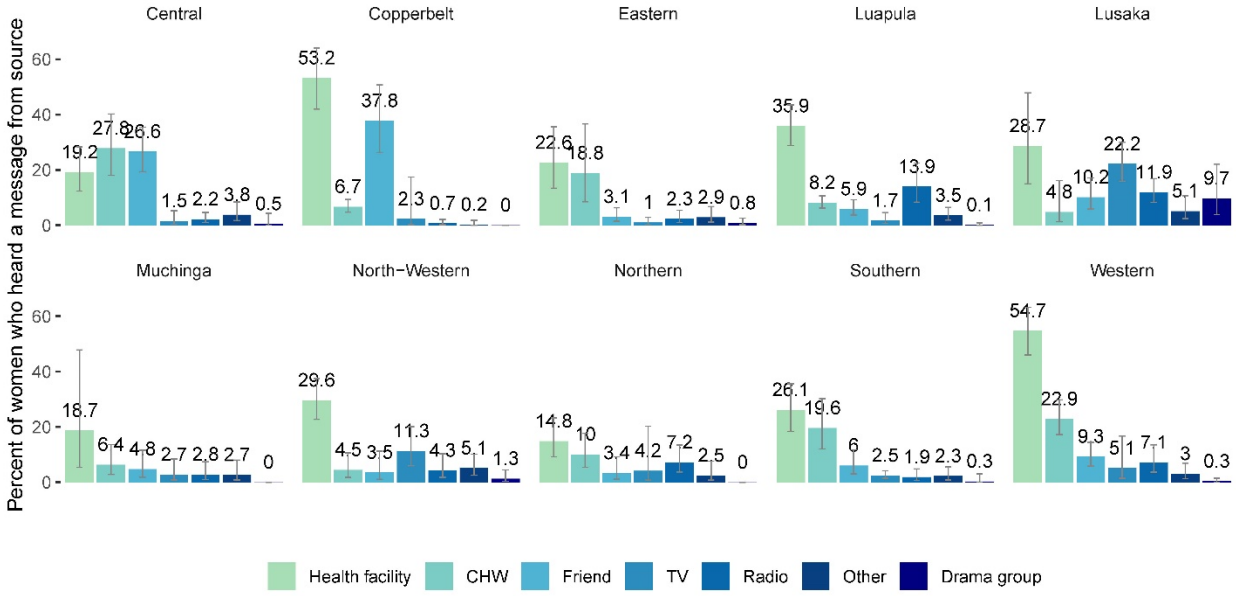


The survey found that among eligible women ages 15–49, 52.4% of women reported hearing a message about malaria **(Table 18)**, with notable variation by province with the highest being Western at 76.2% and the lowest being Muchinga at 33.3%. In terms of the percentage of women hearing any message, women with more education were more likely to report hearing a malaria message than less educated women. The women who reported hearing a message from government hospitals or clinics was 30.4%. Community health workers were also a common source for messaging, although women in North-Western Province were the least likely to hear malaria messages from CHWs **(Figure 32)**. More people in urban areas reported hearing any message on malaria (57.8%) than rural areas (47.7%). The percentage of women who reported seeing/hearing a message about the importance of sleeping under a mosquito net varied among provinces with Western Province recording the highest (47.5%) and Lusaka was the lowest (7.7%).

Table 18. Malaria messaging through information, education, and communication strategies
Among eligible women ages 15 to 49 years who reported hearing a malaria message, 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, by background characteristics (Zambia 2018).

Background characteristic	Percent who reported hearing any message	Percentage who reported government hospital/clinic as the source of malaria message	Percentage who reported CHW 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)
Designation					
Urban	57.8	33.5	8.1	20.1	885
Rural	47.7	27.8	15.2	22.1	2,795
Province					
Central	53.6	19.2	27.8	17.6	246
Copperbelt	71.0	53.2	6.7	33.3	180
Eastern	42.5	22.6	18.8	21.8	629
Luapula	59.4	35.9	8.2	27.5	620
Lusaka	53.3	28.7	4.8	7.7	291
Muchinga	33.3	18.7	6.4	15.3	260
Northern	35.3	14.8	10.0	10.6	295
North-Western	44.4	29.6	4.5	26.1	266
Southern	41.9	26.1	19.6	32.0	255
Western	76.2	54.7	22.9	47.5	638
Wealth index					
Lowest	42.7	30.6	12.1	18.9	609
Second	47.4	29.8	14.3	22.6	670
Middle	45.6	25.8	14.5	20.3	753
Fourth	49.1	27.7	15.9	20.9	768
Highest	60.4	33.8	8.2	21.8	880
Education					
None	43.5	27.7	13.6	17.8	721
Primary	48.8	30.2	13.4	18.5	1,652
Secondary	56.5	31.1	10.1	23.1	1,144
Higher	75.6	35.4	9.2	36.9	163
Total	52.4	30.4	11.9	21.2	3,680

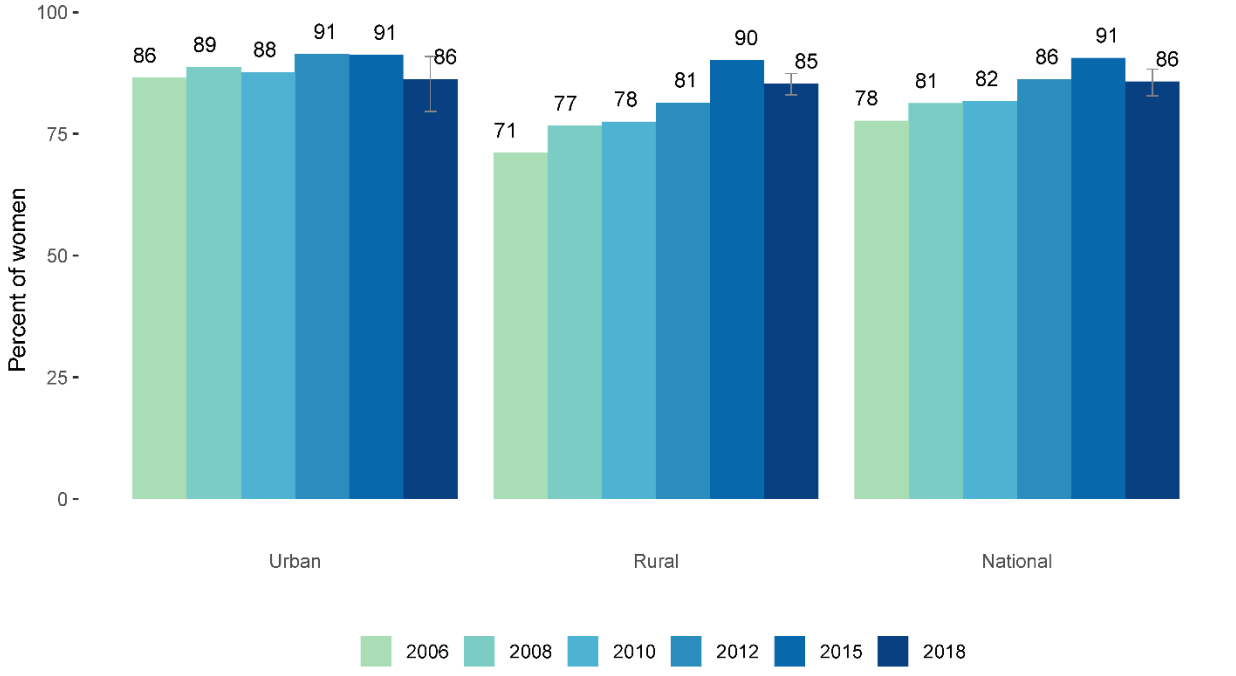
Figure 32. Among women ages 15 to 49 years, sources of malaria messaging by province (Zambia 2018)



Trends in SBC Indicators

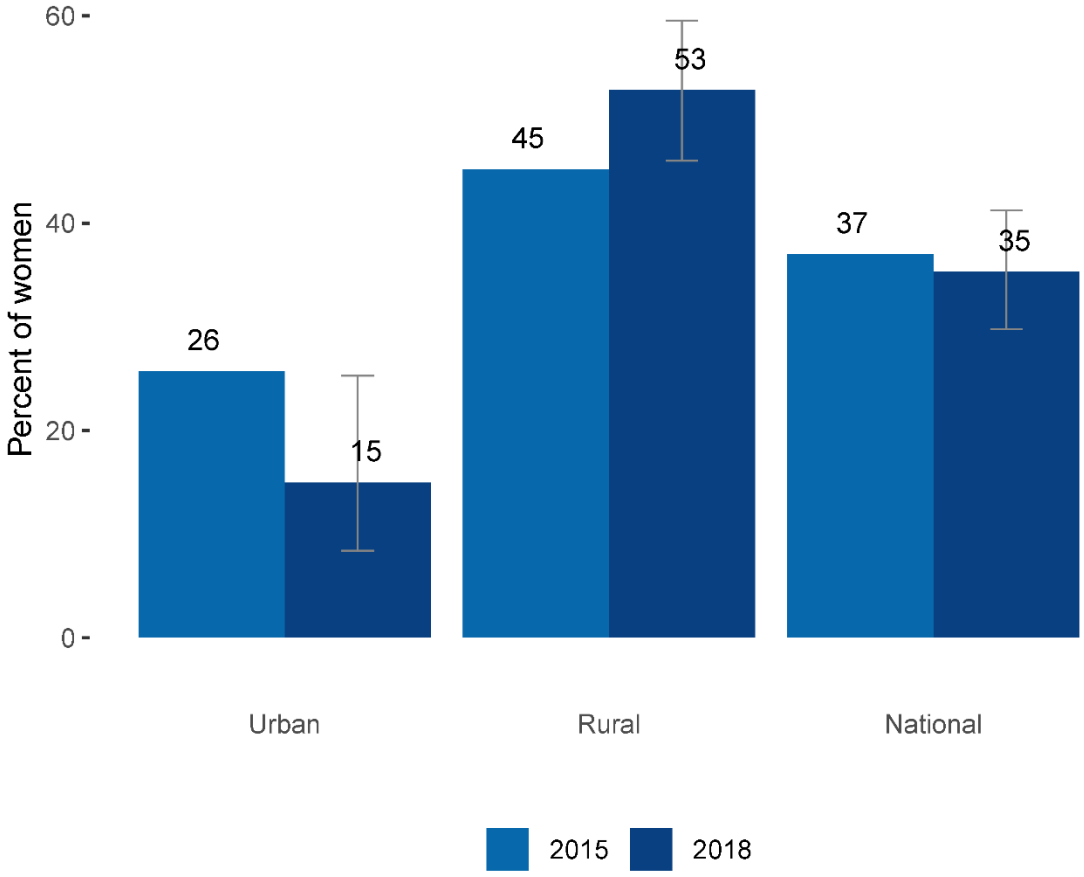
The 2018 MIS builds on several previous MISs to ask questions about the knowledge levels that women of reproductive age have regarding important topics in malaria prevention and treatment as well as malaria-related behaviours. **Figure 33** presents the trends in knowledge among these women regarding ITNs or nets as a method of malaria prevention. This particular knowledge has remained high since 2006 although rural women have been steadily improving in the specific reported knowledge. In 2018, a slight decrease occurred in this across both rural and urban women.

Figure 33. Among women ages 15 to 49 years, percentage who identified nets or treated nets as a source of malaria prevention (Zambia 2006–2018)



Due to the increasing role of CHWs in malaria service provision, especially for testing and treatment services, questions were added in 2015 to understand the degree to which women were aware of the location and role of CHWs in malaria activities. Between 2015 and 2018, this knowledge among women increased in rural areas but declined among urban women **(Figure 34)**. The percentage of women who reported CHWs as the source of malaria messaging in rural, more malarious areas increased from 2015 (9.8%) and 2018 (15.2%). Variations by province on the same indicator were observed with North-Western reporting the highest (49.8%) in 2015 but dropping to 4.5% in 2018, Western reporting 3.2% in 2015 and 22.9% in 2018, and Central Province reporting 5.0% in 2015 and 27.8% in 2018.

Figure 34. Among women ages 15 to 49 years, percentage who reported knowledge of the location and role of their local CHW in malaria activities (Zambia 2015–2018)



In general, SBC knowledge and behaviours require a greater exploration into their relationships to guide implementation activities. The MISs serve as a rich source of data for this further analysis which needs to be conducted and which is beyond the scope of the current report.

Chapter 6: Malaria parasite and anaemia prevalence

Prevalence of malaria and severe malaria anaemia in children under five years of age

Table 19 shows malaria parasite prevalence and anaemia in children from the 2018 MIS. The presence of malaria was ascertained by both microscopy and by RDT, which is standard practice in Zambia, as well as in most MISs globally. RDTs are operationally important for providing malaria diagnosis and treatment for survey subjects in real time during the survey; but slide results provide the commonly accepted standard for comparison of prevalence between areas and over time. In a survey setting, a discordance is expected between prevalence based on RDT results versus prevalence determined by microscopy. This is largely because microscopy detects parasites present in the blood on the day of sampling and yields a point prevalence, whereas RDTs detect antigens that linger approximately 1–3 weeks following an infection, and yield in effect a (higher) period prevalence.

National malaria parasite prevalence (by microscopy) was 9.1% among children under five years of age in 2018 overall, compared with 19.4% in 2015. Malaria prevalence was found to be higher in older children than younger children, however prevalence was similar among boys and girls. Rural areas of Zambia reported much higher levels of malaria than urban areas, and children in the highest wealth category were least likely to test positive while those in lowest wealth categories were most likely to test positive.

By province, Luapula reported the highest level of malaria parasite prevalence, with 30.4% of children testing positive by microscopy. Muchinga, North-Western, and Northern provinces reported the next highest levels of slide prevalence with 23.0%, 13.2% and 11.0%, respectively. Lusaka and Southern provinces reported the lowest levels of slide-positive children with 0.1% and 0% microscopy positive prevalence. Southern Province did report four RDT-positive children despite finding no corresponding positive slides.

Anaemia and severe anaemia were measured in the 2018 MIS in children under five years of age. A cut-off for the relevant spectrum of malaria-related severe anaemia is defined as haemoglobin less than 8 grams/decilitre. Children 6–11 months of age had the highest levels of severe anaemia (8.6%) followed by children 12–23 months old (7.2%). By age four, children reported the lowest level of severe anaemia.

Males had slightly higher levels of severe anaemia than females and children in rural areas had more severe anaemia than those in urban areas. Luapula and Northern provinces reported the highest levels of severe anaemia among children. Central Province reported the lowest rates of severe anaemia with 3.1%.

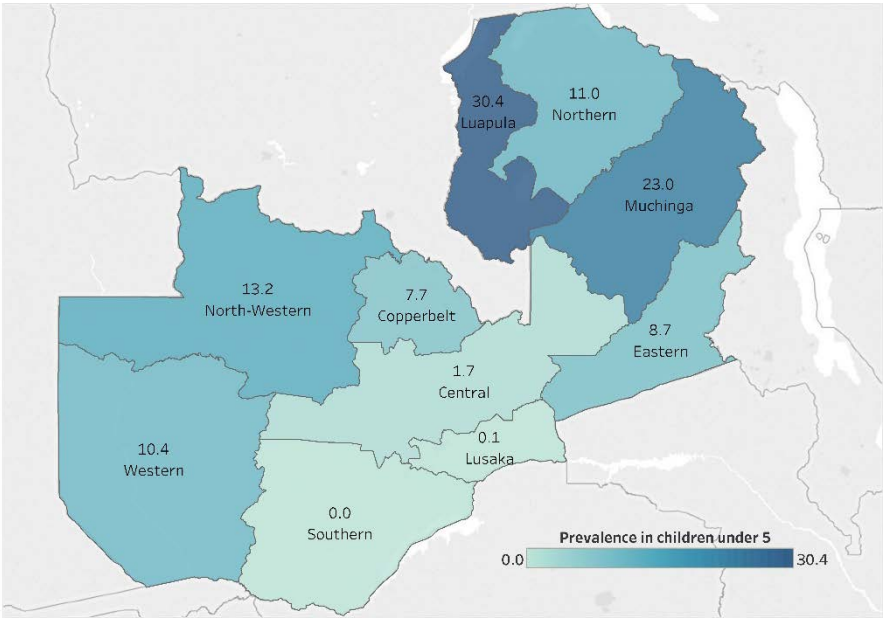
Table 19. Malaria parasite prevalence and anaemia in children under age five years

Among children, percentage with malaria parasites by microscopy or RDT, mean haemoglobin (Hb) values, and percentage with any anaemia (less than 11 grams/decilitre) and with severe anaemia (less than 8 grams/decilitre), by background characteristics (Zambia 2018).

Background characteristic	Percentage with malaria parasites read by microscopy	Percentage with malaria parasites by RDT	Mean haemoglobin value	Percentage of children with any anaemia	Percentage of children with severe anaemia	Number of children
	(1)	(2)	(3)	(4)	(5)	(6)
Age (in months)						
6-11	3.2	6.6	10.0	88.4	8.6	288
12–23	6.3	10.7	10.3	77.4	7.2	647
24–35	9.9	15.9	10.5	74.8	4.7	546
36–47	13.8	25.0	10.9	66.6	5.1	666
48–59	9.9	18.4	11.2	55.1	2.6	736
Sex						
Male	9.7	16.1	10.5	74.7	5.7	1,471
Female	8.6	16.3	10.8	65.8	4.8	1,412
Designation						
Urban	1.2	2.1	10.7	69.1	4.7	517
Rural	13.8	24.7	10.6	71.0	5.6	2,366
Province						
Central	1.7	8.6	10.9	65.5	3.1	183
Copperbelt	7.7	13.2	10.6	68.1	3.8	176
Eastern	8.7	19.7	10.6	75.1	3.8	471
Luapula	30.4	42.2	10.3	76.2	8.6	518
Lusaka	0.1	0.1	10.6	71.5	4.3	173
Muchinga	23.0	34.4	10.7	69.1	4.7	203
Northern	11.0	23.4	10.7	69.5	7.7	234
North-Western	13.2	36.3	10.6	70.9	4.7	212
Southern	0.0	0.9	10.7	69.0	6.4	201
Western	10.4	21.6	10.8	69.9	3.6	512
Wealth index						
Lowest	25.7	39.7	10.4	75.1	8.7	577
Second	16.6	30.1	10.6	71.7	4.3	634
Middle	7.6	17.7	10.7	68.3	3.2	640
Fourth	8.2	13.4	10.7	68.1	7.4	570
Highest	0.4	1.4	10.7	70.1	4.2	462
Total	9.1	16.2	10.6	70.3	5.3	2,883

The patterns of malaria prevalence by province are shown in **Figure 35**. Malaria remains highest in the farthest northern provinces—North-Western, Luapula, Muchinga, and Northern—reflecting the wetter conditions and the longer, more intense malaria transmission seasons. In moving towards elimination, Zambia may consider eliminating in lower prevalence provinces first and gradually moving north.

Figure 35. Map showing percentage malaria parasite prevalence by province among children under age five years (Zambia 2018)



Trends in malaria parasitaemia and severe anaemia

Malaria parasite prevalence, as measured by slide microscopy, and severe anaemia (Hb<8 g/dl) have changed quite dramatically across the MISs conducted between 2006 and 2018. Malaria parasite prevalence continues to be far more of an issue in rural areas. **Figure 36** shows rural and urban prevalence since 2006. Prevalence in urban areas, traditionally low, fell even lower by 2018. Rural areas had seen an increase in recent MISs since 2008, but prevalence fell in 2018. Nationally, 9% of children had malaria in 2018, a large decrease since 2015 levels. A reduction was seen in all provinces compared to 2015, but provinces varied markedly in their malaria prevalence, roughly following the expected north-south gradient and a rural-urban gradient. Severe anaemia prevalence among children under five years of age was 5.3% in 2018 compared with 5.7% in 2015. This indicator has shown a steady decline since 2010.

Figure 36. Malaria parasite prevalence among children under age five years by urban and rural areas (Zambia 2006–2018)

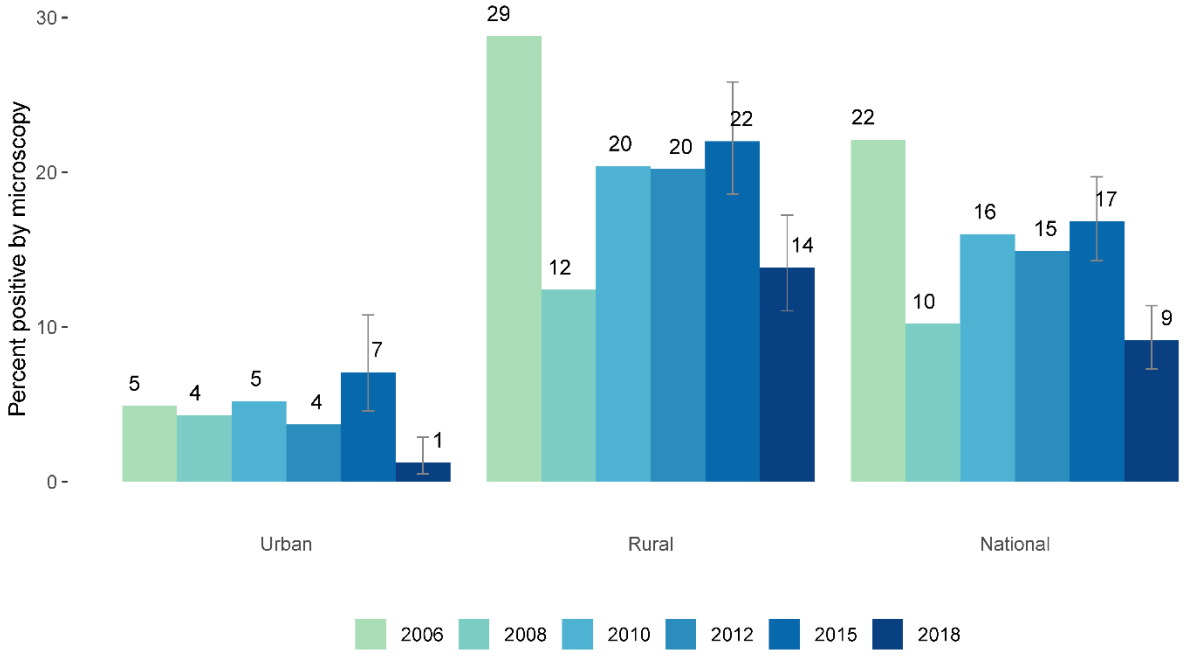
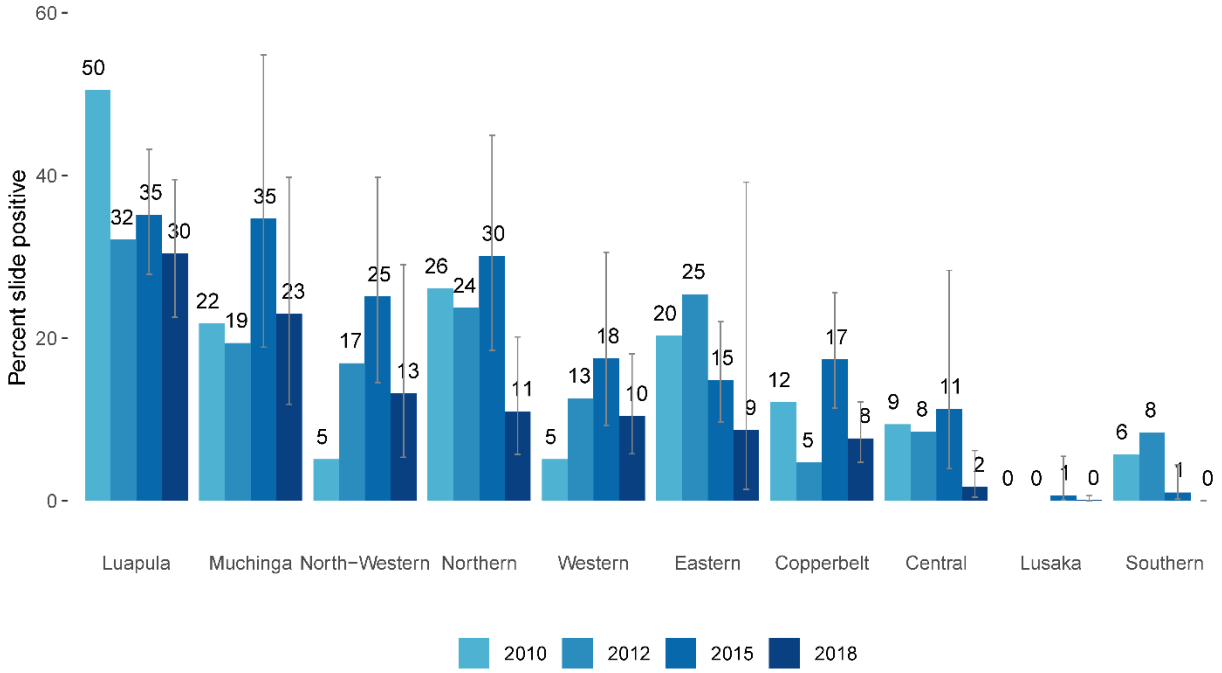


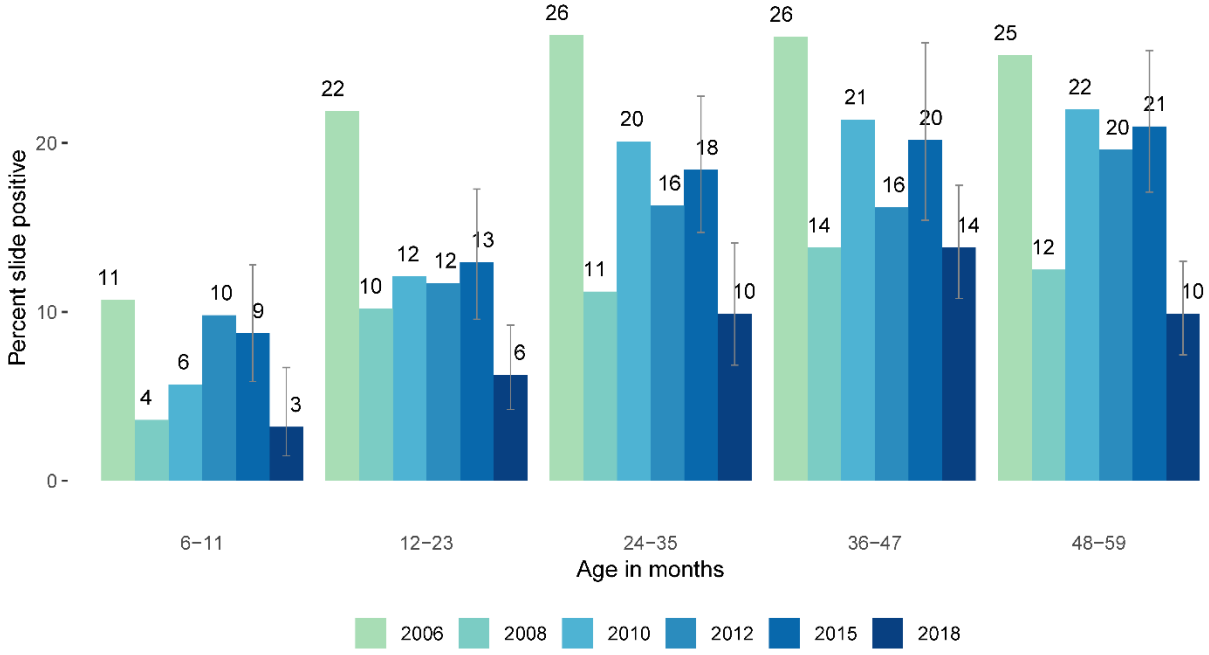
Figure 37 shows malaria parasite prevalence by microscopy patterns across the ten provinces in Zambia. Lusaka Province, dominated by the city of Lusaka, has had low levels of transmission that have stayed very low and stable since 2010; this is not considered unusual for large urban centres in equatorial Africa, especially given Lusaka's altitude (approximately 1,300 meters) and relatively cool climate. Southern Province recently succeeded in reducing its malaria rates to similar amounts as those in Lusaka, to just under 1% in 2015, and with no microscopy-positive samples in 2018. This reduction is likely due to the combination of high vector control and large-scale treatment-based activities carried out in Southern since 2012. Another notable decline was in Eastern, which also reported the most dramatic increase in IRS and the highest-level of IRS coverage. All provinces reported at least a slight decline or more since 2015. Luapula Province malaria prevalence levels remain the highest and relatively stable over the past six years.

Figure 37. Malaria parasite prevalence among children under age five years, by province (Zambia 2010–2018)



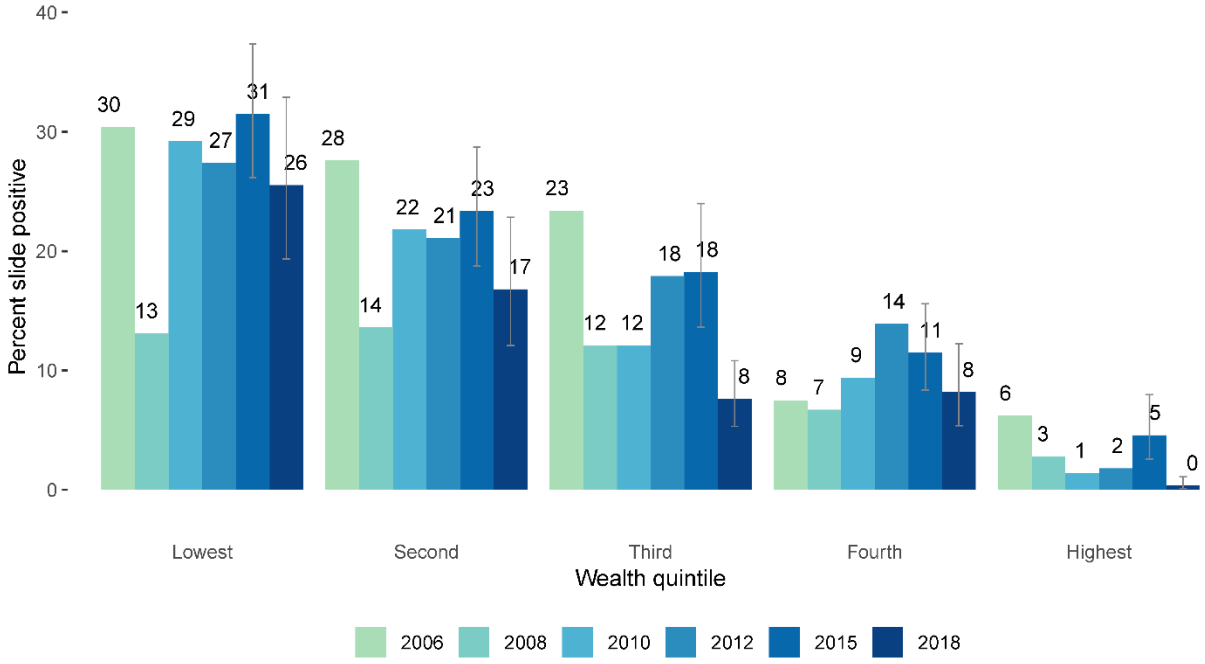
Malaria parasite rates typically increase with increasing age in the first five years of life. **Figure 38** shows this pattern has been consistent since 2006 despite the overall lower levels in 2018. Notable is the decline shown in four-year-olds in 2018, which had not occurred in previous MISs.

Figure 38. Malaria parasite prevalence by age among children under age five years (Zambia 2006–2018)



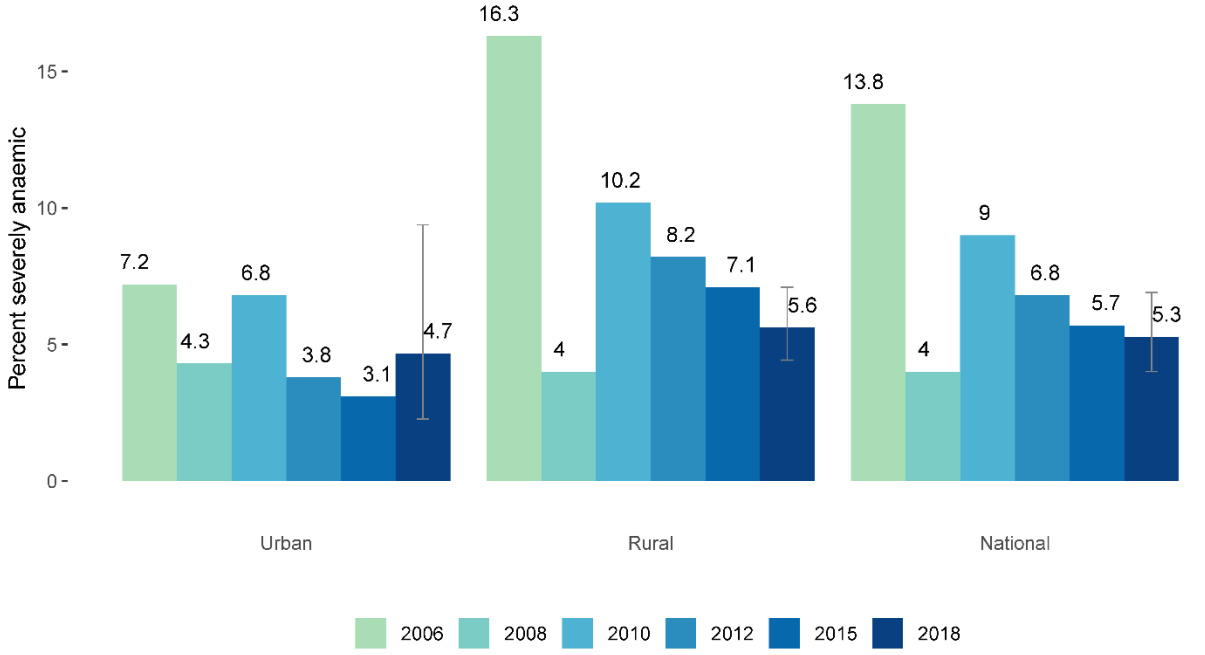
The trends in malaria prevalence by wealth quintile demonstrate that malaria remains a disease heavily influenced by socioeconomic background **(Figure 39)**. Trends from 2010 through 2018 suggest lower wealth status consistently has higher malaria prevalence. The highest wealth quintile in 2018 had little to no malaria prevalence reported.

Figure 39. Malaria parasite prevalence among children under age five years by wealth quintile (Zambia 2006–2018)



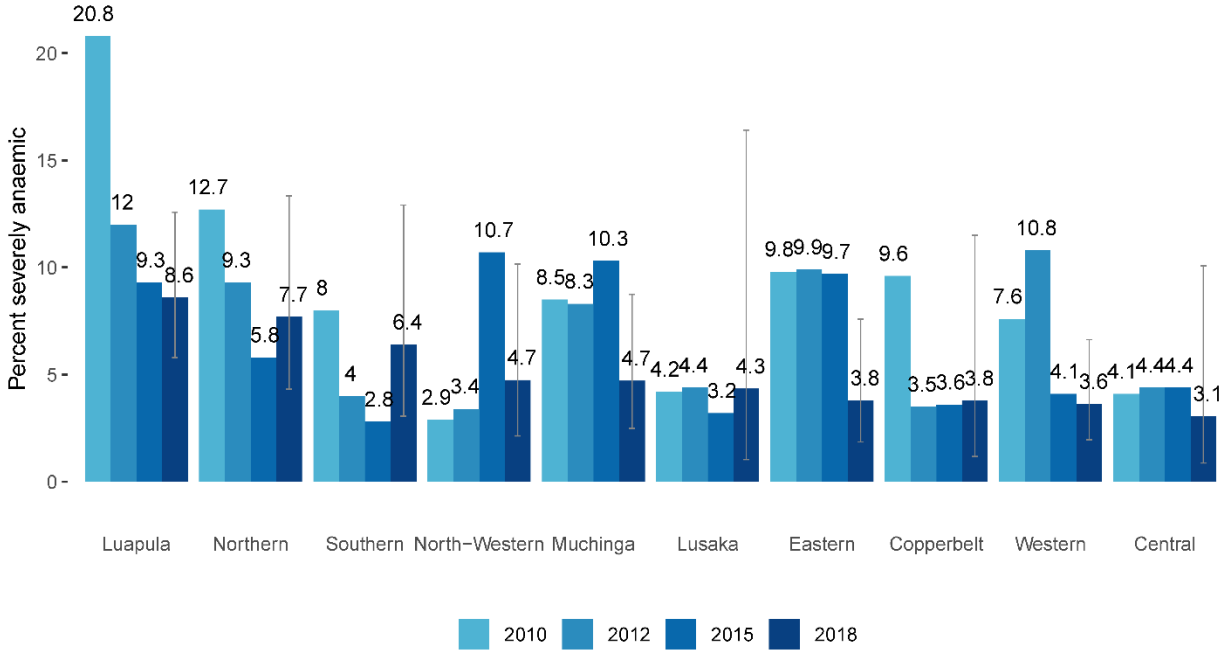
Severe anaemia prevalence has exhibited a similar pattern to malaria parasite prevalence since 2008. Severe anaemia was much more prevalent in rural areas and, despite the apparent anomaly year in 2008, urban areas have remained low and stable and rural areas reported a consistent decline from 2010 to 2018 **(Figure 40)**. Nationally, prevalence dropped to 5.3% by 2018 for children under five years of age, reflecting a trend seen in rural areas.

Figure 40. Severe anaemia prevalence among children under age five years by urban and rural areas (Zambia 2006–2018)



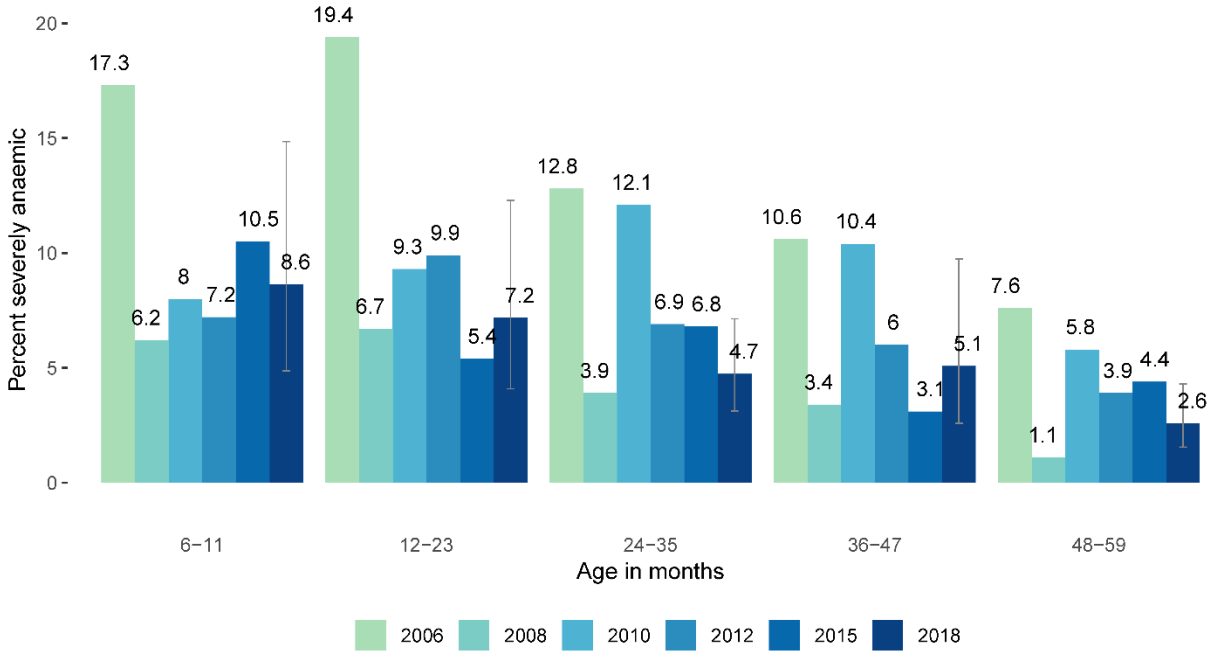
Among provinces, all provinces reported a decline in severe anaemia prevalence except Southern, which reported an increase relative to 2015. Many other provinces also achieved declines from 2012 **(Figure 41)**. The declines in severe anaemia extend back to 2010 in most areas and are encouraging.

Figure 41. Severe anaemia prevalence among children under age five years by province (Zambia 2010–2018)



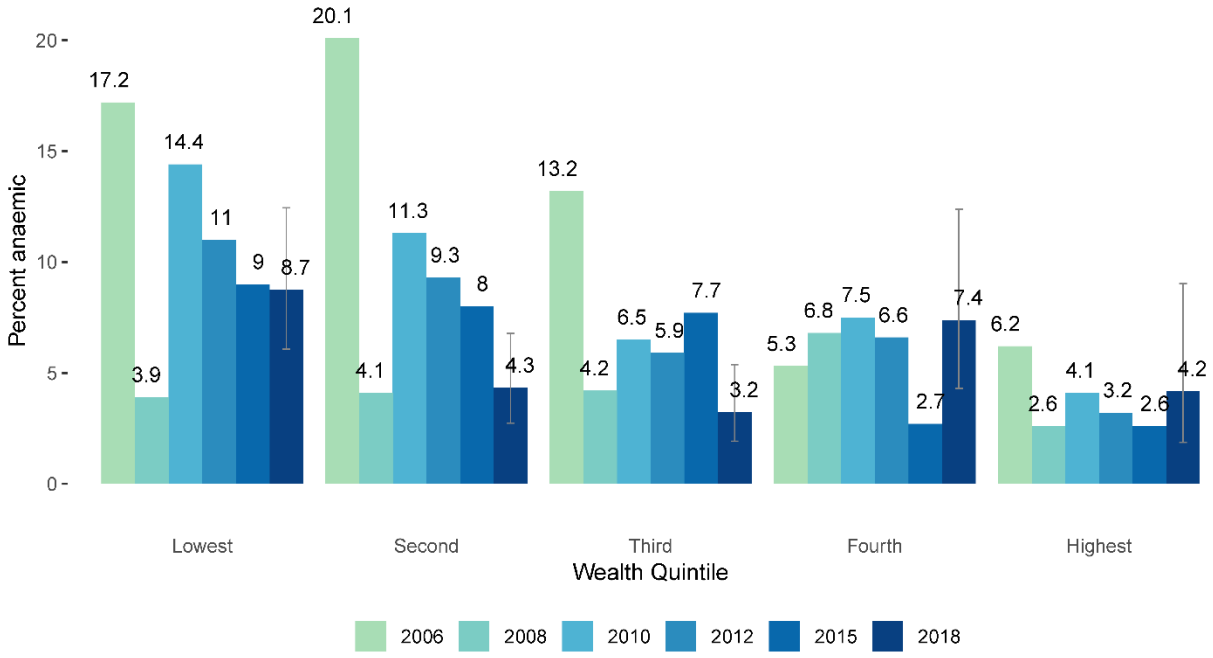
Among children under age five, severe anaemia prevalence generally declined with increasing age **(Figure 42)**. However, a slight increase in severe anaemia was reported among children 12 to 23 months of age and in children 36 to 47 months of age. All other age categories reported a decline.

Figure 42. Severe anaemia prevalence (Hb <8 g/dl) by age among children under age five years (Zambia 2006–2018)



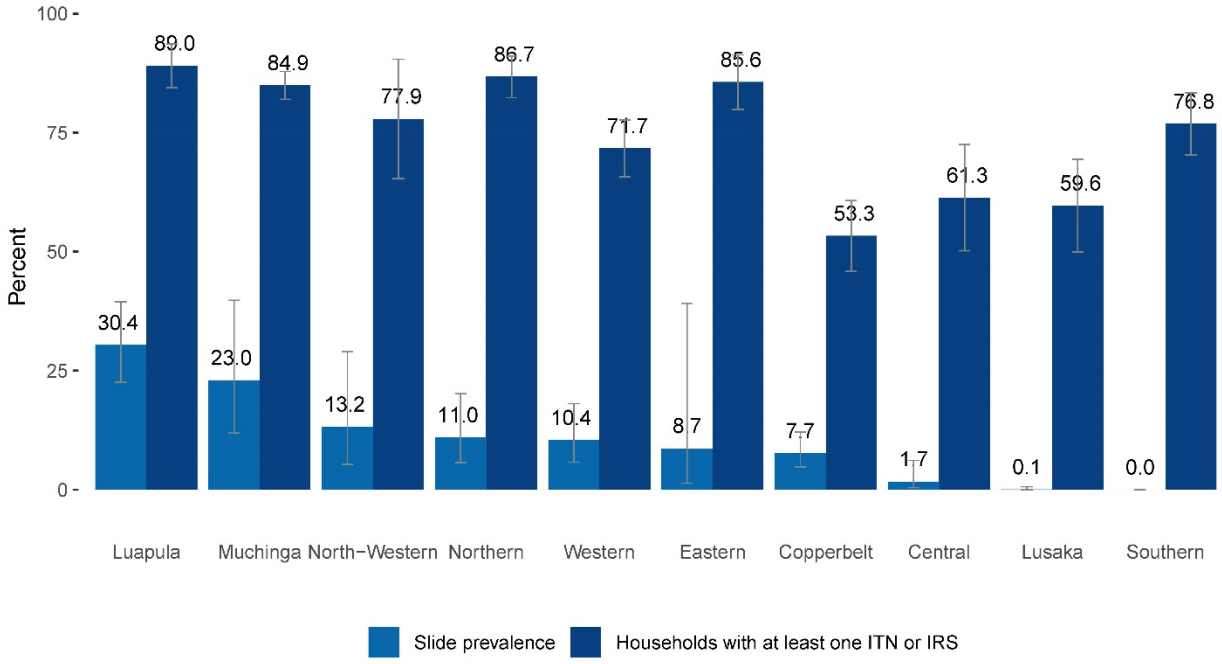
Severe anaemia prevalence generally follows a similar pattern to malaria prevalence by wealth status with wealthier households having less severe anaemia. Notably in 2018, the results are more variable with the fourth wealthiest quintile having higher than expected prevalence compared with previous years and compared with the lower wealth quintiles in 2018 **(Figure 43)**.

Figure 43. Severe anaemia prevalence among children under age five years by wealth quintile (Zambia 2006–2018)



In examining the relationship between intervention coverage and the prevalence of malaria, the expected association is that areas with higher coverage would have lower prevalence. However, interventions also might be expected to be more concentrated in areas with higher burden. **Figure 44** shows that some provinces with high intervention coverage do have reduced malaria parasitaemia, such as Southern and Eastern provinces. However, some provinces, such as Muchinga and Luapula have high malaria prevalence despite reasonably high rates of coverage. The stubbornly high burden in Luapula, which lies in the Congo River basin, may best be explained by environmental and socio-economic factors, not by a failure to keep up with programme implementation. Paradoxically, Luapula has both the nation's highest prevalence and the highest household coverage of vector control interventions (ITNs and IRS). Swampy terrain and equatorial climate promote breeding and transmission via the efficient local malaria vector (*Anopheles funestus*) throughout the year, and are compounded by socio-economic deprivation. **Figure 44** illustrates the concept that in malaria some local ecologies are inherently more receptive to the interventions, as their reduced receptivity to malaria transmission puts them closer to an epidemiologic tipping point.

Figure 44. Comparison of vector control coverage and malaria prevalence, by province (Zambia 2018)



Chapter 7: Discussion/conclusions

The 2018 MIS provides an update on malaria intervention coverage and malaria-related disease burden in Zambia and documents the country's progress toward achieving the goals abd objectives set forth in the NMESP 2017–2021. Six MISs have been conducted in total from 2006 to 2018 and trends across this period provide a long-term story. In particular, positive changes over time can be seen in malaria parasitaemia, severe anaemia, IRS, and the coverage and usage of ITNs.

Zambia has achieved high coverage (80%) of at least one ITN per household, a basic availability indicator, with eight of ten provinces having greater than 80% coverage. In 2018, ITN use among children under age five was 69%. If we exclude households with no reported ITNs, the ITN use among children is 82%. ITN use dips to the lowest levels among household members aged 10 to 19 years. However as **Figure 15** suggests, if the malaria programme could ensure sufficient nets in all households to achieve full coverage, as measured by having at least one ITN for every two household members, then ITN usage among all household members could be greater than 85%.

Across the majority of demographic classifications, Zambia has shown clear, steady progress in increasing ITN coverage and use over the past decade. The current strategy calls for increased efforts to sustain coverage with continuous distribution channels between periodic mass distributions so that coverage and usage do not dip with aging ITNs. The 2018 MIS was conducted at the end of largest ever national mass ITN distribution campaign, reaching all provinces, so the indicators likely reflect the best possible coverage achievable through current methods. Despite the progress, gaps in coverage exist and a more in-depth analysis of those not receiving ITNs and also less likely to use ITNs is needed.

IRS coverage improved in 2018, especially in rural, more malaria-prone areas relative to previous years MISs were conducted. Five of the highest malaria burden provinces, Northern, Luapula, Eastern, North-Western, and Muchinga, achieved greater than 45% IRS coverage in 2018 with two of these provinces, Northern and Luapula, achieving 64% IRS coverage. While IRS is a targeted intervention that aims for operational coverage at the local level of 85% or greater, achieving this significant increase to 64% population level coverage suggests that tremendous efforts have been made to expand IRS in these provinces over the past spray season.

IPTp coverage of at least one and two preventive doses during pregnancy has been a successful indicator in Zambia for a number of years. Zambia has consistently been a leader in the region with a high coverage of one and two doses of IPTp. Eighty-one percent of women reported at least two doses of IPTp during their most recent pregnancy in 2018, up from 79% in 2015. Three doses of IPTp also increased from 60% in 2015 to 67% in 2018. However, the percentage of mothers who took four or more doses of IPTp was very low in 2018, similar to 2015. However, the policy shift of aiming for IPTp coverage of four or more doses was adopted in Zambia in 2016, whereas the 2018 MIS estimates for four doses reflects coverage during the most recent pregnancy among women over the previous five years. This suggests the estimates likely represent a baseline of four doses of IPTp from an average of two and a half years prior to the survey and just prior to the adoption of the four doses policy. Access to four doses requires earlier ANC attendance to ensure sufficient time for four visits during the pregnancy although the MIS does not explicitly ask questions about timing of ANC visits. In light of recent, persistent difficulties in procuring adequate stocks of IPTp drugs (SP) to supply ANC clinics, Zambia may be in jeopardy of eroding its remarkable gains in malaria prevention during pregnancy.

Reported fever prevalence among children nationally was 19% in 2018, slightly more than the 16% reported in 2015. Rural areas were more likely to report fever than urban areas. The cascade of seeking treatment, receiving a finger stick, reporting a positive malaria test result, and taking antimalarial drugs suggests just over half of mothers of febrile children in rural areas seek treatment **(Figure 23)**. However, it is encouraging to note that the proportion of rural febrile children who sought treatment (56%) is very close to the proportion who received a finger stick for the fever episode, according to mothers' reports.

Nationally, 55% of febrile children reported a finger or heel stick for their febrile episode, which is a significant increase from 36% in 2015. Half of rural febrile children (28%) were reported to have had a positive malaria test—an indicator that remains high but is expected to fall as more areas approach elimination. More febrile rural children reported taking antimalarial drugs (38%) than received a positive malaria test (28%). The provision of more treatment than positive malaria tests reported could be attributed to poor recall of test results by mothers from their care-seeking visits or an over-precaution among care providers to prescribe antimalarial medicines for febrile episodes. Among Health Management Information System (HMIS) malaria outpatient attendance data, clinical malaria cases (i.e., malaria cases for which no diagnostic test was used to confirm the malaria case) are still commonly reported in many areas of the country and would explain this apparent over-prescribing pattern of antimalarial medicines.

In 2018, the majority of febrile children who seek care are being seen by government facilities (72.5%). In rural, more malarious areas, community health workers are the next largest source of care (16.7%). The source of antimalarial drugs matched this care-seeking information with 59% of antimalarials being received from government facilities and 22% from community health workers. Although the percentage of treatment received from CHWs declined slightly between 2015 and 2018, the MOH and partners continue to expand community-level service delivery of antimalarial testing and treatment services through CHWs to improve access to care and the promptness of treatment for malaria cases and infections. Ninety-six percent of the antimalarial treatment reported taken was AL—a good sign, as this is the recommended first-line treatment for uncomplicated malaria in Zambia and is available free of charge to patients accessed through the public health system.

Prompt access to curative services is critical for preventing severe malaria disease and deaths and for reducing transmission potential of infected individuals. The percentage of febrile children reported seeking care promptly (the same day or next day) declined from 30% in 2015 to 20% in 2018 **(Figure 27)**. A more in-depth analysis is required to understand the contributing factors for reductions in promptness of care-seeking behaviour. Low sample sizes of febrile children prevent a detailed descriptive exploration of many treatment and care-seeking behaviours in many areas.

In order to improve their own ability to contribute to malaria elimination activities, it is important for communities and households to understand malaria in general, malaria prevention in particular, and channels of communicating information about malaria. ITNs as a prevention method are well known amongst women in Zambia. Eighty-six percent of women reported mosquito nets (treated or untreated) as the most common form or malaria prevention **(Figure 33)**. This observation is expected given that ITNs are one of the principle malaria prevention interventions to which the majority of Zambians are exposed on a regular basis. Communication campaigns have traditionally focused on the use of ITNs without much emphasis on the connection between mosquito bites, malaria, ITN use. Diversity of messaging to improve the broader knowledge of malaria, how it is transmitted, and the importance of prevention may help address the remaining gaps in the use of ITNs. It is also notable that few women reported housing improvements, especially the screening of windows, as a means of preventing malaria. To enable greater individual control of local transmission, additional emphasis could be placed on communicating the importance of household-level prevention, including housing improvements.

As more emphasis is placed on the role of CHWs in providing malaria services, especially in rural areas, the recognition of their location and role should increase. This increase was observed in 2018 compared to 2015 with over of half of rural women reporting knowledge of the role of CHWs in the delivery of malaria services **(Figure 34)**. The effect of the increased presence of CHWs in provinces like Central, Eastern, Southern, and Western is evident in **Figure 32**, which shows that CHWs were the source of a significant portion of malaria information for women.

In 2018, national malaria parasite prevalence by microscopy was 9%, compared to 17% in 2015. This nearly halving of prevalence is likely the result of malaria prevention efforts such as mass and routine ITN distributions, especially from late 2017 through 2018, and the expansion and scale-up of IRS into

more rural malarious areas during the malaria transmission season preceding the 2018 MIS. Vector control activities have been enhanced in Zambia from 2017 through the transmission season in 2018, relative to previous years, and the 2018 MIS was well-timed to detect the malaria burden reduction that came as a result. This decline was reported throughout the country in rural and urban areas and across all provinces. The poorer, more rural areas of Zambia continue to bear the largest malaria burden, particularly in the wetter northern areas, where the malaria transmission season is longer and tends to be more intense. A similar pattern of reduction was seen in the spectrum of severe malarial anaemia measured through haemoglobin prevalence (<8 g/dl).

Zambia's malaria elimination efforts require sustained and additive malaria intervention packages administered in combination as no one tool provides a sufficient remedy. Addressing the needs of vector control in malaria transmission areas and expanding case management and treatment services in combination are two sides of the same coin in malaria elimination. The NMEP has prioritised both and continues to support significant expansion of malaria testing and treatment services into communities combined with malaria services and, where appropriate, reactive case detection in areas of very local transmission and case reporting. Supporting districts and local communities to roll out the combined package of interventions is the current modus operandi of the malaria elimination strategy and the focus of resources and efforts throughout the country.

The MIS has been a cornerstone of benchmarking malaria burden since 2006. As malaria burden declines to pre-elimination levels in certain areas, MISs tend to become less relevant for describing patterns of malaria burden and preferentially targeting interventions to local hotspots. Instead, the development of robust malaria surveillance systems in these areas, and throughout the country as feasible, is required to assess progress. In the context of declining malaria burden, MISs and other national surveys are important to understand the broader trend in coverage of the interventions and to otherwise validate programmatic and operational coverage data provided by malaria programme activities.

Chapter 8: Key recommendations

Sustaining the progress and momentum of malaria elimination efforts requires a number of significant changes and improvements for malaria service delivery and strategic prioritisation. These are summarised as the following recommendations based on evidence provided by the 2018 MIS and the operational knowledge of the NMEP:

- Zambia's public health programmes and population should be encouraged by the nationwide reduction in malaria prevalence in children under five years of age, from 19% to 9% in just three years, as well as the increased coverage of a package of malaria control interventions. Although much work remains to reach the country's ambitious goals for malaria elimination, the progress has been historic. Gains must be protected while we redouble efforts to make further, accelerated progress in the next three-year interval.
- ITNs account for the majority of vector control coverage in Zambia and therefore remain a significant contributor to malaria burden reduction among available malaria prevention tools, especially in rural, more malarious areas. Sustaining high vector control coverage, especially with ITNs and between periods of mass distribution campaigns, is vital for malaria elimination.
- Since high ITN use (>85%) among all household members is possible to achieve by supplying sufficient numbers of ITNs at the household level and many—but not all—areas achieved this, the malaria programme should consider improving buffer stocks for ITN supplies during distribution efforts to ensure sufficient ITNs are available. Current efforts are still falling short, due in part to poor population estimates and frequent underestimations of ITN quantification needs.
- IRS coverage at the population level has increased dramatically in some provinces (such as Luapula) and should be sustained if feasible. In others provinces (such as Copperbelt), population-level coverage was low and IRS was applied late into the rainy season, suggesting a need for increased public as well as private investments and more timely preparations.
- Zambia will need to protect its gains in coverage of two and three doses of IPTp if it is to go further and achieve high coverage of its new policy of providing four or more doses. This means continuing to expand coverage, strengthening the supply of IPTp drugs, encouraging earlier ANC attendance during pregnancy, linking ITN distributions with IPTp service delivery, and using appropriately targeted messaging to encourage women to make their scheduled ANC visits.
- Expanding access to malaria testing and treatment services through improved health service provision, including through community health workers/volunteers, is important to reducing episodes of severe malaria disease and malaria deaths, especially among children. The NMEP's efforts to expand iCCM and surveillance at the community level should be accelerated to achieve malaria elimination targets.
- Promptness of care-seeking behaviour among febrile children has declined between 2015 and 2018 and a more detailed analysis of the contributing factors for this decline are required. Prompt care-seeking is critical to preventing malaria disease progression to a more serious state.
- Effective messaging at the community level on the importance of testing and treatment should be increased to improve care-seeking behaviour. Messages around testing should emphasise that fever is a common symptom of malaria while acknowledging that fever can be caused by other factors as well. Messages around treatment should emphasise that prompt care is crucial to a good malaria treatment outcome.

- Future communications campaigns must focus on providing details on the connection between mosquito bites, malaria, and use of ITNs.
- Intensification and adoption of new SBC messaging approaches among the general population should be developed to increase knowledge of malaria prevention methods. Formative assessments should be conducted to determine the most effective message delivery channels.
- MISs should be supplemented with improved malaria surveillance and research studies aimed at increasingly local levels to understand further transmission patterns and to aid in targeting malaria interventions in cost-effective ways. This is especially important in the lowest burden areas such as Southern and Lusaka provinces, and parts of Western, Central, and Eastern provinces.
- In moving towards elimination, areas of higher transmission should be provided with additional resources in order to transition to lower levels of transmission before elimination.

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Appendix A: Sample design

Introduction

The 2018 Malaria Indicator Survey covered household population in Zambia. A representative probability sample to produce estimates for the country as a whole, rural and urban separately, was drawn. Overall, a representative sample of 4,475 households was selected. A two-stage stratified cluster sampling design was used to select the sample.

Sampling frame

The sampling frame for the selection of households was constructed from the 2010 census frame [14]. The structure of the census frame is as described below.

There are ten provinces in Zambia and each province is subdivided into districts. For statistical purposes each district is subdivided into census supervisory areas (CSAs) and these are in turn subdivided into enumeration areas (EAs). CSAs are grouped in wards, wards in constituencies, constituencies in districts, and districts in provinces. The listing of EAs 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) which are the EAs or clusters. The sample was selected in two stages. This means the primary sampling units were selected from the census frame in the first stage and the households were selected from the selected enumeration areas in the second stage. The enumeration areas on the frame are stratified by province and by rural and urban.

Sample allocation and selection

A equal allocation stratified sample was used to allocate households in the main domains. This is where the number of EAs is disproportional to the percentage distribution of household population in the stratum. Therefore, there will be need to weight the sample results according to the stratum's proportion to the population. The rural urban proportion per stratum used was 25 to 75% respectively. Initially, a total of 4,475 households were allocated in equal proportion in the ten strata (provinces). The distribution is given in the table below.

Table A1. Sample distribution of clusters and households for the 2018 MIS

	# of clusters			**# of households**		
	Rural	Urban	Total	Rural	Urban	Total
Central	9	3	12	225	75	300
Copperbelt	9	4	13	225	100	325
Eastern	9	4	13	225	100	325
Luapula	9	4	13	225	100	325
Lusaka	9	4	13	225	100	325
Muchinga	9	4	13	225	100	325
North-Western	9	4	13	225	100	325
Northern	9	4	13	225	100	325
Southern	9	4	13	225	100	325
Western	9	4	13	225	100	325
Total	**90**	**39**	**129**	**2,250**	**975**	**3,225**

The MIS sample was selected using a stratified two-stage cluster design as mentioned earlier. Once the households were allocated to the strata (provinces, rural, and urban), the number of clusters (SEAs) to be selected were 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.

Special treatment was taken for Western, Eastern, and Luapula provinces, where over sampling was done in order to meet the objectives of the survey. Following the results of the previous MIS, interventions were deployed in these areas, hence the need to over sample them.

The oversampling in Western, Luapula, and Eastern provinces required selecting an additional 21, 15, and 14 clusters above what was initially drawn, respectively. Therefore, the additional clusters were distributed by rural and urban following the average 25% to 75% distribution, respectively. This worked out to be 135 clusters selected from rural and 44 from urban for a total of 179 clusters countrywide. The final sample allocation is therefore as follows.

Table A2. Sample distribution of clusters and households for the 2018 MIS taking into account oversampling in Eastern, Luapula, and Western provinces

	# of clusters			**# of households**		
	Rural	Urban	Total	Rural	Urban	Total
Central	9	3	12	225	75	300
copperbelt	9	4	13	225	100	325
Eastern	20	7	27	500	175	675
Luapula	23	5	28	575	125	700
Lusaka	9	4	13	225	100	325
Muchinga	9	4	13	225	100	325
North-Western	9	4	13	225	100	325
Northern	9	4	13	225	100	325
Southern	9	4	13	225	100	325
Western	29	5	34	725	125	850
Total	**135**	**44**	**179**	**3,375**	**1,100**	**4,475**

Selection procedure for clusters

The selection was done using a programmed Excel spread sheet for stratified systematic sampling. The programme followed the steps outlined below to select the clusters (EAs) in each stratum.

1. Calculate 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 2010 census) and *a* is the number of clusters (SEAs) to be selected in the stratum.

2. Calculate the cumulated size of each SEA.
3. Calculate the sampling numbers

R, *R*+*I*, *R*+2*I*, ..., *R* + (*a*-1)*I*,

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

4. Compare each sampling number with the cumulated sizes of the SEAs.

The first EA (or cluster) whose cumulated size was equal to or greater than the random number generated in (iii) was selected. The next SEA to be selected was the one with cumulated size equal to or greater than *R+I.* Each of the rest of the SEAs were 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 of the households in all the selected SEAs. Upon completion of the household listing, the households were given new household numbers, which were sampling serial numbers assigned to each household in the cluster. The sampling numbers were assigned sequentially within each SEA starting from one. 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 thehousehold:

1. Calculate the sampling interval in each category

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

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

2. Generate a random number between 1 and the interval I; the first selection will hence be R.
3. Add the intervaql to the random number to get the next selection.
4. Add the interval repeatedly until you get your desired sample size.

Estimation procedure

Weights

Sampling weights were required to ensure that the sample was representative at the national level. The sampling probabilities at first-stage selection of SEAs and probabilities of selecting the households were used to calculate the weights. The weights of the sample were equal to the inverse of the probability of selection.

The probability of selecting cluster *i* was calculated as

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

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 is the number of households selected from stratum h and N_h is 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, and 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 = 2 (the rural/urban areas taken as a separate domains).

Table A3. Number of interviews and response rates: household and women's sample

Result	Residence		Total
	Urban	Rural	
Household interviews			
Selected households	990	3,435	4,425
Occupied households	960	3,359	4,319
Interviewed households	916	3,261	4,177
Household response rate (HRR)	93	95	94
Interviews with women			
Number of eligible women	1,016	3,083	4,099
Number of eligible women interviewed	885	2,795	3,680
Eligible women response rate	87	91	90
Finger-pricks			
Number of elligible children	568	2,490	3,058
Number of elligible children finger-pricked	517	2,366	2,883
Finger-prick response rate	91	95	94

Appendix B: Survey personnel

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Copperbelt	Miller M. Phiri	Lab
Copperbelt	Collins Kamocha	Mapper
Eastern 1	Theresa Chama Ngulube	Nurse / team lead
Eastern 1	Majorie Mulawa Chonta	Nurse
Eastern 1	Cynthia Chilekwa	Lab
Eastern 1	Sparkman Chilyabanyama	Lab
Eastern 1	Albert Mukanda	Mapper
Eastern 2	Margaret Taulo	Nurse
Eastern 2	Dabwiso Jere	Nurse
Eastern 2	Herbet Mbewe	Lab / team lead
Eastern 2	Sara Lyempe	Lab
Eastern 2	Japhet Phiri	Mapper
Eastern 3	Mutale Chulu	Nurse / team lead
Eastern 3	Everlyn Kasukumya Banda	Nurse
Eastern 3	Emma Zyambo	Lab
Eastern 3	Arnold Mwape	Lab
Eastern 3	Owen Mwiimbi	Mapper
Luapula 1	Laura Mutale	Nurse
Luapula 1	Maggie Mwila	Nurse / team lead
Luapula 1	Chimuka Hamayanda	Lab
Luapula 1	Chimwemwe Harriet Ndhlovu	Lab
Luapula 1	Derrick Bwalya	Mapper
Luapula 2	Emmily Chokolo	Nurse
Luapula 2	Brenda Mudenda	Nurse
Luapula 2	Andrew Mwandila	Lab / team lead
Luapula 2	Nancy A. Litana	Lab
Luapula 2	Rodgers Musonda	Mapper
Luapula 3	Shillah Chiyabi	Nurse / team lead
Luapula 3	Pierre Celestin Birori	Nurse
Luapula 3	Moono Chilinda	Lab
Luapula 3	Yvonne Mumba	Lab

Luapula 3	Geshom Musenge	Mapper
Lusaka	Clara Mulenga	Nurse
Lusaka	Bridget Muzyamba	Nurse
Lusaka	Patricia Mwale	Lab
Lusaka	Nchimunya Chaambwa	Lab / team lead
Lusaka	Claymore Kalyangile	Mapper
Muchinga	Margret Kafula C.	Nurse / team lead
Muchinga	Josephine Mumbi Chatama	Nurse
Muchinga	Danny Nyama	Lab
Muchinga	Sandra S. Ndhlovu	Nurse
Muchinga	Tom Shankampwa	Lab
Muchinga	Conrad Sikanyiti	Mapper
Northern	Susan K. Ngoyi	Nurse / team lead
Northern	Nancy Chishimba	Nurse
Northern	Future Banda	Lab
Northern	Theresa Shankanga	Lab
Northern	Bonaventure Chishimba	Mapper
North-Western	Fridah Matabishi	Nurse
North-Western	Isaac Musonda	Nurse
North-Western	Florence Lumbala	Nurse
North-Western	Sam Lungu	Lab / team lead
North-Western	Martha Manda	Lab
North-Western	Mutombo Kanganja	Mapper
Southern	Bester Hampande	Nurse
Southern	Memory Siatwinda	Nurse / team lead
Southern	Clever Chisenga	Lab
Southern	Chifwembe Chiyemfya	Lab
Southern	Joseph M. Ngwenye	Mapper
Western 1	Julie Nsamba M.	Nurse
Western 1	Lyamba Njaya	Nurse
Western 1	Stephen Kamukwamba	Lab / team lead
Western 1	Jennifer Mwansa	Lab
Western 1	Tabakamulamu Liswaniso	Mapper
Western 2	Try Ndhlovu	Nurse
Western 2	Mary Kavimba	Nurse
Western 2	Judith Mwanza	Lab / team lead
Western 2	Chuma Mudenda	Lab
Western 2	Fredrick Siwanasoto	Mapper
Western 3	Sandra Mushukulumbwe	Nurse
Western 3	Angela Mwandu	Nurse
Western 3	William Mubanga	Lab / team lead
Western 3	Pauline N. Maimbolwa	Lab
Western 3	Patrick Chitengi	Mapper

Appendix C: National Malaria Indicator Survey 2018 questionnaire

Zambia Malaria Indicator Survey 2018

Household Questionnaire

ZAMBIA MALARIA INDICATOR SURVEY
MODEL HOUSEHOLD QUESTIONNAIRE

IDENTIFICATION[1]

PLACE NAME _____

NAME OF HOUSEHOLD HEAD _____

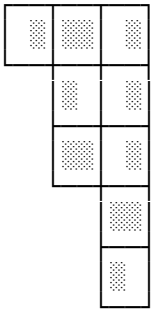
CLUSTER NUMBER.....

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	TIME INDOORS / OUTDOORS				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)?	To the nearest hour, what time last night did (NAME) go indoors for the evening? RECORD HOUR ON 24 HOUR CLOCK	To the nearest hour, what time last night did (NAME) go to bed? RECORD HOUR ON 24 HOUR CLOCK	To the nearest hour, what time this morning did (NAME) get out of bed? RECORD HOUR ON 24 HOUR CLOCK	To the nearest hour, what time this morning did (NAME) go outdoors? RECORD HOUR ON 24 HOUR CLOCK	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7.1)	(7.2)	(7.3	(7.4	(8)
			M F	YES NO	YES NO	IN YEARS	TIME (24 Hours)	TIME (24 Hours)	TIME (24 Hours)	TIME (24 Hours)	
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

* 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.	FEVER PREVALENCE AND TREATMENT									
	Has (NAME) been ill with a fever at any time in the last 2 weeks? IF NO SKIP TO NEXT PERSON,	How many days ago did the fever start? IF LESS THAN ONE DAY, THEN RECORD '00'.	Did (NAME) seek advice or treatment for the fever from any source?	Where did you seek advice or treatment? Anywhere else? RECORD ALL SOURCES MENTIONED	How many days after the fever began did (NAME) first seek advice or treatment? IF SAME DAY, RECORD '00'.	Is (NAME) still sick with a fever?	At any time during the illness, did (NAME) take any drugs for the fever?	What drugs did (NAME) take?[1] Any other drugs? RECORD ALL MENTIONED.	How long after the fever started did (NAME) first take DRUG NAME?	For how many days did (NAME) take the DRUG NAME? IF 7 OR MORE DAYS, RECORD '7'
(1)	(9.1)	(9.2)	(9.3)	(9.4)	(9.5)	(9.6)	(9.7)	(9.8)	(9.9)	(9.10)
01	YES NO DK 1 2 8	DK = 99	YES NO DK 1 2 8	PUBLIC SECTOR GOVT. HOSPITAL……A GOVT. HEALTH CENTER…….B GOVT. HEALTH POST ……..C MOBILE CLINIC……D FIELD WORKER……F OTHER PUBLIC _____G (SPEC) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC……..H PHARMACY ……I PRIVATE DOCTOR……J MOBILE CLINIC……K FIELD WORKER……L OTHER PVT. MED. _____M (SPECIY) OTHER SOURCE SHOP.....N TRAD. PRACTITIONER.....O OTHER _____ X (SPECIFY)	DK = 99 DAYS… . .	YES NO DK 1 2 8	YES NO DK 1 2 8	DK = 8 SP/FANSIDAR……A QUININE……B COARTEM……..C DHAP……D ASPIRIN……E PARACETAMOL….F IBUPROFEN……..G OTHER _____….X DON'T KNOW…….Z	DK = 8 SAME DAY……0 NEXT DAY……1 2 DAYS AFTER THE FEVER..2 3 DAYS AFTER THE FEVER..3 4 OR MORE DAYS AFTER THE FEVER……..4 DON'T KNOW ….8	DK = 99
02	1 2 8		1 2 8	PUBLIC SECTOR GOVT. HOSPITAL……A GOVT. HEALTH CENTER…….B GOVT. HEALTH POST ……..C MOBILE CLINIC……D FIELD WORKER……F OTHER PUBLIC _____G (SPEC) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC……..H PHARMACY ……I PRIVATE DOCTOR……J MOBILE CLINIC……K FIELD WORKER……L OTHER PVT. MED. _____M (SPECIY) OTHER SOURCE SHOP.....N TRAD. PRACTITIONER.....O OTHER _____ X (SPECIFY)	DAYS… . .	1 2 8	1 2 8	SP/FANSIDAR……A QUININE……B COARTEM……..C DHAP……D ASPIRIN……E PARACETAMOL….F IBUPROFEN……..G OTHER _____….X DON'T KNOW…….Z	SAME DAY……0 NEXT DAY……1 2 DAYS AFTER THE FEVER..2 3 DAYS AFTER THE FEVER..3 4 OR MORE DAYS AFTER THE FEVER……..4 DON'T KNOW ….8	
03	1 2 8		1 2 8	PUBLIC SECTOR GOVT. HOSPITAL……A GOVT. HEALTH CENTER…….B GOVT. HEALTH POST ……..C MOBILE CLINIC……D FIELD WORKER……F OTHER PUBLIC _____G (SPEC) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC……..H PHARMACY ……I	DAYS… . .	1 2 8	1 2 8	SP/FANSIDAR……A QUININE……B COARTEM……..C DHAP……D ASPIRIN……E PARACETAMOL….F IBUPROFEN……..G OTHER _____….X DON'T KNOW…….Z	SAME DAY……0 NEXT DAY……1 2 DAYS AFTER THE FEVER..2 3 DAYS AFTER THE FEVER..3 4 OR MORE DAYS AFTER THE FEVER……..4 DON'T KNOW ….8	

				PRIVATE DOCTOR……J MOBILE CLINIC……K FIELD WORKER……L OTHER PVT. MED. _____M (SPECIY) OTHER SOURCE SHOP.....N TRAD. PRACTITIONER.....O OTHER _____ X (SPECIFY)						
04	1 2 8		1 2 8	PUBLIC SECTOR GOVT. HOSPITAL……A GOVT. HEALTH CENTER…….B GOVT. HEALTH POST ……..C MOBILE CLINIC……D FIELD WORKER……F OTHER PUBLIC _____G (SPEC) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC……H PHARMACY ……I PRIVATE DOCTOR……J MOBILE CLINIC……K FIELD WORKER……L OTHER PVT. MED. _____M (SPECIY) OTHER SOURCE SHOP.....N TRAD. PRACTITIONER.....O OTHER _____ X (SPECIFY)	DAYS… . .	1 2 8	1 2 8	SP/FANSIDAR……A QUININE……B COARTEM……C DHAP……D ASPIRIN……E PARACETAMOL….F IBUPROFEN……..G OTHER _____….X DON'T KNOW…….Z	SAME DAY……0 NEXT DAY……1 2 DAYS AFTER THE FEVER..2 3 DAYS AFTER THE FEVER..3 4 OR MORE DAYS AFTER THE FEVER……..4 DON'T KNOW ….8	
05	1 2 8		1 2 8	PUBLIC SECTOR GOVT. HOSPITAL……A GOVT. HEALTH CENTER…….B GOVT. HEALTH POST ……..C MOBILE CLINIC……D FIELD WORKER……F OTHER PUBLIC _____G (SPEC) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC……H PHARMACY ……I PRIVATE DOCTOR……J MOBILE CLINIC……K FIELD WORKER……L OTHER PVT. MED. _____M (SPECIY) OTHER SOURCE SHOP.....N TRAD. PRACTITIONER.....O OTHER _____ X (SPECIFY)	DAYS… . .	1 2 8	1 2 8	SP/FANSIDAR……A QUININE……B COARTEM……C DHAP……D ASPIRIN……E PARACETAMOL….F IBUPROFEN……..G OTHER _____….X DON'T KNOW…….Z	SAME DAY……0 NEXT DAY……1 2 DAYS AFTER THE FEVER..2 3 DAYS AFTER THE FEVER..3 4 OR MORE DAYS AFTER THE FEVER……..4 DON'T KNOW ….8	

Continued….

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	TIME INDOORS / OUTDOORS				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)?	To the nearest hour, what time last night did (NAME) go indoors for the evening? RECORD HOUR ON 24 HOUR CLOCK	To the nearest hour, what time last night did (NAME) go to bed? RECORD HOUR ON 24 HOUR CLOCK	To the nearest hour, what time this morning did (NAME) get out of bed? RECORD HOUR ON 24 HOUR CLOCK	To the nearest hour, what time this morning did (NAME) go outdoors? RECORD HOUR ON 24 HOUR CLOCK	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7.1)	(7.2)	(7.3	(7.4	(8)
			M F	YES NO	YES NO	IN YEARS	TIME (24 Hours)	TIME (24 Hours)	TIME (24 Hours)	TIME (24 Hours)	
06			1 2	1 2	1 2						01
07			1 2	1 2	1 2						02
08			1 2	1 2	1 2						03
09			1 2	1 2	1 2						04
10			1 2	1 2	1 2						05

* 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
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07 = PARENT-IN-LAW
08 = BROTHER OR SISTER
09 = OTHER RELATIVE
10 = ADOPTED/FOSTER/ STEPCHILD
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98 = DON'T KNOW

LINE NO.	FEVER PREVALENCE AND TREATMENT									
	Has (NAME) been ill with a fever at any time in the last 2 weeks? IF NO SKIP TO NEXT PERSON,	How many days ago did the fever start? IF LESS THAN ONE DAY, THEN RECORD '00'.	Did (NAME) seek advice or treatment for the fever from any source?	Where did you seek advice or treatment? Anywhere else? RECORD ALL SOURCES MENTIONED	How many days after the fever began did (NAME) first seek advice or treatment? IF SAME DAY, RECORD '00'.	Is (NAME) still sick with a fever?	At any time during the illness, did (NAME) take any drugs for the fever?	What drugs did (NAME) take?[1] Any other drugs? RECORD ALL MENTIONED.	How long after the fever started did (NAME) first take DRUG NAME?	For how many days did (NAME) take the DRUG NAME? IF 7 OR MORE DAYS, RECORD '7'
(1)	(9.1)	(9.2)	(9.3)	(9.4)	(9.5)	(9.6)	(9.7)	(9.8)	(9.9)	(9.10)
06	YES NO DK 1 2 8	DK = 99	YES NO DK 1 2 8	PUBLIC SECTOR GOVT. HOSPITAL……A GOVT. HEALTH CENTER…….B GOVT. HEALTH POST ……..C MOBILE CLINIC……D COMMUNITY HEALTH WOKER / FIELD WORKER……F OTHER PUBLIC _____G (SPEC) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC……H MISSION HOSPITAL/ CLINIC……I PHARMACY ……J PRIVATE DOCTOR……K MOBILE CLINIC……L COMMUNITY HEALTH WOKER / FIELD WORKER……M OTHER PVT. MED. _____N (SPECIY) OTHER SOURCE SHOP.....O TRAD. PRACTITIONER.....P OTHER _____ X (SPECIFY)	DK = 99 DAYS… . .	YES NO DK 1 2 8	YES NO DK 1 2 8	DK = 8 SP/FANSIDAR……A QUININE……B COARTEM……C DHAP……D ASPIRIN……E PARACETAMOL….F IBUPROFEN……..G OTHER _____….X DON'T KNOW…….Z	DK = 8 SAME DAY……0 NEXT DAY……1 2 DAYS AFTER THE FEVER..2 3 DAYS AFTER THE FEVER..3 4 OR MORE DAYS AFTER THE FEVER……..4 DON'T KNOW ….8	DK = 99
07	1 2 8		1 2 8	PUBLIC SECTOR GOVT. HOSPITAL……A GOVT. HEALTH CENTER…….B GOVT. HEALTH POST ……..C MOBILE CLINIC……D COMMUNITY HEALTH WOKER / FIELD WORKER……F OTHER PUBLIC _____G (SPEC) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC……H MISSION HOSPITAL/ CLINIC……I PHARMACY ……J PRIVATE DOCTOR……K MOBILE CLINIC……L COMMUNITY HEALTH WOKER / FIELD WORKER……M OTHER PVT. MED. _____N (SPECIY) OTHER SOURCE SHOP.....O TRAD. PRACTITIONER.....P OTHER _____ X (SPECIFY)	DAYS… . .	1 2 8	1 2 8	SP/FANSIDAR……A QUININE……B COARTEM……C DHAP……D ASPIRIN……E PARACETAMOL….F IBUPROFEN……..G OTHER _____….X DON'T KNOW…….Z	SAME DAY……0 NEXT DAY……1 2 DAYS AFTER THE FEVER..2 3 DAYS AFTER THE FEVER..3 4 OR MORE DAYS AFTER THE FEVER……..4 DON'T KNOW ….8	
08	1 2 8		1 2 8	PUBLIC SECTOR GOVT. HOSPITAL……A GOVT. HEALTH CENTER…….B GOVT. HEALTH POST ……..C	DAYS… . .	1 2 8	1 2 8	SP/FANSIDAR……A QUININE……B COARTEM……C DHAP……D	SAME DAY……0 NEXT DAY……1 2 DAYS AFTER THE FEVER..2 3 DAYS AFTER THE FEVER..3	

				MOBILE CLINIC……D COMMUNITY HEALTH WOKER / FIELD WORKER……F OTHER PUBLIC _____G (SPEC) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC……..H MISSION HOSPITAL/ CLINIC……I PHARMACY ……..J PRIVATE DOCTOR……K MOBILE CLINIC……L COMMUNITY HEALTH WOKER / FIELD WORKER……M OTHER PVT. MED. _____N (SPECIY) OTHER SOURCE SHOP.....O TRAD. PRACTITIONER.....P OTHER _____ X (SPECIFY)				ASPIRIN……E PARACETAMOL....F IBUPROFEN……..G OTHER _____....X DON'T KNOW…….Z	4 OR MORE DAYS AFTER THE FEVER……..4 DON'T KNOW ….8	
09	1 2 8		1 2 8	PUBLIC SECTOR GOVT. HOSPITAL……A GOVT. HEALTH CENTER…….B GOVT. HEALTH POST ……..C MOBILE CLINIC……D COMMUNITY HEALTH WOKER / FIELD WORKER……F OTHER PUBLIC _____G (SPEC) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC……..H MISSION HOSPITAL/ CLINIC……I PHARMACY ……..J PRIVATE DOCTOR……K MOBILE CLINIC……L COMMUNITY HEALTH WOKER / FIELD WORKER……M OTHER PVT. MED. _____N (SPECIY) OTHER SOURCE SHOP.....O TRAD. PRACTITIONER.....P OTHER _____ X (SPECIFY)	DAYS… . .	1 2 8	1 2 8	SP/FANSIDAR……A QUININE……B COARTEM……..C DHAP……D ASPIRIN……E PARACETAMOL....F IBUPROFEN……..G OTHER _____....X DON'T KNOW…….Z	SAME DAY……..0 NEXT DAY……1 2 DAYS AFTER THE FEVER..2 3 DAYS AFTER THE FEVER..3 4 OR MORE DAYS AFTER THE FEVER……..4 DON'T KNOW ….8	
10	1 2 8		1 2 8	PUBLIC SECTOR GOVT. HOSPITAL……A GOVT. HEALTH CENTER…….B GOVT. HEALTH POST ……..C MOBILE CLINIC……D COMMUNITY HEALTH WOKER / FIELD WORKER……F OTHER PUBLIC _____G (SPEC) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC……..H MISSION HOSPITAL/ CLINIC……I PHARMACY ……..J PRIVATE DOCTOR……K MOBILE CLINIC……L COMMUNITY HEALTH WOKER / FIELD WORKER……M OTHER PVT. MED. _____N (SPECIY) OTHER SOURCE SHOP.....O TRAD. PRACTITIONER.....P OTHER _____ X (SPECIFY)	DAYS… . .	1 2 8	1 2 8	SP/FANSIDAR……A QUININE……B COARTEM……..C DHAP……D ASPIRIN……E PARACETAMOL....F IBUPROFEN……..G OTHER _____....X DON'T KNOW…….Z	SAME DAY……..0 NEXT DAY……1 2 DAYS AFTER THE FEVER..2 3 DAYS AFTER THE FEVER..3 4 OR MORE DAYS AFTER THE FEVER……..4 DON'T KNOW ….8	

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 staff, 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
9.11	For the head of household, did he/she ever **attend** school?	YES.....1 NO.....2	 →10
9.12	For the head of household, what is the highest level of school **attended**: primary, secondary, or higher?[1]	PRIMARY.....1 SECONDARY.....2 HIGHER.....3	
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)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
12a	Does your household have:[2]	YES NO	
	Electricity?	ELECTRICITY 1 2	
	A radio?	RADIO 1 2	
	A television?	TELEVISION 1 2	
	A mobile telephone?	MOBILE TELEPHONE 1 2	
	A non-mobile telephone?	NON-MOBILE TELEPHONE 1 2	
	A refrigerator?	REFRIGERATOR 1 2	
	A bed?	BED 1 2	
	A chair?	CHAIR 1 2	
	A table?	TABLE 1 2	
	A Cupboard?	CUPBOARD 1 2	
	A sofa?	SOFA 1 2	
	A clock?	CLOCK 1 2	
	A fan?	FAN 1 2	
	A sewing machine?	SEWING MACHINE 1 2	
	A cassette player?	CASSETTE PLAYER 1 2	
	A plough?	PLOUGH 1 2	
	A grain grinder?	GRAIN GRINDER 1 2	
	A VCR/DVD?	VCR/DVD 1 2	
	A tractor?	TRACTOR 1 2	
	A vehicle?	VEHICLE 1 2	
	A hammer mill?	HAMMER MILL 1 2	
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
14a	MAIN MATERIAL OF THE FLOOR.[1] RECORD OBSERVATION.	NATURAL FLOOR EARTH/SAND .....11 DUNG.....12 RUDIMENTARY FLOOR WOOD PLANKS.....21 PALM/BAMBOO.....22 FINISHED FLOOR PARQUET OR POLISHED WOOD.....31 VINYL OR ASPHALT STRIPS.....32 CERAMIC TILES.....33 CEMENT.....34 CARPET.....35 OTHER _____ 96 (SPECIFY)	
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)	
14c1	ARE THE EAVES OF THE HOUSE OR BUILDING OCCUPIED BY THIS HOUSEHOLD OPEN OR CLOSED? RECORD OBSERVATION.	OPEN…… 1 CLOSED ……2 PARTIALLY OPEN……3	
14c2	DOES THE PART OF THE HOUSE OR BUILDING OCCUPIED BY THE HOUSEHOLD HAVE A CEILING? RECORD OBSERVATION.	NONE…… 1 PARTIAL/POORLY SEALED/WORN OUT……2 COMPLETE AND SEALED……3	

14c3	IF A CEILING IS PRESENT, WHAT TYPE OF MATERIAL IS THE CEILING PRIMARILY CONSTRUCTED OF? RECORD OBSERVATION.	WOOD / PLYWOOD BOARDS……. 1 GYPSUM / PLASTERCASTE……..2 MUD AND WADDLE……..3 WOVEN PALM THATCH……..4 OTHER……..5	
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	
14d1	Are the windows and any airbrick gaps in the house or building boarded up, glazed or screened against mosquito entry with netting ? ASK OR RECORD OBSERVATION.	COMPLETE……. 1 COMPLETE WITH HOLES……..…2 INCOMPLETE OR BADLY DAMAGED…3 ABSENT……4	—<14e
14d2	If windows are boarded up, glazed or screened, what primary material is used to do so ? ASK OR RECORD OBSERVATION.	WOOD BOARDS……. 1 GLASS……..2 METAL NETTING……..3 FABRIC NETTING……..4 PLASTIC NETTING……..5 OTHER……..6	—<14e
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 ☐☐	
14h	Does any member of the household own any agricultural land?	YES.....1 NO.....2	—<14j
14i	How much agricultural land do members of this household own?	Lima…….. ☐☐ Acres…….. ☐☐ Hectares…….. ☐☐ 95 or more hectares……995 Don't know……998	
14j	Does this household own any livestock, herds other farm animals, or poultry?	YES.....1 NO.....2	
14k	How many of the following animals does this household own? IF NONE, ENTER '0' IF MORE THAN 95, ENTER '95' IF UNKNOWN, ENTER '98': Traditional cattle? Dairy cattle? Beef cattle? Horses, donkeys, mules? Goats? Sheep? Pigs? Chickens? Other poultry? Other livestock?	TRADITIONAL ▒▒ DAIRY ▒▒ BEEF ▒▒ HORSES/DONKEYS/MULES ▒▒ GOATS ▒▒ SHEEP ▒▒ PIGS ▒▒ CHICKEN ▒▒ OTHER POULTRY ▒▒ OTHER LIVESTOCK ▒▒	

15	Does any member of your household own: A watch? A bicycle? A motorcycle or motor scooter? An animal drawn cart? A car or truck? A boat with a motor? A banana boat?	YES NO WATCH 1 2 BICYCLE 1 2 MOTORCYCLE/SCOOTER 1 2 ANIMAL-DRAWN CART 1 2 CAR/TRUCK 1 2 BOAT WITH MOTOR 1 2 BANANA BOAT 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 ☐☐	
15F	Have any of the following been used in your living space over the last week: Mosquito coils? Insecticide spray (eg. DOOM, Rungu, Expel)? Repellents?	YES NO Mosquito coils 1 2 Insecticide spray 1 2 Repellents 1 2	
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
20a	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 MamaSafeNite…..13 NetProtect……….14 Other/Don't Know……16 'PRETREATED' NET[2] ICONET………..21 Fennet………….22 KO Nets………..23 Safinet………...24 Other/Don't Know….. 26 OTHER……………….31 DON'T KNOW BRAND……………..98	'PERMANENT' NET[1] Permanet………11 Olyset…………..12 MamaSafeNite…13 NetProtect…….14 Other/Don't Know……16 'PRETREATED' NET[2] ICONET………..21 Fennet………….22 KO Nets………..23 Safinet………...24 Other/Don't Know. 26 OTHER……………….31 DON'T KNOW BRAND……………..98	'PERMANENT' NET[1] Permanet………11 Olyset………….12 MamaSafeNite..13 NetProtect……….14 Other/Don't Know……16 'PRETREATED' NET[2] ICONET………..21 Fennet………….22 KO Nets………..23 Safinet………...24 Other/Don't Know….. 26 OTHER……………….31 DON'T KNOW BRAND……………..98
20b	Did you get the net through a mass distribution campaign, school distribution, during an antenatal care visit, or during an under five visit? IF AT THE CLINIC FOR ANC OR UNDER FIVE VISIT, PROBE TO BE SURE IT SURE AT THE ANC OR UNDER FIVE CLINIC	YES, MASS DISTRIBUTION............ 1 YES, SCHOOL............ 2 YES, ANC…………. 3 YES, UNDER FIVE VISIT........................... 4 NO 5	YES, MASS DISTRIBUTION............1 YES, SCHOOL ....2 YES, ANC…………. 3 YES, UNDER FIVE VISIT ....4 NO 5	YES, MASS DISTRIBUTION............ 1 YES, SCHOOL............ 2 YES, ANC…………. 3 YES, UNDER FIVE VISIT........................... 4 NO 5
20c	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

20d	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
20e	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 GOVERNMENT CLINIC/HOSPITAL RETAIL SHOP PHARMACY WORKPLACE OTHER (SPECIFY)________ DON'T KNOW	HOME GOVERNMENT CLINIC/HOSPITAL RETAIL SHOP PHARMACY WORKPLACE OTHER (SPECIFY)___________ DON'T KNOW
23b	Did you pay to soak or dip the net?	YES..............................1 NO.(skip to 23d).............2 NOT SURE..................8	YES...........................1 NO.(skip to 23d)...........2 NOT SURE................8	YES..............................1 NO.(skip to 23d).............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	In the last month, has the net gotten any new holes?	YES.....1 NO.(skip to 24).....2 DON'T KNOW.....8	YES .....1 NO.(skip to 24).....2 DON'T KNOW.....8	YES.....1 NO.(skip to 24).....2 DON'T KNOW.....8
23h	What caused the new holes?	1 Tore or split when caught on object 2 Was burned 3 Was caused by animals 4 Children 5 In another way (specify) _____ 98 Don't Know	1 Tore or split when caught on object 2 Was burned 3 Was caused by animals 4 Children 5 In another way (specify) _____ 98 Don't Know	1 Tore or split when caught on object 2 Was burned 3 Was caused by animals 4 Children 5 In another way (specify) _____ 98 Don't Know
23i	Have you tried to repair the new holes?	YES.....1 NO.(skip to 23k).....2 DON'T KNOW.....8	YES .....1 NO.(skip to 23k).....2 DON'T KNOW.....8	YES.....1 NO.(skip to 23k).....2 DON'T KNOW.....8
23j	If yes, what did you use to repair the holes? SKIP TO	1 Stitch 2 Know/tie 3 Patch 5 Other 98 Don't Know	1 Stitch 2 Know/tie 3 Patch 5 Other 98 Don't Know	1 Stitch 2 Know/tie 3 Patch 5 Other 98 Don't Know
23k	If no, what it the main reason you did not try to repair the holes?	1 Too busy 2 Not necessary 3 Don't know how to repair 5 Other 98 Don't Know	1 Too busy 2 Not necessary 3 Don't know how to repair 5 Other 98 Don't Know	1 Too busy 2 Not necessary 3 Don't know how to repair 5 Other 98 Don't Know
23l	Which of these statements best describes the net? PLEASE ASK THE RESPONDENT.	1 Still in good condition 2 Net is beginning to fall apart and should be replaced soon 3 Net is no longer useable and needs to be replaced 98 Don't Know	1 Still in good condition 2 Net is beginning to fall apart and should be replaced soon 3 Net is no longer useable and needs to be replaced 98 Don't Know	1 Still in good condition 2 Net is beginning to fall apart and should be replaced soon 3 Net is no longer useable and needs to be replaced 98 Don't Know
23m	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 25b) =——┤ NOT SURE.....8	YES .....1 NO .....2 (SKIP TO 25b) =——┤ NOT SURE 8	YES.....1 NO.....2 (SKIP TO 25b) =——┤ NOT SURE.....8

"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
25a	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
25b	What is the main reason that nobody slept under this bed net last night? **RECORD ONE ANSWER**	NO MOSQUITOES ..... 1 THERE IS NO MALARIA ..... 2 TOO HOT ..... 3 DON'T LIKE SMELL ..... 4 FEEL 'CLOSED IN' ..... 5 NET TOO OLD OR TORN ..... 6 NET TOO DIRTY ..... 7 NET NOT AVAILABLE LAST NIGHT (WASHING) ..... 8 USUAL USER DID NOT SLEEP HERE LAST NIGHT ..... 9 NET WAS NOT NEEDED LAST NIGHT ..... 10 NO PLACE TO HANG IT .... 11 OTHER (*specify*) ..... 96 DON'T KNOW 98	NO MOSQUITOES ..... 1 THERE IS NO MALARIA ..... 2 TOO HOT ..... 3 DON'T LIKE SMELL ..... 4 FEEL 'CLOSED IN' ..... 5 NET TOO OLD OR TORN .... 6 NET TOO DIRTY ..... 7 NET NOT AVAILABLE LAST NIGHT (WASHING) ..... 8 USUAL USER DID NOT SLEEP HERE LAST NIGHT ... 9 NET WAS NOT NEEDED LAST NIGHT ..... 10 NO PLACE TO HANG IT ... 11 OTHER (*specify*) ..... 96 DON'T KNOW 98	NO MOSQUITOES ..... 1 THERE IS NO MALARIA ... 2 TOO HOT ..... 3 DON'T LIKE SMELL ..... 4 FEEL 'CLOSED IN' ..... 5 NET TOO OLD OR TORN . 6 NET TOO DIRTY ..... 7 NET NOT AVAILABLE LAST NIGHT (WASHING) ..... 8 USUAL USER DID NOT SLEEP HERE LAST NIGHT. 9 NET WAS NOT NEEDED LAST NIGHT ..... 10 NO PLACE TO HANG IT 11 OTHER (*specify*) ..... 96 DON'T KNOW 98
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 (or under age 10 for Western province). THEN ASK THE DATE OF BIRTH.

CHILDREN UNDER AGE 6 (or age 10 in Western province) YEARS/HOUSEHOLD MEMBER					CONSENT STATEMENT FOR CHILDREN UNDER SIX (or TEN) (BORN IN 2002 OR AFTER) (AND HOUSEHOLD MEMBERS)	
LINE NUMBER FROM COL. (1)	NAME FROM COL. (2)	Is (NAME) present for a malaria/anemia test?	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)	(28.5)	(29)	(30)	(31)	(32)
		YES……..1 NO……2 IF NO, SKIP TO NEXT PERSON.		DAY MONTH YEAR		GRANTED YES……..1 NO……2
		YES……..1 NO……2 IF NO, SKIP TO NEXT PERSON.				YES……..1 NO……2
		YES……..1 NO……2 IF NO, SKIP TO NEXT PERSON.				YES……..1 NO……2
		YES……..1 NO……2 IF NO, SKIP TO NEXT PERSON.				YES……..1 NO……2
		YES……..1 NO……2 IF NO, SKIP TO NEXT PERSON.				YES……..1 NO……2
		YES……..1 NO……2 IF NO, SKIP TO NEXT PERSON.				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: READ ATTACHED Consent. 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.	

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 DHAp…………………2 SP……………………..3 Quinine……………….4 Artesunate……………5 No treatment………...6	☐	A ☐☐☐☐/☐☐/☐ B ☐☐☐☐/☐☐/☐
☐☐	☐☐.☐	☐	CoArtem……………1 Iron…………………2 Albendazole……….3	Pf positive………......1 NEGATIVE…………2 NOT VALID…………3 NOT DONE…………4	CoArtem………………1 DHAp…………………2 SP……………………..3 Quinine……………….4 Artesunate……………5 No treatment………...6	☐	A ☐☐☐☐/☐☐/☐ B ☐☐☐☐/☐☐/☐
☐☐	☐☐.☐	☐	CoArtem……………1 Iron…………………2 Albendazole……….3	Pf positive………......1 NEGATIVE…………2 NOT VALID…………3 NOT DONE…………4	CoArtem………………1 DHAp…………………2 SP……………………..3 Quinine……………….4 Artesunate……………5 No treatment………...6	☐	A ☐☐☐☐/☐☐/☐ B ☐☐☐☐/☐☐/☐
☐☐	☐☐.☐	☐	CoArtem……………1 Iron…………………2 Albendazole……….3	Pf positive………......1 NEGATIVE…………2 NOT VALID…………3 NOT DONE…………4	CoArtem………………1 DHAp…………………2 SP……………………..3 Quinine……………….4 Artesunate……………5 No treatment………...6	☐	A ☐☐☐☐/☐☐/☐ B ☐☐☐☐/☐☐/☐
☐☐	☐☐.☐	☐	CoArtem……………1 Iron…………………2 Albendazole……….3	Pf positive………......1 NEGATIVE…………2 NOT VALID…………3 NOT DONE…………4	CoArtem………………1 DHAp…………………2 SP……………………..3 Quinine……………….4 Artesunate……………5 No treatment………...6	☐	A ☐☐☐☐/☐☐/☐ B ☐☐☐☐/☐☐/☐
☐☐	☐☐.☐	☐	CoArtem……………1 Iron…………………2 Albendazole……….3	Pf positive………......1 NEGATIVE…………2 NOT VALID…………3 NOT DONE…………4	CoArtem………………1 DHAp…………………2 SP……………………..3 Quinine……………….4 Artesunate……………5 No treatment………...6	☐	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 2018

Women's Questionnaire

MODEL 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	_____	_____		
TIME	_____	_____		TOTAL NO. OF VISITS

*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

READ INFORMATION SHEET AND CONSENT AND RECORD RESULTS ON CONSENT DOCUMENT.

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 2	
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	219a IF ALIVE:	219b IF DEAD:	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).	How old was (NAME) when he/she died? IF '1 YR' PROBE: How many months old was (NAME)?	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)	DAYS...1 MONTHS...2 YEARS....3	
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	DAYS...1 MONTHS...2 YEARS....3	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	DAYS...1 MONTHS...2 YEARS....3	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	DAYS...1 MONTHS...2 YEARS....3	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	DAYS...1 MONTHS...2 YEARS....3	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	DAYS...1 MONTHS...2 YEARS....3	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	DAYS...1 MONTHS...2 YEARS....3	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. FOR EACH DEAD CHILD: AGE AT DEATH IS RECORDED. FOR AGE AT DEATH 12 MONTHS OR ONE YEAR: PROBE TO DETERMINE EXACT NUMBER OF MONTHS		☐ ☐ ☐ ☐
223	CHECK 215 AND ENTER THE NUMBER OF BIRTHS IN 2010[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 2010[1] OR LATER ☐ NO BIRTHS IN 2010 OR LATER ☐		<345

[1]For fieldwork beginning in 2014, 2015, 2016, 2017 or 2018, the year should be 2009, 2010, 2011, 2012 or 2013, respectively.

SECTION 3: GENERAL MALARIA KNOWLEDGE / PRACTICES / Media Exposure

240	HOW MANY TIMES IN A WEEK DO YOU READ A NEWSPAPER ?	NONE……..1 ONCE A WEEK……..2 2-3 TIMES PER WEEK……3 4-5 TIMES PER WEEK……4 MORE THAN 5 TIMES PER WEEK…….5	
241	HOW MANY TIMES IN A WEEK DO YOU WATHC TELEVISION?	NONE……..1 ONCE A WEEK……..2 2-3 TIMES PER WEEK……3 4-5 TIMES PER WEEK……4 MORE THAN 5 TIMES PER WEEK…….5	
242	HOW MANY TIMES IN A WEEK DO YOU LISTEN TO THE RADIO?	NONE……..1 ONCE A WEEK……..2 2-3 TIMES PER WEEK……3 4-5 TIMES PER WEEK……4 MORE THAN 5 TIMES PER WEEK…….5	
249	WHAT ARE THE SIGNS OF ILLNESS THAT WOULD INDICATE TO YOU THAT YOUR CHILD NEEDS TO BE TAKEN SOMEWHERE FOR TREATMENT? MULTIPLE RESPONSES POSSIBLE PROBE ONCE (ANYTHING ELSE?)	LOOKS UNWELL……..1 NOT PLAYING NORMALLY……..2 NOT EATING/DRINKING……3 NOT BREASTFEEDING……4 LETHARGIC……5 HIGH FEVER……..6 FAST OR DIFFICULT BREATHING……7 VOMITING……8 BLOOD IN STOOL……9 CONVULSIONS……..10 OTHER (SPECIFY)_____ _____..13 DON'T KNOW……14	
250	HAVE YOU EVER HEARD OF AN ILLNESS CALLED MALARIA?	YES.....1 NO.....2	IF 2, SKIP TO 255C
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		SLEEP UNDER A MOSQUITO NET……..1	

	HOW CAN SOMEONE PROTECT THEMSELVES AGAINST MALARIA? MULTIPLE RESPONSES POSSIBLE PROBE ONCE (ANYTHING ELSE?)	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	
255A	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	
255B	IN THE PAST YEAR, HOW OFTEN HAVE YOU SPOKEN WITH FAMILY AND FRIENDS ABOUT THE PROBLEM OF MALARIA IN YOUR COMMUNITY?	VERY OFTEN…….1 SOMETIMES……..2 NOT VERY OFTEN……3 NEVER……..4	
255C	In the past 6 months, have you heard, read, or seen any information and health-related matters?	YES ……1 NO ……..2	IF 2, SKIP TO 255E
255D	Where did you see or hear that information? *PROBE: ANY PLACE ELSE? [Do not read responses]* *MULTIPLE RESPONSES POSSIBLE.* *RECORD ALL ANSWERS*	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	

	SOCIAL MEDIA WOULD INCLUDE WHAT'S APP, FACEBOOK, INSTAGRAM, SNAP CHAT, TWITTER TEXT MESSAGES WOULD INCLUDE SMS.	ON THE RADIO……..9 IN THE NEWSPAPER……10 T-SHIRT……11 LEAFLET/FACTSHEET……12 TEXT MESSAGE……13 SOCIAL MEDIA……14 INTERNET SEARCHES……15 OTHER (SPECIFY) _____.....16 DON'T KNOW……17	
255E	Have you ever used the internet?	YES ……..1 NO ……2	IF 2, SKIP TO 256
255F	In the last 12 months, have you used the internet? IF NECESSARY, PROBE FOR USE FROM ANY LOCATION, WITH ANY DEVICE	YES ……1 NO ……..2	
255G	During the last one month, how often did you use the internet: almost every day, at least once a week, less than once a week, or not at all?	ALMOST EVERY DAY . . . . .1 AT LEAST ONCE A WEEK .. . . . . 2 LESS THAN ONCE A WEEK . . . . . 3 NOT AT ALL 4	
255H	In the last 12 months, have you used the internet to get information on any health issues?	YES ……1 NO ……..2	
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 T-SHIRT……11 LEAFLET/FACTSHEET……12 OTHER (SPECIFY) _____ _____.....13 DON'T KNOW……14	
258	HOW LONG AGO DID YOU SEE OR HEAR THESE MESSAGES?	MONTHS..... ☐☐	
259A	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	
259B	DO YOU HAVE A COMMUNITY HEALTH WORKER WORKING IN YOUR COMMUNITY?	YES.....1 NO.....2 (IF 'NO' SKIP TO 260) DON'T KNOW……3	
259B	DO YOU KNOW WHERE THE COMMUNITY HEALTH WORKER IS LOCATED IN YOUR COMMUNITY?	YES.....1 NO.....2 DON'T KNOW……3	
259C	DOES YOUR COMMUNITY HEALTH WORKER PROVIDE ANY OF THE FOLLOWING SERVICES?	Y N DK MALARIA TESTING……1 2 8 MALARIA TREATMENT…….1 2 8 ANTIBIOTIC TREATMENTS..1 2 8 OTHER TREATMENTS…….1 2 8 HEALTH EDUCATION……1 2 8 OTHER……..1 2 8 (PLEASE SPECIFY _____)	
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	
271	HOW OFTEN DO YOU DISCUSS SLEEPING UNDER MOSQUITO NETS WITH YOUR FAMILY OR FRIENDS>	VERY OFTEN…….1 SOMETIMES…….2 NOT VERY OFTEN……3 NEVER……..4	
272	GENERALLY, IN HOW MANY HOUSEHOLDS IN YOUR COMMUNITY DO PEOPLE SLEEP UNDER MOSQUITO NETS?	ALL HOUSEHOLDS…….1 MOST HOUSEHOLDS…….2 AT LEAST HALF OF THE HOUSEHOLDS……3 FEWER THAN HALF OF THE HOUSEHOLDS……..4 NONE……5	
273	NOW I WOULD LIKE YOU TO THINK OF PEOPLE OUTSIDE YOUR HOUSEHOLD WITH WHOM YOU TALK ABOUT PERSONAL MATTERS. HOW MANY OF THESE PEOPLE DO YOU THINK SLEEP UNDER A MOSQUITO NET?	ALL …….1 MOST …….2 AT LEAST HALF……3 FEWER THAN HALF……..4 NONE……5	

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 ☐ 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 ☐ 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 ☐ 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 ☐ 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 2010[1] OR LATER. (IF THERE ARE MORE THAN 2 LIVING CHILDREN BORN IN 2010[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 _____
312a	Has (NAME) had diarrhea at any time in the last 2 weeks?	YES ..... 1 NO ..... 2 (GO TO 312a FOR NEXT CHILD OR, IF NO MORE CHILDREN, SKIP TO 313) DON'T KNOW 8	YES ..... 1 NO ..... 2 (GO BACK TO 312a FOR NEXT CHILD OR, IF NO MORE CHILDREN, SKIP TO 313) DON'T KNOW 8
312b	Now I would like to know how much (NAME) was given to drink during the diarrhea (including breastmilk). Was he/she given less than usual to drink, about the same amount, or more than usual to drink? IF LESS, PROBE: Was he/she given much less than usual to drink or somewhat less?	MUCH LESS ..... 1 SOMEWHAT LESS ..... 2 ABOUT THE SAME ..... 3 MORE ..... 4 NOTHING TO DRINK ..... 5 DON'T KNOW 8	MUCH LESS ..... 1 SOMEWHAT LESS ..... 2 ABOUT THE SAME ..... 3 MORE ..... 4 NOTHING TO DRINK ..... 5 DON'T KNOW 8
312c	When (NAME) had diarrhea, was he/she given less than usual to eat, about the same amount, more than usual, or nothing to eat? IF LESS, PROBE: Was he/she given much less than usual to eat or somewhat less?	MUCH LESS ..... 1 SOMEWHAT LESS ..... 2 ABOUT THE SAME ..... 3 MORE ..... 4 STOPPED FOOD ..... 5 NEVER GAVE FOOD ..... 6 DON'T KNOW 8	MUCH LESS ..... 1 SOMEWHAT LESS ..... 2 ABOUT THE SAME ..... 3 MORE ..... 4 STOPPED FOOD ..... 5 NEVER GAVE FOOD ..... 6 DON'T KNOW 8
312d	Did you seek advice or treatment for the diarrhea from any source?	YES ..... 1 NO ..... 2 (SKIP TO 312g)	YES ..... 1 NO ..... 2 (SKIP TO 312g)
312e	Where did you seek advice or treatment?[2] Anywhere else? RECORD ALL SOURCES MENTIONED. IF UNABLE TO DETERMINE IF PUBLIC OR PRIVATE SECTOR, WRITETHE NAME OF THE PLACE _____ (NAME OF THE PLACE(S)	PUBLIC SECTOR GOVT. HOSPITAL ..... A GOVT. HEALTH CENTER ..... B GOVT. HEALTH POST ..... C MOBILE CLINIC ..... D COMMUNITY HEALTH WORKER or FIELD WORKER ..... F OTHER PUBLIC _____ G (SPECIFY) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC ..... H PHARMACY ..... I PRIVATE DOCTOR ..... J MOBILE CLINIC ..... K	PUBLIC SECTOR GOVT. HOSPITAL ..... A GOVT. HEALTH CENTER ..... B GOVT. HEALTH POST ..... C MOBILE CLINIC ..... D COMMUNITY HEALTH WORKER or 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)	FIELD WORKER ..... L OTHER PVT. MEDICAL _____ M (SPECIFY) OTHER SOURCE SHOP..... N TRAD. PRACTITIONER..... O OTHER _____ X (SPECIFY)
312f	Where did you first seek advice or treatment? USE LETTER CODE FROM 312e	FIRST PLACE ..... [ ]	FIRST PLACE ..... [ ]
312g	Was he/she given any of the following to drink at any time since he/she started having diarrhea: a) Fluid made from a special packet called [ORS]? b) A pre-packaged ORS liquid? c) A government-recommended home-made fluid for diarrhea?	Y N DK Fluid from ORS Packet 1 2 8 ORS LQD 1 2 8 Homemade fluid 1 2 8	Y N DK Fluid from ORS Packet 1 2 8 ORS LQD 1 2 8 Homemade fluid 1 2 8
312h	Was anything (else) given to treat the diarrhea?	YES ..... 1 NO ..... 2 (If 'NO' GO TO 313) DON"T KNOW 8	YES ..... 1 NO ..... 2 (If 'NO' GO TO 313) DON"T KNOW 8
312i	What (else) was given to treat the diarrhea? Anything else? RECORD ALL TREATMENTS MENTIONED	PILL OR SYRUP ANTIBIOTIC ..... A ANTIMOTILITY ..... B ZINC ..... C OTHER ..... D UNKNOWN PILL OR SYRUP ..... E INJECTION ANTIBIOTIC ..... F NON_ANTIBIOTIC ..... G UNKNOWN PILL OR SYRUP ..... H (I.V.) INTRAVENOUS ..... I HOME REMEDIES/HERBAL MEDICINES ..... J OTHER _____ ..... X (specify)	PILL OR SYRUP ANTIBIOTIC ..... A ANTIMOTILITY ..... B ZINC ..... C OTHER ..... D UNKNOWN PILL OR SYRUP ..... E INJECTION ANTIBIOTIC ..... F NON_ANTIBIOTIC ..... G UNKNOWN PILL OR SYRUP ..... H (I.V.) INTRAVENOUS ..... I HOME REMEDIES/HERBAL MEDICINES ..... J OTHER _____ ..... X (specify)
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 316c) =———	YES .....1 NO.....2 (SKIP TO 316c) =———
316a	Where did you seek advice or treatment?[2] Anywhere else? RECORD ALL SOURCES MENTIONED. IF UNABLE TO DETERMINE IF PUBLIC OR PRIVATE SECTOR, WRITETHE NAME OF THE PLACE _____ (NAME OF THE PLACE(S)	PUBLIC SECTOR GOVT. HOSPITAL .....A GOVT. HEALTH CENTER .....B GOVT. HEALTH POST .....C MOBILE CLINIC.....D COMMUNITY HEALTH WORKER or 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 COMMUNITY HEALTH WORKER or 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)
316b	Where did you first seek advice or treatment? USE LETTER CODE FROM 316a	FIRST PLACE..... ▒	FIRST PLACE..... ▒
316c	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 2016, 2017, or 2018, the year should be 2011, 2012, or 2013, 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 _____
316d	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
316e	Was a diagnostic blood test for malaria performed?	YES ..... 1 NO ..... 2 DON'T KNOW..... 8 (2 or 8 THEN SKIP TO 317) =———	YES ..... 1 NO ..... 2 DON'T KNOW..... 8 2 or 8 THEN SKIP TO 317) =———
316f	Did you request the test or was it offered to you?	OFFERED..... 1 REQUESTED 2	OFFERED ..... 1 REQUESTED 2

316g	What type of diagnostic blood test for malaria performed?	Microscopy..... 1 Malaria test kit/ rapid diagnostic test. 2 DON'T KNOW..... 8	Microscopy ..... 1 Malaria test kit/ rapid diagnostic test 2 DON'T KNOW..... 8
316h	Was the result of the diagnostic blood test for malaria shared with you?	YES ..... 1 NO ..... 2 DON'T KNOW..... 8 (2 or 8 THEN SKIP TO 317) =——┘	YES ..... 1 NO..... 2 DON'T KNOW..... 8 2 or 8 THEN SKIP TO 317) =——┘
316i	What was the result of the diagnostic blood test for malaria?	Positive for malaria ..... 1 Negative for malaria..... 2 DON'T KNOW..... 8	Positive for malaria ..... 1 Negative for malaria..... 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 ARTESUNATE……E AL/COARTEM/LUMET……F DHAP……G OTHER ANTIMALARIAL_____ H (SPECIFY) ANTIBIOTIC DRUGS PILLS/SYRUP ..... I INJECTION ....J OTHER DRUGS ASPIRIN.....K ACETAMINOPHEN/ PARACETAMOL.....L IBUPROFEN ..... M OTHER _____ X (SPECIFY) DON'T KNOW ..... Z	ANTIMALARIAL SP/FANSIDAR .....A CHLOROQUINE.....B AMODIAQUINE..... C QUININE ..... D ARTESUNATE……E AL/COARTEM/LUMET……F DHAP……G OTHER ANTIMALARIAL_____ H (SPECIFY) ANTIBIOTIC DRUGS PILLS/SYRUP .....I INJECTION .....J OTHER DRUGS ASPIRIN.....K ACETAMINOPHEN/ PARACETAMOL .....L IBUPROFEN ..... M 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
339a	Did you purchase the SP/Fansidar?	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 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	SAME DAY ..... 0 NEXT DAY ..... 1 TWO DAYS AFTER THE FEVER ..... 2 THREE DAYS AFTER THE FEVER . 3

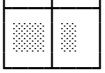
		FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8	FOUR OR MORE DAYS AFTER THE FEVER ..... 4 DON'T KNOW 8
326	For how many days did (NAME) take chloroquine? IF 7 OR MORE DAYS, RECORD '7'.	DAYS ..... ▒▒ DON'T KNOW 8	DAYS ..... ▒▒ DON'T KNOW 8
327	Did you have the chloroquine at home or did you get 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
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?	AT HOME ..... 1 COMMUNITY HEALTH WORKER ..... 2 GOVERNMENT HEALTH FACILITY/WORKER 3	AT HOME ..... 1 COMMUNITY HEALTH WORKER ..... 2 GOVERNMENT HEALTH FACILITY/WORKER 3

	IF SOMEWHERE ELSE, PROBE FOR SOURCE. IF MORE THAN ONE SOURCE MENTIONED, ASK: Where did you get the Amodiaquine first?	PRIVATE HEALTH FACILITY/WORKER ..... 4 SHOP ..... 5 OTHER_____ 6 (SPECIFY) DON'T KNOW 8	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 ☐ ˇ(SKIP TO 340)	CODE 'E' CIRCLED ☐ | CODE 'E' NOT CIRCLED ☐ ˇ(SKIP TO 340)
337	How long after the fever started did (NAME) first take Artemether-lumefantrine (AL or COARTEM or LUMET)?	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
338	For how many days did (NAME) take AL/COARTEM/LUMET ? IF 7 OR MORE DAYS, RECORD '7'.	DAYS..... ┌┬┐ ├┼┤ └┴┘ DON'T KNOW 8	DAYS..... ┌┬┐ ├┼┤ └┴┘ DON'T KNOW 8
339	Did you have the AL/Coartem/Lumet 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 AL/Coartem/LUMET ?	YES..... 1 NO ..... 2 If NO, Skip to 339c	YES..... 1 NO ..... 2 If NO, Skip to 339c
339b	How much did you pay for the AL/Coartem/LUMET ?	In Kwacha ┌┬┐ ├┼┤ └┴┘	In Kwacha ┌┬┐ ├┼┤ └┴┘
339c	CHECK 319: WHICH MEDICINES?	CODE 'E' CIRCLED ☐ | CODE 'E' NOT CIRCLED ☐ ˇ(SKIP TO 340)	CODE 'E' CIRCLED ☐ | CODE 'E' NOT CIRCLED ☐ ˇ(SKIP TO 340)

339d	How long after the fever started did (NAME) first take DHAP?	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
339e	For how many days did (NAME) take DHAP? IF 7 OR MORE DAYS, RECORD '7'.	DAYS ☐☐ DON'T KNOW 8	DAYS ☐☐ DON'T KNOW 8
339f	Did you have the DHAP 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
339g	Did you purchase the DHAP?	YES 1 NO 2 If NO, Skip to 340	YES 1 NO 2 If NO, Skip to 340
339h	How much did you pay for the DHAP?	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)?	DAYS ..... ☐☐	DAYS ..... ☐☐

	IF 7 OR MORE DAYS, RECORD '7'.	DON'T KNOW 8	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 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: _____

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: _____