Oxford Policy Management

malaria consortium
disease control, better health

SEASONAL MALARIA CHEMOPREVENTION SURVEY IN NORTHERN NIGERIA 2018

Final Report

OPM Nigeria

January 2019

Table of Contents

List of tables and figures

Acknowledgement

This study was made possible through funding by the Malaria Consortium. This report presents findings from the Seasonal Malaria Chemoprevention survey carried out in Sokoto, Zamfara, Katsina and Jigawa states.

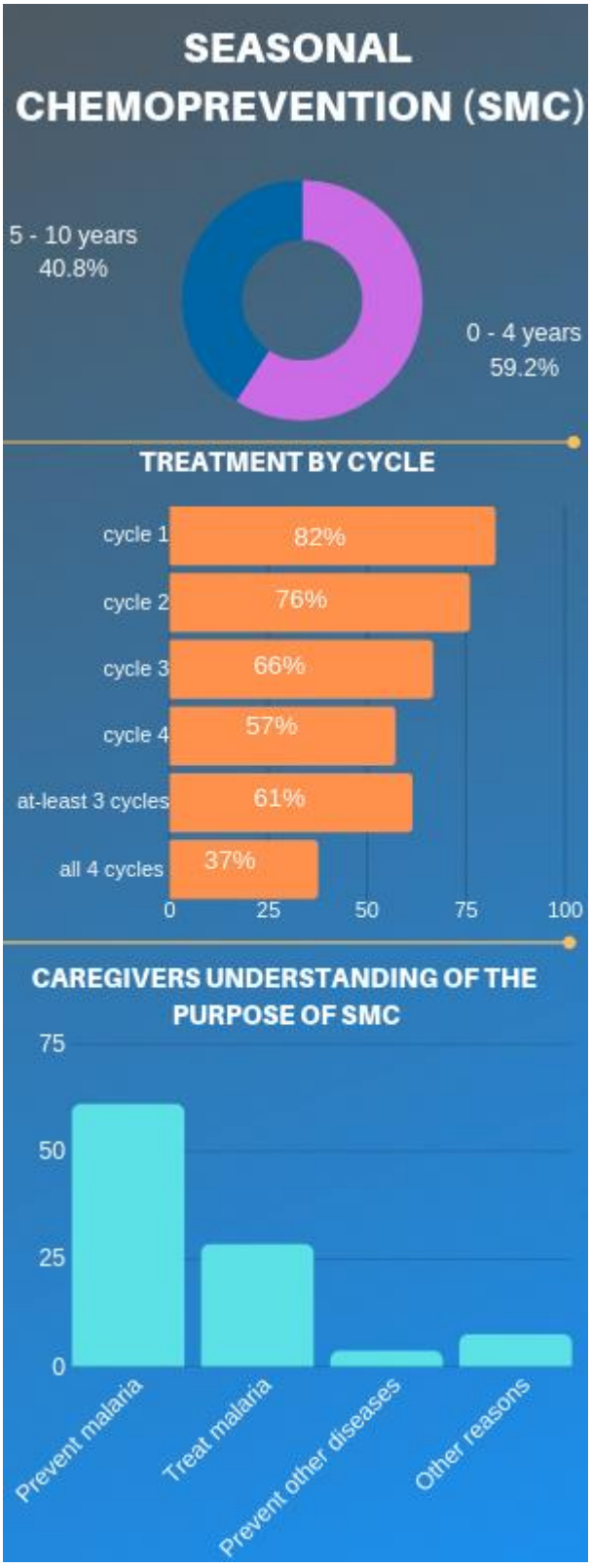
Oxford Policy Management (OPM) wishes to register its sincere thanks to the staff and management of Malaria Consortium for their support during the survey. We also like to thank the state coordinators, support staff, research assistants and survey team members for their countless contributions towards the success of this survey. We are especially most grateful to the households that gave their time to participate in this exercise.

List of Abbreviation

CAPI	Computer Assisted Personal Interview
CI	Confidence Interval
CHW	Community Health Worker
CU5	Children Under Five
DOT	Directly Observed Treatment
HH	Household
LGA	Local Government Area
OPM	Oxford Policy Management
MC	Malaria Consortium
SP-AQ	Sulfadoxine-pyrimethamine and amodiaquine
SMC	Seasonal Malaria Chemoprevention

Executive Summary

Seasonal malaria chemoprevention (SMC) is defined as the intermittent administration of full treatment courses of an antimalarial medicine during the malaria season to prevent malarial illness by maintaining therapeutic antimalarial drug concentrations in the blood throughout the period of greatest malarial transmission. The SMC protocol requires four monthly cycles of drugs distribution, roughly overlapping the rainy season, when mosquitos are most active, and transmission is highest.



A cross-sectional survey was conducted to evaluate the coverage level of the SMC treatment programme in Zamfara, Katsina, Sokoto and Jigawa states comparing eligible children aged 3-59months treated in the programme with the number of eligible children (3-59months) in the states. The survey sought to provide the percentage of the total number of eligible children in the various states, who received the SMC treatment.

The programme covered in Jigawa (5 LGAs) and Katsina (4 LGAs), Sokoto (all 23 LGAs) and Zamfara (all 14 LGAs). There were two sets of respondents for this study: primary caregivers of children under the age of five and heads of compounds. A primary caregiver in this survey refers to any individual, aged 15 years or over, with the primary responsibility for the feeding and daily care of at least one child under the age of five, in a household where he or she has been resident prior to the start of the SMC programme or one month before the last cycle of the treatment.

The data analysis was done using STATA 14, all indicators of interest were calculated in proportion by state and an average across all the states. The confidence interval (CI) of 95% was used to provide a range of values around the estimate within which selected result can be expected to fall. Majority of the tables are descriptive.

The findings from this survey showed that 88% of the compounds were visited for the SMC treatment and about 74% of the children from all age group (0 – 10 years) were treated during the programme. Children under 5 that were treated were about 93% irrespective of the treatment cycle of, which 9% came from outside the home and only 7% of children within that age bracket were not reached. The average number of children that were treated during cycle 1 was about 82, 75% in cycle 2, 66% in cycle 3 and 57% in cycle 4. On completion of the cycles, 61% of the children were treated at least 3 times while 37% across all the states were treated during all the cycles. Zamfara had the highest completion of about 52% and Sokoto the least with 26%. The other 2 states fell between.

About 94% of caregivers confirmed to have received some blisters for treatment of the child and 93% of the caregivers said the blister contained 4 tablets but only 44% percent said the CHW administered the first dose to the child on the day of visit.

The findings from the survey revealed a continuous decline in coverage overtime from the first cycle to the fourth cycle. The momentum of the SMC needs to be sustained in each of the cycles as there seems to be a decrease coverage momentum as the cycle progress.

1 Introduction

1.1 Overview of Malaria Consortium's Seasonal Malaria Chemoprevention (SMC) Programme

Malaria Consortium is one of the world's leading non-profit organizations dedicated to the comprehensive control of malaria and other communicable diseases in Africa and Southeast Asia. Malaria Consortium works with communities, government and non-government agencies, academic institutions, and local and international organizations, to ensure good evidence supports delivery of effective services, providing technical support for monitoring and evaluation of programmes and activities for evidence-based decision-making and strategic planning. The organization works to improve not only the health of the individual, but also the capacity of National health systems, which helps to relieve poverty and support improved economic prosperity.

Seasonal malaria chemoprevention (SMC) is defined as the intermittent administration of full treatment courses of an antimalarial medicine during the malaria season to prevent malarial illness by maintaining therapeutic antimalarial drug concentrations in the blood throughout the period of greatest malarial transmission. WHO recommended a treatment for children aged between 3 and 59 months living in the Sahel region with sulfadoxine-pyrimethamine and amodiaquine (SP+AQ) once a month for 4 months during the peak malaria transmission season in March 2012 and Nigeria adopted this intervention in their 2014-2020 Malaria Strategic Plan. Malaria Consortium Nigeria is committed to tackling the large number of malaria cases and deaths in the country and has been implementing seasonal malaria chemoprevention (SMC) programs in northern Nigeria. It currently operates in the states of Sokoto (all 23 LGAs), Zamfara (all 14 LGAs), Katsina (4 LGAs) and Jigawa (5 LGAs).

The SMC protocol requires four monthly cycles of drug distribution, roughly overlapping the rainy season, when mosquitos are most active, and transmission is highest. Selected compounds across the LGAs in the four states were visited; and all children between three and 59 months treated at each cycle and expected to receive anti-malaria drugs (SP-AQ) monthly were assessed. Each monthly treatment consists of a dose of sulfadoxine- pyrimethamine and a dose of amodiaquine, administered on the first day, and a dose of amodiaquine (the white tablet) on each of the next two days. The drugs were distributed by community health workers (CHWs) who visit door to door to administer the first day's doses and leave the blister pack with the caregiver with instructions to administer the remaining amodiaquine doses on each of the next two days. Malaria Consortium was required to assess its level of implementation at the end of each cycle, to verify the validity of its administrative coverage results.

The primary objective of the survey was to assess the extent of the coverage of the seasonal malaria chemoprevention programme. The study set out;

1. To conduct end-of round coverage cluster surveys of Malaria Consortium's seasonal malaria chemoprevention (SMC) programs in Zamfara, Katsina, Jigawa and Sokoto state.
2. To assess if all children between three and 59 months were treated at each cycle with the anti-malaria drugs (SP-AQ) monthly.
3. To enable decision makers in the local and state level of government better understand some of the health and seasonal challenges with malaria faced by communities in these areas.

The SMC general indicators that were measured are;

1. SMC program reach of children, and to identify deficient target areas in states

2. Ascertain cycle completion. (DOT on day one, days 2 and 3 taken)

1.2 Rationale of the SMC Programme

The SMC Programme aims to maintain therapeutic anti-malaria drug concentrations in the blood throughout the period of greatest risk. This will reduce the incidence of both simple and severe malaria disease and the associated anaemia and result in healthier, stronger children able develop and grow without the interruption of disease episodes.

2 Methodology

This section describes the approach deployed for the coverage level assessment of the treatment of children aged 3–59months with the seasonal malaria chemoprevention (SMC) programme in the implementing states of Sokoto, Zamfara, Katsina and Jigawa.

2.1 Sampling Methodology

The study is a cross-sectional survey to evaluate the coverage level of the SMC treatment programme in the Zamfara, Katsina, Sokoto and Jigawa states comparing eligible children aged 3-59months treated in the programme with the number of eligible children (3-59months) in the states. The survey sought to provide the percentage of the total number of eligible children in the various states, who received the SMC treatment.

The number of health facilities from which study communities and compounds were determined varied across the four states relative to the number of LGAs receiving the SMC programme. The state with more programme LGAs had more health facility clusters sampled than others.

Given the characteristics of the seasonal malaria chemoprevention programme, the sampled respondents selected from the LGAs currently covered by the programme in Jigawa (5 LGAs) and Katsina (4 LGAs), Sokoto (all 23 LGAs) and Zamfara (all 14 LGAs) were nested according to their proximity to a health facility. All LGAs covered in Jigawa and Katsina were surveyed while LGAs in Sokoto and Zamfara were stratified into homogenous group by proximity before selection was made from each of the strata. Five communities each were sampled per health facility catchment area. A household listing exercise was conducted to produce eligible compounds in each of the communities. Eight compounds each were randomly interviewed across the four states to produce 40 compounds each per HF catchment area.

Tab 1: Health Facilities per State

State	Number of HF
Sokoto	40
Zamafara	28
Katsina	20
Jigawa	15

The sample size was proportionate to the number of SMC programme LGAs in each state using the health facility as the primary base of reference. At each structure (compound) in each of the selected community served by the health facility, after listing of all eligible compounds in the community was completed, eligible respondents were selected randomly using a randomizer from the Stata programme. Compounds in each of the selected communities that met the study's minimum criteria were eligible to participate in the survey. Selected compounds with more than one eligible child were interviewed based on all the eligible children in the compounds.

2.1.1 Sample assignment sheet

MC – ASSIGNMENT FORM

State: Jigawa
LGA: Babura
Community Name: BABURA AREWA A
Facility Name: BABURA GEN HOSPITAL

SNo.	Struct #	HH #	HH Name	Nickname of HH Name	Phone Number	Size of Household	Address	Landmark
1	4	1	Abdullahi Sule	Inkia	8145145182	20	Babura Arewa	Network mask
2	7	1	Alhassan Salisu	Mai borkonu	99999999999	12	Babura Arewa	Network mask
3	9	1	Garba Muhammad	Bashir	7060743986	15	Babura Arewa	Network mask
4	10	1	Shazali Isah	Shazali	99999999999	12	Babura Arewa	Network mask
5	11	1	Ibrahim Saleh	Mallam	99999999999	7	Babura Arewa	Network mask
6	12	1	Ibrahim	Ibrama	99999999999	7	Babura Arewa	Network mask
7	13	1	Jamilu Shehu	Sani	99999999999	15	Babura Arewa	Network mask
8	15	1	Halima Ahmed	Hally	9069146039	5	Halima Ahmed	Network mask

REPLACEMENT (IF THERE IS LISTING ERROR)

SNo.	Struct #	HH #	HH Name	Nickname of HH Name	Phone Number	Size of Household	Address	Landmark
1	3	1	Murtala Bala	Murtala	8065406881	10	Babura Arewa	Network mask
2	5	1	Yusuf Rabiu	Kawu	8034527659	5	Babura Arewa	Network mask
3	6	1	Bashir Abdullahi	Aljan	8166153904	12	Babura Arewa	Network mask
4	8	2	Magaji Jafaru	Mohammed	99999999999	5	Babura Arewa	Network mask
5	1	1	Bala Abdullahi	Bala	99999999999	7	Babura Arewa	Network mask

2.1.2 Stratification of LGAs in Sokoto and Zamfara States

Stratification of LGAs in Sokoto State into homogenous group by proximity[1]			
• **Strata 1**	• **Strata 2**	• **Strata 3**	• **Strata 4**
• Sokoto North • Sokoto South • Wamako	• Gudu • Tangaza • Kware	• Goronyo • Sabon Birni • Isa • Rabah • Wurno	• Illela • Gwadabawa • Gada
• **Strata 5**	• **Strata 6**	• **Strata 7**	• **Strata 8**
• Tambuwal • Kebbe	• Shagari • Yabo	• Bodinga • Dange-shuni • Tureta	• Binji • Silame

Stratification of LGAs in Zamfara into homogenous group by proximity[2]		
• **Strata 1**	• **Strata 2**	• **Strata 3**
• **Gu**sau • **Ts**afe	• Maradun • Bungudu	• Zurmi • Kaura Namoda • Birnin Magaji Kiyaw • Shinkafi
• **Strata 4**	• **Strata 5**	• **Strata 6**
• Maru • Anka	• Gummi • Bukkuyum	• Talata Mafara • Bakura

[1] http://nigeriazipcodes.com/wp-content/uploads/2012/07/Sokoto-Postcode-Map.jpg
[2] http://nigeriazipcodes.com/wp-content/uploads/2012/07/Zamfara-State-Postcode-Map.jpg

2.2 Sample Size Determination

The overall sample size was calculated and divided proportionately to the states. The sample size for each state was based on the number of implementing LGAs.

2.2.1 Sample size calculation

Box 1: Sample size Estimation

$$n \geq \frac{k\, z^2_{1-\alpha/2}}{4d^2} + \frac{1}{d} - 2\, z^2_{1-\alpha/2} + \frac{z_{1-\alpha/2} + 2}{k}$$

$$k = 4(p - d)(1 - p + d)$$

Z_{1-x} is the standard normal distribution	1.96
Coverage Target = 85%	0.85
Precision is ± 3%	0.03
Inter cluster correlation conservative for a routine survey	0.333
An unequal weight term multiplier for a cluster survey	$(1 + CVw2) = 1.25$
Attrition of 5%	0.05

Tab 2: Sample Breakdown

Subhead	Jigawa	Katsina	Sokoto	Zamfara	Total
Compound per HF catchment area	40	40	40	40	40
Compound interview per community	8	8	8	8	8
Community per HF catchment area	5	5	5	5	5
Total HF across the states	**15**	**20**	**40**	**28**	**103**
Total community across the states	**75**	**100**	**200**	**140**	**515**
Sample Size per state	**600**	**800**	**1600**	**1120**	**4120**

2.3 Sampling Strategy

There were two sets of respondents for this study: primary caregivers of children under the age of five and heads of compounds.

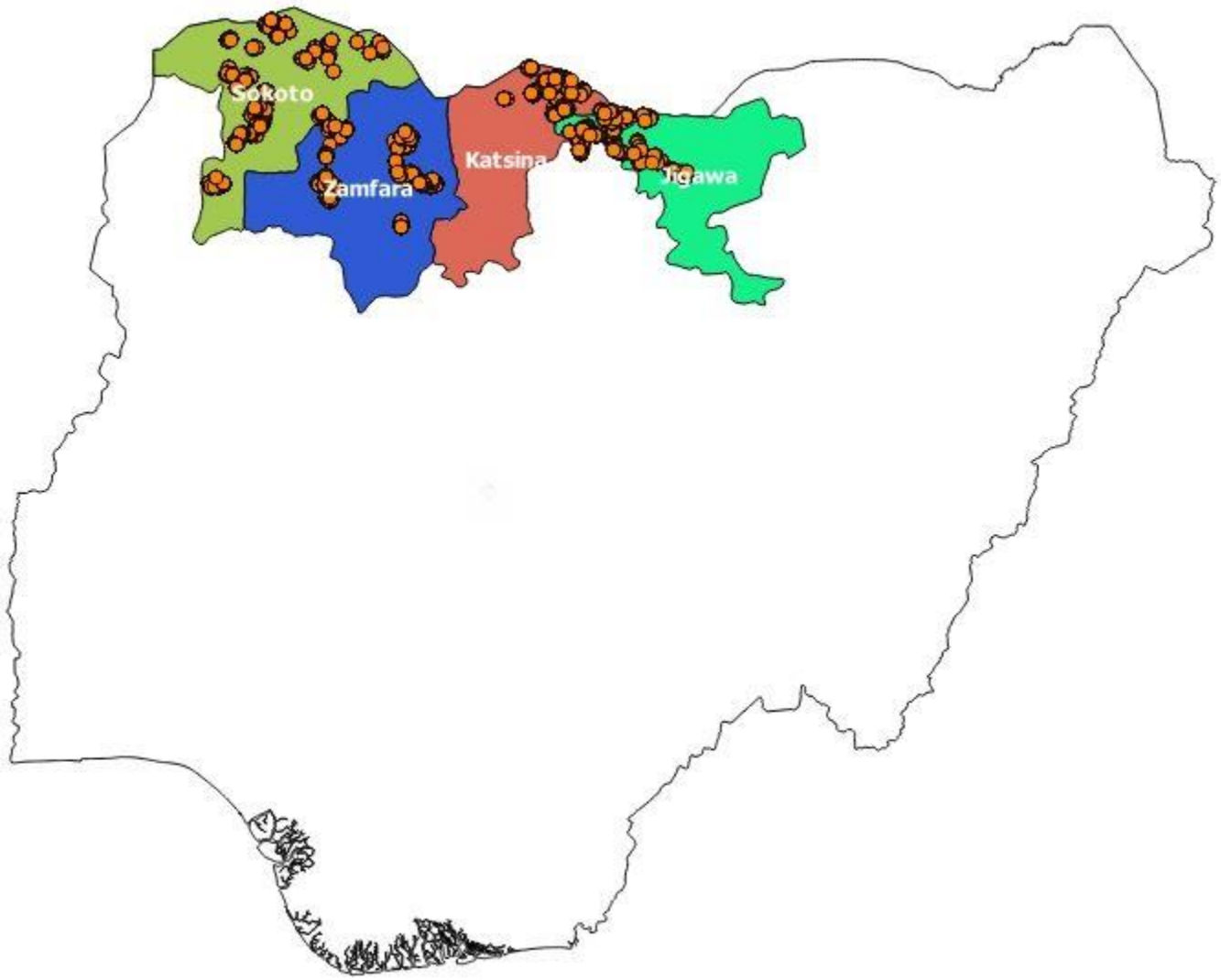
A primary caregiver in this survey refers to any individual, aged 15 years or over, with the primary responsibility for the feeding and daily care of at least one child under the age of five, in a household where he or she has been resident prior to the start of the SMC programme or one month before the last cycle of the treatment. We defined household heads as member of the family who manages the resources and is the final decision maker in the household.

Inclusion criteria

- Primarily, the inclusion criteria are compounds with children age 3 – 59 months, resident in the study location (at least one month) during the period of the programme implementation.
- Compounds refusing to participate in the study will be replaced with the next eligible compound until the estimated sample size is attained.

To ensure the internal and external validity of selected study sample of respondents, the list of health facilities and the communities they served shared by MC was used for the selection process. Health facilities were the primary unit of sampling through which the study communities and subsequently compounds and respondents were selected. The selection of compounds per community and ultimately the survey respondents was randomized. In addition, the survey instrument(s) was translated to the Hausa language to contextualize better and reduce wording reaction from respondents.

2.4 Area covered by the survey



2.5 Data Collection and Management

2.5.1 Recruitment and training

Research assistants with competent skills and expertise who are also conversant in the local language and familiar with the study location were recruited locally from each of the four states and trained at a central location in Sokoto State. The listing team included mapping experts and cartographers who have extensive experience in geographical interpretations. The training sessions covered the project background, aims and objectives, field manual, and questionnaires through a combination of lectures, role play using typical field scenarios, and group and pilot exercises.

2.5.2 Fieldwork

The duration of the respective field schedules for each component of the study is shown in **Error! Reference source not found.** below.

Tab 3: Field work schedule

The Gantt chart below illustrates the work schedule of the specialized teams engaged during the study.

Timeframe				
Study component	Dec-18	Dec-18		
	Week 1	*Week 2*	*Week 3*	*Week 4*
Listing fieldwork	x			
Household survey fieldwork		x	x	x
Final Mop up and Spot checking				x

2.5.3 Listing of Study Compounds

For this study, information from the 2006 national census was considered obsolete. And also, information on household lists in the various communities is not available. Therefore, it was necessary for us to conduct a listing exercise to bridge the gap in the changes that may have taken place over time within the respective communities. The listing exercise collected relevant information such as the name of each household head (and nickname), a contact phone number, and total household size. Detailed maps of the communities were sketched to help the data-collection team to identify sampled communities.

The listing team were deployed to the study areas in the first week of December 2018 to conduct the listing of households in the selected communities. In total, 515 communities were listed, with each consisting of approximately 20 to 40 compounds of study respondents on average. The household listing was conducted using the Computer-Assisted Personal Interview (CAPI) device and the data was transmitted to a dedicated server daily.

2.5.4 Data processing

Using CAPI, which allows for in-field data entry and server synchronization, data were collected, verified for quality assurance purposes by the quality assurance officer in field and uploaded daily to the Malaria consortium Magpi platform. The uploaded files were retrieved by Malaria consortium focal person to OPM-N which is then passed through additional consistency checks, cleaned and saved into Stata.

The Magpi software was used for data collection. Instruments were developed by Malaria Consortium and shared with OPM-Nigeria. The tools were desk-tested by the survey management team and piloted during training together with the research assistants. This was reviewed and modified again before the field launch. Data validation and cleaning was conducted at different levels. First, the set of tools was validated internally using the constraints created for each question in terms of questionnaire flow and logic of skipped patterns. During fieldwork, daily quality assurance checks were carried out using Stata 14 and the power-BI to flag inconsistencies in the tabulations of each question for each tool. Extensive data cleaning was done at the end of the fieldwork.

2.5.5 Data analysis

The data analysis was done using Stata 14, all indicators of interest were calculated in proportion by state and an average across all the states. The confidence interval (CI) of 95% was used to provide a range of values around the estimate within which selected result can be expected to fall. Majority of the tables are descriptive.

2.6 Ethical Approval and Confidentiality of Data Sets

The overall study design of the SMC programme and all questionnaires and protocols were submitted to the National Health Research Ethics Committee (NHREC) of Nigeria for ethical review and approval. NHREC granted ethical approval for this study with Approval Number **NHREC/01/01/2007-7/12/2018** which was received in November 2018 prior to the commencement of data collection.

Informed consent was sought from all respondents by means of a consent form developed in Hausa. Respondents were informed of the nature of the study and what would be required of them as study participants, as well as given an indication of the time that would be required to complete the survey.

All personal or biographic data collected as part of this survey are electronically stored securely within the OPM office in Abuja. They are only available to authorized individuals for analytical purposes and are handled according to the following data protection principles: Each respondent was been assigned a unique identifier that is used to analyse the data by group characteristics such as age bands and gender. All meta-data and final clean data set related to the study will be made available to Malaria Consortium by OPM after final approval of the report. The meta-data will include analytical syntax, raw data and cleaned data that have all been made anonymous by removing personal information that could be used to identify respondents.

2.7 Survey instruments

The seasonal malaria chemoprevention Survey involved the collection of a series of essential indicators (both treatment and coverage indicators). Questions and indicators have been adapted to be precise to the program intervention that was implemented.

Data was collected by administering the questionnaires following the outline in Table 2 below. This table summarizes the content of each questionnaire, as well as the respondents to whom the questionnaire was given.

Tab 4: Summary Of SMC Coverage Survey questionnaire

Questionnaire	Target population	General indicators	Respondent
General Compound Questions	Eligible adult male or female	General household characteristics and health related decisions.	Head of household or other knowledgeable HH member
Child SubForm	Eligible male or female caregiver	- Household with at least one child aged 3-59months. - Caregiver evaluation	All mothers or main caregivers of children between 3-59 months of age in each selected household
Cycle 4 specific questions	Eligible male or female caregiver	- CHW/distributor behaviour - Child's reaction to swallowing drug. - Caregiver knowledge and experience with SMC medicines.	All mothers or main caregivers of children between 3-59 months of age in each selected household
General knowledge and behavior	Eligible male or female caregiver	- SMC sensitization coverage - Caregiver's SMC knowledge and practices	All mothers or main caregivers of children between 3-59 months of age in each selected household
General – Adverse Reactions	Eligible male or female caregiver	- Children's reaction to medication - Caregiver knowledge and experience with SMC medicines.	All mothers or main caregivers of children between 3-59 months of age in each selected household
Subform	Eligible male or female caregiver	- Child's descriptive information - Child's experience with SMC and other health related enquiry	All mothers or main caregivers of children between 3-59 months of age in each selected household

3 Results

This section describes all the findings from the end-of-round survey of the administrative coverage of the Seasonal Malaria Chemoprevention programme in Zamfara, Katsina, Jigawa and Sokoto; these include the distribution of the interview across the study sites, SMC coverage, fever episode within the last month, children sleeping under the net, Indoor residual spraying, coverage by each cycle, general knowledge on the SMC programme, and caregiver literacy and behaviour.

3.1 Survey completion rate

Overall, a total sample size of 4120 was planned, in the end, a completion of 4090 interviews (99% completion rate) was achieved across the sampled compounds spread across the states: Jigawa, 598; Katsina, 796; Sokoto, 1594 and Zamfara, 1102. Based on security challenges, two communities in Zamfara were exempted

Table 1: Distribution of interviews across study sites

Respondents	Jigawa	Katsina	Sokoto	Zamfara	Overall
Households					
Expected	600	800	1600	1120	4120
Achieved	598	796	1594	1102	4090
%complete	99.7%	99.5%	99.6%	98.4%	99.3%
Communities					
Expected	75	100	200	140	515
Achieved	75	100	200	138	513
%complete	100%	100%	100%	98.6%	99.6%

This survey targeted household with at least one child under the age of ten years. The age of the children was recorded in completed years for those above 12 months. Birth certificate and/or immunisation card was used to verify age. Table 2 below presents the age distribution of children in the survey with about forty-one percent within the age range of 3 -5 years.

Table 2: Age distribution of children in the survey

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	N (%)	N (%)	N (%)	N (%)	N (%)
Overall	n = 1793	n = 3138	n = 4307	n = 4379	n = 13617
0 – 4 years	63.1	55.8	61.1	58.2	59.2
5 years and above	36.9	44.2	38.9	41.8	40.8

The table below gives the distribution of children surveyed regardless of the age, children under 5 years and those that are 5 years and above.

Table 3: Distribution of children surveyed across the states

Respondents	Jigawa	Katsina	Sokoto	Zamfara	Overall
Distribution of children treated with SMC regardless of age					
Yes	1288 (71.7)	2155 (68.8)	3358 (78.0)	3283 (74.9)	10084 (74.0)
No	509 (28.3)	976 (31.2)	949 (22.0)	1101 (25.1)	3533 (26.0)
Total	1797 (100)	3131 (100)	4307 (100)	4384 (100)	13617 (100)
Distribution of children under 5 treated with SMC					
Yes	1069 (94.5)	1603 (91.6)	2441 (92.8)	2378 (93.3)	7491 (92.9)
No	62 (5.5)	148 (8.4)	190 (7.2)	170 (6.7)	570 (7.1)
Total	1131 (100)	1751 (100)	2631 (100)	2548 (100)	8061 (100)
Distribution of children 5 and above treated with SMC					
Yes	215 (32.5)	546 (39.4)	911 (54.4)	894 (48.8)	2566 (46.2)
No	447 (67.5)	841 (60.6)	765 (45.6)	937 (51.2)	2990 (53.8)
Total	662 (100)	1387 (100)	1676 (100)	1831 (100)	5556 (100)

On average, there were two households in each compound visited across the four states with the exception of compounds visited in Katsina, where the average number of households in a compound is one. One hundred percent of respondents agreed to the survey across the four states surveyed. Also, one hundred percent of responding compounds had children under 10 years of age. On average, 88.2% of all responding compounds with children under 10 was reached by SMC teams while 92.9% of children 3-59 months (programme population target) were treated during the programme. More children were reached and treated in Jigawa (94.5%) than in the other three programme states. Out of all the children within the programme's target age (3-59 months) across the four states, about 6.9% of them were never reached by the SMC programme. This was most common in Katsina (8.2%) and Sokoto (7.0%) and least common in Jigawa (5.5%). There were instances where the children that fit the programme's target age outside the programme's target areas received SMC Programme. About 8.5% of children (3-59 months) who received the SMC treatment, did so coming from outside target areas.

Table 4: Survey and SMC programme completion rate

S/N	MC Indicator	Jigawa	Katsina	Sokoto	Zamfara	Overall
1.	% respondents (agreed to the survey)	*100%*	*100%*	*100%*	*100%*	*100%*
2.	% of responding compounds with children under 10	*100%*	*100%*	*100%*	*100%*	*100%*
3.	% of responding compounds with children under 10 reached by SMC teams	*94.6%*	*93.3%*	83.3%	88.0%	88.2%
4.	Average no. of HH in a compound	*2*	*1*	2	2	2
5.	% of children ever treated during the programme from all age group	*71.7%*	*68.8%*	78.0%	74.0%	74.0%
6.	% of children 3 – 59 months ever treated during the programme	*94.5%*	*91.6%*	92.8%	93.3%	92.9%
7.	% of children 3-59 never reached	*5.5%*	*8.2%*	7.0%	6.6%	6.9%
8.	% of treated children coming from outside target areas	*7.4%*	*2.7%*	11.1%	10.0%	8.5%

3.2 SMC Coverage by Cycle

The card given to caregivers was observed and caregivers were also asked about the child's treatment based on recall. The result from the observation and recall were pull together to compute the proportions. Out of the proportion of under 5 children (93%) that received SMC treatment at any of the program's cycles, about 82% reported receiving cycle 1 treatment, 76% received cycle 2 treatment, 66% received cycle 3 treatment and about 57% received cycle 4 treatment across the survey states.

A progression in the coverage rate was observed in Jigawa and Zamfara states from cycle one to two with about 4% and 1% increase for the second cycle respectively, while other states reported a decrease in the proportion of the children that received the cycle two treatment relative to cycle one response.

Across states, sixty-eight percent of caregivers in Katsina reported that children received cycle-two treatment while 69% of caregivers in Sokoto state reported dose administration in cycle two. There was a slight coverage increase in Katsina from cycle three to four of about 2%.

Across the states, Zamfara reported the highest percentage of children 3-59 month old, who received at least three cycles (73%). About 68% of respondents in Jigawa state reported having received at least 3 cycles of the SMC treatment whilst 53% and 52% in Katsina and Sokoto respectively also received 3 cycles.

Majority of caregiver of children 3-59 months reported not receiving the four-cycle treatment. About 37% of children 3-59 months were reported covered by all the four cycles across all the surveyed states. This ranges from 53% in Zamfara, 41% in Jigawa, 30% in Katsina and 26% in Sokoto.

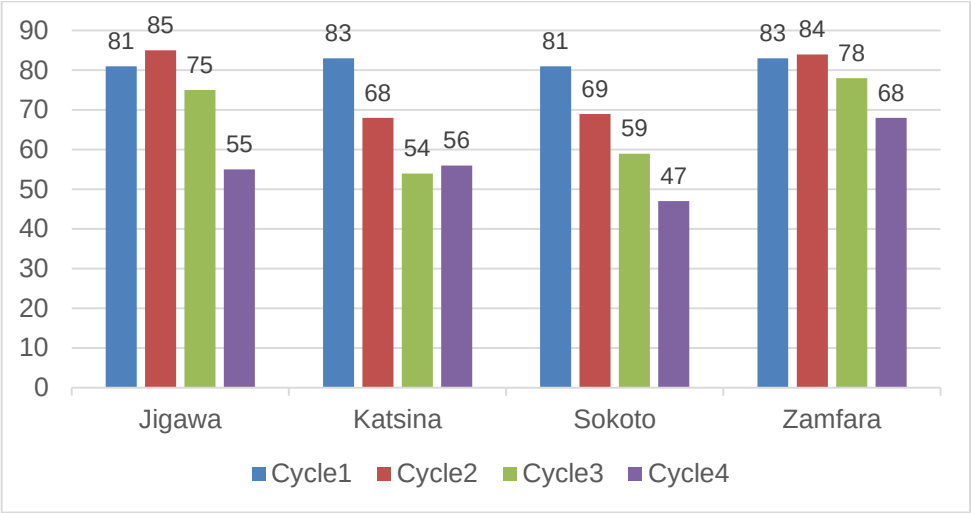


Figure 1: Proportion of children 3 – 59 months who were treated with SMC by cycle

Table 5: Proportion of Children 3 – 59 months who were treated with SMC by cycle

Proportion of children 3 – 59 months who were treated with SMC by cycle					
	Jigawa (%) (CI)	**Katsina (%) (CI)**	**Sokoto (%) (CI)**	**Zamfara (%) (CI)**	**Overall (%) (CI)**
Children Under 5 who were ever treated	**1069**	**1603**	**2441**	**2378**	**7491**
% of children 3-59 reached, by cycle 1	*80.5 (78.0 – 82.9)*	*83.1 (81.2 – 84.9)*	81.0 (79.4 – 82.6)	83.4 (81.8 – 84.9)	82.2 (81.3 – 83.0)
% of children 3-59 reached, by cycle 2	*85.1 (82.9 – 87.2)*	*67.7 (65.4 – 70.0)*	68.6 (66.7 – 70.4)	84.3 (82.7 – 85.7)	75.7 (74.8 – 76.7)
% of children 3-59 reached, by cycle 3	*75.4 (72.7 – 78.0)*	*53.6 (51.2 – 56.1)*	59.2 (57.2 – 61.2)	78.3 (76.6 – 80.0)	66.4 (65.3 – 67.5)
% of children 3-59 reached, by cycle 4	*55.4 (52.3 – 58.4)*	*55.8 (53.4 – 58.3)*	47.2 (45.2 – 49.2)	68.2 (66.3 – 70.1)	56.9 (55.8 – 58.0)
% of children 3-59 reached in at least 3 cycles	*67.7 (64.8 – 70.5)*	*52.6 (50.1 – 55.1)*	52.2 (50.2 – 54.2)	73.2 (71.4 – 75.0)	61.2 (60.0 – 62.3)
% of children 3-59 reached in all 4 cycles	*41.0 (38.0 – 44.0)*	*29.8 (27.6 – 32.1)*	25.9 (24.2 – 27.7)	52.5 (50.5 – 54.5)	37.3 (36.2 – 38.4)

Based on programme protocol children 5 years of age and above at the time of the first SMC cycle, are not meant to receive the drug. Despite this guidelines, about 83% of children aged 5 to 10 in the households visited who were treated received the treatment at the first cycle on the average but this was seen to consistently reduce across the four cycles (as the cycle progressed from cycle 1 to cycle 4). Respondents in Jigawa state (84%) reported the children receiving cycle one treatment while about 48% reported to have received cycle four treatment. Percentage of respondents that received cycle one and cycle four treatment in Katsina fell from 81% to 53%. Similarly, the percentage of respondents from Sokoto and Zamfara state, who received cycle one and cycle four treatment fell from 86% to 50% and 84% to 65% respectively. The mean of the children above the required age who received who were treated and received cycle 1 was 83% at 95% confidence interval.

About 70% of the children 5 years and above who were treated and surveyed in Zamfara state were treated in at least 3 cycles while 46% completed the 4 cycles. Sokoto state also had a high proportion of children 5 years and above who received at least 3 cycles (58%) and the complete 4 cycles (30%). On the average children 5 years and above who were treated across the states, 61% and 35% received at least 3 cycles and complete 4 cycles respectively.

Table 6: Proportion of children five years and above who were treated with SMC by cycle

Proportion of children 5 – 10 years who were treated with SMC by cycle					
	Jigawa (%) (CI)	**Katsina (%) (CI)**	**Sokoto (%) (CI)**	**Zamfara (%) (CI)**	**Overall (%) (CI)**
Children 5 and above who were ever treated	**215**	**546**	**911**	**894**	**2566**
% of children 5 – 10years reached, by cycle 1	*84.2 (78.6 – 88.8)*	*81.3 (77.8 – 84.5)*	83.1 (80.5 – 85.5)	84.3 (81.8 – 86.7)	83.2 (81.7 – 84.7)
% of children 5 – 10years reached, by cycle 2	*84.7 (79.1 – 89.2)*	*61.2 (56.9 – 65.3)*	72.1 (69.1 – 75.0)	82.0 (79.3 – 84.5)	74.3 (72.5 – 76.0)
% of children 5 – 10years reached, by cycle 3	*70.2 (63.6 – 76.3)*	*48.5 (44.3 – 52.8)*	63.8 (60.6 – 66.9)	72.5 (69.4 – 75.4)	64.1 (62.2 – 66.0)
% of children 5 – 10years reached, by cycle 4	*47.9 (41.1 – 54.8)*	*53.3 (49.0 – 57.5)*	50.2 (47.0 – 53.6)	64.7 (61.4 – 67.8)	55.7 (53.8 – 57.7)
% of children 5 – 10years reached in at least 3 cycles	*63.2 (56.4 – 69.7)*	*49.8 (45.5 – 54.1)*	58.4 (55.1 – 61.6)	70.1 (67.0 – 73.1)	61.1 (59.1 – 63.0)
% of children 5 – 10years reached in all 4 cycles	*36.3 (29.8 – 43.1)*	*24.7 (21.2 – 28.6)*	30.4 (27.4 – 33.5)	46.4 (43.1 – 49.8)	35.3 (33.4 – 37.2)

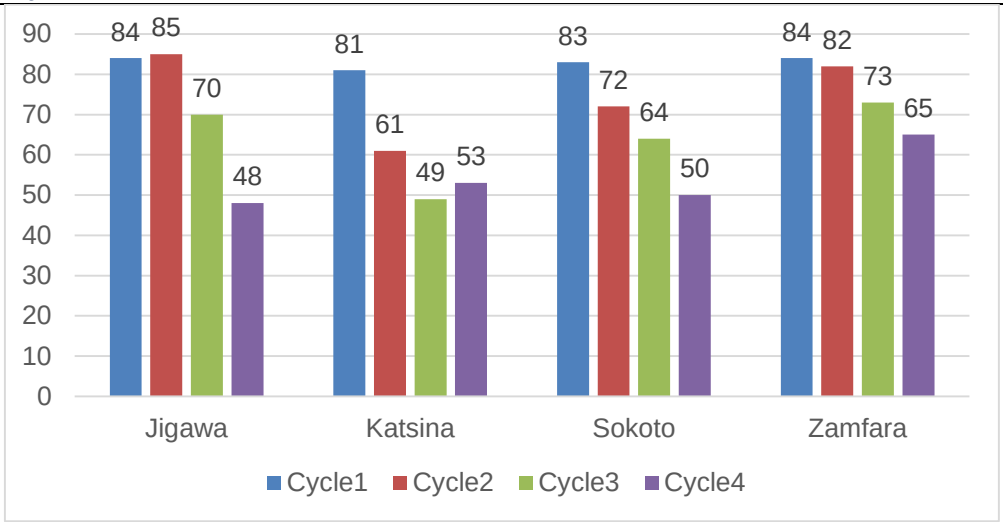


Figure 2: Proportion of children over five years who were treated with SMC by cycle

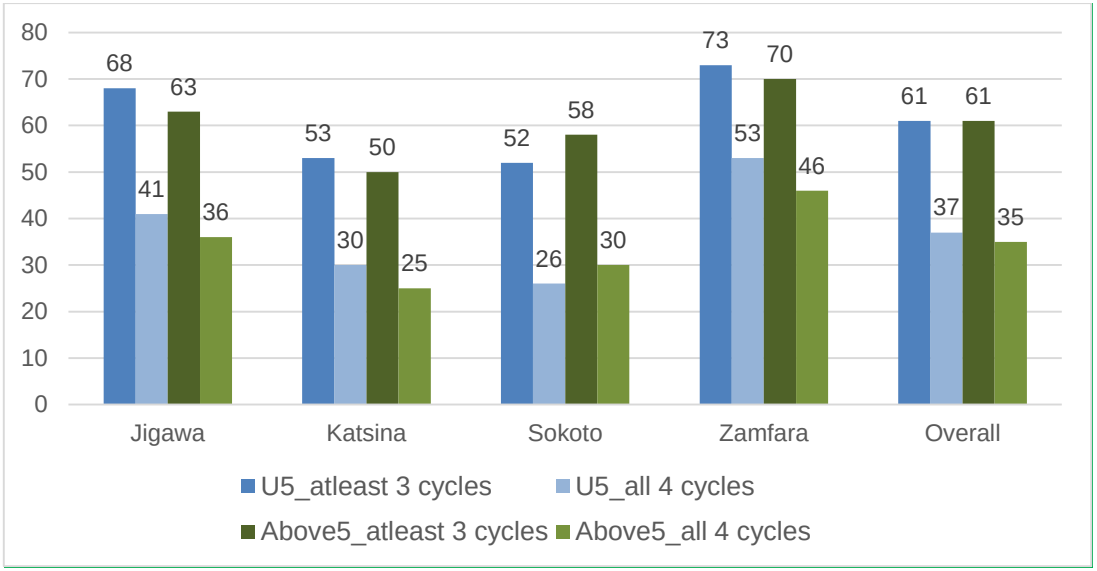


Figure 3: Proportion of children 3 – 59 months and above 5 years who were treated with SMC at least 3 cycles and all cycle

3.3 Understanding of SMC card use

The CHEW were also trained to explain to the caregiver the purpose of the card which is to track and inform on treatment administration as well as steps on how to resolve adverse effect. This involves ticking the card after administering the day 2 and day 3 home doses.

About forty five percent of caregivers across the four states reported the receipt of an SMC card but only about 37% overall had their SMC card available for inspection at the time of field visit. Assessment of coverage therefore relied on caregiver recall for those who did not have an SMC card. About 13% of all caregiver had an understanding that they were expected to tick the card after administering the day 2 and 3 home AQ doses.

Table 7: Proportion of caregivers with SMC Card

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	(%)	(%)	(%)	(%)	(%)
Child have an SMC Card					
Yes	60.9	40.4	45.9	38.8	45.2
No	39.1	59.6	54.1	61.2	54.8
% card retention rate					
% card retention rate	47.2	37.4	39.4	31.1	37.3
What caregiver need to do with the card					
Keep the card to show to CHW for the next cycle	51.7	27.3	32.9	27.9	33.2
Tick home doses for day 2 and day 3	17.7	10.4	13.4	11.7	13.0
Read messages in the card	0.2	0.1	0.2	0.7	0.3
Any other response	4.2	7.4	5.5	4.5	5.45

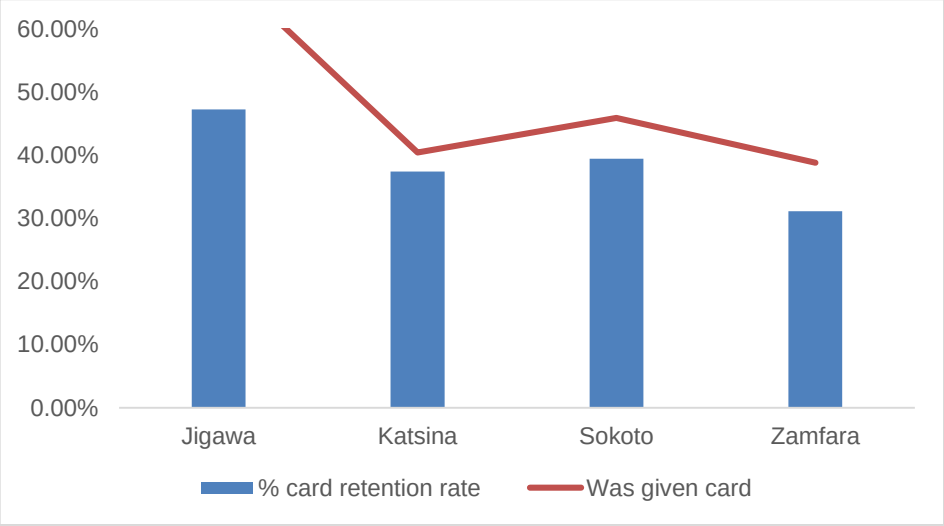


Figure 4: Proportion of respondent that reported receipt of an SMC card and those that had it available for inspection at the time of survey

3.4 Non-Treatment

Majority of those who said their child was not treated with SMC gave reasons outside the list of options provided. About 65% of the caregivers gave reasons not on the list of options. About 8% said child was absent during the visits.

Table 8: Reasons for children under 5 not receiving SMC

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	(%)	(%)	(%)	(%)	(%)
	n=62	n=148	n=190	n=170	n=570
Child/absent during the visits	12.9	7.9	18.2	8.9	12.2
Caregiver and/or child not home during the visit	6.5	6.5	7.0	10.7	7.9
Caregiver refused to take the malaria drugs for the child	0	0	2.7	3.0	1.8
Household never visited by all the CHWs	3.2	15.8	7.5	4.1	8.1
Child was sick	6.5	7.9	3.2	4.1	5.0
Child allergic to SMC medicines	0	0	1.6	0	0.5
Any other response	71.0	61.9	59.9	69.2	64.5

For household that refused to allow child to be given the SMC, majority also gave reasons not provided in the options (56%), but about 22% in all said the household head was not at home to give permission.

Table 9: Reasons for refusing to allow child to receive treatment

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	N = 0 (%)	N=0 (%)	N=4 (%)	N=5 (%)	N=9 (%)
Husband not at home to give permission	-	-	25.0	20.0	22.2
Husband refused	-	-	0	40.0	22.2
Medicine dangerous	-	-	0	0	0
Any other reasons	-	-	75.0	40.0	55.6

3.5 General Health Concerns and Behaviours

Some of the compound surveyed were never visited by a CHW (11%) of which about 99% of the compound heads confirmed to have children under 5 in the compound. The fever rate among children under 5 in those compound not visited was high. About 80% of the compound had a child who had fever during the treatment cycle and about 56% of the caregiver sought for care at the health facility.

Respondent provided various reasons why health facilities were not visited during fever episodes. On average, about 41% gave reasons outside the list of options provided. In Jigawa about 54% said the child got better so there was no need to visit the health centre. Twenty percent in Sokoto and Zamfara while 9% in Katsina gave same reason for their action. In Jigawa, Katsina and Sokoto about a third of the caregivers said the cost of treatment was expensive and that deter them from taking the child for treatment at the health centre.

Table 10: Compounds not visited and child fever rate

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
	n = 31	n = 52	n = 263	n = 132	n = 478
Compounds not visited and child sick with fever	80.7	80.8	82.1	73.5	79.5
	n = 25	n = 42	n = 216	n = 97	n = 380
Compounds not visited and sick child was taken to the health centre	48.0	73.8	57.4	47.4	56.1
Reasons for not taken sick child to the health centre (Compounds not visited by a CHW)					
	n = 13	n = 11	n = 92	n = 51	n = 167
Health centre too far	0	27.3	27.2	13.7	21.0
Health services too expensive	38.5	36.4	35.9	15.7	29.9
Child got better	53.9	9.1	19.6	19.6	21.6
Went to local healer	7.7	18.2	16.3	2.0	11.4
Any other reasons	30.8	27.3	30.4	64.7	40.7

***This table captures a multiple response responses of caregiver**

The children that were treated within any of the cycles were compared to those not treated to know if they had fever within the treatment period. Over 50% of the children had fever at one point or the other within the four cycles. Katsina and Sokoto had about 70% fever rate, Zamfara with 55% and Jigawa was 54%. The number of children not treated were few but still had about 47% who had fever during the treatment period.

Table 11: Comparative trend in children 3-59 months treated and not treated

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
Child treated and had fever					
Yes	574 (53.7)	1107 (69.1)	1686 (69.1)	1309 (55.1)	4676 (62.4)
No	495 (46.3)	496 (30.9)	755 (30.9)	1069 (44.9)	2815 (37.6)
Total	1069 (100)	1603 (100)	2441 (100)	2378 (100)	7491 (100)
Child not treated and had fever					
Yes	20 (32.3)	60 (42.5)	108 (56.8)	74 (43.5)	262 (46.0)
No	42 (67.7)	88 (59.5)	82 (43.2)	96 (56.5)	308 (54.0)
Total	62 (100)	148 (100)	190 (100)	170 (100)	570 (100)

From those who were treated and child had fever, about 62% of the caregivers sought treatment at a health centre. Katsina had the highest proportion compare to other states (67%) followed closely by Jigawa and

Sokoto with a proportion of 61% for the two states. About 58% visited the health centre for care of the sick child.

Among those that were not treated and child had malaria, about 49% sought care at a health centre. Katsina also had the highest visit rate to the health centre, followed by Jigawa with 55% and Zamfara and Sokoto with a proportion of 49% and 38% respectively.

Table 12: Children 3 – 59 who had fever health seeking behaviour

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
Child treated and taken to the health centre					
Yes	350 (61.0)	741 (66.9)	1035 (61.4)	760 (58.1)	2886 (61.7)
No	224 (39.0)	366 (33.1)	651 (38.6)	549 (41.9)	1790 (38.3)
Total	574 (100)	1107 (100)	1686 (100)	1309 (100)	4676 (100)
Child not treated and taken to the health centre					
Yes	11 (55.0)	41 (68.3)	42 (38.9)	36 (48.6)	130 (49.6)
No	9 (45.0)	19 (31.7)	66 (61.1)	37 (51.4)	131 (50.4)
Total	**20 (100)**	**60 (100)**	**107 (100)**	**72 (100)**	**262 (100)**

Information on the health outcome for children under 5 whose caregiver sought treatment at health facilities were also considered. Amongst those treated with anti-malaria drugs, caregivers reported that, about 78% on the average were tested at the health facility during the child's visit. The proportion among those who were reported to have tested positive for malaria was 84% across all states. Sokoto state had the highest rate of positive cases reported by the respondents (90%), with Katsina and Zamfara having about 88% and 86% while Jigawa reported a 50% positive result for malaria. These results are based on respondents recall, no record was access to confirm the malaria incidence.

The survey also captured the test outcome of children with fever who did not receive SMC dose. About 63% of the children were tested and out of which 85% tested positive for malaria as reported. No document was assessed to confirm the report from caregivers, responses was based on caregiver recall and report.

Table 13: Test outcome of children 3 – 59 who were treated and not treated who had fever

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
Treated with SMC					
	n = 350	n = 741	n = 1035	n = 760	n = 2886
% of sick children who were taken to the health centre and were tested	76.3	75.6	71.0	90.3	77.9
	n = 267	n = 560	n = 735	n = 686	n = 2248
% of children who tested positive for malaria	50.2	87.7	90.1	86.1	83.5
Not Treated with SMC					
	n = 11	n = 41	n = 41	n = 35	n = 128
% of sick children who were taken to the health centre and were tested	81.8	36.6	68.3	80.0	62.5
	n = 9	n = 15	n = 28	n = 28	n = 80
% of children who tested positive for malaria	66.7	80.0	96.4	82.1	85.0

The use of mosquito net among children treated and not treated during the cycles was assessed. Majority of the children who were treated across the states sleep under a mosquito net on the average (74%). Also a very high proportion sleep under a mosquito net among those not treated (70%).

Table 14: Comparative trend in mosquito nets coverage among children treated and not treated

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
Child treated and use net					
	n = 1069	n = 1603	n = 2441	n = 2378	n = 7491
% of children who were treated and used net	87.9	88.5	59.7	72.4	73.9
	n = 62	n = 143	n = 185	n = 167	n = 557
% of children who were not treated and used net	83.9	81.8	60.0	67.1	70.4

Reasons were given for child that did not sleep under a mosquito net. Most of the caregivers said that the net was temporarily unavailable (62%), while about 15% said the net was damaged and same proportion said they forgot to prepare the net for the child to sleep under.

Table 15: Reasons child did not sleep under a mosquito net

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	(%)	(%)	(%)	(%)	(%)
Causes heat	3.5	5.7	1.8	3.7	2.9
Disruption of sleeping arrangements	6.5	28.3	2.7	5.5	6.2
Net is damaged	7.7	4.7	5.8	28.9	14.5
Forgetfulness	37.7	18.0	11.4	15.7	14.9
Net temporarily unavailable	44.7	43.3	78.4	46.2	62.0

The compounds not visited were also asked if child slept under mosquito net. About 56% across the four states reported that the children slept under a mosquito net. The state with the least proportion was Sokoto state (46%). About 87% in Jigawa, 73% in Katsina and 61% in Zamfara reported that their ward sleep under a mosquito net.

Reasons were given for those whose child(ren) did not sleep under a mosquito net,. The next reason with high proportion was that the net was temporarily unavailable while for some the nets available were damaged (1%).

Table 16: Compounds not visited and children sleep under mosquito net

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
Child sleep under mosquito net					
Yes	27 (87.1)	38 (73.1)	122 (46.4)	80 (60.6)	267 (55.9)
No	4 (12.9)	14 (26.9)	141 (53.6)	52 (39.4)	211 (44.1)
Total	31 (100)	52 (100)	263 (100)	132 (100)	478 (100)
Reason for not sleeping under a mosquito net					
Causes heat	1 (0.2)	0 (0)	18 (1.1)	4 (0.4)	23 (0.6)
Disrupt sleep arrangement	0 (0)	4 (0.5)	6 (0.4)	1 (0.1)	11 (0.3)

Net is damaged	0 (0)	1 (0.1)	23 (1.4)	15 (1.4)	39 (1.0)
Forgetfulness	0 (0)	0 (0)	20 (1.3)	2 (0.2)	22 (0.5)
Net temporarily unavailable	1 (0.2)	1 (0.1)	26 (1.6)	17 (1.5)	45 (1.1)
Too expensive	0 (0)	0 (0)	9 (0.6)	6 (0.5)	15 (0.4)
Any other reasons	2 (0.5)	8 (1.0)	58 (3.6)	23 (2.1)	92 (2.3)

*This is a multiple response table

About 95% of the compounds visited were not sprayed by anyone in the past 6 months prior to the survey. This was also the case for compounds not visited during the treatment period (98%). Although, few respondents had disclosed having received visits from personal intending to spare houses, but were prevented by some households due to cultural reasons.

Table 17: Comparative trend in IRS (Anyone sprayed the interior walls of dwelling against mosquitoes at any time in the past 6 months)

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
Compound Visited (IRS)					
Yes	24 (4.2)	42 (5.7)	70 (5.3)	28 (2.9)	164 (4.6)
No	542 (95.8)	701 (94.5)	1257 (94.7)	942 (97.1)	3442 (95.4)
Total	566 (100)	743 (100)	1327 (100)	970 (100)	3606 (100)
Compound not Visited (IRS)					
Yes	0 (0)	0 (0)	9 (3.4)	1 (0.8)	10 (2.1)
No	31 (100)	52 (100)	254 (96.6)	131 (99.2)	468 (97.9)
Total	31 (100)	52 (100)	263 (100)	132 (100)	478 (100)

3.6 General Adverse Reaction

The reaction of the child after been administered the anti-malaria drug was assessed. A very large proportion of the children swallowed the drugs without vomiting or spitting (84%). We had about 12% of the children across the states who spit or vomited part of the drug immediately after being given and 3% who were reported to vomit all the drug after given.

Table 18: Child Immediate Reaction to Drug

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	(%)	(%)	(%)	(%)	(%)
Swallow the drugs without vomiting or spitting	90.1%	88.4%	78.6%	83.8%	83.8%
Swallow the drugs but spit or vomited part of the medicine immediately	7.4%	8.3%	15.2%	12.4%	11.8%
Swallow but vomited all the medicine immediately	1.4%	2.3%	3.7%	3.1%	2.9%
Refused to swallow to swallow or the drugs	1.1%	0.9%	2.5%	0.7%	1.5%

The reaction of the child after being given the anti-malaria drug was assessed and a good proportion had no adverse reaction to the medication (87%). Only about 13% of the children were reported to react to the drug.

Table 19: Child reaction to medication after given

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
Child reacted to medication					
Yes	41 (7.2)	101 (13.6)	174 (13.1)	166 (17.1)	482 (13.4)
No	525 (92.8)	642 (86.4)	1153 (86.9)	804 (82.9)	3124 (86.6)
Total	566 (100)	743 (100)	1327 (100)	970 (100)	3606 (100)

About 8% of the children reacted to the treatment by vomiting. Some caregiver also said the child came down with malaria after the treatment (3%).

Table 20: Reactions to medication

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	N = 41	N=101	N=174	N=166	N=482
Vomiting	2.8%	6.0%	8.6%	11.3%	8.0%
Diarrhea	1.2%	0.5%	0.4%	0.5%	0.6%
Rashes	0.7%	0%	0.3%	0.3%	0.3%
Itching	0.5%	0%	0%	0.2%	0.1%
Yellow eyes	0%	0%	0.1%	0%	0.1%
Drowsiness	1.3%	0%	0.2%	0.7%	0.5%
Fever	3.3%	1.8%	2.7%	4.3%	3.0%
Loss of appetite	0.2%	0.4%	0.1%	0.7%	0.3%
Abdominal pain	0.2%	0.4%	0.1%	0.1%	0.2%
Any other response	0.2%	5.2%	0%	0.4%	1.1%

3.7 SMC Card Usage and Retention

A Card was given to caregivers to tick when a child is given the required dose for day 2 and 3 after the visit from a CHW was assessed. Only about 40% of the caregivers across all the state said they have a card. Majority of those without a card misplaced the card. With about 58% of the caregiver on average with no card said they misplaced the card given, while about 34% from those with no card said they were never given a card. Other responses were given outside the list of options (8%). Jigawa has the highest number of children with card (48%).

From the inspection of card by data collectors, only about 13% across all the states ticked for day 2 and day 3 for child after given the home dosage. Zamfara has the highest adherence of about 15% for the 2 days followed by Katsina with about 14%, Jigawa and Sokoto had about 12% adherence to record keeping.

Table 21: SMC card and usage

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	n=1069 (%)	n=1603 (%)	n=2441 (%)	n=2378 (%)	n=7491 (%)
Child have a card					
Yes	48.3	40.3	41.5	33.3	39.6
No	51.7	59.7	58.5	66.7	60.4
Total	100	100	100	100	100
Reasons child not having a card					
	n =546 (%)	n=936 (%)	n=1373 (%)	n=1563(%)	n=4418(%)
Caregiver lost or misplaced card	57.1	58.6	56.2	59.0	57.8
Caregiver claims card was never given	33.3	37.4	34.0	31.2	33.9
Any other response	9.5	4.1	9.8	9.9	8.6
Adherence to the use of card					
Proxy for adherence (% children that received AQ home does in: day 2 in cycle 4	26.8	34.7	31.3	47.3	35.7
Proxy for adherence (% children that received AQ home does in: day 3 in cycle 4	26.8	34.5	30.9	47.0	35.4

3.8 Treatment with the DOT by CHW and Caregivers

The CHW were supposed to administer the first dose of treatment to the child before handing over some blister to the caregiver depending on the age of the child. About 44% of the caregivers across the states said the CHW gave the child the first dose of treatment. In Zamfara 50%, Sokoto 48%, Katsina 41% and Jigawa 32% respectively said the CHW administered the first dose.

Over 90% of the caregivers confirmed to receive some tablets from the CHW that visited their compound and also about same proportion confirm to have 4 tablets in the blister given by the CHW.

Table 22: CHW administered first dose to the child and left some tablets

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
CHW administered the first treatment to child					
Yes	182 (32.2)	307 (41.3)	630 (47.5)	481 (49.6)	1600 (44.4)
No	384 (67.8)	436 (58.7)	697 (52.5)	489 (50.4)	2006 (55.6)
CHW left some tablets with caregiver of child					
Yes	531 (93.8)	680 (91.5)	1254 (94.5)	911 (93.9)	3376 (93.6)
No	35 (6.2)	63 (8.5)	73 (5.5)	59 (6.1)	230 (6.4)
Number of tablets left by CHW for day 2 and 3 treatment					
2 tablets	6 (1.1)	22 (3.0)	41 (3.1)	104 (10.7)	173 (4.8)
1 tablet	1 (0.2)	2 (0.3)	1 (0.1)	2 (0.20	6 (0.2)
4 tablet	542 (95.7)	709 (95.3)	1249 (94.1)	838 (86.4)	3338 (92.5)
Don't recall	17 (3.0)	10 (1.4)	36 (2.7)	26 (2.7)	89 (2.5)
Total	566 (100)	743 (100)	1327 (100)	970 (100)	3606 (100)

The residence of CHW who visited the compound was also assessed and majority of the CHW were not familiar faces in the community (57%). This was confirmed with a follow on question were caregivers said that the CHW do not reside in the community (64%) across all the states.

Table 23: CHW residency status

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
Caregiver know CHW					
Yes	211 (37.3)	235 (31.6)	732 (55.2)	377 (38.9)	1555 (43.1)
No	355 (62.7)	508 (68.4)	595 (44.8)	593 (61.1)	2051 (56.9)
CHW origin					
From the community	163 (28.8)	150 (20.2)	631 (47.6)	355 (36.6)	1299 (36.0)
Outsider	403 (71.2)	593 (79.8)	696 (52.4)	615 (63.4)	2051(64.0)
Total	566 (100)	743 (100)	1327 (100)	970 (100)	3606 (100)

3.9 Caregiver Knowledge and Perception

The literacy level of caregiver was assessed. Only about 6% could read a sentence fully without any difficulty. Over 80% of the caregivers across were unable to read a complete sentence. About 14% were able to read with some difficulty.

Table 24: Evaluating the literacy level of caregiver

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	N =556 (%)	N=743 (%)	N=1327 (%)	N=970 (%)	N=3606 (%)
Read test sentence fully without difficulty	7.2	1.9	6.6	6.3	5.7
Read test sentence with difficulty	6.9	5.5	22.9	10.5	13.5
Was not able to read test sentence	85.9	92.6	70.5	83.2	80.8

The table 5 below illustrates the responses of caregivers on their knowledge of what should be done with the white (AQ) tablets left behind by the CHWs. Over eighty percent of caregivers across all the survey state know that each of the tablets are to be given to the treatment child one each for the two subsequent days.

Table 25: Understanding of the use of AQ tablet

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	N (%)	N (%)	N (%)	N (%)	N (%)
Understanding of SMC dosage					
Correct Usage	499 (88.2)	640 (86.1)	1160 (87.4)	830 (85.6)	3129 (86.8)
Incorrect Usage	67 (11.8)	103 (13.9)	167 (12.6)	140 (14.4)	477 (13.2)
Total	566 (100)	743 (100)	1327 (100)	970 (100)	3606 (100)
Responses on the use of AQ (yellow) tablets at home					
Give dose 2 on day after CHW'S visit and the dose 3 a day after dose 2	88.2%	86.1%	87.4%	85.6%	86.8%
Give dose 2 and 3 together on day after CWS visit	4.1%	7.3%	4.1%	9.0%	6.1%
Give to child later if sick	0.4%	0.3%	0.1%	0.7%	0.3%
Give to other (sick) children	0.2%	0.1%	0.2%	0.0%	0.1%
Any other response	7.2%	6.2%	8.2%	4.7%	6.7%

3.10 General Knowledge and Behaviour related to SMC

The knowledge of caregiver on the purposes of the SMC programme was evaluated and a good proportion have good knowledge of the programme objective. About 61% of the caregivers said that it was for preventing malaria among the children while 28% said it was for treatment across the four states.

Table 26: Understanding of the purposes of SMC

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	N (%)	N (%)	N (%)	N (%)	N (%)
Prevent Malaria	77.4%	74.7%	48.1%	58.7%	61.0%
Treat Malaria	11.1%	14.5%	40.5%	32.2%	28.3%
Prevent/treat other diseases	3.4%	4.0%	2.9%	3.4%	3.4%
Any other reasons	8.1%	6.7%	8.4%	5.8%	7.3%

Majority of the caregivers across the states heard about the SMC programme form a town announcer (56%) and another good proportion in Sokoto (38%) and Zamfara (35%) said they heard from the radio. Those who heard from the local leader was also on the high side with Jigawa having about 43%, Sokoto 29%, Katsina 25%, and Zamfara 20%.

Table 27: Key communication channel for caregivers

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	N = 268	N=216	N=750	N=430	N=1664
Health worker	14.9%	14.8%	17.1%	19.3%	17.0%
Community health worker	17.2%	31.0%	11.1%	14.4%	15.5%
Local Leader / Village Chief	42.5%	25.0%	29.3%	20.0%	28.5%
Religious leaders	5.6%	1.4%	2.3%	4.2%	3.2%
Town announcers	60.5%	42.1%	55.1%	62.1%	56.1%
Radio	0.8%	9.7%	38.3%	34.9%	27.6%
Television	0.8%	0.9%	1.5%	0.9%	1.1%
Printed materials	0%	0%	0%	0.7%	0.2%
Any other response	4.1%	8.3%	6.9%	10.0%	7.5%

4 Conclusion and Recommendation

The recommendation of the WHO to treat children within the age bracket 3 and 59 months with the sulfadoxine-pyrimethamine and amodiaquine (SP+AQ) once a month for 4 months during the malaria transmission season has necessitated the need to assess the extent of coverage of the treatment in the states covered by the SMC programme and also see the level of improvement among the children treated with the anti-malaria drugs ((SP-AQ) monthly. Findings from this coverage survey has reviewed that the coverage was high across all the states with an average of 88% across all the states and over 90% of the children under 5 were treated in all the states. The programme was focused on children under 5 but the survey still recorded almost 20% of children 5 and above being treated at one point during the programme.

There was a high report of fever cases of surveyed children by caregivers. This is based on caregivers recall which cannot be confidently ascertain as no document was access to confirm what was reported by the caregivers and also the survey was conducted two month after the end of the last treatment cycle which might be a factor influencing the response of the caregivers.

Although proper administration of the first dose was designed to be given by the CHW as well as a demonstration and explanation on how caregivers are meant to administer subsequent dosage. Survey findings revealed that about 44% of the children were given the first dose by the CHW as claimed by the caregiver during the fourth cycle. Over ninety percent of the caregiver received blister containing 4 tablets and over eighty percent have a good understanding on how to administer the medication which is to give dose 2 on the day after CHW's visit and the dose 3 a day after dose 2.

The momentum of the SMC needs to be sustained in each of the cycles as there seems to be a decreased coverage momentum as the cycle progresses.

By way of recommendation, SMC training should emphasize the importance of checking the age of the child to avoid treating children that are 5 years and above. Since the child-strength, blister packs are only suitable for children under 5 years of age. The protocol of DOT needs to be emphasized also in training the SMC field staff. The level of caregivers' knowledge of the content and the use of blister packs (especially for home doses) need to be sustained.

Data collectors become familiar with a process of data collection if it is a long one and tend to overlook some processes that might be critical to the success of a programme. There is need to design a system of quality assurance after every round of treatment in order to ensure that leakages in the expected process are fixed before the next round commence and also refresher training of enumerators at intervals and an unscheduled visits to location just to keep them on their toes at all times.

S/N	MC Indicator	Jigawa	Katsina	Sokoto	Zamfara	Overall
1.	% respondents (agreed to the survey)	*100%*	*100%*	*100%*	*100%*	*100%*
2.	% of responding compounds with children under 10	*100%*	*100%*	*100%*	*100%*	*100%*
3.	% of responding compounds with children under 10 reached by SMC teams	*94.6%*	*93.3%*	83.3%	88.0%	88.2%
4.	Average no. of HH in a compound	*2*	*1*	2	2	2
5.	% of children ever treated during the programme	*71.7%*	*68.8%*	78.0%	74.0%	74.0%
6.	% of children 3 – 59 months ever treated during the programme	*94.5%*	*91.6%*	92.8%	93.3%	92.9%
Proportion of children 3 – 59 months who were treated with SMC by cycle						
7.	% of children 3-59 reached, by **cycle 1**	*80.5*	*83.1*	81.0	83.4	82.2
8.	% of children 3-59 reached, by **cycle 2**	*85.1*	*67.7*	68.6	84.3	75.7
9.	% of children 3-59 reached, by **cycle 3**	*75.4*	*53.6*	59.2	78.3	66.4
10.	% of children 3-59 reached, by **cycle 4**	*55.4*	*55.8*	47.2	68.2	56.9
11.	% of children 3-59 reached in at least **3 cycles**	*67.7*	*52.6*	52.2	73.2	61.2
12.	% of children 3-59 reached in all **4 cycles**	*41.0*	*29.8*	25.9	52.5	37.3
Proportion of children 5 – 10 years who were treated with SMC by cycle						
13.	% of children 5 – 10years reached, by **cycle 1**	*84.2*	*81.3*	83.1	84.3	83.2
14.	% of children 5 – 10years reached, by **cycle 2**	*84.7*	*61.2*	72.1	82.0	74.3
15.	% of children 5 – 10years reached, by **cycle 3**	*70.2*	*48.5*	63.8	72.5	64.1
16.	% of children 5 – 10years reached, by **cycle 4**	*47.9*	*53.3*	50.2	64.7	55.7
17.	% of children 5 – 10years reached in at least **3 cycles**	*63.2*	*49.8*	58.4	70.1	61.1
18.	% of children 5 – 10years reached in all **4 cycles**	*36.3*	*24.7*	30.4	46.4	35.3
19.	% of children 3-59 never reached	5.5%	8.2%	7.0%	6.6%	6.9%
20.	% card retention rate	47.2%	37.4%	39.4%	31.1%	37.3%
21.	% of children under 10 with viable proof of life	13.4%	27.7%	11.8%	18.9%	18.0%
22.	Main reasons for non-treatment if visited by CHWs (3-59 years) **(Other response outside the options)`**	93.7%	91.8%	86.4%	89.9%	90.1%
23.	Main categories of refusals (3-59 years) **(Husband not at home to give permission)**	-	0%	11%	42.8%	20%
24.	Proxy for adherence (% children that received AQ home doses in: day 2 in cycle 4	26.8%	34.7%	31.3%	47.3%	35.7%
25.	Proxy for adherence (% children that received AQ home doses in: day 3 in cycle 4	26.8%	34.5%	30.9%	47.0%	35.4%

Comparative trends in fever between children 3-59 visited and not visited						
26.	Proportion of children visited who had fever	53.7%	69.1%	69.1%	55.1%	62.4%
27.	Proportion of children not visited who had fever	32.3%	42.0%	57.8%	43.1%	46.5%
28.	Comparative trends in health seeking behaviours (treated)	61.0%	66.9%	61.4%	58.1%	61.7%
29.	Comparative trends in health seeking behaviours (not treated)	55.0%	68.3%	38.3%	48.6%	49.4%
30.	Child with malaria Testing rates	72.5%	73.9%	69.3%	87.4%	75.7%
31.	Child with malaria **positives rates**	54.5%	88.0%	89.7%	87.9%	84.7%
32.	Comparative trends mosquito nets coverage / use	87.1%	73.1%	46.4%	60.6%	55.9%
33.	Comparative trends in IRS	4.2%	5.7%	5.3%	2.9%	4.6%
34.	% of treated children coming from outside target areas	7.4%	2.7%	11.1%	10.0%	8.5%
35.	Caregiver literacy & education status (**No formal education**)	73.0%	74.8%	38.0%	52.9%	55.1%
36.	Caregiver literacy status (**Was not able to read test sentence**)	85.8%	92.6%	70.5%	83.2%	80.8%
37.	CHWs/distributors' status (**Know CHW**)	37.3%	31.6%	55.2%	38.9%	43.1%
38.	% of children treated in DOT	32.2%	41.3%	47.5%	49.6%	44.4%
39.	% of children spitting/regurgitating drugs immediately	8.8%	10.6%	18.9%	15.4%	14.6%
40.	% of children given a second dose spitting/regurgitating	42.9%	20.0%	60.0%	37.9%	49.6%
41.	Caregiver understanding of content and use of blister packs (especially for home doses)	88.2%	86.1%	87.4%	85.6%	86.8%
General knowledge and behaviour related to SMC, including:						
42.	*Key communication sources to caregivers* **(Town Announcer)**	60.5%	42.1%	55.1%	62.1%	56.1%
43.	*Understanding of purposes of SMC and links to malaria* ***(Prevent Malaria)***	77.4%	74.7%	48.1%	58.7%	61.0%
44.	*Understanding of SMC dosage (DOT vs home doses)* **(Correct usage)**	88.2%	86.1%	87.4%	85.6%	86.8%
45.	Overview of adverse reactions **(Vomiting)**	2.8%	6.0%	8.6%	11.3%	8.0%

Annex A Other Tables

Variable	Jigawa	Katsina	Sokoto	Zamfara	Overall
	N (%)	N (%)	N (%)	N (%)	N (%)
Child sick with fever within the last 4 months					
Yes	53.6%	64.5%	69.1%	54.1%	61.2%
No	46.4%	35.5%	30.9%	45.9%	38.8%
Child taken to Health Centre for treatment					
Yes	58.4%	65.7%	56.8%	54.0%	58.3%
No	41.6%	34.3%	43.2%	46.0%	41.7%
Child tested for malaria					
Yes	72.5%	73.9%	69.3%	87.4%	75.7%
No	27.5%	26.1%	30.8%	12.6%	24.3%
Child tested positive of malaria parasite					
Positive	54.5%	88.0%	89.7%	87.9%	84.7%
Negative	45.5%	12.0%	10.3%	12.1%	15.3%

Variables	Jigawa	Katsina	Sokoto	Zamfara	Total
	N=566	N=743	N= 1,327	N= 970	N= 3,606
No Formal Education	73.0%	74.8%	38.0%	52.9%	55.1%
Koranic Education	11.0%	14.0%	50.1%	32.4%	31.8%
Formal Education- Primary	3.4%	5.0%	2.8%	3.0%	3.4%
Formal Education- Secondary	3.0%	3.5%	2.3%	6.6%	3.8%
Formal Education- Tertiary	1.2%	0.1%	1.3%	1.2%	1.0%
Formal- primary plus Koranic	3.9%	1.5%	2.7%	1.7%	2.4%
Formal- Secondary plus Koranic	3.0%	0.4%	2.3%	1.3%	1.8%
Formal- Tertiary plus Koranic	1.6%	0.7%	0.5%	0.9%	0.8%

Annex B List of Facilities and Communities Replaced

Jigawa			
LGA	**Ward**	**Facility**	**Community**
Babura	Babura	BABURA GEN HOSPITAL	BABURA AREWA A
			BABURA KUDU B
			JIJI AREWA
			JIJI TSAKIYA
			UNGUWAR SHARU
	Gasakoli	GASAKOLI PHC	GAJONGO KANAWA
			MUNDU
			NAIRA
			RATAYE GABAS
			YAN LADA B
	Kuzunzumi	KUZUNZUMI PHC	AUWALAWA FULANI GABAS
			BEKAWA
			FADI BARA AREWA
			GUJUGURU YAMMA FULANI
			KANAWA
Garki	Doko	Doko MPHC	BALALASHE FULANI
			DANBAGAJE FULANI
			DANBAGAJE GARI
			GEBAWA
			KABDODO
	Kanya	Makangawa HP	DIGAWA
			JANBAM (JAMA'ARE FULANI)
			KATSALLE
			MAKANGAWA
			WALAWA
	Muku	Muku BHC	BABAGANAWA
			DANBUZU
			DANDUBULO
			GIDAN DUNU
			JABA
Kazaure	Dada	Gezoji HP	DAURAWA KALANGUNA
			FARU FULANI
			GEZZOJI FULANI C
			GEZZOJI HABE
			UNG. MALAM B
	Kanti	Kazaure Gen Hosp	HOSPITAL QTERS
			KANTI YAMMA C
			KATOGE A B
			KATOGE A D
			SHAGARI QTERS
	Sabaru	BANDUTSE H P0ST	BANDUTSE AREWA
			BELAS
			KURFI

			SABUWAR JAWO
			TAKWASA A
Roni	AMARYAWA	AMARYAWA MPHC	JARINGA
			MAKERA
			SABUWAR UNGUWA
			TSANGAYA
			YARIMAWA
	Gora	GORA PHC	CIKI KAINI
			GANGARE
			GORA FULANI A
			TUDUN GABAS
			UNGUWAR DASHI
	Roni	Roni PHC	JANBULO
			KANTUDU CENTRE
			NASARAWA B
			SABON GARI
			WALAWA
Taura	**CHUKUTO**	KWAJALI HP	AKASAN
			MAZUZUWA
			RIGAR ALI
			RIGAR MAIMAKO
			TOFA
	KWALAM KWALAM	KWALAM MPHC	BARNAWA
			BULA
			KALAWA
			KWALAM ABUJA
			LIMAWA
	MAJE	MAJE DISPENSARY	ATIYAYE
			DANMEDI
			MAJE
			SABON GARIN MAJE
			TSUWA

Katsina			
LGA	**Ward**	**Facility**	**Community**
Baure	B/MUTUM	CHC B/MUTUM	BABBAN MUTUM BABBAN GIDA
			BABBAN MUTUM DAN IYA
			BABBAN MUTUM NA SAYE
			BABBAN MUTUM TELA SULE
			BABBAN MUTUM UBAN DAWAKI
	DANKUM/AGALA	DANKUM HC	DANKUM DANLADI
			DANKUM ISAKA
			KAFIN KWANCE K/YAMMA
			TSAMIYA DANKO
			TSAMIYA MAIFADA
	GARKI	HC BAKANJI	BAKANJI AUDU MAI KANO

			BAKANJI MAI GARI KUNDI
			BAKANJI MUSA TELA
			GOZAWA KANTA
			GOZAWA MALAM SULE
	MAIBARA	HC ACHAKWALE	ACHAKWALE
			ACHAKWALE FULANI
			GWARANDAMA
			KIRINIYA
			KIRINIYA FULANI
	YANDUNA	HC GAMAJI	BARANGAWA HARDO GWAMNA
			BARANGAWA RIJIYA
			BUKUDU TSOHUWA
			GAMAJI MASASSAKA
			GAMAJI YARMARIYA
Dutsi	DUTSI A	H/C GALLAWA	GALLAWA
			HABAWA
			LAMBAR
			SHIFALI
			SUBA
	DUTSI B	H/C DAN KUDU	BARURI
			BIYATA
			MACHINAWA
			TALU
			WALAWA
	R/AYA B	H/C NASARAWA	HINNINGERI
			MAGAMIYO YUSUF
			NASARAWA ANYALE
			NASARAWA SURAJO
			RUNDE
	R/KAYA A	H/C DUGUNEJI	DUGUNAWA
			DUGUNEJI
			RIJIYAR GAWO
			S MINAWA
			TAMAJE
	SIRIKA B	MCHC SIRIKA	KALGORE
			MALKERE
			SIRIKA
			WAILARE
			WARWARA
MAI'ADUA	BUMBUM B	KWADAGE HC	KUDI JIKA
			KWADAGE
			RIJYAR KADO
			TUGA FULANI
			TUGA GARI
	KOZA	JIRDEDE HC	DAWAKAWA
			JIRDEDE
			KALGO
			RABA

			YAKANOMA
	MAIA'DUA A	CHC MAIADUA	KOFAR GALADIMA
			UNGUWAR KANAWA LAYI SANI DAN M ZUBAIRU
			UNGUWAR KANAWA LAYIN DANLADI KANAWA
			UNGUWAR SALE LAYI YUSUF BELLO PRI S
			UNGUWAR SALE LAYIN SANI B. O
	MAIKONI A	MCH MAIKONI	DAMSAWA
			G.R.A
			JAR LAMBA
			MAIKONI
			TSOHON GARI
	NATSALLE	ARAHA HC	ARHA BALA
			ARHA BASHAR
			ARHA DAHIRU
			ARHA IDI
			ARHA LAWAL
MASHI	DOGURU A WARD	BADAURI HF	BADAURI BAGADAS
			BADAURI BAKIN DAJI
			BADAURI SULE
			MARKAWA
			SHAKI SHAFA
	GANA JIGAWA	TAGURA HF	BAUDE
			DAN GARIN LAWAL
			DANKAWARI KUDU
			TADA
			TSAMIYAR DANNOSU
	MAJIGIRI	DANDOGARIHF	DAN BABBA
			DAN GOSHI GARI
			DANDOGARI
			MAI DAN GERO
			TAJAYE
	SONKAYA WARD	KOTAI HF	ABUJA NAMAKAU
			AREWATAWA
			HAYIN GINA
			JAMAA NASARAWA
			LADINGO
	TAMILO A	MCH TAMILO	DUNAWA GADA
			KANON DABO
			KOHE
			SABON SARA
			TAMILO

Sokoto			
LGAs	Ward	**Facility**	**Community**
BINJI	BINJI	GENERAL HOSPITAL	30 HOUSES
			BAJAGAWA
			GTC BINJI

			S/LIMAN NASORO
			DAN MALI ASARAWA
	GAWAZZAI	YERDEWU DISPENSARY	GIMBA
			JIWANDU
			RUGGA
			WARDEBE
			YERDEWU
	SAMAMA	PHC SAMAMA	GIDAN DAJI
			GIDAN GORIBA
			SAMAMA S/HAKINI
			SAMAMA UNGULU
			TUNGA KWANDO
	PHC TUDUN KOSE	AJOGAL	AJOGAL
			BARAGABA
			FARTINGA
			MALGAM
			TOBI
BODINGA	BAGARAWA WARD	PHC BAGARAWA	AMANAWA
			BAGARAWA
			GAGALAWA
			GIDA BABBA
			KAMBAZAWA
	DANCHADI	PHC DANCHADI	CILAWA
			DUTSIN SARKIN RUWA
			GIDAN DANBUBE
			KARAZUNTU
			LUNGUN RUNJI
	KAURA MIYO	JABE CLINIC	ADARAWA
			BAYAN DUTSI
			JABE
			K/MIYO
			KABAWA
	TAKATUKU/MADORAWA	TAKATUKU DISPENSARY	KAURA ATTO
			KULALO 2 RUGGA
			LULU HAUSAWA
			LULU MAGAJI
			TAKATUKU SHIYAR RAFI
GORONYO	BIRJINGO	GANZA DISP	BUNGI
			BUNGIN MADU
			GANZA DUTSI
			GANZA YAMMACI
			ZANGO BUNGI
	KAGARA	KAGARA DISP	GIDAN BUNU
			GIDAN SALIHU
			KAWADATA
			MASUNTA
			SARKAWA

	RIMAWA	FALALIYA (DISP)	DANTUDUN FALALIYA
			FALALIYA
			FANFARA AKAIFA
			KATSIRA
			RIYOJIN TSAMIYA
	SHINAKA	SHINAKA (MPHC)	JINGILMAWA
			MASAKATA
			SHIYAR GALADIMA
			SHIYAR GULBI
			SHIYAR MABA
GUDU	BACHAKA	PHC BACHAKA	BACHAKA GABAS2
			BACHAKA GIDAN BAKI1
			BACHAKA SABARU
			JEMA
			TATSAWA
	BALLE	GENARAL HOSPITAL BALLE	AYAMA
			GUNBIMATA YAMMA
			KAHIRU BALLE
			MALLAMAWA BALLE
			MARINA BALLE
	KARFEN CHANA	BHC BINGEL	BINGEL KANWURI
			GARIN BAFASHI
			MASAMA
			T/NAMAIWA
			TUSKWUI
	KURDULA	KURDULA PHC	ADARAWA YARGARKA
			BUNYA
			DANGEBE
			GARIN BAFASHI
			GARIN MAKERA
ILLELA	ARABA	ARABA PHC	GANDU
			KANWURI
			KWANKWAMAWA
			MASALLACIN ABDU
			SABON GARI YAMMA
	GARU	GARU DISP	BON GARI
			CHANCHAWA
			GARU MAGORAWA
			MAZAUDA
			NASARAWA
	KALMALO	KALMALO	GAJIYA
			HEALTH CLINIC(FADI KAHUTA)
			KALMALO
			MUNWADATA
			TITIN ISKA
	TOZAI	GIDAN BANGO	GIDAN AJIYA HAUSAWA
			GIDAN BANGO
			GIDAN DALA

			GIDAN SHEHU
			KORINGO
KEBBE	Kebbe East	Dukura health clinic	DUKURA SABON GARI
			GIDAN ALHAJI LATO
			GIDAN BALERI
			KALANGU NOMADIC
			SHIYAR DAN KURA
	Margai west	Karma health post	GURU
			ILLELA
			SHIYAR KUKA MARGAI
			SHIYAR MAKARANTA
			SHIYAR SALLAMA B
	Nasagudu	Nasagudu Health Clinic	NASAGUDU SHIYAR ASIBITI
			NASAGUDU SHIYAR FADA
			NASAGUDU SHIYAR MAKARANTA
			NASAGUDU SHIYAR MASALLACI
			NASAGUDU SHIYAR RAFI
	Ungushi	Maikurfuna Health post	DABAGIN GWANDI
			DABAGIN JAN BALI
			RUGGAR HUSSAINI GAWRU
			RUGGAR LADAN
			SHIYAR ALHAJI SA'IDU
SARBON BIRNI	GATAWA	ARAGA HEALTH CLINIC	ARAGA
			DANGIWA
			GIDAN DAN BAKI
			MADAKA
			MASHEKARINBINGIL
	KURAWA	DAKWARO HEALTH P0ST	DAKWARO
			DAKWARO TSOHUWA
			GIDAN ALMU
			HAWAN DIRAM
			KWARAN GAMBA
	TAKATSABA	GARIN UMARA HEALTH POST	G/UMARA S/MAIGARI
			G/UMARA TSAKIYA
			GARDIN GINGI
			GARIN BAUSHI
			GARIN NAKAURA
	TARAH	GARIN IDI HEALTH POST	GARIN IDI S/HASHIMU
			GARIN IDI S/KAKO
			GARIN IDI TUDU
			NASARAWA
			TUDUN WADA
SHAGARI	HORO	MPHC HORO	GANGARE
			HORO SHIYAR GALADIMA
			HORO SHIYAR KWADARKO
			KARAJE
			RUGGAR YARA

	KAJIJI	AGGUR DISPENSORY	BABUJE
			GIDAN GALLA
			GIDAN MAGAJI
			GIDAN MANGORO
			RUNJIN GAGO
	LAMBARA	PHC LAMBARA	BADIYAWA
			GIDAN BAURA
			KAURA DOLE
			LAMBARA SHIYAR AJIYA
			LAMBARA SHIYAR GALADIMA
	SHAGARI	GENERAL HOSPITAL SHAGARI	BIRNI
			NASARAWA B
			SHIYAR GEBE
			SHIYAR MAGAJI
			ZABARMA
SOKOTO SOUTH	GAGI A	MANA TUDU DISPENSARY	Mana Tudu S/ Tudu
			Mana Tudu S/Makaranta
			Manatudu HF
			Tamaje S/Galadima
			Tamaje S/Makaranta
	GAGI C	MABERA PHC	Blue Cresstent
			Kwasare House
			Madam Karo
			Sharifai QTS
			Shuni Road
	SARKIN ADAR A	MARYAM ABACHA SPECIALIST HOST	Bello Way Old Market
			Kwanni Yan Tukane
			MAINIYO
			Masallachin Shehu
			Kwanni
	TUDUN WADA A	TUDUN WADA CLINIC	ARMIYAU MADA
			DALLATU OFFICE
			IBRAHIM MAIFATA
			MUSA SOKOTO
			T/DAN WANZAM
TAGANZA	KWACCEHURU	KWACCHE HURO DISP.	BIRFA MANU
			GANAJAYE
			ILLELA
			RAMUN CERA
			RAMUN CERA TUDU
	MAGONHO	MASALLCHI DISP	MASALLACIN BALA KOTAI
			MIZAM BARDO
			MULLELA TA AREWA
			TUNGA RUNJI
			TUNGA SABON GARI
	SALEWA	BAUNI PHC	ASARARA
			DAN TUDU

			MAKERA
			SABON GARI
			SABON GARI TUDU
	TANGAZA	GH TANGAZA	BILANGI
			SABSIYA
			SHIYAR DANGALADIMA
			SHIYAR KWAJA
			TALBA YAMMA

Zamfara			
LGAs	**Ward**	**Facility**	**Community**
BAKURA	BAKURA	OLPC	ALASAWA
			KOFAR BAI
			MAKARANTAR BOKO
			RAFAWA
			Shiyar Magayaki
	DAKKO	KAURAR MALAN HF	BANKANU
			GIDAN MODI
			KATSALLE
			KWATSAMA
			MAKATO
	DANKADU	PHC DAMBO	GEZAWO
			GUNTUN RUNJI
			MABAUDA
			RANGO
			Shiyar Galadima
	Nasarawa	TUMBA HF	GIDAN BAIDU
			KATSALLE
			MAZGON YAMMA
			SHIYAR HAKIMI MUSA
			TUMBA KANWURI
	RINI	PHC RINI	DORA
			GALADAWA
			KATTAKAI
			SHIYAR KOFA
			TITIN BASACHI
	YARGEDA	KABAWA DISP	GANAIKAWA
			Gidan Gabas
			KABAWA MASSALLACI
			KABAWA TSAMIYA
			TUNGAR KALGO
BUNGUDU	Bingi North	Bingi Health Clinic	BASHIDI
			DAGWALGI
			DAKKOJI
			GIDAN ALH DAN JAO
			GIDAN MAIDAJI
	Bungudu	Bungudu General Hospital	KAIWAYE

			KANBUKE
			SABON BIRNI
			SABON GARI I
			SABON GARI II
	Gada Karakkai	Danmarke Primary Health Centre	BARZO
			DOGON MARKE
			GIDAN ALH HABIBU
			KASARAWA
			TUNGA
	Kotorkoshi	Aisha Dispensary	AGULAWA
			AISHA
			GIDAN ALGO A
			GIDAN MAKAHO
			KADAMUTSAWA
	Samawa	Samawa Health Clinic	BULKA I
			DAN SAYE
			DANBOJI
			G. GADO
			GIDAN BARMO
	Tofa	Gamawa Health Clinic	DAN DAJI
			DORAWA
			GAMAWA II
			GIDAN MAI RAGO
			GIDAN RAHAZAWA
KAURA NAMODA	BANGA	BANGA PHC	Baice
			Dandanbo A
			Dandanbo D
			Shiyar Dahiru B
			Shiyar- Garba A
	DAN ISA	DOGON KADE PHC	Dagan gan
			Duhuwa
			Efa
			Gado
			Makore
	GALADIMA D/GALADIMA	MAGIZAWA CLINIC	Alibawa
			Awala Magizawa
			GIDAN TSAMIYA
			Kasharbawa
			Lungun Saidi
	KUNGURKI	KUNGURKI CLINIC	Gidan kado
			Gidan sambo
			GIDAN SARKIN FULANI
			Shiyar Najabaka
			YARKAIWA
	SAKAJIKI	DOKAU COMM. DISP	Dokau kware
			Kwalabdawa
			TULLUKAWA
			Tungar yemi

			Unguwar faila
	YANKABA	BARKEJI CLINIC	S/Baura H/F
			S/Baura UK
			S/Dangaladima
			S/S/ Gabas
			Zamfarawa
ZURMI	BOKO WARD	DUMAMA DISPENSIRY	BABURDE
			DUMAMA
			IFE
			JEMA
			NAKI FADA
	DOLE	TUDUN BUGAJE DISPENSARY	ANGO
			DOGUWAR KAIWA
			MASHEKARIN TUKULLU
			TUDUN BUGAJE
			TUKULLU
	KWASHABAWA	GIDAN KANYA DISPENSARY	GIDAN DOGO
			GIDAN KANYA
			HURURU
			TURMUZAWA
			ZANGON
	MASHEMA	TUNGAR FULANI	BABBAN BAKI
			DUKA
			GIDAN DUTSI
			TAFKIN DAWO
			TUNANI
	MAYASA KUTURU	MAKUSA DISPENSARY	DUHU
			GIDAN DUWA
			KA FACHE
			MAKUSA
			SAFARAWA
	ZURMI WARD	FSC NASARAWA CLINIC	BAKON GEBE
			GIDAN GADAJE
			JAYA
			NASARAWA 1
			NASARAWA 2
GUSAU	Galadima	Federal medical centre	Bayan FMC
			Massalacin kanoma
			Unguwar gwaza qtrs
			Yan mangwarora
			Zarau college
	MAYANA WARD	KASHARUWA OLPC	Gidan dankado
			GIDAN HALILU
			Mafaraje
			TUZA
			Zango
	SABONGARI	Police clinic	Ahmad bello way
			Gidan kabuga

			Gidan makarata
			Igbo road
			MTD Quarters
	WONAKA	BAWO DISPENSARY	Bawo
			Danwuru
			Kofa
			Mai Galma
			Mutu

Annex C OPM Survey Management Team

Name	Position	Key Duties
Femi Adegoke	Country Lead	OPM Nigeria country lead; Manages the entire survey team
Ekundayo Arogundade	Project Manager	Overall management of survey implementation; Client management; Training of enumerators and field management
Tayo Ajala	Data Manager	CAPI Training; data cleaning and analysis
Gloria Olisenekwu	Survey/Field Coordinator	Responsible for field management process; Recruitment and other field logistics
Okey Ezike	Data Support	Data cleaning and management
Joshua Moriyonu	Dashboard/ Data Support	Design of dashboard for data management and coordinated listing assignment
Adetoun Nnabugwu	Quality Assurance Manager	Provides Survey, analysis and report quality assurance.

Annex D Questionnaire

Form: SMC_NG_CovSurv2018_VIII
66 Questions

==========

1. Select Compound

2.Ask the head of compound: do you agree to participate to this survey?
Choose one response

- Agree

- Don't Agree If this response, jump to 66

3. General Compound Questions

4.Is there at least one child from 3 months to 10 years old in the compound? (Yes or No)
Choose one response

- Yes

- No If this response, jump to 65

5.Was the compound ever visited by a CHWs/distributor this year for SMC?
Choose one response

- Yes If this response, jump to 15

- No

6.If No, are there any children 3-59 months living in this compound? (Yes or No)
Choose one response

- Yes

- No If this response, jump to 65

7.If Yes, how many?

8.Was any of your children under 5 years of age sick with fever within the last month? (Yes or No)
Choose one response

- Yes

- No If this response, jump to 12

9.If Yes, how many?

10.Did you bring / send them to the health center? (Yes or No)
Choose one response

- Yes If this response, jump to 12

- No

11.If No, why not? (record all responses given by different people)
Choose all that apply

- Health center too far

- Health services too expensive

- Child got better

- Went to local healer

- Any other reason

12.Did you children sleep under a mosquito net last night? (Yes or No)
Choose one response

- Yes If this response, jump to 14

- No

13.If No, why not? (record all responses given by different people)
Choose all that apply

- Causes heat

- Disruption of sleeping arrangements

- Net is damaged

- Forgetfulness

- Net temporarily unavailable

- Too expensive

- Any other reason

14.Has anyone sprayed the interior walls of your dwelling against mosquitoes at any time in the past 6 months? (Yes or No)
Choose one response

- Yes If this response, jump to 65

- No If this response, jump to 65

15.How many households are there in this compound?

16. For each children under 10, ask the following questions, if possible to their immediate caregiver (i.e. mother):

17.Child SubForm
Subform name : Cov_Surv_2018_child_subForm
Subform keyword : ChildSubForm

18.Was there any other child at any other time, who normally doesn't live in this compound, but who was there during one or more cycles, and was treated at least once?
Choose one response

- Yes

- No If this response, jump to 20

19.If Yes, do you recall how many?

20.Has anyone sprayed the interior walls of your dwelling against mosquitoes at any time in the past 6 months? (Yes or No)
Choose one response

- Yes

- No

21. Select one household that has at least one child 3-59 months at random within the compound, and for that household, select only one child, and ask the following questions to the caregiver

22.Investigate the level of education of the caregiver:
Choose one response

- No formal education

- Koranic education

- Formal education - primary

- Formal education - secondary

- Formal education - tertiary

- Formal - primary, plus Koranic

- Formal - secondary, plus Koranic

- Formal - tertiary, plus Koranic

23.Evaluate the literacy level of the caregiver
Choose one response

- Reads test sentence fully without difficulty

- Reads test sentence with difficulty

- Was not able to read test sentence

24.Does the child have an SMC card? (Yes or No)
Choose one response

- Yes

- No If this response, jump to 26

25.Can you explain what you need to do with the card? (click all that apply)
Choose all that apply

- Keep the card to show to CHW for next cycle

- Tick home doses for day 2 and day 3

- Read the messages in the card

- Any other response

26.Do you / did you know the CHW/distributor who came to the compound to treat your child?
Choose one response

- Yes

- No

27.Is the CHW/distributor that treated your child from your community/village, or is he coming from outside?
Choose one response

- From the community/village

- Outsider

28. Cycle 4 specific questions

29.Can you confirm if the CHW/distributor did administer the first dose to the child?
Choose one response

- Yes

- No

30.Ask about child immediate reaction. Did the child:
Choose one response

- Swallow the drugs without vomiting or spitting If this response, jump to 33

- Swallow the drugs but spit or vomited part of the drugs immediately

- Swallow but vomited all the medicine immediately

- Refuse to swallow / take the drugs If this response, jump to 33

31.If the child vomited / spitted the drugs, did the CHW/distributor repeat the dose?
Choose one response

- Yes

- No If this response, jump to 33

32.If Yes, did he vomit / spit after the repeated dose?
Choose one response

- Yes

- No

33.Did the CHW leave you some SMC medicines in a blister pack to give to child?
Choose one response

- Yes

- No

34.Do you remember how many tablets were in the blister pack?
Choose one response

- 2

- 1

- 4

- Don't recall

35.Can you explain what you should do with AQ (yellow) tablets at home?
Choose one response

- Give dose 2 on day after CHW's visit and the dose 3 a day after dose 2

- Give dose 2 and 3 together on day after CHW's visit

- Give to child later if sick

- Give to other (sick) children

- Any other response

36.Have you (caregiver) given Day 2 medicine to your child/children? (Y or N)
Choose one response

- Yes If this response, jump to 37

- No If this response, jump to 38

37.Ask about child immediate reaction after Day 2. Did the child:
Choose one response

- Swallow the drugs without vomiting or spitting If this response, jump to 40

- Swallow the drugs but spit or vomited part of the drugs immediately If this response, jump to 40

- Swallow but vomited all the medicine immediately If this response, jump to 40

- Refuse to swallow / take the drugs If this response, jump to 40

38.If N, why not?
Choose one response

- Didn't know had to give If this response, jump to 40

- Blister lost If this response, jump to 40

- Any other response

39.If "Any other response", please specify:

40.Have you (caregiver) given Day 3 medicine to your child/children? (Y or N)
Choose one response

- Yes If this response, jump to 41

- No If this response, jump to 42

41.Ask about child immediate reaction after Day 3. Did the child:
Choose one response

- Swallow the drugs without vomiting or spitting If this response, jump to 44

- Swallow the drugs but spit or vomited part of the drugs immediately If this response, jump to 44

- Swallow but vomited all the medicine immediately If this response, jump to 44

- Refuse to swallow / take the drugs If this response, jump to 44

42.If Non, why not?
Choose one response

- Didn't know had to give If this response, jump to 44

- Blister lost If this response, jump to 44

- Any other response

43.If "Any other response", please specify:

44.Ask to see blister: present? (Y or N)
Choose one response

- Yes

- No If this response, jump to 48

45.Are there tablets remaining in the blister?
Choose one response

- Click if 0 tablets If this response, jump to 48

- Click if 1 or more tablets

46.Why didn't you give this/these tablet(s)?
Choose one response

- Didn't know had to give If this response, jump to 48

- Forgot If this response, jump to 48

- Any other response

47.If "Any other response", please specify:

48. General knowledge and behaviour

49.Did you hear about SMC this month before being visited by CHWs? (Y or N)
Choose one response

- Yes

- No If this response, jump to 51

50.If Y, where / from whom / what channel?

Choose all that apply

- Any other response

- Health worker

- Community health worker / distributor

- Local Leader / Village Chief

- Religious leaders (church/mosque)

- Town announcers

- Radio

- Television

- Printed materials

51.Can you tell for what is SMC for?
Choose one response

- Prevent malaria If this response, jump to 53

- Treat malaria If this response, jump to 53

- Prevent / treat other diseases If this response, jump to 53

- Any other response

52.If "Any other response", please specify:

53.How many tablets should the child take on the first day? (show a blister, but do not suggest a response)
The answer must be > and < 4

54.How many tablets should the child take on the second day?

The answer must be > and < 4

55.How many tablets should the child take on the third day?
The answer must be > and < 4

56. General - Adverse Reactions

57.Did any of your children react to this medication after giving it to them? (Y or N)
Choose one response

- Yes

- No If this response, jump to 64

58.If Yes, specify which reaction. (Click all that apply)
Choose all that apply

- Vomiting (after 30 minutes)

- Diarrhea

- Rashes

- Itching

- Yellow eyes

- Drowsiness / sleepiness / weakness

- Fever

- Loss of appetite

- Abdominal pain

- Any other response

59.If "Any other response" in the previous question, please specify:

60.If Vomiting, did caregiver ask for replacement treatment? (Y or N)
Choose one response

- Yes If this response, jump to 62

- No

- N/A (if reaction other than vomiting) If this response, jump to 62

61.If N, why not?
Choose one response

- Didn't know this was an option

- CHW/HW too far

- Any other reason

62.Did you report the reaction? (Y or N)
Choose one response

- Yes If this response, jump to 64

- No

63.If N, why not?

Choose one response

- Didn't know this was an option

- CHW/HW too far

- Any other reason

64.Is the house marked by the Community Health Worker? (Observed, Y or N)
Choose one response

- Yes

- No

65.Now move outside and find a spot with clear vision of the sky (no roofs, no trees), and capture GPS coordinates

66. The End - Next Compound.

Subform: Cov_Surv_2018_child_subForm
29 Questions

==========
1.How old is this child?
The answer must be > and < 10

2.Ask for proof of age (birth registration, immunization card, etc...): available?
Choose one response

- Yes

- No If this response, jump to 4

3.If available, please confirm date of birth as per available document

4.Was the child treated with / did s/he receive SMC this year?
Choose one response

- Yes If this response, jump to 7

- No

5.If No, why not?
Choose one response

- Child/Absent during the visits If this response, jump to 20

- Caregiver and/or child not home during the visit If this response, jump to 20

- Caregiver refused to take the malaria drugs for the child

- Household never visited at all by the CHW If this response, jump to 20

- Child was sick If this response, jump to 20

- Child allergic to SMC medicines If this response, jump to 20

- Any other response If this response, jump to 20

6.If Refusal, why?
Choose one response

- Husband not at home to give permission If this response, jump to 20

- Husband refused If this response, jump to 20

- Medicine dangerous If this response, jump to 20

- Any other response If this response, jump to 20

7.Do you remember when / which month(s)? (click all that apply)
Choose all that apply

- July

- August

- September

- October

- Don't know / don't remember

- Any other response

8.If "Any other response", please specify:

9.Does the child have a card?
Choose one response

- Yes If this response, jump to 11

- No

10.If No, why not?
Choose one response

- Caregiver lost or misplaced card If this response, jump to 20

- Caregiver claims card was never given If this response, jump to 20

- Any other response If this response, jump to 20

11. Check card if present, and confirm if:

12.Child received cycle 1
Choose one response

- Yes

- No

13.Are Day 2 and Day 3 ticked? (click all that apply)
Choose all that apply

- 0 Days

- Day 2

- Day 3

14.Child received cycle 2
Choose one response

- Yes

- No

15.Are Day 2 and Day 3 ticked? (click all that apply)
Choose all that apply

- Day 2

- Day 3

- 0 Days

16.Child received cycle 3
Choose one response

- Yes

- No

17.Are Day 2 and Day 3 ticked? (click all that apply)
Choose all that apply

- Day 2

- Day 3

- 0 Days

18.Child received cycle 4
Choose one response

- Yes

- No

19.Are Day 2 and Day 3 ticked? (click all that apply)
Choose all that apply

- Day 2

- Day 3

- 0 Days

20.Was the child sick with fever within the last four month (since the rains started) ?
Choose one response

- Yes

- No If this response, jump to 26

21.If Yes, did you bring / send him/her to the health center?
Choose one response

- Yes

- No If this response, jump to 24

22.If Yes, was he tested for malaria at the health centre?
Choose one response

- Yes

- No If this response, jump to 26

23.If Yes, do you recall what the result was (did he test positive or negative for malaria)?
Choose one response

- Positive If this response, jump to 26

- Negative If this response, jump to 26

24.If No, why not?
Choose one response

- Health center too far If this response, jump to 26

- Health services too expensive If this response, jump to 26

- Child got better If this response, jump to 26

- Went to local healer If this response, jump to 26

- Any other reason

25.If "Any other response", please specify:

26.Did this child sleep under a mosquito net last night? (Yes or No)
Choose one response

- Yes If this response, jump to 29

- No

27.If No, why not?
Choose one response

- Causes heat If this response, jump to 29

- Disruption of sleeping arrangements If this response, jump to 29

- Net is damaged If this response, jump to 29

- Forgetfulness If this response, jump to 29

- Net temporarily unavailable

28.If "Any other response", please specify:

29. Next child