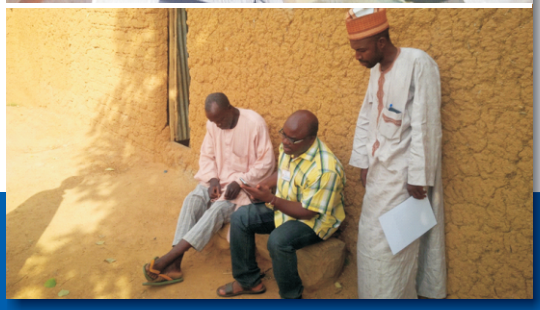

NSTOP

MALARIA BASELINE ASSESSMENT REPORT

KANO AND ZAMFARA STATES

Supported by:

AFENET African Field Epidemiology Network A healthier Africa

CDC Centers for Disease Control and Prevention

Executive Summary

The Nigeria Frontline Project is a collaboration among the National Malaria Elimination Program (NMEP), State governments, U.S. President's Malaria Initiative (PMI), the National Stop Transmission of Polio Program (NSTOP), the Nigeria Field Epidemiology and Laboratory Training Program (NFELTP) and other partners. The project builds on NSTOP capacity and structure to further enhance Nigeria's public health capacity to reduce malaria and to prevent, detect, and respond to epidemics and other endemic high-impact diseases. The project is supported by the U.S. Centers for Disease Control and Prevention (CDC).

In order to be able to measure the impact of the Frontline Project, a baseline assessment (malaria baseline assessment - MBA) was conducted in August 2016, prior to the implementation of the Frontline Project. Data on key malaria indicators were collected to establish the project starting point. MBA was carried out in the two Frontline project states, Zamfara and Kano. Health workers, clients, household members and malaria programme staff were interviewed and data were abstracted from health facility records.

Findings

Majority of the health workers in both states had good knowledge about the cause, ways to prevent, and treat malaria. Overall, 89.5% knew Artemether-lumefantrine as the recommended first line treatment for uncomplicated malaria, and 94.5% knew correct diagnostic criteria. Adherence to the national guideline for treatment of uncomplicated malaria was 92%. Among health workers, 37.3% in Zamfara and 31.3% in Kano administered ACTs for malaria treatment to pregnant women in first trimester. Health workers reported using chloroquine tablets and injections for treatment of uncomplicated malaria and for malaria in first trimester of pregnancy in both states. Low proportion of antenatal care (ANC) clients, 42.9% in Kano project LGAs received SP during the visit at the time of

the survey, of which half was by direct observation of treatment. However, none of the ANC clients in Zamfara reported to have received SP at the time of the survey. High proportion of health workers requested malaria test for febrile illnesses (77.6% in Zamfara, 73.2% in Kano project LGAs) and high proportion of clients and caregivers (94.7% in Zamfara, 100% in Kano project LGAs) got tested. The proportion of health workers informing clients and ca regivers of test results was 71.1% in Zamfara and 66.7% in Kano project LGAs.

In Kano, 38.6%, 37.1% and 24.2% of women received one, two and three doses of IPTp respectively during the most recent pregnancy while in Zamfara, 33.3%, 25.0% and 41.7% of women received one, two and three doses of IPTp respectively.

Review of health facility records highlighted poor quality data and use of non-standardised reporting registers, especially at the general hospitals. According to health facility data, Rapid Diagnostic Test (RDT) positivity rate among children under-five declined in Kano from 94% to 69% but remained stable in Zamfara, at 86%. Under-five mortality from severe malaria cases has been on the increase with highest rate in 2015 (Zamfara: 56.5%, Kano: 4.4%).

The results of the household survey showed that interviewed household members were aware of the cause, symptoms and preventive measures for malaria. Knowled ge on use of ACT for malaria treatment among women was low (14.8% in Zamfara, 28.8% in Kano), but higher proportion among women with tertiary education (61.5%). The proportion of households with at least one net was high in both states (62.3% in Zamfara, 6 2.9% in Kano project LGAs) and net use was 67.9% in Zamfara and 68.0% in Kano project LGAs. Continuous distribution of LLIN was less than 7% through ANC clinics and less than 4% through immunisation clinics.

Table of contents

Executive Summary 1
List of Tables 4
List of Figures 5
List of Abbreviations 6
Introduction 8
1.0 Background 8
Methods 9
2.1. Study sites 9
2.2 Sampling 10
2.2.1 Selection of PHCs 10
2.2.2 Selection of clusters for household survey 10
2.2.3 Pre-testing of tools 11
2.2.4 Notification of the State Officials 11
2.3 Data management 11
2.3.1 Training of Supervisors and data collectors 11
2.3.2 Advocacy at State, LGA and health facility levels 11
2.3.3 Survey teams 11
2.3.4 Data collection 12
2.3.5 Quality assurance 13
2.4 Data processing and analysis 13
2.5 Ethical consideration 13
Results 14
3.0 Knowledge and practices of health workers 14
4.0 Client Exit Interview 20
5.0 Health facility data 22
6.0 Key Informant Interviews 25
7.0 Household Survey 26
Discussion 35
Limitations 36
Conclusions 37
Acknowledgment 38

List of Tables

Table 2.1: Distribution of study sites sampled.....10
Table 2.3.4: Description of data tools administration.....12
Table 3.1: Knowledge on national guideline on malaria case management among health workers interviewed in facilities visited in Kano and Zamfara States 16
Table 3.2: Reported malaria diagnosis and treatment practices among health workers interviewed in Kano and Zamfara States 17
Table 3.3: Knowledge of intermittent preventive treatment among health workers interviewed in health facilities visited in Kano and Zamfara States 18
Table 3.4: Malaria treatment practices during pregnancy by health workers interviewed in health facilities visited in Kano and Zamfara Sta tes 19
Table 3.5: Knowledge of proper storage conditions for malaria commodities 20
Table 4.1: IPTp uptake among clients interviewed in PHCs visited in Kano and Zamfara States 21
Table 4.2: Advice on LLIN use and receipt of LLIN among ANC clients interviewed in PHCs visited in Kano and Zamfara 21
Table 4.3: Malaria testing among clients interviewed in PHCs visited in Kano and Zamfara States.....22
Table 5.1: Deaths among Severe Malaria Cases in Children under five in Referral Facilities Visited in Kano and Zamfara States.....24
Table 7.1: Age and educational characteristics of women 26
Table 7.2.1: Knowledge of malaria symptoms among women interviewed 28
Table 7.2.2: Knowledge of people most at risk of malaria among women interviewed who have ever heard of malaria.....29
Table 7.2.3: Knowledge of what to do to prevent pregnant women from getting malaria 30
Table 7.2.4.1: Knowledge of the type of medicine used for malaria treatment among women interviewed who say malaria can be treated. 31
Table 7.2.4.2: Percentage with knowledge on the type of medicine for malaria treatment in Children among women interviewed who say malaria can be treated 32
Table 7.3.1: Sources of information among women who heard malaria messages in the last 6 months 33

List of Figures

Figure 2.1: Map of Nigeria showing Frontline Project LG!s in Kano and Zamfara states.....9
Figure 5.1: Proportion of under 5 children receiving LLIN during PHC immunization visit 23
Figure 5.2: Test positivity rate among RDT tested febrile U5 in PHCs visited. 23
Figure 5.3: Proportion of RDT test positive febrile under 5 children who received ACT in PHCs visited (poor quality raw data) 23
Figure 5.4: Proportion of RDT test positive febrile under 5 children who received ACT in PHCs visited (cleaned data) 24
Figure 5.5: Malaria attributable mortality in Children under-five in Referral Facilities Visited in Kano and Zamfara States. 24

List of Abbreviations

ACT:	Artemisinin-based Combination Therapy
AFENET:	African Field Epidemiology Network
AHNi:	Achieving Health Nigeria Initiative
ANC:	Antenatal care
CCO:	Cold Chain Officer
CDD:	Community Directed Distributor
CHEW:	Community Health Extension Worker
CHO:	Community Health Officer
CMS:	Central Medical Store
DHIS:	District Health Information System
DOT:	Directly Observed Treatment
GH:	General Hospital
GPS:	Global Positioning System
HF:	Health Facility
HH:	Household
HW:	Healthcare Worker
IBM SPSS:	Statistical Package for Social Sciences
IPTp:	Intermittent Preventive Treatment during Pregnancy
IRS:	Indoor Residual Spraying
JCHEW:	Junior Community Health Extension Worker
KII:	Key Informant Interview
KMC:	Kano Municipal Council
LGA:	Local Government Area
LIO:	Local Government Immunization Officer
LLIN:	Long Lasting Insecticidal Net
M&E:	Monitoring and Evaluation
MBA:	Malaria Baseline Assessment
MFP:	Malaria Focal Person
NGO:	Non-Governmental Organization

NHMIS:	National Health Management Information System
NMEP:	National Malaria Elimination Programme
NSLO:	National Stop Transmission of Polio Programme Local Government Officer
NSTOP:	National Stop Transmission of Polio Programme
ODK:	Open Data Kit
OPD:	Outpatient department
PHCs:	Primary Health Care Centres
PMI:	U.S. President's Malaria Initiative
PPMV:	Patent and Proprietary Medicine Vendors
RDT:	Rapid Diagnostic Test
RMC:	Role Model Caregiver
SBCC:	Social Behavioural Change Communication
SHMB:	State Hospital Management Board
SMC:	Seasonal Malaria Chemoprevention
SMEP:	State Malaria Elimination Programme
SMoH:	State Ministry of Health
SP:	Sulphadoxine-Pyrimethamine
U5:	Under-five years old
WHO:	World Health Organization

Introduction

1.0 Background

The Nigeria Frontline Project is a collaboration among the National Malaria Elimination Program (NMEP), State governments, U.S. President's Malaria Initiative (PMI), the National Stop Transmission of Polio Program (NSTOP), the Nigeria Field Epidemiology and Laboratory Training Program (NFELTP) and other partners. NFELTP and NSTOP have built capacity nationally which is being used to eliminate polio in Nigeria at the LGA level. This structure played a critical role in containing Ebola virus disease outbreak in 2015. The Frontline project has adapted this structure to enhance Nigeria's public health capacity to improve malaria programme implementation through improved use of malaria data to optimise coverage and use of interventions to ultimately reduce malaria morbidity and mortality. The project is supported by the U.S. Centers for Disease Control and Prevention (CDC).

Nigeria contributes approximately 29% of global malaria burden[1]. Zamfara and Kano states have approximately 62.6% and 27.7% parasite prevalence among children under 5 years of age respectively[2]. The projected 2016 population of Zamfara and Kano states were 4,466,775 and 12,945,338 respectively. Multiple factors including high malaria burden, available human resource and political commitment from the state government informed the selection of Zamfara and Kano as the pilot states for the Frontline Project.

The Malaria Frontline project is being implemented in all 14 local government areas (LGAs) in Zamfara state and in 20 out of the 44 LGAs in Kano state.

The objectives of the project are to:

- Strengthen malaria surveillance using routine health information system data for decision making; improve distribution and availability of commodities, quality of and access to key malaria interventions in LGAs through use of quality surveillance data; and measure the impact on malaria morbidity and mortality through routine health information system
- Enhance Nigeria's public health capacity to improve malaria programme implementation and reduce its morbidity and mortality

[1]2016 World Malaria Report

[2]2015 Nigeria Malaria Indicator Survey

Malaria baseline assessment (MBA) was conducted to measure the current state of the malaria control programme including disease burden, quality of health facility data, knowledge on case management and practices among health care workers at public facilities, and malaria intervention coverage at the household level. This assessment was carried out in the two pilot states. Programme implementation will be assessed annually using adapted protocol and relevant tools, with emphasis on continuous review of HMIS data available in the DHIS-2 platform. End of project assessment will be conducted using same protocol as the baseline.

The specific objectives of the MBA were to:

1. Document and describe the level of malaria interventions in the two states.
2. Document trends in malaria morbidity and mortality at the health facilities using routine health facility data.
3. Assess the quality and trends of malaria data for selected indicators at health facilities.
4. Assess health workers' knowledge on malaria case management and preventive measures.
5. Assess malaria intervention coverage at household level.

2. Methods

2.1. Study sites

The health facility component of the assessment was conducted in 69 primary health care centres (PHCs), 23 in Zamfara and 46 in Kano (23 each in the project and non-project LGAs); and 45 general hospitals (16 in Zamfara and 29 in Kano). Data were extracted from health facility records. A total of 417 households were surveyed, 210 in Zamfara and 207 in Kano.

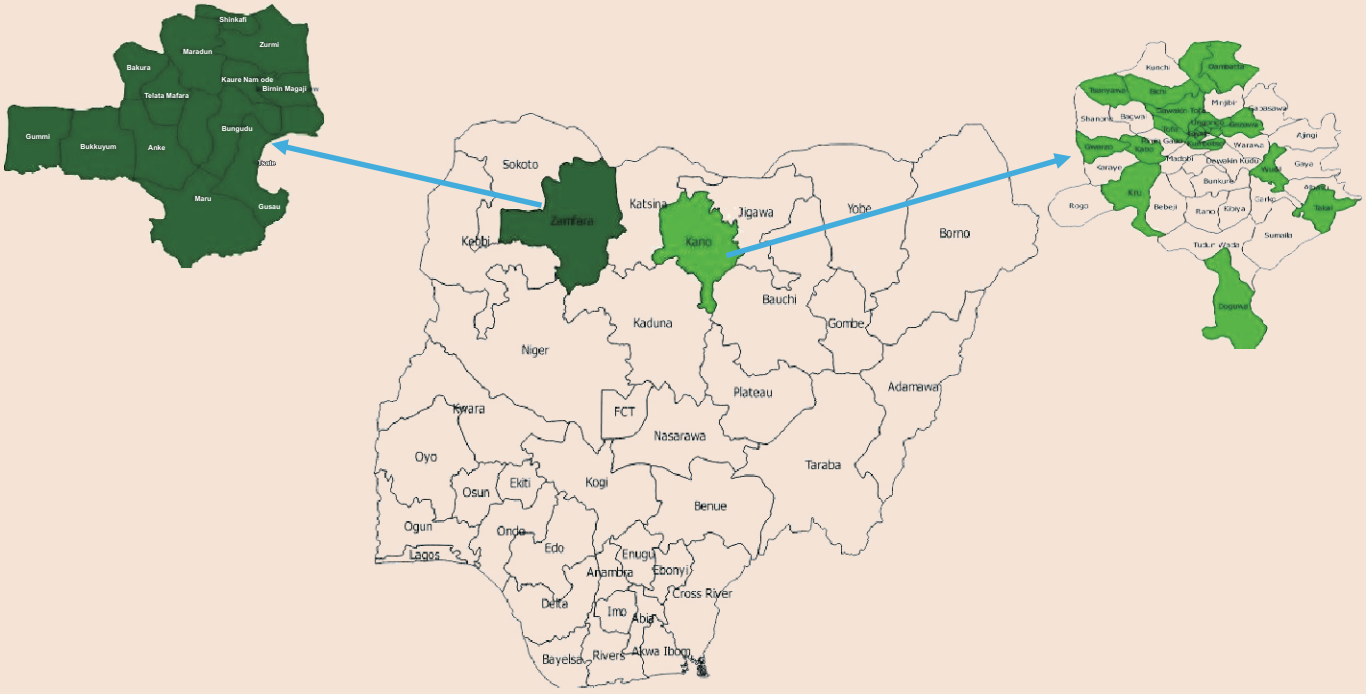

Figure 2.1: Map of Nigeria showing Frontline Project LGAs in Kano and Zamfara states

Table 2.1: Distribution of study sites sampled

State	Total number of LGAs	Total number of PHCs[3]	Number of PHCs sampled	Number of General Hospitals[†]	Number of Households
Kano	44	165	46	29	207[4]
Zamfara	14	46	23	16	210

[†]All General hospitals were eligible in the survey

2.2 Sampling

2.2.1 Selection of PHCs

Kano: LGAs were stratified into project (Kano/P) and non-project (Kano/N) LGAs. A sampling frame of all facilities classified by state as PHCs was created. Average patient volume was calculated using outpatient attendance in two previous reporting months (April and May 2016). PHCs were ranked based on the average patient volume and 24 facilities were selected by systematic random sampling in each stratum. At the time of data collection, 23 PHCs were found to be functioning (i.e. actively seeing patients) while one facility was found to be non-functioning in Kano/P and another in Kano/N LGAs.

Zamfara: sampling was done using the same criteria as Kano. However, data was collected from 23 PHCs. One PHC could not be accessed due to security reasons at the time of data collection.

2.2.2 Selection of clusters for household survey

A household (HH) is defined as a person or a group of persons, related or unrelated, who live together, have common cooking and eating arrangements and acknowledge one adult member as the head of the HH. Households with at least one child under five years (U5) were eligible for the survey. Using National Population Commission's criteria, 30 clusters were randomly selected and geo-located from the 20,249 clusters in 20 Kano/P LGAs, and from 17,449 clusters in 14 LGAs in Zamfara. We used World Health Organisation cluster survey sampling method and 7 HHs were surveyed in each cluster. A start point of the cluster was identified with Orux-mapping GPS-android mobile phone technology. Facing north, the first HH was identified and subsequent selections were made by making a right turn until all eligible HHs were interviewed. (See list of health facilities in annexes B and C, and clusters in annex D). 210 HHs were surveyed in each state, however, only 207 HHs were found in the database for Kano state during analysis.

[3] Facilities designated as comprehensive health centres, basic health centres, dispensaries and health clinics were excluded were excluded

[4] Household survey was conducted only in sampled clusters in 20 project LGAs

2.2.3 Pre-testing of tools

All survey tools were pre-tested at Karu and Mararaba PHCs in Nasarawa state and revised based on feedback. The household survey questionnaire was not pre-tested as we used the standardised 2015 Malaria Indicator Survey questionnaire.

2.2.4 Notification of the State Officials

NMEP notified Kano and Zamfara State Ministries of Health (SMoH) and State Hospital Management Boards (SHMB) about the survey. The SMoH notified all LGA PHC coordinators about the baseline assessment. The SHMB notified Medical Directors of GHs about the survey.

2.3 Data management

2.3.1 Training of Supervisors and data collectors

NSTOP field staff, data collectors and supervisors were trained[5]. Content of the training included a review of the MBA objectives, procedures and methods for conducting the assessment, survey instruments, data management procedures, use of mobile phones for data collection and identification of clusters.

2.3.2 Advocacy at State, LGA and health facility levels

Prior to data collection, the project management team visited State, LGA and health officials during which advocacy was made for the survey. The LGA malaria focal persons conducted advocacy at the community level.

2.3.3 Survey teams

The survey was conducted with staff from NSTOP, NFELTP, Federal Ministry of Health and Federal Ministry of Agriculture. A survey team was made up of three to four data collectors and one supervisor[6]. Overall, there were 14 teams in Zamfara and 20 teams in Kano. Key informant interviews

[5] 10 Field staff, 10 supervisors, 56 data collectors

[6] The numerical composition of the teams was dependent on the magnitude of work as the number of GHs selected for the survey varies by LGA.

were conducted with State Malaria Programme Managers, Monitoring and Evaluation Officers and Roll Back Malaria Officers at the LGAs. At the PHCs, data collectors interviewed two health workers on knowledge and practice of case management, conducted five client exit interviews, and collated data on malaria morbidity and mortality. At the GHs, two health workers were interviewed and collated data on morbidity and mortality. At the household, heads of HH and eligible women aged 15 - 49 years were interviewed with the assistance of a female interpreter fluent in both English and Hausa languages. The interview was facilitated by a community member who introduced the survey team and was present during the interview to conform to socio-cultural norms.

2.3.4 Data collection

Data was collected in both states over three weeks' period between July and August, 2016 using adapted Malaria Intervention Assessment tools.[7] Key informant interviews (KIIs) were audio-recorded. Data collection tools were used as follows in the table below:

Table 2.3.4: Description of data tools administration

S/N	Data tool	Purpose	Study site/population	Remarks
1.	KII guide	Contextual factors influencing malaria interventions such as major changes to the distribution procedures of malaria commodities, the duration of changes, and the reasons	LGA Roll Back Malaria Officers, LGA Monitoring and Evaluation Officers, SMEP managers	One person had both roles in Dala LGA in Kano
2.	Client exit interview questionnaire	Fever, malaria diagnosis and management, access to intermittent preventive treatment in pregnancy (IPTp)	Consecutively selected five febrile patients at OPD or ANC clients exiting the selected PHCs.	Only febrile patients or their caregivers and afebrile ANC attendees were interviewed. Fewer than five patients or their caregivers were interviewed in some PHCs. Screening interview for eligibility was conducted.
3.	Data collation checklist	Fever and malaria morbidity, mortality and management, IPTp, presence of malaria commodities	Abstracted 2012 – 2015 data from general attendance, OPD, ANC and immunisation registers and monthly summary forms in PHCs and GHs	

[7] Malaria Intervention Assessment implemented by USAID through MEASURE Evaluation

4.	Knowledge and practice questionnaire	Knowledge on malaria case management and preventive measures	Purposively selected two health workers (head of facility and the health worker providing clinical services) per PHC and GH	Officer-in-charge/Medical Director and staff providing clinical services
5.	HH questionnaire	Knowledge of malaria treatment and prevention, net ownership and use, IPTp,	Head of HH	
6.	Women questionnaire	Knowledge about malaria, its causes, preventive measures, management of fever, and IPTp	All eligible women aged 15 - 49 years who were household residents	

2.3.5 Quality assurance

Geographic coordinates were captured at the entrance of each health facility and each HH. Supervisors validated the collated data from the registers and NSTOP data officers uploaded the ODK data onto the AFENET server on a daily basis. The survey was coordinated by NSTOP and supervised by NFELTP graduates who have competency in conduct of surveys. Paper copies of each questionnaire were available in the event electronic device failed.

2.4 Data processing and analysis

Data entry, cleaning and analysis were conducted using SPSS version 20 and Microsoft Excel. Abstracted health facility record data was reviewed for data quality and analysed for trend from 2012 to 2015.

The key informant interviews were summarised using thematic analysis. Thematic analysis allows for exploratory analysis to be conducted with qualitative data as it involves searching through data to identify recurrent patterns or themes based on linked categories conveying similar meanings. This allows for emerging concepts and ideas to come forth. Recommendations were categorised based on emerging themes from the responses.

2.5 Ethical consideration:

Ethical approvals were obtained from Kano and Zamfara states' Institutional Review Boards for non-research determination and also from CDC for non-research, non-engaged determination. Oral

informed consent was obtained from health facility staff while written consent was obtained from HH survey respondents. Confidentiality was maintained throughout the assessment by using non-personal identifiers during data analysis. Data was available to only the NSTOP data management team.

Results

3.0 Knowledge and practices of health workers

To ascertain knowledge and practices for malaria case management, 220 health care workers were interviewed (145 in Kano, 75 in Zamfara). One hundred and sixty-five (75%) were aged 30 - 49 years and 215 (97.7%) had tertiary education. One hundred and twenty-three (56%) respondents were from PHCs (80 in Kano, 43 in Zamfara) and 97 respondents were from general hospitals (65 in Kano, 32 from Zamfara).

One hundred and sixty-six (75.5%) of respondents knew malaria is caused by the parasite, *Plasmodium spp*. One hundred and ninety-five (89.5%) identified Artemether-Lumefantrine as a first line treatment medication.

Adherence to treatment guidelines

Treatment guidelines

Ninety-five percent of the respondents knew the correct diagnostic criteria[8] for malaria in both states (Table 3.1). 77 (35.5%) reported adherence to national diagnosis and treatment guidelines. About 92% of health workers in both states adhered to the national guideline to confirm malaria diagnosis using RDT and nearly 39% used microscopy (Table 3.2). Similarly, a high proportion of health workers in both states reported administering ACTs (96.0%) as the recommended medicines for treatment of uncomplicated malaria (Tables 3.1 and 3.2).

Respondents reported that factors influencing choice of antimalarials were existing treatment policy (Zamfara: 60.0%, Kano/P: 78.3%, Kano/N: 58.1%) and available medicines (Zamfara: 61.3%, Kano/P: 48.2%, Kano/N: 35.5%). Main sources of ACTs were reported as government (Zamfara: 40.0%, Kano/P: 69.9%, Kano/N: 40.3%) and NGOs (Zamfara: 61.3%, Kano/P: 44.6%, Kano/N: 64.5%)[9].

Majority of the respondents knew the appropriate storage condition for RDT (55.9%: cool environment, away from sunlight/heat: 55.0% and away from moisture: 30.9%) and for antimalarials (55.9%: cool environment, away from sunlight/heat: 64.5% and away from moisture: 35.0%) [Table 3.5], however, some knew about the three criteria[10] [Zamfara: 12 (16.0%), Kano/P: 8 (9.6%), Kano/N:

[8] Diagnostic criteria for malaria were defined as fever and or any other symptoms and signs with parasitological confirmation of malaria

[9] This survey question was comprised of multiple responses

[10] The three criteria: cool environment, away from sunlight/heat and away from moisture

18 (29.0%)]. Chloroquine tablets (11%) and injections (13%) were available at health facilities visited in Kano and Zamfara.

Intermittent Treatment of Malaria in Pregnancy (IPTp)

The majority (85.0%) of respondents in Kano and Zamfara correctly defined IPTp[11]. 83.6% of respondents knew sulphadoxine-pyrimethamine (SP) as the medicine of choice (Table 3.3).

Treatment of Malaria in Pregnancy

In Kano/P, 40.9% of health workers reported treating uncomplicated malaria in the first trimester of pregnancy with Quinine while 31.3% used ACTs. In Zamfara, 34.7% of the health workers reported treating uncomplicated malaria in the first trimester of pregnancy with Quinine while 37.3% used ACTs. SP is still being used for treating uncomplicated malaria in the second and third trimester of pregnancy (Table 3.4).

[11] Intermittent preventive treatmen t of malaria during pregnancy was defined as the administration of a dose of 3 white tablets of SP to a pregnant woman

Table 3.1: Knowledge on national guideline on malaria case management among health workers interviewed in facilities visited in Kano and Zamfara States

		Zamfara	Kano		Total
			Project LGAs	Non-project LGAs	
Characteristics		**N=75**	**N=83**	**N=62**	**N=220**
		n (%)	**n (%)**	**n (%)**	**n (%)**
Knowledge on diagnostic criteria of malaria	Clinical diagnosis	3 (4.0)	2 (2.7)	3 (4.8)	8 (3.6)
	Clinical plus parasitological diagnosis	71 (94.7)	78 (93.7)	59 (95.2)	208 (94.5)
	No response	1 (1.3)	3 (3.6)	0 (0.0)	4 (1.9)
Knowledge on recommended first line treatment for uncomplicated malaria*	Artemether-Lumefantrine	70 (93.3)	72 (86.7)	55 (88.7)	197 (89.5)
	Artesunate-Amodiaquine	30 (40.0)	16 (19.3)	22 (35.5)	68 (30.9)
	Artemether injection	16 (21.3)	5 (6.0)	8 (12.9)	29 (13.2)
	Amodiaquine	10 (13.3)	5 (6.0)	4 (6.5)	19 (8.6)
	Sulphadoxine-pyrimethamine	4 (5.3)	3 (3.6)	1 (1.6)	8 (3.6)
	Dihydroartemisinin-piperaquine	4 (5.3)	3 (3.6)	2 (3.2)	9 (4.1)
	Artesunate	10 (13.3)	8 (9.6)	5 (8.1)	23 (10.5)
	Quinine tablets	4 (5.3)	7 (8.4)	4 (6.5)	15 (6.8)
	Halofantrine	1 (1.3)	1 (1.2)	0 (0.0)	2 (0.9)
	Quinine injection	3 (4.0)	2 (2.4)	1 (1.6)	6 (2.7)
	Chloroquine	2 (2.7)	0 (0.0)	0 (0.0)	2 (0.9)
	ACT	0 (0.0)	7 (8.4)	2 (3.2)	9 (4.1)

**Multiple responses

Table 3.2: Reported malaria diagnosis and treatment practices among health workers interviewed in Kano and Zamfara States

		Zamfara	Kano		Total
			Project LGAs	Non-project LGAs	
Characteristics		**N=75**	**N=83**	**N=62**	**N=220**
		n (%)	**n (%)**	**n (%)**	**n (%)**
Practices on malaria diagnosis*	Health worker recognition of signs[12]	36 (48.0)	43(51.8)	27 (43.5)	106 (48.2)
	Confirm malaria diagnosis using RDT	68 (90.7)	75 (90.4)	60 (96.8)	203 (92.2)
	Confirm malaria diagnosis using microscopy	25 (33.3)	44 (53.0)	16 (25.8)	85 (38.6)
	Self-recognition of symptoms	8 (10.7)	7 (8.40	2 (3.2)	17 (7.7)
Practices on malaria treatment for uncomplicated malaria (formulations)*	Tablet	68 (90.7)	76 (91.6)	56 (90.3)	200 (90.9)
	Intramuscular injection	18 (24.0)	12 (14.5)	14 (22.6)	44 (20.0)
	Intravenous infusion	6 (8.0)	6 (7.2)	4 (6.5)	16 (7.3)
Practices on malaria treatment for uncomplicated malaria (medicines)*	Antibiotics	2 (2.7)	6 (7.2)	1 (1.6)	11 (50.0)
	Oral Artesunate monotherapy	19 (25.3)	16 (19.3	11 (17.7)	46 (23.0)
	Quinine	1 (1.3)	0 (0.0)	0 (0.0)	1 (0.5)
	ACT	65 (86.7)	71 (85.5)	56 (90.3)	192 (96.0)
	SP	15 (20.0)	16 (19.3)	11 (17.7)	42 (21.0)
	Chloroquine injection	1 (1.3)	4 (4.8)	1 (1.6)	6 (3.0)
	Chloroquine tablets	2 (2.7)	3 (3.6)	5 (8.1)	10 (5.0)
	Quinine tablets	8 (10.7)	16 (19.3)	16 (25.8)	40 (20.0)
	Quinine injectable	9 (12.0)	12 (14.5)	6 (9.7)	27 (13.5)
	Paracetamol	0 (0.0)	1 (1.2)	0 (0.0)	1 (0.5)

***Multiple responses.**

[12] Signs may include fever, chills, general malaise, sweats, headaches, nausea and vomiting and body aches.

Table 3.3: Knowledge of intermittent preventive treatment among health workers interviewed in health facilities visited in Kano and Zamfara States

		Zamfara	Kano		Total
			Project LGAs	Non-project LGAs	
Characteristics		**N=75**	**N=83**	**N=62**	**N=220**
		n (%)	**n (%)**	**n (%)**	**n (%)**
Knowledge of definition of IPTp	Yes	62 (82.7)	74 (89.2)	51 (82.3)	187(85.0)
	No	13 (17.3)	9 (10.8)	11 (17.7)	33 (15.0)
Knowledge of name of drugs for IPTp	Sulphadoxine-Pyrimethamine	64 (85.3)	68 (81.9)	52 (83.9)	184(83.6)
	Other antimalarial	9 (12.0)	7 (8.4)	3 (4.8)	19 (8.6)
	Other medicines	2 (2.7)	6 (7.2)	6 (9.7)	14 (6.4)
	None	0 (0.0)	2 (2.5)	1 (1.6)	3 (1.4)
Knowledge of time of commencement of IPTp*	After 13 weeks	14 (18.7)	16 (19.3)	14 (22.6)	44 (20.0)
	First trimester	22 (29.3)	14 (16.9)	18 (29.0)	54 (24.5)
	Third trimester	24 (32.0)	22 (26.5)	29 (46.8)	75 (34.1)
	At quickening 16 weeks	42 (56.0)	44 (53.0)	32 (51.6)	118 (53.6)
	Mid-half of pregnancy	9 (12.0)	9 (10.8)	10 (16.1)	28 (12.7)

* Multiple responses.

Table 3.4: Malaria treatment practices during pregnancy by health workers interviewed in health facilities visited in Kano and Zamfara States

		Zamfara	Kano		Total
			Project LGAs	Non-project LGAs	
Characteristics		**N=75**	**N=83**	**N=62**	**N=220**
		n (%)	**n (%)**	**n (%)**	**n (%)**
Drug given for treating uncomplicated malaria in first trimester of pregnancy*	ACT	28 (37.3)	26 (31.3)	17 (27.4)	71 (32.2)
	Quinine tablets	26 (34.7)	34 (40.9)	35 (56.5)	95 (43.2)
	Sulphadoxine-pyrimethamine	15 (20.0)	17 (20.5)	16 (25.8)	48 (21.8)
	Artemether injection	13 (17.3)	4 (4.8)	2 (3.2)	19 (8.6)
	Oral artesunate monotherapy	3 (4.0)	3 (3.6)	1 (1.6)	7 (3.2)
	Amodiaquine	1 (1.3)	0 (0.0)	1 (1.6)	2 (0.9)
	Quinine injection	1 (1.3)	2 (2.4)	0 (0.0)	3 (1.4)
	Chloroquine tablets	1 (1.3)	3 (3.6)	2 (3.2)	6 (2.7)
	Chloroquine injection	0 (1.3)	1 (1.2)	2 (3.2)	3 (1.4)
	Proguanil	0 (1.3)	1 (1.2)	0 (0.0)	1 (0.4)
	Injectable artesunate	0 (1.3)	1 (1.2)	0 (0.0)	1 (0.4
Medicine given for treating uncomplicated malaria in second and third trimester of pregnancy*	ACT	57 (76.0)	57 (68.7)	42 (67.7)	156 (70.9)
	Sulphadoxine-pyrimethamine	7 (9.3)	16 (19.3)	11 (17.7)	34 (15.4)
	Artemether injection	13 (17.3)	5 (6.0)	3 (4.8)	21 (9.5)
	Quinine injection	1 (1.3)	4 (4.8)	2 (3.2)	7 (3.2)
	Quinine tablets	8 (10.7)	17 (20.5)	15 (24.2)	40 (18.2)
	Injectable artesunate	3 (4.0)	1 (1.2)	2 (3.2)	6 (2.7)
	Oral artesunate monotherapy	3 (4.0)	2 (2.4)	1 (1.6)	6 (2.7)
	Proguanil	0 (0.0)	1 (1.2)	0 (0.0)	1 (0.4)

** Multiple responses.*

Table 3.5: Knowledge of proper storage conditions for malaria commodities

		Zamfara	Kano		Total
			Project LGAs	Non-project LGAs	
Characteristics		**N=75**	**N=83**	**N=62**	**N=220**
		n (%)	**n (%)**	**n (%)**	**n (%)**
Appropriate condition for RDT storage*	Away from sunlight/heat	40 (53.3)	38 (45.8)	43 (69.4)	121 (55.0)
	Cool environment	38 (50.7)	45 (54.2)	40 (64.5)	123 (55.9)
	Away from moisture	24 (32.0)	21 (25.3)	23 (37.1)	68 (30.9)
	Cold boxes	3 (40.0)	15 (18.1)	3 (4.8)	21 (9.5)
	No special arrangement	8 (10.7)	13 (15.7)	5 (8.1)	26 (11.8)
	Don't know	2 (2.7)	3 (3.6)	1 (1.6)	6 (2.7)
	Pharmacy	1 (1.3)	0 (0.0)	0 (0.0)	1 (0.5)
	Moisture proof envelopes	1 (1.3)	9 (10.8)	7 (11.3)	17 (7.7)
Appropriate condition for antimalarial storage*	Away from sunlight/heat	52 (69.3)	47 (56.6)	43 (69.4)	142 (64.5)
	Away from moisture	23 (30.7)	29 (34.9)	25 (40.3)	77 (35.0)
	Cool environment	38 (50.7)	45 (54.2)	40 (64.5)	123 (55.9)
	Moisture proof envelopes	1 (1.3)	6 (7.2)	12 (19.4)	19 (8.6)
	No special arrangement	9 (12.0)	10 (12.0)	6 (9.7)	25 (11.4)
	Cold boxes	3 (4.0)	15 (18.1)	3 (4.8)	21 (9.5)
	Don't know	0 (0.0)	2 (2.4)	0 (0.0)	2 (0.9)

*Multiple responses.

4.0 Client Exit Interview

The client exit interview was conducted in selected PHCs in Kano and Zamfara states. A total of 266 clients were interviewed in 69 PHCs (Kano: 46, Zamfara: 23). Most of the respondents (76.8%) were between 20 - 34 years of age. Eighty-five percent of the clients interviewed in both states were febrile patients from OPD while nearly 15% were afebrile ANC attendees. All ANC clients in Zamfara and most of the ANC clients in Kano (Kano/P: 35.7%, Kano/N: 52.6%) presented in the third trimester at the time of survey.

Adherence of health workers to DOT for IPTp was low. About two-thirds of ANC clients had not received SP for IPTp in Zamfara and Kano/N (Table 4.1).

Among pregnant women who attended ANC, majority (Zamfara: 83.3%, Kano/P: 78.6%, Kano/N: 94.7%) received advice on the use of LLIN. Fewer ANC clients (Zamfara: 33.3%, Kano/P: 7.1%, Kano/N: 15.8%) actually received LLIN (Table 4.2).

In both states, majority (≥70%Kano, Zamfara: 78%) of clients reported they were requested to do malaria test. Acceptance for malaria test was high among febrile clients (94.7%: Zamfara, 100%:

Kano/P). Most febrile clients (Zamfara: 85.2%, Kano/P: 94.6%) reported receiving malaria test results within 1hour (Table 4.3). Majority of clients (Zamfara: 71.1%, Kano/P: 66.7%) and fewer proportion (Kano/N: 58.8%) reported receiving explanation on their malaria test results (Table 4.3).

Table 4.1: IPTp uptake among clients interviewed in PHCs visited in Kano and Zamfara States

	Zamfara	Kano		Total
		Project LGAs	Non-project LGAs	
Characteristics	**N = 6**	**N=14**	**N=19**	**N =39**
	n (%)	**n (%)**	**n (%)**	**n (%)**
Received SP for IPTp* during current visit	0 (0.0)	6 (42.9)	4 (21.1)	10 (25.6)
DOT SP during current visit*	0 (0.0)	3 (50.0)	1 (25.0)	4 (40.0)
Doses of IPTp received in current pregnancy				
Never	4 (66.6)	2 (14.3)	12 (63.2)	18 (46.2)
One	0 (0.0)	8 (57.1)	4 (21.1)	12 (30.8)
Two	0 (0.0)	1 (7.2)	2 (10.5)	3 (7.5)
Three	0 (0.0)	3 (21.4)	1 (5.2)	4 (10.3)
≥ Four	1 (16.7)	0 (0.0)	0 (0.0)	1(2.6)
Don't know	1 (16.7)	0 (0.0)	0 (0.0)	1 (2.6)
ANC card indicative of doses	3 (50.0)	8 (57.1)	19 (100.0)	30 (76.9)
ANC indicative of receiving SP (current visit)				
No dose	3 (100.0)	3 (37.5)	13 (68.4)	19 (63.3)
1 dose	0 (0.0)	3 (37.5)	4 (21.1)	7 (23.3)
2 doses	0 (0.0)	2 (25.0)	2 (10.5)	4 (13.4)

*Multiple responses.

Table 4.2: Advice on LLIN use and receipt of LLIN among ANC clients interviewed in PHCs visited in Kano and Zamfara

	Zamfara	Kano		Total
		Project LGAs	Non-project LGAs	
Characteristics	**N=6**	**N =14**	**N =19**	**N=39**
	n (%)	**n (%)**	**n (%)**	**n (%)**
Clients advised on LLIN use	5 (83.3)	11 (78.6)	18 (94.7)	34 (87.2)
Clients received LLIN	2 (33.3)	1 (7.1)	3 (15.8)	6 (15.4)

Table 4.3: Malaria testing among clients interviewed in PHCs visited in Kano and Zamfara States

	Zamfara	Kano		Total
		Project LGAs	Non-project LGAs	
Characteristics	**N=49**	**N=82**	**N=96**	**N=227**
	n (%)	**n (%)**	**n (%)**	**n (%)**
Clinician request for malaria testing	38 (77.6)	60 (73.2)	68 (70.8)	166 (73.1)
	N=38	**N=60**	**N=68**	**N=166**
	n (%)	**n (%)**	**n (%)**	**n (%)**
Client got tested	36 (94.7)	60 (100.0)	68 (100.0)	164 (98.8)
Caregiver/client reported receipt of malaria test result	34 (89.5)	55 (91.7)	65 (95.6)	154 (93.9)
Waiting time for test result	**N=34**	**N=55**	**N=65**	**N=154**
	n (%)	**n (%)**	**n (%)**	**n (%)**
< 15mins	23 (67.6)	32 (58.2)	34 (52.3)	89 (57.8)
15 mins - < 1hr	6 (17.6)	20 (36.4)	27 (41.5)	53 (34.4)
1 - 2hrs	1 (3.0)	3 (5.4)	4 (6.2)	8 (5.2)
Don't know	4 (11.8)	0 (0.0)	0 (0.0)	4 (2.6)
Caregiver/client reported presentation of test result to clinician	34 (100.0)	54 (98.2)	64 (98.5)	152 (98.7)
Clients reported receiving explanation on malaria test results	**N=38**	**N=60**	**N=68**	**N=166**
	n (%)	**n (%)**	**n (%)**	**n (%)**
	27 (71.1)	40 (66.7)	40 (58.8)	107 (64.5)

5.0 Health facility data

Data from 46 PHCs (23 PHCs in each state), 16 GHs in Zamfara and 35 GHs in Kano were reviewed from 2012 to 2015. Data quality was poor and older versions of reporting forms were in use. The national HMIS data capturing tools (DCTs) were revised in 2012 but not available in most health facilities until late 2013. Abstracted health facility record data was reviewed for data quality and analysed for t rend.

The proportion of U5 who received LLIN on completion of routine immunization is very low (Figure 5.1) although this is a national policy. In Kano state, RDT test positivity rate among U5 attending PHC declined from 94% in 2013 to 69% in 2015 but increased and remained stable at 86% in Zamfara state (Figure 5.2). Unrealistic trend in proportion of positive malaria cases who were treated with ACTs was probably due to poor data quality (Figure 5.3) prior to cleaning (Figure 5.4). There was a spike in the proportion of positive malaria cases who were treated with ACTs in Kano in 2013, however, after cleaning the data, there was a gradual decline (Figure 5.4).

5.1 LLIN for PHC

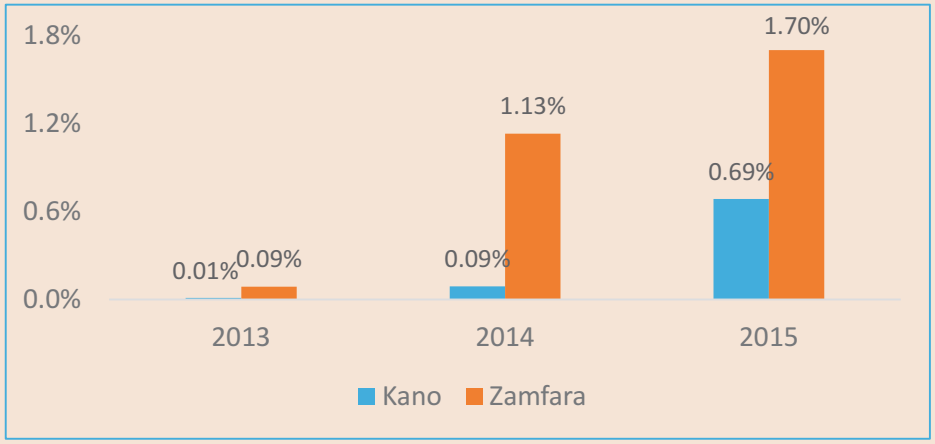

Figure 5.1: Proportion of under 5 children receiving LLIN during PHC immunization visit

5.2 Case management: disease and treatment for PHC

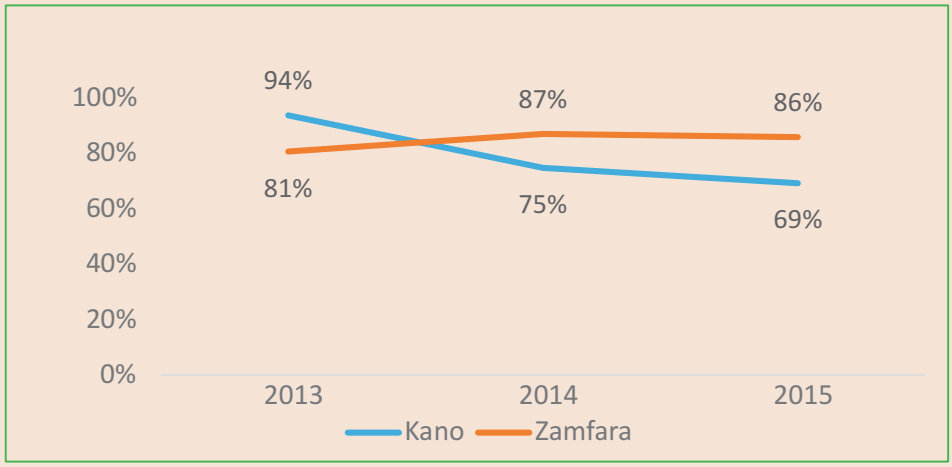

Figure 5.2: Test positivity rate among RDT tested febrile U5 in PHCs visited

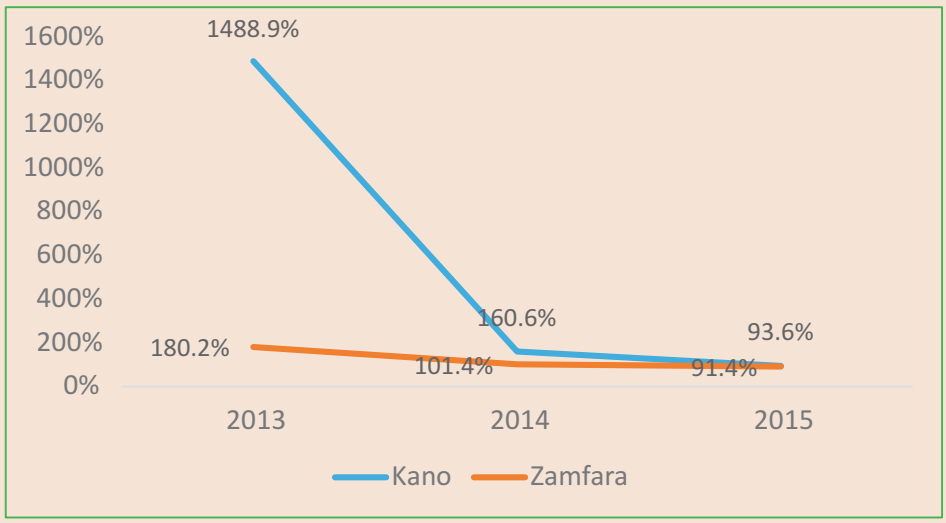

Figure 5.3: Proportion of RDT test positive febrile under 5 children who received ACT in PHCs visited (poor quality raw data)

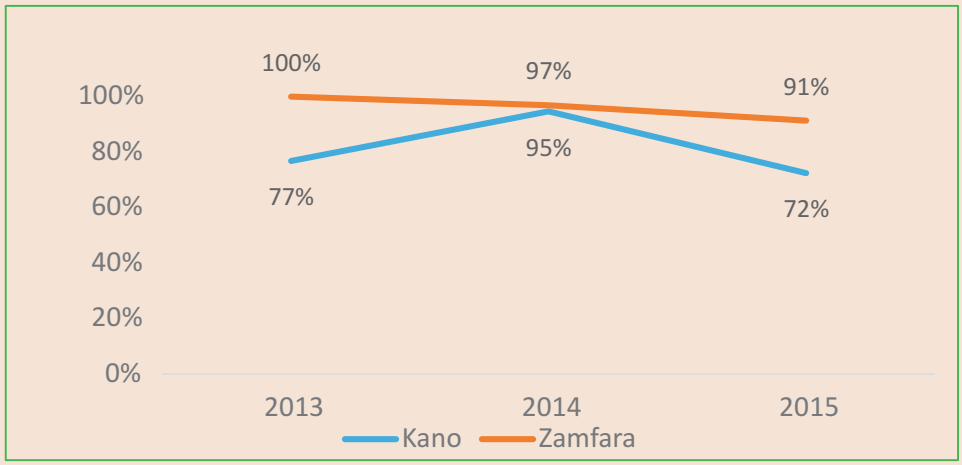

Figure 5.4: Proportion of RDT test positive febrile under 5 children who received ACT in PHCs visited (cleaned data)

5.3 Severe Malaria and Deaths in General Hospitals

Deaths from severe malaria and malaria proportionate morta lity (all causes) in children under-five increased over the review period in GHs (Table 6.1 and Figure 6.3).

Table 5.1: Deaths among Severe Malaria Cases in Children under five in Referral Facilities Visited in Kano and Zamfara States

	2012		2013		2014		2015	
States	**Cases n**	**Deaths n (%)**	**Cases n**	**Deaths n (%)**	**Cases n**	**Deaths n (%)**	**Cases n**	**Deaths n (%)**
Kano	237	No data	16645	3 (0.02)	17215	79 (0.46)	3534	156 (4.41)
Zamfara	23	No data	130	16 (12.31)	217	31 (14.29)	65	38 (56.46)

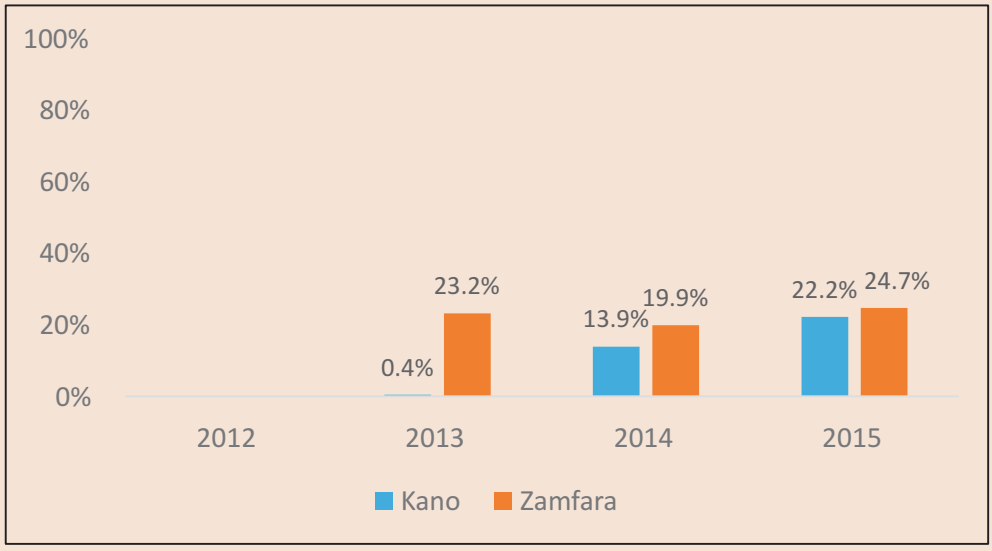

Figure 5.5: Malaria attributable mortality in Children under-five in Referral Facilities Visited in Kano and Zamfara States

6.0 Key Informant Interviews

Overall, there were 117 interviews. For the purposes of this report, the summary of information that follows is restricted to a thematic analysis of malaria testing and ACTs. In both states, 17 PHCs in each LGA received support for malaria commodities (ACTs, SP, RDTs and LLINs) from partners (Zamfara: United States President's Malaria Initiative, Kano: United Kingd om Department for International Development) and Global Fund.

Malaria Diagnosis

Most of the respondents reported that RDTs was most commonly used for malaria diagnosis. In Zamfara, there was no mention of RDT stock out in facilities receiving support fro m partners. However, most frequently reported challenges are related to RDTs not supplied to non -supported health facilities (HFs), lack of staff motivation and salary. In contrast, Kano reported frequent RDT stock outs in supported health facilities. Health facilities without support from partners did not receive adequate support for RDTs from the government in both states.

Despite these challenges, respondents identified strengths to current malaria diagnosis. In both states, respondents frequently reported that most times malaria treatment is based on confirmatory diagnosis rather than clinical diagnosis. Respondents in Kano also indicated there is increased number of health facility staff trained in the use of RDTs.

Malaria Treatment

Respondents in both states reported frequent stock outs of ACTs due to poor supply and that not all health facilities received ACTs, largely due to lack of funding. In Kano, religious beliefs, political issues, and belief in traditional medicine affected the use of ACTs. In Zamfara, respondents reported that free health care services attracted more community members to the HFs and increased demand for care while in Kano, respondents reported high turnout of patients in HFs.

Malaria Commodities (ACTs and RDTs) at the State level

A variety of changes ranging from the introduction of new malaria commodities, accessibility to direct commodity data and changes to commodity storage were reported in both states as stated below.

State level changes to malaria commodity distrib ution			
	Major changes	**Duration of change**	**Reason for this change**
Zamfara	Direct data information capture (distribution of commodities especially drugs)	Sept. 2016	• Lack of accountability and adequate supervision
Kano	ACTs	May – July 2016	• Auditing of HIV, TB and malaria programmes by Global Fund
	Commodities are no longer stored at the Central Medical Store (CMS)	2015 – present	• Some drugs expire or are close to expiry before being pushed out of the LGAs to the HFs • To ensure the rapid delivery of malaria commodities to HFs

Kano	Introduction of RDTs, ACTs and SP	2012 – 2015	• New government policy and guidelines for managing malaria
	Increased distribution of ACTs	2015 – present	• Due to the participation of the Global Fund sub-recipient - Achieving Health Nigeria Initiative

7.0 Household Survey

A total of 207 HHs in Kano/P and 210 HHs in Zamfara were surveyed where 551 women aged 15-49 years (Kano/P: 249, Zamfara: 302) were interviewed.

Table 7.1: Age and educational characteristics of women

Background characteristics	Kano N = 249 n (%)	Zamfara N = 302 n (%)
Age (years)		
15-19	22 (8.8)	29 (9.6)
20-24	46 (18.5)	31 (10.3)
25-29	47 (18.9)	65 (21.5)
30-34	49 (19.7)	41 (13.6)
35-39	29 (11.6)	32 (10.6)
40-44	26(10.4)	22 (7.3)
45-49	10 (4.0)	17 (5.6)
Don't know	20 (8.0)	65 (21.5)
Highest level of education		
Quranic	72 (28.90)	122 (40.4)
Primary	38 (15.3)	22 (7.3)
Secondary	59 (23.7)	33 (10.9)
Tertiary	22 (8.8)	4 (1.3)
No education	58 (23.3)	121 (40.1)

Majority of the women in both states were less than 35 years of age and had only Quranic education (40.4% in Zamfara and 28.9% in Kano/P). Few respondents had tertiary education (1.3% in Zamfara and 8.8% in Kano).

Knowledge of malaria symptoms, cause and risks

Of the 551 women surveyed, 520 (94.4%) have heard of malaria. Fever was the most mentioned symptom of malaria. About 90% of them in both states cited mosquito as the cause of malaria, and that children (63.6% in Kano/P and 63% in Zamfara) are most likely to be affected (Table 7.2.2).

Knowledge of malaria prevention during pregnancy

Of the 520 women who have heard of malaria, 518 (99.6%) responded to questions on ways to avoid malaria. Of the 518 respondents, 483 (93.2%) knew how to avoid malaria in pregnancy. Sleeping inside a bed net was most mentioned (80.5% in Kano/P; 90.7% in Zamfara), followed by use of mosquito coils (22.6% in Kano/P; 30.4% in Zamfara) and clean surroundings (23.7% in Kano/P; 8.6% in Zamfara). Women were more aware that sleeping inside a mosquito net prevents malaria in pregnancy than all other prevention methods (Table 7.2.3).

Knowledge of malaria treatment

Among 520 women who have heard of malaria, 489 (94.0%) knew malaria could be treated. Knowledge of ACT as an effective antimalarial was 28.8% in Kano/P and 14.8% in Zamfara. This was higher among women with tertiary education (61.5%) and lowest among those with Quranic education (11.5%) (Table 7.2.4.1). Also, 491 women (94.4%) knew medicines for treating malaria in children and 27% in Kano/P and nearly 18% in Zamfara identified ACT as an effective antimalarial in children (Table 7.2.4.2). Sixty-four percent of women with tertiary education identified ACT (Table 7.2.4.2).

Exposure to prevention messages

Among 551 women surveyed, 270 (49.1%) have heard of malaria messages in the last six months. Radio was the main source of information on malaria prevention (Kano/P: 77.6%, Zamfara: 76.6%). This was followed by TV (15.2% in Kano/P; 4.1% in Zamfara) and health centre (Kano/P: 13.6%, Zamfara: 11.7%). See Table 7.3.1.

Table 7.2.1 Knowledge of malaria symptoms among women interviewed

% of women who cite specific symptoms among women aged 15 -49 years who have ever heard of malaria												
Characteristics	**Women that have ever heard of malaria N = 520 n (%)**	**Fever**	**Chills**	**Headache**	**Joint Pain**	**Vomiting**	**Poor Appetite**	**Catarrh**	**Convulsion**	**Cough**	**Diarrhea**	**Itchy Legs**
Age												
15-19	47 (9.0)	91.5	27.7	51.1	23.4	31.9	12.8	2.1	4.3	0.0	2.1	0.0
20-24	74 (14.2)	90.5	37.8	39.2	16.2	25.7	24.3	4.1	1.4	1.4	4.1	0.0
25-29	106 (20.4)	89.6	38.7	38.7	20.8	30.2	10.4	0.9	1.9	2.8	5.7	0.0
30-34	88 (16.9)	81.8	40.9	36.4	29.5	27.3	18.2	1.1	1.1	1.1	1.1	0.0
35-39	59 (11.3)	88.1	47.5	50.8	27.1	37.3	22.0	5.1	5.1	1.7	3.4	0.0
40-44	44 (8.5)	81.8	34.1	50.0	22.7	22.7	15.9	2.3	0.0	0.0	0.0	2.3
45-49	26 (5.0)	80.8	50.0	57.7	26.9	15.4	19.2	3.8	3.8	0.0	0.0	0.0
Don't know	76 (14.6)	82.9	43.4	39.5	18.4	57.9	26.3	0.0	3.9	5.3	5.3	0.0
State												
Kano	236 (45.4)	88.1	34.3	41.1	17.4	26.3	21.6	2.5	0.4	0.8	2.5	0.4
Zamfara	284 (54.6)	84.9	44.4	44.4	27.1	38.0	15.8	1.8	4.2	2.8	3.9	0.0
Education												
Quranic	183 (35.1)	85.8	37.7	42.6	26.2	30.1	18.0	2.7	3.3	0.5	3.3	1
Primary	56 (10.8)	83.9	44.6	39.3	23.2	33.9	16.1	3.6	1.8	3.6	1.8	0
Secondary	90 (17.3)	93.3	40.0	44.4	30.0	26.7	30.0	3.3	1.1	1.1	3.3	0
Tertiary	26 (5.0)	100.0	38.5	65.4	19.2	46.2	7.7	0.0	3.8	3.8	7.7	0
No education	165 (31.7)	81.8	40.6	40.0	15.2	36.4	15.2	0.6	2.4	3.0	3.0	0.0

Table 7.2.2 Knowledge of people most at risk of malaria among women interviewed who have ever heard of malaria

Characteristics	Number of women who heard (N = 520)	% People most likely to be affected by malaria according to women aged 15 -49 years who have ever heard of malaria				
		Children	Women	Everyone	Elderly	Adults
Age						
15-19	47	66.0	29.8	23.4	4.3	6.4
20-24	74	60.8	35.1	24.3	4.1	6.8
25-29	106	67.0	29.2	24.5	0.9	5.7
30-34	88	59.1	30.7	30.7	2.3	3.4
35-39	59	74.6	23.7	18.6	1.7	0.0
40-44	44	65.9	13.6	29.5	0.0	2.3
45-49	26	73.1	23.1	23.1	7.7	0.0
Don't know	76	50.0	26.3	46.1	2.6	3.9
State						
Kano	236	63.6	32.2	29.2	4.2	7.2
Zamfara	284	63.0	23.9	27.5	1.1	1.4
Education						
Quranic	183	69.9	24.6	25.7	2.7	5.5
Primary	56	67.9	35.7	33.9	5.4	3.6
Secondary	90	67.8	36.7	20.0	1.1	1.1
Tertiary	26	57.7	23.1	30.8	0.0	11.5
No education	165	52.7	24.2	33.3	2.4	3.0

Table 7.2.3 Knowledge of what to do to prevent pregnant women from getting malaria

Characteristics	Number of women who knew ways to avoid malaria (N = 483)	% of women that knows what to do to prevent malaria in pregnancy among women who have ever heard of malaria										
		Sleep inside net	Sleep inside LLIN	Fansidar	Use mosquito coils	Clean surroundings	Eliminate stagnant water	Shut doors	Closed windows	Insecticide	Cut grass	Repellent
Age												
15-19	45	88.9	7.8	8.9	31.1	17.6	9.8	0.0	2.0	9.8	2.0	2.0
20-24	72	87.5	13.0	15.3	16.7	20.8	11.7	0.0	5.2	16.9	6.5	0.0
25-29	95	82.1	20.5	13.7	16.8	18.8	10.7	3.6	4.5	13.4	2.7	0.9
30-34	86	82.6	24.4	20.9	19.8	20.0	14.4	1.1	1.1	5.6	2.2	1.1
35-39	56	82.1	19.7	17.9	37.5	16.4	9.8	0.0	3.3	4.9	3.3	1.6
40-44	39	87.2	18.8	17.9	28.2	8.3	12.5	0.0	2.1	12.5	2.1	4.2
45-49	23	95.7	0.0	21.7	52.2	14.8	14.8	0.0	3.7	11.1	11.1	0.0
Don't know	67	91.0	7.1	11.9	38.8	21.2	11.8	2.4	18.8	9.4	11.8	2.4
State												
Kano	226	80.5	24.1	19.0	22.6	23.7	15.7	0.4	4.8	14.1	5.2	1.6
Zamfara	257	90.7	8.6	12.8	30.4	13.6	8.6	2.0	6.3	7.6	4.6	1.3
Education												
Quranic	147	86.7	11.3	10.2	25.9	12.9	9.3	0.5	1.0	5.2	1.5	1.0
Primary	55	89.1	30.0	18.2	23.6	18.3	11.7	0.0	0.0	8.3	3.3	0.0
Secondary	89	79.8	23.9	23.6	29.2	27.2	19.6	1.1	8.7	18.5	5.4	2.2
Tertiary	26	69.2	34.6	23.1	7.7	38.5	30.8	3.8	7.7	42.3	15.4	0.0
No education	166	90.5	10.2	14.5	30.6	19.7	9.5	2.7	12.9	10.2	8.8	2.7

Table 7.2.4.1: Knowledge of the type of medicine used for malaria treatment among women interviewed who say malaria can be treated.

		% with knowledge of specific type of antimalarial medicine							
Characteristics	**Number of women (N =520)**	**Women who said malaria can be treated N = 489 n (%)**	**Fansidar**	**Unknown Antimalarial**	**Chloroquine**	**Quinine**	**ACT**	**Artesunate**	**Aspirin**
Age									
15-19	47	45 (95.7)	8.9	37.8	4.3	0.0	17.0	2.1	2.1
20-24	74	70 (94.6)	11.4	30.0	1.4	0.0	18.9	6.8	5.4
25-29	105	100 (95.2)	16.0	24.0	9.4	2.8	24.5	3.8	2.8
30-34	88	79 (89.8)	16.5	25.3	3.4	0.0	21.6	6.8	10.2
35-39	59	58 (98.3)	15.5	27.6	13.6	1.7	20.3	5.1	6.8
40-44	44	41 (93.2)	19.5	17.1	9.1	4.5	31.8	11.4	9.1
45-49	26	25 (96.2)	24.0	24.0	11.5	0.0	26.9	3.8	7.7
Don't know	77	71 (92.2)	5.6	18.3	0.0	0.0	13.2	0.0	0.0
State									
Kano	236	225 (95.3)	16.9	29.3	5.1	0.0	28.8	3.4	5.9
Zamfara	284	264 (93.0)	11.4	22.0	6.7	2.1	14.8	6.0	4.6
Education									
Quranic	184	174 (94.6)	9.2	29.3	4.4	0.5	11.5	2.2	6.6
Primary	56	54 (96.4)	18.5	25.9	0.0	0.0	21.4	3.6	5.4
Secondary	90	88 (97.8)	25.0	37.5	13.3	2.2	35.6	8.9	7.8
Tertiary	26	25 (96.2)	20.0	28.0	11.5	3.8	61.5	11.5	3.8
No Education	164	148 (90.2)	10.1	12.8	5.4	1.4	19.6	5.4	2.7

Table 7.2.4.2: Percentage with knowledge on the type of medicine for malaria treatment in Children among women interviewed who say malaria can be treated

% with knowledge on type of medicine for malaria treatment in children													
	Women who know medicine for malaria treatment (N = 491)	ACT	Antimalarial (name unknown)	Artesunate	Fansidar	Chloro-quine	Quinine	Aspirin	Comb-isunate	Herbs and medicine from chemist	Amoxil	Parac-etamol	Artem-ether
Age													
15-19	45	15.6	35.6	0.0	6.7	4.4	0.0	6.7	0.0	0.0	0.0	0.0	2.1
20-24	70	21.4	27.1	8.6	2.9	1.4	0.0	11.4	0.0	0.0	0.0	0.0	0.0
25-29	101	26.7	21.8	4.0	10.9	8.9	2.0	4.0	0.0	0.0	0.0	0.0	0.0
30-34	80	20.0	27.5	5.0	2.5	3.8	2.5	12.5	1.3	0.0	0.0	0.0	0.0
35-39	58	25.9	29.3	5.2	6.9	15.5	3.4	6.9	0.0	0.0	0.0	0.0	0.0
40-44	41	31.7	14.6	4.9	9.8	14.6	2.4	14.6	0.0	0.0	2.4	2.3	0.0
45-49	25	28.0	28.0	12.0	4.0	12.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Don't know	71	11.3	18.3	0.0	2.8	0.0	0.0	2.8	0.0	2.8	0.0	0.0	0.0
State													
Kano	225	27.1	27.1	4.9	3.6	5.8	0.0	10.2	0.0	0.0	0.0	0.0	0.4
Zamfara	266	17.7	22.9	4.1	7.9	7.5	2.6	5.6	0.4	0.8	0.4	0.4	0.0
Education													
Quranic	174	12.1	30.5	1.7	4.6	4.6	1.1	8.0	0.6	0.0	0.6	0.5	0.0
Primary	54	22.2	25.9	5.6	0.0	3.7	0.0	7.4	0.0	0.0	0.0	0.0	0.0
Secondary	88	33.0	36.4	10.2	9.1	12.5	2.3	9.1	0.0	0.0	0.0	0.0	1.1
Tertiary	25	64.0	20.0	12.0	8.0	12.0	4.0	20.0	0.0	0.0	0.0	0.0	0.0
No Education	150	20.0	12.0	2.7	7.3	6.0	1.3	4.7	0.0	1.3	0.0	0.0	0.0

Table 7.3.1: Sources of information among women who heard malaria messages in the last 6 months

	% who cited specific sources of malaria messages among women age 15 – 49 who have seen or heard any message about malaria in the last 6 months														
Characteristics	**Women that have heard message about N = 270**	**Billboard**	**CDD***	**Relative /school**	**Leaflet**	**Radio**	**TV**	**Comm-unity event**	**CHEW****	**Town announ-cer**	**ANC visits**	**Health centre**	**Poster**	**RMC†**	**Mosque or church**
Age															
15-19	20	5.0	0.0	10.0	0.0	70.0	5.0	5.0	0.0	10.0	0.0	15.0	0.0	0.0	0.0
20-24	40	0.0	0.0	2.5	2.5	75.0	5.0	0.0	15.0	0.0	5.0	17.5	0.0	5.0	0.0
25-29	52	1.9	0.0	1.9	0.0	76.9	13.5	1.9	5.8	11.5	5.8	7.7	3.8	7.7	3.8
30-34	54	0.0	1.9	0.0	0.0	68.5	9.3	3.7	13.0	5.6	5.6	11.1	3.7	14.8	0.0
35-39	34	0.0	0.0	0.0	0.0	91.2	11.8	0.0	5.9	8.8	8.8	8.8	0.0	0.0	0.0
40-44	26	0.0	0.0	0.0	0.0	84.6	19.2	0.0	3.8	11.5	3.8	11.5	3.8	0.0	0.0
45-49	14	0.0	0.0	0.0	0.0	85.7	0.0	7.1	0.0	21.4	0.0	7.1	0.0	0.0	0.0
Don't know	30	0.0	0.0	0.0	0.0	73.3	3.3	0.0	3.3	3.3	0.0	23.3	3.3	0.0	0.0
State															
Kano	125	1.6	0.0	2.4	0.8	77.6	15.2	1.6	7.2	5.6	8.0	13.6	2.4	7.2	0.0
Zamfara	145	0.0	0.7	0.7	0.0	76.6	4.1	2.1	7.6	9.7	1.4	11.7	2.1	3.4	1.4
Education															
Quranic	94	0.0	1.1	0.0	0.0	83.0	2.1	3.2	6.4	10.6	5.3	4.3	0.0	5.3	1.1
Primary	37	0.0	0.0	2.7	0.0	67.6	10.8	0.0	8.1	8.1	2.7	21.6	8.1		
Secondary	49	2.0	0.0	4.1	0.0	83.7	20.4	0.0	10.2	6.1	8.2	12.2	0.0	2.0	2.0
Tertiary	17	5.9	0.0	0.0	5.9	94.1	29.4	0.0	11.8	0.0	0.0	11.8	11.8	5.9	0.0
No education	73	0.0	0.0	1.4	0.0	65.8	5.5	2.7	5.5	6.8	2.7	19.2	1.4	1.4	0.0

**Community Directed Distributor, *Community Health Extension Worker, † Role Model Caregiver*

7.4 Malaria prevention

7.4.1 LLINs

Questions on nets in the survey were restricted to LLIN. The proportion of households with at least one net was high in both states (62.3% in Zamfara, 62.9% in Kano /P and net use was 67.9% in Zamfara and 68.0% in Kano/P. Net use in pregnant women was 81.6% in Zamfara and 70.8% in Kano/P. Mass net distribution campaigns were the main source of nets to households (Zamfara: 79.3%, Kano/P: 78.3%). Other sources of LLINs included ANC clinic (Zamfara: 6.2%, Kano/P: 5.0%) and immunisation clinics (Zamfara: 3.6%, Kano/P: 1.1%).

Reasons for not using the LLIN in the previous night ranged from "nets being too old" (Zamfara: 3.3%, Kano/P: 33.3%) to "absence of mosquitoes/no need for nets" (Zamfara: 12.1%, Kano/P: 16.7%), "heat/claustrophobia" (Zamfara: 12.1%, Kano/P: 13.9%), "net being difficult to hang" (Zamfara: 6.1% Kano/P: 2.8%,) and "nets provoking cough/presence of unsafe chemical" (Zamfara: 3.0%, Kano/P: 2.8%). Factors that would encourage the use of LLINs included "large size" (Zamfara: 81.5%, Kano/P: 21.7%), "itch-free" (Zamfara: 83.6%, Kano/P: 11.7%) and "smell-free" (Zamfara: 90%, Kano/P: 3.3%).

7.4.2 Intermittent Preventive Treatment

Among women who had live births in the last 2 years preceding the survey, proportion of those who received IPTp 1, IPTp 2 and IPTp 3 were 38.6%, 37.1%, 24.2% in Kano/P and 33.3%, 25.0% and 41.7% in Zamfara respectively.

Discussion

The baseline assessment revealed that health workers were knowledgeable on cause, symptoms and transmission of malaria, guidelines for malaria case management, as well as prevention and control of malaria in pregnancy. There were fairly high ownership and utilisation of LLIN in households in both states. Morbidity and mortality from malaria were high in both states.

The low uptake of IPTp, poor adherence to DOT, and poor access to LLIN for ANC clients highlight missed opportunities for preventing malaria in pregnancy.

Among women of reproductive age, high level of awareness and knowledge about cause, prevention, transmission and appropriate treatment of malaria is encouraging and similar to findings of the 2015 Nigeria Malaria Indicator Survey (NMIS). This is probably due to increasing education of women of reproductive age in both states and influence of malaria messages in mass media especially radio.

Net ownership in both states was high (about 62%), but lower than reported in 2015 NMIS (Zamfara: 88.6%, Kano: 88.0%).

Malaria morbidity has remained high in Zamfara despite malaria control interventions over the years, although decline was observed in Kano state. This is consistent with routine data from nat ional HMIS within period of review (2012 – 2015) and might require further studies. The 2015 NMIS parasitemia estimates for Zamfara were also high, consistent with our findings. Increasing malaria mortality observed in both states in recent years may be due to late presentation and delayed treatment of severe malaria, or increased access to health care among other reasons.

Consistent use of RDTs for malaria testing in both states as described by key informants showed increased access to malaria diagnostic testing over the years, and has the potential to further reduce the practice of presumptive treatment of fever cases as malaria. This could be attributed to increase in the numbers of health workers trained on malaria case management and availability of RDTs.

Artemisinin-based combination therapies were the major medicines administered by health workers for malaria treatment. This was largely attributed to a change in policy and the availability of new national guidelines on the case management of malaria and capacity building of health workers.

Limitations

There were few women attending ANC clinic during the survey, and therefore inferences based on client exit interviews could have wide confidence intervals. During the data review process, outdated data forms, incomplete forms, and forms with errors were observed, potentially impacting the validity of data summaries and trend estimates. Data were lost due to the size of the database and problems with data capture tools (ODK and Android phones). It is unclear what impact this had on the final analysis.

Conclusions

Majority of the health workers in Kano and Zamfara states were knowledgeable about the cause of malaria, and adhered to national guidelines for treatment of uncomplicated malaria. However, the use of ACT for the treatment of malaria during first trimester of pregnancy was reported in Zamfara, while Chloroquine was administered for malaria treatment in both states. IPTp-SP uptake and adherence to DOT were low in both states and a high proportion of ANC clients have not received SP during pregnancy at the time of the survey. Despite high proportion of health workers requesting malaria test for febrile illnesses and high acceptance rate for malaria testing among clients, the proportion of health workers informing clients of the test results was low. Malaria morbidity remains high in both states.

Majority of household members knew the cause of malaria, cited fever as a symptom, and mentioned nets for its prevention. Overall, awareness of ACT for malaria treatment was low. Net ownership and use were high in both states.

Barriers to adherence to national guideline on malaria case management in both states were frequent stockouts and inadequate coverage of health facilities with ACTs and RDTs and lack of staff motivation. Consistent supply of commodities to all health facilities in both states are recommended.

Acknowledgment

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The commitment and devotion of the data collectors, interpreters and local guides are well appreciated.

Annexures

A. States and LGAs

S/N	State		LGAs	State		LGAs
1.	Kano	Project LGAs	Fagge	Zamfara	Project LGAs	Anka
2.			Nassarawa			Bakura
3.			Kumbotso			Birnin Magaji
4.			Wudil			Bukkuyum
5.			Danbatta			Bungudu
6.			Ungogo			Gummi
7.			Tarauni			Gusau
8.			Gwarzo			Kaura Namoda
9.			Tsanyawa			Maradun
10.			Dawakin Tofa			Maru
11.			Makoda			Shinkafi
12.			Kano Municipal			Talata Mafara
13.			Takai			Tsafe
14.			Tofa			Zurmi
15.			Doguwa			
16.			Dala			
17.			Bichi			
18.			Gwale			
19.			Gezawa			
20.			Kiru			
21.		Non-project LGAs	Gaya			
22.			Ajingi			
23.			Bebeji			
24.			Kabo			
25.			Shanono			
26.			Warawa			
27.			Minjibir			
28.			Dawakin Kudu			
29.			Madobi			
30.			Rogo			
31.			Garum Mallam			
32.			Kura			
33.			Gabasawa			
34.			Albasu			
35.			Rimin Gado			
36.			Kibiya			
37.			Garko			
38.			Rano			
39.			Karaye			
40.			Kunchi			
41.			Bagwai			
42.			Bunkure			
43.			Sumaila			
44.			Tudun Wada			

B. List of Primary Health Facilities

Zamfara

Post-systematic sampling S/N	LGA	Facility Name	Ward
1	Maru	Kanoma PHC	Kanoma
2	Tsafe	Keta PHC	Keta
3	Tsafe	Bilbis PHC	Bilbis
4	Bukkuyum	Adabka PHC	Adabka
5	Zurmi	Mayasa Model PHC	Mayasa Kuturu
6	Bakura	Damri PHC	Damri
7	Anka	Rafin Gero PHC	Barayar Zaki
8	Anka	Wuya PHC	Wuya
9	Bukkuyum	Ruwan Jema PHC	Ruwan Jema
10	Bungudu	Nahuche PHC	Nahuche
11	Tsafe	Hayin Alhaji PHC	Yankuzo B
12	Maru	Ruwan Doruwa PHC	Ruwan Doruwa
13	Tsafe	Chediya PHC	Chediya
14	Gusau	Mada PHC	Mada
15	Shinkafi	Kware PHC	Kware
16	Maradun	Faru Upgraded PHC	Faru/Magami
17	Shinkafi	Jangeru PHC (Shinkafi)	Jangeru (Shinkafi)
18	Anka	Sabon birni phc	Sabon Birnin
19	Anka	Bagega PHC	Bagega
20	Kaura Namoda	Kasuwar Daji PHC	Kyanbarawa
21	Talata Mafara	Morai PHC	Morai
22	Kaura Namoda	Yankaba PHC	Yankaba
23	Zurmi	Zurmi PHC	Zurmi
24	Maradun	Takalmawa PHC	Kaya

Kano (Intervention LGAs)

Post-systematic sampling S/N	LGA	Facility Name	Ward
1	Fagge	R/LEMO MPHC	R/LEMO
2	Bichi	DANZABUWA MODEL PRI H. CENTER	DANZABUWA
3	Ungogo	Ungogo PHC	Ungogo
4	Kumbotso	PANSHEKARA	PANSHEKARA
5	Dala	Haj. Umma Zaria BHC	Gobirawa
6	Nasarawa	Kaura Goje PHC	Kaura Goje
7	TRN	Hausawa PHC	Baban Giji
8	Bichi	Badume Model PHC	BADUME
9	Nasarawa	Dawakin Dakata PHC	Dakata
10	Makoda	Makoda MPHC	Maitsidau

11	Dala	Yalwa MCH	Yalwa
12	Wudil	Darki MPHC	Darki
13	Tsanyawa	Tsanyawa PHC	Tsanyawa
14	Dambatta	Kore PHC	KORE
15	D-Tofa	Tattarawa PHC	Tattarawa
16	Dambatta	Gwanda PHC	Gwanda
17	Gezawa	Babawa MPHC	Babawa
18	Takai	Karfi MPHC	
19	Gezawa	Tsalle MPHC	Zango
20	D-Tofa	Dawanau BHC	Dawanau
21	Kumbotso	Guringawa	Guringawa
22	D-Tofa	Ganduje Model PHC	Ganduje
23	D-Tofa	Jalli PHC	Jalli
24	Gwarzo	Madadi BHC	Madadi

Kano (Non-intervention LGAs)

Post-systematic sampling S/N	LGA	Facility Name	Ward
1	D-Kudu	Unguwar Fawa PHC	GADANYA
2	Kabo	Hauwaden Bango PHC Clinic	Hawaden Galadima
3	Gaya	Kademi PHC	Kademi
4	Gabasawa	Gabasawa MPHC	Gabasawa
5	Ajingi	Ajingi PHC	Ajingi
6	Kibiya	Kibiya PHC	Kibiya 1
7	Bagwai	Abbas	Bagwai
8	Ajingi	Toranke PHC	Toranke
9	Kabo	Garo PHC	Garo
10	Shanono	Faruruwa PHC	Faruruwa
11	Shanono	Tsaure PHC	Tsaure
12	Bunkure	Kumurya PHC	Kumurya
13	T-Wada	Burum Burum PHC	BURUM BURUM
14	G-Malam	Yadakwari	Yadakwari
15	Kabo	Dugabau PHC Clinic	Dugabau
16	Karaye	Yammedi PHC	Yammedi
17	Bunkure	Gurjiya PHC	Gurjiya
18	Shanono	Kadamu MPHC	Kadamu
19	Karaye	Kwanyawa PHC	Kwanyawa
20	Rogo	Falgore PHC	Falgore
21	Albasu	Hungu PHC	Hungu
22	Bagwai	Wuro Bagga	Wuro Bagga
23	Kunchi	Kasuwar Kuka MPHC	Kasuwar Kuka
24	Kunchi	Yandadi MPHC	Yandadi

List of Secondary Health Facilities

Zamfara

S/N	LGA	Facility Name	Ward
1.	Bakura	Bakura General Hosp	Bakura
2.	Birnin Magaji	Birnin Magaji General Hosp	Birnin Magaji
3.	Bukkuyum	Bukkuyum General Hosp	Bukkuyum
4.	Bungudu	Bungudu General Hosp	Bungudu
5.	Gusau	Gusau General Hosp	Galadima
6.	Gusau	Mada General Hosp	Mada
7.	Kaura Namoda	Kaura Namoda General Hosp	Galadima
8.	Maradun	Maradun General Hosp	Maradun South
9.	Maru	Dansadau General Hosp	Dansadau
10.	Maru	Maru General Hosp	Maru
11.	Shinkafi	Shinkafi General Hosp	Shinkafi North
12.	Talata Mafara	Talata Mafara General Hosp	Galadima (T/M)
13.	Talata Mafara	Kagara General Hosp	Kagara
14.	Tsafe	Tsafe General Hosp	Tsafe central
15.	Zurmi	Moriki General Hosp	Moriki
16.	Zurmi	Zurmi General Hosp	Zurmi

Kano

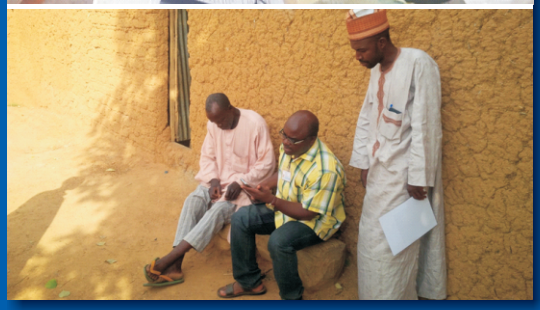
S/N	LGA	Facility Name	Ward
1.	D-Tofa	D/Tofa Gen Hospital	DAWAKI WEST
2.	D-Kudu	D/Kudu Gen. Hosp	DAWAKI
3.	Doguwa	Doguwa General Hospital	DOGUWA
4.	Dambatta	Dbt General Hospital	DBT WEST
5.	Dambatta	Fagwalawa Cott Hosp	FAGWALAWA
6.	Bebeji	Bebeji General Hospital	BEBEJI
7.	Bebeji	Tiga General Hospital	GWARMAI
8.	Bichi	Bichi General Hospital.	BICHI
9.	Fagge	Idh Kano	S/GARI WEST
10.	Fagge	Shehu Muhd. Jidda GH	FAGGE C,
11.	Fagge	NAF Base Clinic	KWACHIRI
12.	Fagge	Bukavo Brack Clinic	KWACHRI
13.	Fagge	Armed Force Specialist HQ	KWACHIRI
14.	Fagge	Abubakar Imam Urology	FAGGE D2
15.	Gaya	Gaya General Hosp	GAYA NORTH
16.	Gezawa	Gezawa General Hopital	
17.	Gwale	Imamu Wali General Hopital	DORAYI
18.	Gwale	Imamu Halliru Maternity Hospital	Iokon Makera

19.	Gwarzo	Gwarzo General Hospital	Gwarzo
20.	KMC	Marmara MCH	SHESHE
21.	KMC	Hasiya Bayero Pead Hos	T/WUZIRCHI
22.	KMC	Bamalli Nuhu Mat. Hosp	KANKAROFI
23.	KMC	Sabo Bakin Zuwo Mat.H	T/NUFAWA
24.	KMC	Murtala Muhd Spe. Hos	ZANGO
25.	Kura	Kura General Hospital	DALILI
26.	Minjibir	Minjibir Gen. Hospital	Minjibir
27.	Nassarawa	Sir Muhd Sunusi General Hospital	Hotoro North
28.	Nassarawa	Mohd Abdullahi Wase Gen.Hospital	Giginyu
29.	Rano	Rano General Hosp	S/GARI
30.	Rogo	Rogo General Hospitsl	Sabon Gari
31.	Sumaila	Sumail General Hosp.	Sumaila
32.	T/Wada	General Hosp. T/Wada	Jandutse
33.	Ungogo	Waziri Gidado General Hopital	
34.	Ungogo	Mariya Sunusu Maternity Hospital	
35.	Ungogo	Yada Kunya Leprosy Hospital	
36.	Wudil	Wudil General Hospital	

List of clusters for household survey : LGA/ cluster name/cluster number

Kano State

S/N	LGA_ code	LGA_name	SA_NAME	EA_NAME	LOC_NAME
1	65	Bichi	Danzabuwa Arabic Sch.Hostel	Hashimu Idi	Danzabuwa/Rinji Kulu
2	65	Bichi	Sarki Malami	Dahiru Na Zuwairu	Malikawa/Sarari/Yalwa
4	135	Dala	Dala Maternity	Alh. Sani Brother	Gwammaja A
5	135	Dala	Aminu Usani Kaifi	Alh Lawan Sadauki	Ayagi
6	135	Dala	Alh. Ali Mai Unguwa	M. Umaru Mai Bulala	Shago Tara Qtrs
7	25	Dambatta	Mai Unguwa Magaji Bello	Mohd. Bello	Doragofi "B"
8	55	Dawakin-Tofa	Jamaa	Gabashiya	Gabashiya
9	435	Doguwa	Burji S. Kaura	Alh. Mal. Nasiru	Ung. Beguwa
10	145	Fagge	Alh. Mudi Spiking	Audu Aladio	Fagge "A"
11	195	Gezawa	Baba Dan Azumi	Alhaji Ya U	C/Gari Kudu
12	195	Gezawa	Shagari Quarters	Alhaji Hamisu	Dan Ladi
13	125	Gwale	Sarkin Gaya	Ibrahim D. Mukhtar	Lokon Makera
14	125	Gwale	Umar Susu	Alasan Dan Barazana	Makera Jaen
15	285	Gwarzo	Ibrahim Nagodi	Hashimu Ibrahim	Getso Shahuci
16	165	Kano Municipal	Makkah Eye Spe. Hospital	Makkah Eye Spe. Hospital	Sharada G/Garu
17	165	Kano Municipal	Dr. Rabiu Musa K.	Nafiu Mohd	Kurmawa
18	315	Kiru	Hayin Fulani	Hayin Fulani	Kiru ward
3	185	Kumbosto	Nurul Auwal Islamiyya	Alh. Sabo Soja	Naibawa Yamma
19	185	Kumbosto	Ubale Mai Yadi	Alh.Sani Farawa	Farawa
20	185	Kumbosto	Ado Wailare	Abdulkadir Adamu	Maikalwa
21	15	Makoda	Jafar Dan Tanko	Jafar Dan Tanko	Unguwar Kudu
22	155	Nasarawa	Sir Sunusi Hospital	Mal. Muazu	Hotoron Arewa
23	405	Takai	Gidan Sarki	Gidan Sarki	Kogo
24	175	Tarauni	Hajiya Mai Nono	Abdullahi Dan Ati	Kauyen Muhammadu
25	175	Tarauni	Jamaare	Jamaare	Danmarke
26	105	Tofa	Amadu Lawan	Amadu Lawan	Yalwa Cikin Gari
27	75	Tsanyawa	Samaila Mai Unguwa	Mal. Kamaye Sarki Aiki	Galadanchi
28	115	Ungogo	Kassim Yusif	Abdun Iliyasu	Zaura Dan Baba
29	115	Ungogo	Alh. Usman A.C	Alh. Yushau	Rangaza
30	235	Wudil	Adamu Shanono	Abdulminu	Kawajin Magaji

Zamfara state

S/NO.	LGA_CODE	LGA_NAME	SA_NAME	EA_NAME	LOC_NAME
1	5	Gummi	Ibrahim Rijiya	Mai Yar Kwama	Gummi
2	5	Gummi	Hajiya Goye	Hajiya Goye	Gummi
3	15	Bukkuyum	G.S.S Bukkuyum	Waziri House I	Bukkuyum
4	15	Bukkuyum	Mode Dandare	Mai Damma	Ramfashi
5	25	Anka	Sarkin Dogaray	Sarkin Dogorai	Anka
6	25	Anka	Babbon Baye	Abdullahi Hakimi	Matseri Tunga
7	35	Bakura	Alhaji Marafar	Alh. Marafa	Dakko
8	45	Talata Mafara	Mother Cat	Kartawa	Talata-Mafara
9	45	Talata Mafara	Damma Sarkin Aski	Alhaji Dan Isah	Gidan Jagaba
10	55	Maradun	Sale St Kazama	Halliru Sarkin Hatsi	Maradun
11	55	Maradun	Marafan Dan Baza	Malam Dauda	Danbaza
12	65	Shinkafi	Mani Maibuhu	Mani Maibuhu	Shinkafi
13	65	Shinkafi	Tungar Kahau	Ba'azawa	Gidan Kwandu
14	75	Zurmi	Alh. Audu Mai Agogo	Alh. Audu Mai Agogo	Zurmi
15	75	Zurmi	Magaji	Sada Baduku	Gidan Kayya
16	75	Zurmi	Sabon Gidan Garbe	Alh. Shehu	Gidan Badai
17	85	Birnin-Magaji	G S S Birnin Magaji	Dan Ali House	Birnin Magaji
18	85	Birnin-Magaji	Maigari Nababa	Bashir Aliyu	Nassarawa Godel
19	85	Birnin-Magaji	Maigari Mamuda	Ibrahim Gado	Modomawa
20	95	Kauran-Namoda	Umaru Mamuda Pri. Sch.	Umaru Mai Kada	Kauran-Namoda
21	95	Kauran-Namoda	Alh. Na Umale	Alh. Na Ummale	Sabon Gari
22	105	Tsafe	Alh. Lawali Dan Dogo-Dogo	Abdu Na-Baba	Tsafe
23	105	Tsafe	Maianguwar Dahiru	Alh. Aliyu Ubankasa	Yandoto
24	115	Gusau	Malam Abdullahi	Jumma'at Mosque	Yar Geba
25	115	Gusau	Hassan Fata	Mallam Sodangi	Mayana
26	115	Gusau	Audi Dan Kaiwaye	Audi Dan Kai Waye	Ruwan Dawa
27	125	Bungudu	Alhaji Madiya	Maigari Salihu	Bungudu
28	125	Bungudu	Gidan Sabo	Kaurar Dole	Kaurar Dole
29	135	Maru	Alh Namadi	Liman Mustapha	Maru
30	135	Maru	Hakimi Garba	Alhji Goje	Jabaka