Provider and Client Perceptions of Malaria Prevention and Treatment Services in Sierra Leone

Formative Assessment in Bo and Port Loko Districts

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Acronym List

AL	Artemether-lumefantrine
ANC	Antenatal Care
CCP	Johns Hopkins Center for Communication Programs
CEI	Client Exit Interviews
CHA	Community Health Aide
CHC	Community Health Center
CHO	Community Health Officer
CHP	Community Health Post
CHW	Community Health Worker
DHMT	District Health Management Team
IDI	In-depth Interview
ITN	Insecticide-Treated Net
IPC	Interpersonal Communication
IPTp	Intermittent Preventive Treatment in Pregnancy
IPTp-SP	Intermittent Preventive Treatment in Pregnancy - Sulfadoxine Pyrimethamine
IRB	Institutional Review Board
JHSPH	Johns Hopkins Bloomberg School of Public Health
MCHC	Maternal and Child Health Center
MOHS	Ministry of Health and Sanitation
NMCP	National Malaria Control Program
PMI	U.S. President's Malaria Initiative
RDT	Rapid Diagnostic Test
SP	Sulfadoxine Pyrimethamine
STI	Sextually Transmitted Infection
USAID	United States Agency for International Development

Introduction

Through the Breakthrough ACTION Sierra Leone program, PMI is supporting activities to increase the capacity of Sierra Leonean institutions to effectively address high-risk behaviors associated with malaria prevention and control. The Johns Hopkins Center for Communication Programs (CCP) is the lead organization for Breakthrough ACTION funded by USAID.

Malaria is responsible for a quarter of morbidity among the general population in Sierra Leone and 40 percent among children under five years of age[1]. According to the 2016 Malaria Indicator Survey (MIS), one in four children under five, and four in ten aged between 6–59 months in Sierra Leone tested positive for malaria. In addition, most individuals do not have access to an insecticide-treated net (ITN), and only a third of pregnant women received three doses of recommended intermittent preventive treatment in pregnancy (IPTp). Sierra Leone's National Malaria Strategic Plan 2016–2020 aims to reduce malaria morbidity by at least 40 percent compared to 2015 levels. A growing body of evidence supports the role of Social and Behavior Change (SBC) interventions in promoting positive health behaviors among individuals and in communities, including related to malaria prevention and treatment.

A systematic review and meta-analysis of data on malaria-related service delivery in sub-Saharan Africa identified health worker behavior as a major barrier to the effective delivery of malaria interventions, including IPTp[2]. The authors cited factors known to affect delivery of quality services including health worker attitudes and behaviors, communication skills, and knowledge of clinical guidelines for malaria case management and prevention. In Sierra Leone, there is a need to examine health worker perceptions and behaviors related to malaria case management and the experiences of patients with the health system, including provider-patient interactions at the point of service delivery.

With funding from PMI, Breakthrough ACTION Sierra Leone worked with the NMCP and other local stakeholders to conduct in-depth interviews (IDI) and client exit interviews (CEI) among health workers to provide insights into health worker attitudes, behaviors, the quality of malaria care delivery, and the factors that impact health workers' ability to deliver quality malaria treatment and care services in Sierra Leone. Together, the two data collection activities were designed to increase understanding of the facility- and community-based factors that influence the delivery of quality malaria health services and strengthen the evidence base for malaria control and prevention program activities for health workers in Sierra Leone.

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[1] National Malaria Control Programme (NMCP) [Sierra Leone], Statistics Sierra Leone, University of Sierra Leone, Catholic Relief Services, and ICF. 2016. Sierra Leone Malaria Indicator Survey 2016. Freetown, Sierra Leone: NMCP, SSL, CRS, and ICF.

[2] Hill, J., Hoyt, J., van Eijk, A. M., D'Mello-Guyett, L., Ter Kuile, F. O., Steketee, R., Smith, H., & Webster, J. (2013). Factors affecting the delivery, access, and use of interventions to prevent malaria in pregnancy in sub-Saharan Africa: a systematic review and meta-analysis. *PLoS medicine*, *10*(7), e1001488. https://doi.org/10.1371/journal.pmed.1001488

Study Aims and Objectives

The overall aim of the study was to explore perceptions, knowledge, and behaviors for malaria prevention, diagnosis, and case management among facility-based health workers and to assess patient perceptions of care received for malaria. Specific objectives include to:

1. Assess health worker knowledge of:
   - Malaria signs and symptoms
   - Malaria diagnosis and treatment guidelines
   - Malaria prevention strategies
2. Understand factors (individual, structural, economic, socio-cultural norms, etc.) that influence adherence to treatment guidelines;
3. Describe health worker experiences with malaria case management;
4. Identify accepted kinds and sources of information on malaria diagnosis and treatment; and,
5. Explore patients' perceptions of health worker knowledge, and quality of services provided for malaria.

This report summarizes the results from a qualitative exploration of malaria prevention and treatment behaviors of facility-based health workers providing malaria-related services and the experiences of patients receiving health services for fever and maternal or newborn services, in Bo and Port Loko districts of Sierra Leone. This research was implemented as part of Breakthrough ACTION program activities in Sierra Leone to better understand the socio-behavioral determinants of individual and community level malaria prevention and treatment behaviors.

Methods

Study Design

The study design used an unstructured qualitative IDI and a semi-structured quantitative CEI interview tool to gather information from facility-based health workers and the patients that used those health facilities. A convenience sample of adult men and women were interviewed once during the study.

Study sites

Research activities were conducted in Bo and Port Loko districts. Five target constituencies were purposefully selected with input from the NMCP, Ministry of Health and Sanitation (MOHS), and PMI. Selection of constituencies was based on the following guidelines:

- High ongoing malaria transmission rates particularly among children under 5 years of age
- Community where activities increase the risk of malaria
- Geographically well-defined and accessible locale
- Patient population is large enough to allow the recruitment of the required number of participants for the exit interviews, and,
- Represents a target area for behavior change messaging.

Sample size

Health worker in-depth interviews

The total sample for the in-depth interviews was 80 health workers (40 in Bo and 40 in Port Loko). Table 1 is a summary of the distribution of informants per district. Informants were recruited from different types of health facilities within each constituency including community health posts (CHP), maternal and child health centers (MCHC), and community health centers (CHC), and hospitals.

TABLE 1: SAMPLING DISTRIBUTION AND SIZE FOR HEALTH WORKER INTERVIEWS, PER DISTRICT

	SAMPLE SIZE FOR EACH CONSTITUENCY, FOR ONE DISTRICT					
	Const #1	Const #2	Const #3	Const #4	Const #5	District Total
# of health facilities	4	4	4	4	4	20
# of health workers per facility	2	2	2	2	2	10
Total # of health workers	**8**	**8**	**8**	**8**	**8**	**40**

Client exit interviews

The total sample for the exit interviews was 320 community members (160 in Bo and 160 in Port Loko). Community members who visited the health facility for malaria treatment or preventive care were conveniently approached and invited to join the study. Table 2 provides a distribution of informants per district. Informants were interviewed from different types of health facilities within each constituency including CHP, MCHP, CHC, clinics, and hospitals.

TABLE 2: SAMPLING DISTRIBUTION AND SIZE FOR CLIENT EXIT INTERVIEWS, PER DISTRICT

	SAMPLE SIZE FOR EACH CONSTITUENCY, FOR ONE DISTRICT					
	Const #1	Const #2	Const #3	Const #4	Const #5	District Total
# of health facilities	4	4	4	4	4	20
# of informants per facility	8	8	8	8	8	
Total # of informants	**32**	**32**	**32**	**32**	**32**	**160**

The number of IDI respondents per constituency was eight, and the number of CEI informants per constituency was 32. These sample sizes were deemed adequate to achieve saturation of themes within each sub-group and for group comparisons. The sampling structure also allows for variation through eliciting the views of a diverse group of individuals to capture potential differences in experiences, beliefs, and opinions related to the thematic focus of the health worker assessment.

Sampling

Statistics Sierra Leone provided the sampling frame, conducted the random sampling, and produced the sketch maps of randomly selected constituencies and enumeration areas.

Study participants

We purposefully sampled and interviewed different cadres of health care workers who provide malaria services.

Health worker In-depth Interviews (IDI)

In smaller health posts and centers where there were just one or two health workers available, all the health workers were assessed for eligibility and invited to participate in the study. Where there were more than two health workers in one facility, such as larger hospitals and health centers, two informants were purposefully selected based on professional experiences with malaria case management and on their willingness to discuss in detail, the challenges operating at different levels of the health system regarding the provision of quality care for malaria. This included physicians, nurses, midwives, physician assistants, community health workers, and health aides.

Eligibility criteria for the IDIs included has worked in the selected community for at least one year, provides malaria-related prevention and care services to patients, and understands and speaks English, Temne, and/or Mende.

Client exit interview participants

Participants for the CEIs were intercepted as they exited the selected health facilities. Only adults (18 years and older at the time of the interview) were included in the study. Other eligibility criteria included individuals who currently lived in one of the selected research catchment areas, understands and speaks English, Temne and/or Mende, and responded 'YES' to at least one of the following questions on the recruitment script:

- Did you visit this health facility today for information, care and/or treatment for a fever?
- Did you visit this health facility today for antenatal care (ANC)?
- Did you visit this health facility today for routine/well baby check-up?

Only individuals who provided voluntary informed consent participated in the study.

The research team

The research team consisted of a study principal investigator, a senior research data analyst, and assisting graduate researchers from CCP Baltimore. A local contractor conducted field work with a team of 10 data collectors, a program manager, two research leads, a field team coordinator, a data quality manager, an information technology officer, and a project logistics manager.

The local field research team completed a five-day training workshop conducted by the principal investigator in September 2019. The training workshop focused on research ethics for fieldwork and the research protocol, including study methods, procedures, and tools. Training content included information on research ethics in the field, rights of human subjects during research, research study design and protocol, sampling procedures, informed consent, data collection tools, electronic data collection, interviewing techniques for getting rich data, and database management, security, and quality.

A key component of the training was opportunities to practice using the study methods and the forms and tools in English as well as their local language versions. Training on processes and logistics for field management, supervision, communication, and documentation was conducted by the local contractor. The local project manager, research leads, and field team coordinator received additional training on the protocol, supervision, quality assurance, communication, and reporting requirements for the study.

Data Collection, Management, and Analysis

Data were collected in Bo and Port Loko districts over a period of six weeks from September to October 2019. A local research firm, selected through a competitive bidding process, assisted with the data collection.

Data collection tools

Two data collection tools, a qualitative IDI guide and a semi-structured quantitative outcomes monitoring questionnaire were used to collect information from informants.

In-depth interview guide

Topics to be explored include (but are not limited to):

1. Health workers knowledge of:
    - Malaria signs and symptoms
    - Malaria diagnosis and treatment guidelines
    - Malaria prevention strategies
2. Factors (individual, structural, economic, socio-cultural norms, etc.) that influence adherence to treatment guidelines;
3. Health workers' experiences with malaria diagnosis and treatment; and,
4. Acceptable sources of information on malaria diagnosis and treatment.

IDIs were audio-recorded (when agreed to by the informant). Discussion notes also were taken during interviews for the purpose of accurately capturing informants' responses. Data collected from informants were anonymous. Each IDI took no more than 90 minutes to complete.

Client Exit Interviews

The semi-structured CEI questionnaire included a demographics section to characterize the sample, and questions directly related to the perceived quality of provider-patient interactions experienced at the just completed visit to the health facility. Survey questions included perceptions of the care (diagnosis, testing, treatment) received at the facility, explanations, advice, or referrals received from the health worker, and perceptions and rating of the provider-patient interaction just encountered.

Data management

Data were secured on password-protected mobile devices and transferred to secure computers and sent to the team in Baltimore using encryption procedures. Access to the data was restricted to members of the research team who had, at the time, responsibilities to collect the data or to process and analyze it. Databases did not contain personal identifiers.

Data analysis

IDIs were translated and transcribed into English. A codebook was developed to facilitate consistency in the coding process. *A priori* codes were first developed based on the concepts of interest in this research and the study aims. Codes were used to conceptually name the data and to reduce it to manageable units of information that covered broad categories. The *a priori* codes were complemented by additional refined codes that reflected themes and concepts emerging from the data. The coded discussion data was organized into a hierarchy of themes, which were then meaningfully linked to show patterns, relationships, and explanations. In conjunction with the coding process, memos were used to denote conceptual categories and themes and to track emerging insights and interpretations.

A team approach to data analysis was used. Several researchers provided feedback on emerging interpretations and analysis and checked developing categories, interpretations, and concepts back against the original data. This generated an "audit trail" to increase trustworthiness of findings and gather input from multiple perspectives.

Data from the CEIs were captured into a quantitative database and analyzed using STATA. Short-answer qualitative responses were translated into English (as needed), transcribed into a word processing document, and content analyzed. A process similar to that used for the in-depth interviews was used to analyze the qualitative short-answer responses from the CEI interviews.

Triangulation of the results from the two data sources was a part of the analysis. Descriptions of the real-time experiences from the CEIs were used to explain as well as corroborate the findings from health workers on similar or related issues.

Permissions and Ethics

The study protocol was reviewed and approved by the Sierra Leone Ethics and Scientific Review Committee at the MOHS and the Johns Hopkins Bloomberg School of Public Health (JHSPH) Institutional Review Board in Baltimore. All key study personnel had active completion certificates for human subjects' research and ethics training, and the study co-Investigators were registered with the JHSPH IRB. The five-day training workshop held in September 2019 included a comprehensive component related to ethics for data collectors in the field.

The Office of the Chief Medical Officer at Sierra Leone MOHS provided a letter of support and cooperation for the study. This was presented to the DHMT, chiefs, and community leaders in the participating districts to facilitate community entry. Authorities were notified of the presence of the data collection teams prior to the start of data collection. Leaders were provided with information about the study, their questions were answered, and their permission sought prior to approaching households. No leaders refused to have data collected from their communities.

Results

This section summarizes the results of in-depth interviews conducted among health workers providing malaria-related prevention and treatment services in selected health facilities in Bo and Port Loko districts. Results from CEI conducted among patients with fever who were exiting the health facilities where health workers were interviewed, also are described.

Data were collected from health workers and patients at government hospitals, CHC, MCHC, and CHP. 82% of the facilities were in rural areas, and 18% were in urban areas. The distribution of 40 health facilities that participated in the study is shown below.

TABLE 3: DISTRIBUTION OF PARTICIPATING HEALTH FACILITIES BY TYPE OF FACILITY, PER DISTRICT

TYPE OF HEALTH FACILITY	NUMBER OF FACILITIES BY DISTRICT	
	Bo District	Port Loko District
Government Hospital	1	1
Community Health Center	7	5
Maternal & Child Health Center/Post	9	10
Community Health Post	3	4
TOTAL	**20**	**20**

47% of the facilities were MCHC, 30% where CHCs, and 18% were CHPs.

Description of the Sample

In-depth interviews

A total of 80 health workers, 40 from each district, participated in the in-depth interviews.

Client exit interviews

A total of 320 patients participated in the exit interviews. Most of the participants (88%) were female. Age range of participants was 18-58 years old, with a mean age of 27.4 years (SD: 7.7). 88% of participants were residing in rural areas and 12% in urban areas. All participants had received care at the health facility just prior to the survey. All participants had visited the facility with either a complaint of fever among their symptoms, or to receive ANC or well-child care for their baby.

Table 4 below is a summary of the reasons participants had visited the health facility on the day of the survey.

TABLE 4: PERCENT OF PARTICIPANTS* VISITING HEALTH FACILITY FOR STATED REASONS, BY DISTRICT. (N=320)			
REASON FOR VISIT TO HEALTH FACILITY	BO DISTRICT	PORT LOKO	TOTAL
Antenatal care visit	30.6	30.0	30.3
Fever in a child	17.5	21.9	19.7
Fever in an adult	13.8	10.0	11.9
Body aches and pains	12.5	11.3	11.9
Newborn / Well-child care	13.8	8.0	10.9
Vomiting	2.5	10.0	6.3
Headache	4.4	7.5	5.9
Diarrhea	1.9	1.3	1.6
Other reason	3.0	0	1.5
TOTAL	**100**	**100**	**100**

* Not a representative sample

Overall, fever was the most prevalent reason for participant visits to the health facility, accounting for 32% of all visits. Among all participants, more visits were made for fever in children (20%) compared to fever in adults (12%), however among all those with fever, 62% were children and 38% were adults. The proportion with complaints of fever in children was higher (22%) in Port Loko district and the proportion of complaints of fever in adults was higher (14%) in Bo district. Proportion reporting symptoms of headache and vomiting were higher in Port Loko compared to Bo district. Overall, 30% of CEI participants reported that they visited the facility for ANC services; this did not vary by district.

Knowledge

In this section, excerpts are shared on results for health workers' knowledge and awareness of the prevention, diagnosis, and treatment of malaria. Health workers offered valuable insights into their knowledge of malaria prevention and treatment. Health workers discussed their knowledge of the burden of malaria in their communities, the risk factors associated with malaria, how to prevent, diagnose, and treat malaria, and their knowledge of the national guidelines for malaria case management.

Overall, health workers verbalized concern about malaria in the communities they served.

Context of malaria in the community

"Malaria is a serious health issue… and a serious concern to all health workers"

Participating health workers provided context about the burden of malaria in the communities where they worked. Malaria was described as a major or "main," "most common," and "serious" illness that is seen at the health facility, all year round. This perception was present among health workers from both districts and in urban and rural settings.

> *Malaria is the major sickness that we are receiving in this health facility. During the dry season, we receive patient[s] with headache, fever, and malaria. During the [rainy] season, the patients will bring other complications but the major sickness that we are treating here is malaria.* (Bo district, Urban, Female)

> *[The] majority of the people who come to this facility complain of malaria as it is the most common illness in this part of the district. If you do a malaria test on say twenty or thirty patients, only two will be negative as the rest will be positive.* (Bo district, Rural, Male)

> *People come with plenty and different types of illnesses and most of the illnesses are associated with fever. Typhoid will come with fever; diarrhea is also associated with fever. Even meningitis will come with fever. We have those who report headache, but they also complain of fever. When you ask people, they will say he or she just got fever last night. Most of these fevers when tested for malaria they will be positive.* (Bo district, Rural, Female)

> *People came here with different illnesses like anemia, diarrhea, malaria, and other different types of illnesses. But the diarrhea is not too much compared to malaria and the clients who come at this facility are more of malaria. ... malaria is serious within the communities.* (Port Loko district, Rural, Female)

These perceptions are consistent with results from CEIs that showed that the most prevalent reason for visits to the health facility among participants interviewed was fever. Of note, many health workers supported their perception of a high prevalence of malaria in their catchment communities with statements about high rates of positive results from rapid diagnostic testing for malaria. Health workers frequently mentioned fever as a symptom of malaria but acknowledged that fever is associated with other illnesses, indirectly showing that distinguishing malaria-related fever from other illness is necessary. The statements of health workers also show that community members recognize to some extent, that they should seek care at the facility for a fever.

Health workers also shared their knowledge and beliefs about mortality and morbidity associated with malaria. Many health workers discussed their reasons for characterizing malaria as a serious health issue, exemplified by this excerpt from a female provider in rural Bo district.

> *Malaria is a serious health issue because it can easily kill and it's a serious concern to all health workers across the globe and not only in Sierra Leone. For those who survive serious malaria, it will sometimes result in anemia and this is the worst stage of malaria as the person can die at any time.*

Also, apart from the death associated with malaria, it can also lead to other health problems that can result in permanent disability. Too much malaria parasite can lead to anemia and death. (Bo district, Rural, Female)

The aforementioned illustration is an example of how a health worker recognized malaria as a public health issue. Some health workers also had knowledge of different stages of malaria and the potential consequences of infection such as disability and death.

Overall, health workers demonstrated good knowledge about malaria in Sierra Leone. They acknowledged the seriousness of malaria infection and knew what populations were most at risk of the disease. They shared the primary symptoms that patients present with and most of them knew that a malaria rapid diagnostic test (RDT) should be done to confirm the presence of infection.

Risk and vulnerability

Health workers described their knowledge of vulnerable groups and risk behaviors for malaria in their community. Factors mentioned included exposure to mosquitoes, not covering the body to prevent mosquito bites especially late in the evening and delaying use of ITNs until late in the evening.

"The pregnant women and the under-fives are the groups of people that are at risk of malaria"

Most health workers identified pregnant women and young children as vulnerable sub-groups in the population with increased risk of malaria. Health workers mentioned that the immune systems of children and pregnant women may be weakened or less capable of fighting off the malaria parasite. Children also were perceived to have increased vulnerability as they are usually not able to describe their symptoms early to caretakers for prompt intervention. The following narratives illustrate these points.

The pregnant women and the under-fives are the groups of people that are at risk of malaria in this health facility. For pregnant women, many of them when they become pregnant, they will be very lazy and weak in such a way that if they feel sick, they will not be able to come to the hospital. If they continue to stay at home without treatments, the malaria will affect the child in her womb as well. The other reason is, under-fives cannot talk, if they feel sick, they will not be able to complain earlier and they will not be able to complain exactly how they are feeling, so many times, by the time the parents realize that their children are sick then the sickness must have overcome them. So, you see they are very much vulnerable. (Bo district, Urban, Female)

The under-five child, his or her immune system is not able to fight the parasite and if not quickly responded to, will end up killing him or her. For the lactating mother, she is still breastfeeding, and she loses more strength through that and so if she gets malaria, when breast feeding the baby, the baby will get contracted through the breast milk. For pregnant women, everyone knows that they are two in one, and the unborn child depends on her as she feeds through the umbilical cord. So, at any time a pregnant woman develops any condition, the tendency for the baby to be affected is very great. (Bo district, Rural, Female)

While overall health workers identified vulnerable groups in the population that have increased risk of malaria, a few health workers had misconceptions about transmission of malaria through breastmilk, believed that pregnant and lactating women were weak and perhaps prone to sickness, and one individual thought malaria was a chronic condition that could not be cured. There also is indirect implication from a few statements from health workers that strong immune systems should be able to overcome the malaria parasite. Some health workers spoke more specifically about the effect of malaria on pregnant women and children, as shown in the quotation below:

> *Malaria is a life-threatening health problem because it can easily kill and can abort pregnancy if timely action is not taken. The fever during pregnancy can make the mother to become anemic. (Bo district, Rural, Female)*
>
> *Malaria gives a lot of problems, it damages someone, it opens anemia, destroys pregnancy, and even if she delivered the baby, the baby won't be healthy, it causes a lot of problem, it destroys a child growth, damages the child's growth, also it damages the child's daily activities based on the age, it stagnates the child. (Bo district, Rural, Male)*
>
> *You cannot treat malaria completely because it in the blood stream the moment you take drugs it goes to the liver and stay for the time being. Because it became active sooner there. It got stimulated from mosquito bite. We are treating malaria to reduce infant and mortality rate nationwide, but it cannot completely be cured except the person's blood is changed. (Bo district, Urban, Female)*

These illustrations show that health workers are aware that malaria potentially could impact individuals in different ways including long-term physical and developmental effects across the lifespan. Health workers knew also that malaria had the potential to negatively affect pregnant women, the pregnancy, the unborn child, and children under five years of age. Nevertheless, incorrect information about the effect of malaria and outcomes of treatment are present among some health workers.

"The time that they will be outside with the children is the time the mosquitoes will bite the children"

Health workers identified specific behaviors and community practices as risk factors for malaria transmission. Health workers from both districts knew that malaria was transmitted through mosquito bites. Health workers also were insightful in understanding that use of an ITN did not offer guaranteed protection from malaria. Some health workers from both districts perceived that ITNs were not used optimally by community members to protect themselves, and especially children, from mosquito bites. Specifically, children were not encouraged to turn in for the night early in the evening and have the full protective benefit of a bed net but were allowed to follow a late-night routine that kept them outside with adults and unprotected against mosquitoes. The following quotations describe these behaviors.

> *The under-five children are at risk of getting malaria because their parents are not taking care of them the way they are supposed to do. When I go out for visitation, I tell them to put down the bed net earlier and allow the children to go to bed and sleep in the bed net earlier so that they will not get mosquito bite, but they always say that they will not be able to go to bed early. So, the time that they will be outside with the children is the time the mosquitoes will bite the children. (Port Loko district, Rural, Female)*

Our people are in the habit of spending time outside and will be there for as long as they want to. They sometimes stay with their children and you can't stop the mosquitoes from reaching out to you. Sometimes, the children will be inside the house, but they will not put down the bed net until it is time for them [the adult] to sleep. (Bo district, Rural, Male)

When they sit outside without wearing long clothes that will cover their body completely, they will be bitten by mosquitos and they will end up infected. So, even if they later go to sleep under bed net, they are already been bitten and infected by the mosquitos. (Bo district, Rural, Female)

Not using protective coverings or clothing coupled with late nights outside in the evening time increased exposure to mosquitoes and risk of mosquito bites among community members. Health workers perceived these behaviors as being resistant to change and while they do encourage community members to go indoors earlier and to pull down nets for children to use earlier in the evening, they believe that there has been little behavior change.

"They are not cleaning their environments that is why malaria is a big problem"

Another factor that increased the risk of malaria that was identified by many health workers was poor environmental sanitation practices. Health workers from both districts believed that mosquitoes bred or were usually found in areas or compounds that were not clean or well taken care of.

They are not using the bed nets correctly and they are not cleaning their environments that is why malaria is a big problem in these communities. (Port Loko district, Rural, Female)

What makes them [mosquitoes] breed around is when the people don't clean their compound. (Bo district, Rural, Female)

Types of malaria

"We have the complicated and the uncomplicated types of malaria"

Health workers demonstrated good knowledge about distinguishing the severity of malaria cases at the health facility, being clear about what they could effectively and safely manage, and how best to respond to the clinical symptoms. Many health workers shared knowledge about the different response options for malaria based on the severity of the infection.

We have two types of malaria; we have the complicated and the uncomplicated types of malaria. The complicated malaria is the severe form of malaria and the uncomplicated malaria is the un-severe form of malaria. (Port Loko district, Rural, Male)

The uncomplicated malaria is not the worst malaria. Some children have frequent stooling and vomiting, and such symptoms from children we can manage to solve. Some are complicated ones for instance some children have shortage of blood or not breathing the way they are supposed to breathe. We can call the doctor to handle that case because if a child is short of blood it will result in anemic diseases. But the uncomplicated ones we can cure by providing medicine, and folic acid so that the child cannot become anemic. Sometimes when the child went for blood test that hemoglobin may be 10.5 and sometimes 9, we can manage the child. Even 8, 7 we can also manage the child for treatment but 6 we cannot manage. Below 6 ,5, 4 the child will be admitted at the hospital. (Port Loko, Rural, Male)

In general, health workers are aware of the behavioral risk factors in communities, and management of malaria at health facilities. They spoke at length about the seriousness of malaria, especially among pregnant women and young children. Health workers also distinguished between the management approach for severe (complicated) and uncomplicated malaria.

Awareness of national clinical guidelines for malaria

"I feel good because I know it and it helps us to identify cases easier... . It is my consultant"

Health workers responded to questions about their knowledge of the national guidelines for malaria prevention and treatment in health facilities. [Perceptions of the guidelines are described in detail in the section on Provider Perceptions]. Overall, the majority of health workers knew about the NMCP guidelines for prevention, treatment, and case management of malaria in health facilities. All health workers who knew about the national guidelines for malaria prevention and case management in facilities described value in the use of the guidelines and perceived the guidelines as a teaching tool that made their work easier and ensured they provided correct and good quality services.

> *I am happy about the guidelines because the guidelines are helping me to treat malaria in the correct way… and it teaches me a lot of things. (Port Loko district, Urban, Female)*

> *I feel good because I know it and it helps us to identify cases easier. It is my consultant all I need to do if I am having a difficulty, I will just take the book and go through it. (Bo district, Urban, Male)*

> *I as a health worker cannot do anything without the guideline even though I have experience and my knowledge, but I must have the guidelines that tell me [about] the importance of testing and treating of malaria in Sierra Leone. It makes my work easy. (`Port Loko, Rural, Female)*

Guidelines for malaria case management were used in practice frequently by the health workers who had been trained on them, and who had copies of the guidelines for use as a clinical resource and reference. A few health workers from both districts indicated they had limited knowledge about them, as shown below:

> *I do not know much about the national guidelines yet. Honestly, I do not have idea about the guidelines yet. (Bo district, Urban, Female)*

> *I haven't seen the guidelines for the treatment of malaria. I don't know if what we are doing is part of the guideline or not. I don't want to say something I'm not sure of. We test and treat patients as the in-charge and other nurses are doing and based on what we learn from nursing school. (Bo district, Rural, Male)*

> *If documents are not available, we cannot be able to treat malaria. Some of these documents use one line as the guideline for various treatments but I did not have experience on this guideline. But one of my colleagues that we have worked together tell me about this guideline and she further explained about this guideline to me but through that time I only know little on these guidelines. (Port Loko district, Rural, Female)*

For those health workers who had little or no exposure to the national guidelines, they relied on knowledge obtained through their nursing training to treat patients, observed, and learned from more senior colleagues they worked with, or relied on receiving knowledge about the guidelines from peers. Results suggest that a minority of health workers did not receive information and have poor knowledge of the NMCP guidelines. Statements imply also that resources about the malaria guidelines are not available in some facilities.

Sources of information

A few health workers shared the most common sources of information for their knowledge about malaria prevention, diagnosis, and treatment, especially in regard to the national guidelines. Health workers stated that they used media, peers, mentors, and sensitization programs as sources of information on malaria. A few mentioned that they had handouts on malaria from the district health authority and also had attended workshops on malaria.

> *The guidelines, I listen to it through radio and other health workers who came here with visit, and also through mentorship and also sensitization to other people about malaria. (Port Loko district, Rural, Female)*

> *Normally, we have handouts for malaria, national guidelines for malaria, they will call us on training workshops, and they educate us on that. (Bo district, Rural, Male)*

In summary, the health workers had different perspectives about their level of knowledge of malaria prevention and treatment. Health workers had good knowledge about the burden of malaria in the communities that was in large part drawn from their experiences with patients. Health workers demonstrated some knowledge of groups with increased risk of malaria and described also specific behaviors and practices of community members that increase one's risk of getting malaria. Most health workers knew about the national guidelines for malaria, but a few stated they were unaware of the guidelines, had no resources on it, and relied on their co-workers and nursing training for information on how to identify and treat malaria. Most health workers used the radio and their colleagues for information about malaria, and a few of them had attended training workshops.

Health Worker Behaviors and Practices

Health workers could describe the malaria-related services they provide at the health facility, including specific behaviors to prevent, diagnose, and treat malaria in children and pregnant women. Most health workers shared similar descriptions of the procedures that they follow for diagnosing and treating malaria.

Diagnosing fever in children

"I cannot treat without Paracheck® through which I will know the problem is malaria."

The majority of health workers generally follow similar procedures for diagnosing malaria in children. Specifically, they conduct an intake physical exam, obtain a history about the illness, and perform

diagnostic testing. Health workers discussed symptoms associated with malaria and what they look for in children. Fever was the most frequently cited symptom associated with malaria. If a child presents with a complaint of fever, health workers typically take a temperature, obtain a history of the symptoms and care given prior to coming to the health facility, and then use a RDT, such as the Paracheck®, to test for malaria.

> *We ask them what treatment they have taken at home, the signs, and symptoms of the child, does the child eat, vomit or not, does the child convulse at home? … If the fever is more than 37.5 then we know that there is high fever and there is a tendency for malaria. And after that we do the test. (Bo district, Urban, Female)*

> *If a child comes to the health facility with fever, the first thing that I will do is, I will undress the child and soak a towel in cold water so that I will use the towel to clean the child. That will reduce the fever of the child. After that I will take the history of the child. So that I will understand how everything started and what the patient has done when the illness started. After taking the history of the child, I will then do the RDT test to find out if the child has malaria. If the test is positive, I will provide the treatment for the child. (Port Loko district, Rural, Female)*

> *If the child comes to the hospital with fever, I will first of all take the history of the child from the caregiver. After that I will do the Paracheck®. Then I will tell the caregiver that I will want to take the blood sample of the child with her permission, I will clean the finger of the child where I will be taking the blood sample. I will prick the child's finger and take the blood sample. The first blood I will put in the buffer and take the second blood of the child. I will use the second blood to do the test for the child. The result will be available within 15min. If the result is positive, two lines will show on the tester but if it is negative, only one line will show. (Port Loko district, Rural, Male)*

Due to the high instances of malaria seen at the health facilities, health workers usually suspect malaria when a child presents with fever. The vast majority of health workers indicated that they use the RDT to confirm a suspicion of malaria. The evidence from health workers suggests that they are following national guidelines and only start treatment once the diagnostic test has a positive malaria result.

> *If a child [comes] here with fever I will suspect malaria, but I will not treat the child until I do the test to the child. The signs and symptoms of malaria relate to fever so I will suspect malaria even without doing the test but [it] is a matter of must for the test of malaria. Also, if we test the child and the test shows positive, we can treat the child with malaria treatment but if the test shows negative, we can treat the child for other illnesses like acute respiratory infection. (Port Loko district, Rural, Male)*

> *When they come with a child and say he or she has fever, before ever concluding that it is malaria, I will do a test using the temperature machine to check the degree or level of the fever. After that, if the temperature is higher than the normal degree, I will let them Tepee Sponge him or her and bring them in for Para Check to ascertain the Malaria and if it's positive, I treat. I cannot treat without Paracheck® through which I will know the problem is malaria. (Bo district, Rural, Female)*

Results from CEI showed that health workers used the RDT to diagnose malaria in children brought to the health facility with fever. Among children visiting the health facility because of fever, 78% had blood drawn for a test. 98% of the caregivers of these children reported that the health worker had explained the purpose of the test to them, and for 96% of children, health workers had informed caretakers that

the test was to check for malaria. 98% of caregivers reported that they were informed of the test results and 92% of the tests that were done were positive for malaria.

In Bo district, 75% of children who were taken to the health facility because of fever received a blood test. 95% of them reported the health worker had explained what the test was for, and 95% stated it was for malaria. 95% of those tested stated that they were informed of the test results, and 90% had a positive malaria test result.

Estimates for RDT in Port Loko district were higher. 80% of children taken to the health facility because of fever received a blood test. All caretakers reported that the health worker had explained what the test was for, and 96% of the tests done were to check for malaria. All caregivers who had children tested stated that they were informed of the test results, and 93% had a positive malaria test result.

Nevertheless, the in-depth interviews showed that some health workers were not as strict about relying on the RDT for a confirmed diagnosis of malaria in children. In the excerpt below, a health worker asserts that one can tell if a case is malaria by looking at the patient but did not elaborate on what specifically she looks for.

> *We use the RDT kits and sometimes we look at the patient and you can tell whether that patient is malaria positive or not. Some will have a clear sign that will tell you even without using the RDT kits that these children are malaria positive. (Bo district, Rural, Female)*

Some health workers also stated that they often suspect malaria even when the diagnostic test result is negative. In this case, the health worker will verify negative RDTs by making referrals to a lab facility for further testing with microscopy, potentially relaying mixed messages about the reliability of the RDT to patients.

> *If they came with a child about fever, the first thing we need to do is test the child temperature after that we used the RDT test. if the test is positive, we can treat the child if also the child test is negative, we can make referral to the lab to further testing through microscopy. (Bo district, Rural, Female)*

Overall, most health workers were consistent in their description of how to manage a child who presents at the health facility with fever. Some health workers relied on observation rather than the RDT test to diagnose malaria, while others appeared to doubt the ability of the RDT to identify malaria cases and felt that negative RDT results needed to be confirmed through microscopy. Of note, there was little mention about explaining procedures to patients or educating them about the case management process.

Treating malaria in children

"If the child is malaria positive … we will give the drugs accordingly the first dose starting at the facility as that is mandatory"

Most of the health workers were resolute that treatment for malaria was started only after confirming by use of the RDT that a child with fever has malaria. Health workers shared detailed knowledge on

procedure, dosing protocols, and treatment guidelines for children based on the child's age, weight, and how they respond to initial treatment.

> *If the child is malaria positive, we will follow up on the history of that and we will give the drugs accordingly the first dose starting at the facility as that is mandatory. We will write down the name of the child and the village they come from. Before we allow the mother to take her child along, we will explain to them how to give the drug to the child. The drugs are given based on the weight and age of the child. We will tell them to give the second dose eight hours after the first dose. The treatment will last for three days but during that period if the fever continues, we do ask them to come back for further checkup. (Bo district, Rural, Male)*

> *Before treating children with malaria, we Paracheck® you if it shows positive, we will put you on treatment and [tell] the mother to report after three days. We will start with a first dose here and tell the mother to continue with the treatment and report to us after three days. Then we will check if the child is anemic, we will give blood medicine or syrup to the patient, but if they reach home and the child is not responding to treatment, we have told them to come with the child in the morning. (Port Loko district, Rural, Male)*

> *If the child is from zero to 59 months, we will divide the tablet which is the AL [Artemether-lumefantrine] into four and give the half part to the child [to] start [the] dose immediately in the hospital because it has paracetamol in it and between 30 minutes to an hour the fever will have reduce by then. And we will ask the mother to continue with the same treatment for three day[s]. But if the child did not respond to the treatment when they reach home let her come with the child first things in the morning. (Bo district, Rural, Female)*

CEI interviews confirmed that most children were prescribed malaria medication when the RDT was positive for malaria. However, there were inconsistencies in the information given to caregivers, or in caregivers' understanding of information about medication provided. Among children with a positive RDT result, 86% stated they were given malaria treatment medication for their child. However, 11% of caregivers with a positive test stated the health worker informed them the medication was to prevent, not treat, malaria. For children with fever who had a negative RDT result, no caregiver reported that health workers had given them medication to treat malaria, however, 29% of them report they were given malaria prevention medication.

Among children from Bo district with a positive RDT result, 94% of caretakers reported that they received malaria treatment medication for their child, while 6% of caregivers of children with a positive malaria test stated the health worker informed them the medication was to prevent, not treat, malaria. For children from Port Loko district with a positive RDT result, 81% of the caretakers reported that their child was given malaria treatment medication, and 15% said they received medication to prevent malaria.

Health workers shared similar descriptions of behaviors related to dosing and treatment guidance. Health workers provided education about treatment for malaria and instructed families to return to the health facility with the sick child after three days of the malaria treatment. Caregivers were instructed to return sooner if the child did not improve at home while on the treatment. Health workers stated that

for serious cases and for cases where the fever did not respond to treatment and persisted for more than a day, they referred the patient to the district hospital.

> *If the child doesn't respond to treatment, we will call upon the ambulance and they will take the child to the referral hospital. I can only observe fever malaria in patients for twenty-four hours before making a decision to either refer or not. (Bo district, Rural, Female)*

Overall, health workers appeared to be consistent in their approach to treating malaria in children.

Preventing malaria in pregnant women

"For the pregnant women, the guidelines say that we should give them SP because it will prevent the pregnant woman and the baby in the womb from getting malaria"

Health workers discussed IPTp-SP in the context of malaria prevention measures for pregnant women who visit the health facility for ANC services. All health workers recognized that pregnant women were vulnerable to malaria and need to be treated differently. Generally, health workers felt positive about using IPTp-SP to reduce malaria cases and distinguished it from treatment interventions. They were knowledgeable about the dose and administration of IPTp-SP and reported that they offer it proactively and routinely to pregnant women using the direct observation approach to ensure that it is taken.

> *The IPTp you should not wait for the patient to complain about fever, it is for prevention not for treatment. (Bo district, Rural, Male)*

> *The SP is not to a curative measure but a preventive measure and that is why we are administering the drug to children and pregnant women as they are more vulnerable when it comes to malaria. (Bo district, Rural, Female)*

> *For the pregnant women, the guidelines say that we should give them SP because it will prevent the pregnant woman and the baby in the womb from getting malaria, we will not even allow them to take it home, they are going to take it in the facility (Port Loko district, Rural Female)*

> *Without reporting on malaria or fever, we begin giving her SP as in 16 weeks. We talk to her to come to the clinic every four weeks. The SP is given three times before delivery, based on the clinic attendance. (Bo district, Rural, Male)*

CEI results confirmed that health workers do offer malaria prevention medication to pregnant women who received ANC services at the facilities. Several CEI participants confirmed health worker statements about initiating medication at the health facility. Some patients stated, "*I took the drugs and rest[ed] for a while before going home*," and "*he gave me water to start my treatment*" while they were at the health facility. However, several CEI participants attending ANC did report that "*they force some pregnant women to comply with them and take the medicine*," and this was a behavior among health workers that they objected to.

Overall, CEI results showed that 72% of participants who reported they had been at the facility for ANC stated that they had received malaria prevention medication during the visit. There were district-level

differences in these results with 85% of ANC clients in Port Loko receiving the medication compared to 59% in Bo district.

There may be a need for improvements in knowledge as is evident from the illustration below where a health worker believes poor nutrition during pregnancy may influence complicated malaria.

> *For the pregnant women we do also give them bed net and SP called Fansidar, the same thing goes to the under-fives. The other preventive measure that we also do advice on is environmental sanitation, which is very much important, they need to be cleaning their surrounding because the more the filth the more mosquitoes will breed. if you want to sleep make sure that you close the windows, fan it properly and placed the tail end of the bed net under the bed and we will also advise them on nutritional diet because if you don't eat proper diet the more you get complicated condition of malaria. (Port Loko district, Rural, Male)*

As shown above, other services mentioned for preventing malaria in pregnant women included distributing mosquito nets and encouraging pregnant women to clean the environment around their houses. Among patients who had attended the clinic for ANC services, 54% reported that the health worker had discussed the ITN distribution program through the health facility with them. More participants attending ANC from Port Loko (60%) reported that the health worker discussed the net distribution program with them compared to those in Bo district (47%). However, only half of all ANC patients (27%) reported that they had received an ITN during the visit just prior to the survey. A third (33%) of ANC patients in Port Loko reported receiving a net, compared to 20% of ANC patients in Bo district. It is possible that some patients may already have received information and nets during other visits – this was not assessed during the CEI interview.

While most of the health workers had positive attitudes towards malaria prevention interventions provided through routine ANC services, some noted that pregnant women did not always want to take the IPTp-SP that was provided to prevent malaria.

> *The same goes to the pregnant women as I will make sure they take the drug in my presence, ask them to go home and come the next to continue the other dose until they finish the amount prescribed. This is also due to the fact that some will not complete the dose because the says it makes them feel to vomit or even vomit, while others always says it smells and so many other excuses. (Bo districts, Rural, Female)*

The narratives show that health workers are aware that some pregnant women may not be compliant with taking the malaria prevention medication that is prescribed for them, and feel it is important to encourage and also observe the administration of IPTp-SP at the clinic to ensure that the pregnant woman actually takes the medication.

Diagnosing malaria in pregnant women

"If a pregnant woman is here with fever …. for adults you do not have to conclude that it is malaria if she says I have fever."

Many health workers emphasized that a fever in a pregnant woman does not necessarily mean that she has malaria. Sexually transmitted illnesses (STIs) were commonly cited by health workers as another diagnosis that could result in fever among pregnant women. The health workers emphasized the need to screen for possible STIs and the critical role of the RDT in confirming malaria in pregnant women.

> *A patient will not just come here with a fever and we conclude that it is malaria because there are other conditions which result in fever not just malaria. So, we will do the test and if the test is positive, we will treat for malaria. But if negative we further do some other tests because STI also gives fever and that is common among pregnant women. (Bo district, Rural, Female)*

> *If a pregnant woman is here with fever … because for adults you do not have to conclude that it is malaria if she says I have fever. …We have other question[s] to know if it is STI because even STI causes people to have high body temperature. Are you passing frequent urine? How did you feel during urinating? …. After all this process I will know that it is STI or malaria and what step next to take. If it is malaria, I will start with the RDT and if negative, I will also check for the STI because of these signs she has shown up. And if it is STI we will go in for the treatment. You just don't come here and say I am having fever and we conclude that it's malaria. (Bo district, Rural, Male)*

Health workers responded to questions about how they manage malaria in pregnancy. Similar to the diagnosis for children, health workers follow a consistent process when diagnosing and treating malaria in pregnant women. However, health workers also described additional diagnostics that they use to provide appropriate care to pregnant women.

> *When the pregnant woman came, she said she is not well and I will ask her how long do you have illness. I will tell her to sit so that I can test her. If the result is positive, I will write on her book BP and I will do a urine test for more confirmation like infection. It Is the same way of treatment given to children. The only difference is that for all pregnant women we need to test the pressure BP to know if it is low or high before [giving] treatment. (Port Loko district, Rural, Female)*

> *We will ask her some questions like when did the fever start, how long and how severe she feels. I will then do her vital checks and record it. The checks include checking the temperature, the HB, the MP checks, and the urinary and other investigations and obtain the result. (Bo district, Rural, Female)*

"We cannot treat the pregnant woman without doing the RDT test"

Health workers stated they also rely on the RDT to confirm malaria in pregnant women so they can offer the appropriate treatment.

> *We cannot treat the pregnant woman without doing the RDT test. If not so, we cannot do the right work. (Port Loko district, Rural, Male)*

> *For pregnant women we first look at the temperature, do the RDT, and also STI test as that can also lead to sign like malaria. We are really trying to do RDT for malaria before administering drugs as it is very good. (Bo district, Rural, Male)*

The results from the CEI showed that none of the participants who reported that they were at the health facility to receive ANC services also were there because of complaints of fever. None of these participants reported that they had been given a blood test.

Treating malaria in pregnant women

"I will give her a malaria treatment based on her trimester"

Health workers provided detailed descriptions of the treatment drugs of choice and dosing schedule for malaria in pregnant women that they use in daily practice. Some health workers discussed the differences in managing malaria cases based on the stage of the pregnancy.

> *I will give her a malaria treatment based on her trimester. Malaria drugs are in different [categories]. Some women if they are in their first trimester you should not give AL. We give them quinine. In their second trimester we give them AL. (Bo district, Rural, Male)*

> *We will have to treat but we will do it in line with the duration of the pregnancy. If it is the first trimester, we know the type of treatment we will administer is quinine tablet but if it is more than three months, we will go to antenatal Lumefantrine. (Port Loko district, Rural, Male)*

Other health workers described how the drug dosing varied depending on the malaria treatment to be administered. Drugs such as Fansidar or sulfadoxine and pyrimethamine (SP), quinine, and artemether-lumefantrine (AL) are commonly used by health workers for treating malaria in pregnant women.

> *Since pregnant women are adults, we give them 24 tablets. They should take the tablets, four in the morning and four in the evening. If the pregnant woman is attending clinic and the pregnancy has [reached] 16 weeks, you will give SP, that is the Fansidar, to her. The health worker should give the first dose to the pregnant woman in the health facility and she will continue at home. (Port Loko district, Rural, Female)*

> *If the pregnancy is almost 24 weeks, I can give AL contained 24 tablets in the box the pregnant woman can take the first dose that is four tablets after some hours observation another eight hours the pregnant woman will take four tablets. The balance dose remaining for other days will be after every 12 hours take four tablets. (Port Loko district, Rural, Male)*

The aforementioned examples show some inconsistency in the medicines used to treat malaria at different stages of pregnancy. While most agreed that quinine was given during the first trimester of pregnancy, there was inconsistency in the timing of use of AL medication.

Some health workers spoke to the need to be careful in managing malaria cases in pregnant women. They expressed concern about managing the cases so that the fetus and mother stayed healthy during malaria treatment.

> *We will not just administer treatment like that, they have a test which they will do and the midwife is in charge of this area. They will come here on every visit and they will do a test. First visit they will send them to the lab they will do urinalysis, Hb [hemoglobin] and malaria, they are the key things that is for sugar and sickle cell. So, they will not just come here and we start treatment because the woman*

is pregnant and if you do that you will endanger the child life so you have to be careful in dealing with them. (Bo district, Rural, Female)

We do not administer drugs to pregnant women just like saying that they have fever and we should treat them like that no, because the fetus may be endangered so you have to know how to treat them. (Bo district, Urban, Female)

In summary, the majority of the health workers reported that they followed the national malaria guidelines to prevent, diagnose, and treat malaria in children and pregnant women and were able to describe the procedural steps for case management of malaria. Health workers treating malaria in pregnant women in particular considered a number of factors that could impact the health of the mother and fetus. Rather than proceed with usual treatment, health workers were more cautious and careful in case management for pregnant women. These precautionary steps included asking detailed questions, and using different treatment medicines during different trimesters of pregnancy.

National Guidelines for Malaria Care

Health workers discussed what they perceived made it easy or challenging to provide the services recommended in the national guidelines for prevention and treatment of malaria.

Facilitators for using the guidelines

All health workers who were aware of the national guidelines expressed general agreement and approval of activities expected at the facility-level for the prevention and treatment of malaria. The respondents were overwhelmingly positive about the information and protocols in the guidelines. Health workers felt the guidelines made their work easier, was simple and straightforward to understand, allowed them to deliver higher quality care, and helped to build trust with patients.

Easy to understand and use

"The guideline is making it very simple for us to test and treat malaria cases"

Health workers felt the guidelines were simple and easy to use and increased their capacity to provide appropriate care to patients. Health workers use the guidelines because of the benefits they perceive when using them to manage malaria cases. The guidelines are perceived as a reliable resource for different malaria-related topics including how to use bed nets, and how to test and treat malaria.

The guideline is making it very simple for us to test and treat malaria cases. Each time you want help, you will just need to go to the guidelines and the guidelines will help you. (Port Loko district, Rural, Male)

It is very easy because it has some picture of instructions like how to use a bed net and we are telling them how to use this bed net and the guideline is also available, so all this makes work easier for us. (Bo district, Rural, Male)

The guideline is free of cost actually and it is easy to follow for me. I found no difficulty in using the guidelines. (Port Loko district, Rural, Female)

Increases capacity of staff

"Each time you want help, you will just need to go to the guidelines and the guidelines will help you."

The national guidelines are perceived as a learning resource or a teaching tool that increased the knowledge and skills of health workers at the health facility, especially in the area of drugs and doses for prevention versus treatment, and for children, adults, and pregnant women.

> *The management guidelines have helped me greatly on how to treat and prevent malaria cases. The guides tell me exactly on how to treat and prevent serious malaria cases according to the age brackets and categories of people, it will direct me on the use of IPT for children, and SP for pregnant women, chloroquine, quinine, Asaq, aspirin for malaria cases. They are the best ones because they are simple, easy, and accurate to use. (Port Loko district, Rural, Male)*

One health worker pointed out that without the guidelines, health workers would not be effective at identifying malaria and would miss more malaria cases.

> *The guideline has been a help to me. if it wasn't available, we would have missed case definitions. (Bo district, Urban, Female)*

Through learning how to use the guidelines, the health workers also were able to identify what they were doing incorrectly and learn the correct ways to manage malaria cases at the health facility. This is an example of behavior change facilitated by the guidelines.

> *The training modifies our skills, I learnt a lot and I was able to correct some common mistakes that I was doing. The training actually improved my skills in the treatment of malaria. (Bo district, Rural, Female)*

> *I have gone through training on case management of malaria. It is very helpful as it guides us and we are not making a mistake again. (Bo district, Rural, Male)*

Facilitates quality improvement of services

"You must use the guidelines to issue the drugs to the patients if you do not want to make mistakes."

The perception that the guidelines help health workers to deliver higher quality care came up often among the health workers. Health workers perceived that using the guidelines was the best way to ensure good quality care was provided to patients. They view the guidelines as a resource that prevents them from making clinical mistakes that could harm the patient. In this respect, the guidelines are a quality improvement tool for the delivery of safe care.

> *It is very much useful especially in the area of the ages to prescribe the drugs for the patients. You must use the guidelines to issue the drugs to the patients if you do not want to make mistakes. (Port Loko district, Rural, Female)*

> *We have a big flip chart that is placed on the table that every nurse is able to read. Also, other smaller copies are made as well that we could easily read and digest well which could be used in the job because when a health worker digests all contents in that guide, it will lead to a successful treatment. (Bo district, Rural, Female)*

The guidelines are very important because every drug has side or adverse effects on the patient. So before administering drugs to patients, you need to be aware about the adverse effects of that drug so if it occurred, you will be able to handle it because you are informed. If you are not trained, you will either overdose or underdose the patient and in either case it is not good for the health of the patient. (Bo district, Rural, Female)

Health workers were motivated to follow the national guidelines because they believe that it provides the most current scientific and medical guidance for high-quality care. Without the guidelines, health workers will rely on their own beliefs and opinions about how to provide care, possibly resulting in poor resolution of health issues. The guidelines set standards and consistent expectations for how health workers should prevent and treat malaria, and this minimizes variability in the treatment approaches and quality of care provided.

Medicine is dynamic, and you should not relent on your old ideas only because you did not know whether they have reduced. That why it is important for us to be using the guideline given to us. So just imagine that I am still with the old assumption that pregnant women should take it two times. That will create problems if you decide to use your old ideas. (Bo district, Rural, Male)

Without that guide, we will go above our limit in drug administration and there will be a predominant use of personal belief and general knowledge in treatment which may sometimes be harmful to the health of the patients as different health workers' ideas will be used on a case. So, it is really helpful because it has now reduced the case burden as compared to initially when there was no guide. We were just giving blind treatment to the people and that is one of the reasons why the people kept coming with the same complaint. (Bo district, Rural, Female)

Overall, the health workers agreed that the national guidelines for prevention and treatment of malaria are a resource that facilitates their capacity to deliver effective, high-quality, and safe malaria-related care at the facility.

Improves provider-patient interactions

"The guideline teaches all the approaches on how to talk to the person and let the person accept."

Some health workers described being motivated to follow the national guidelines because it helps them to improve their interactions and teaching experiences with patients. The guidelines helped them use the right language that patients could understand and provide appropriate explanations about their activities. This builds their confidence as counselors. Health workers believe also that effective interpersonal communication (IPC) with patients influences patient acceptance and adoption of recommendations provided by health workers.

You have to be polite and use the language which the parent should understand, and the guideline is greatly helping us. (Bo district, Urban, Female)

The guideline teaches all the approaches on how to talk to the person and let the person accept. Before now, when you tell the person that he or she has fever, they will say "it Yellow Fever leave me alone." It true that what you have learned you have to teach them for them to get the understanding. (Bo district, Rural, Female)

I feel very good about the guidelines because it builds our confidence for the correct treatment of malaria cases in Sierra Leone. It also builds our confidence in providing counselling to people. Now we have the same message that we give to people. (Port Loko district, Rural, Male)

CEI results confirmed that the majority of patients described they had positive interactions with health workers at the health facility, just prior to the interview. CEIs explored patients' perceptions of their interactions with the health worker and the care they had received on the day of the interview. Results showed that overall 52% of patients reported being satisfied, and 32% very satisfied, with their experience at the health facility on the day of the interview. Nonetheless, the vast majority of patients perceived that they were treated respectfully (88%), felt confident in the knowledge and skills of the health worker who had provided them services at the health facility (87%), believed that the health worker provided them good care (88%), reported that the health worker was able to resolve the health complaint they had (81%), and felt that the health worker was concerned about their health (86%). It may be that other factors, such as structural and process reasons, may influence the level of satisfaction with services received. These were not assessed through the CEI.

CEI results at district-level were insightful with higher level of satisfaction reported by patients in Port Loko where 52% of patients were very satisfied compared to 11% in Bo district. Conversely, more (70%) patients in Bo district reported that they were satisfied, with the health care services they had just received compared to 34% in Pork Loko.

At district-level, patient perceptions of their interactions with the health worker who provided them care on the day of the survey were similar except for ability of the health worker to resolve the health complaint. Specifically, fewer patients (72%) from Bo district compared to Port Loko district (91%) perceived that the health worker resolved the issue for which they had sought care.

Challenges to using the guidelines

Health workers described factors that they believed made it challenging to implement the national guidelines for malaria case management. While the prevailing viewpoint is that following the guidelines makes work easier for health workers, prevents mistakes, and improves quality of services, some health workers suggested that shortages of test kits and drugs, behaviors of patients, lack of time, and the belief among some health workers that they already knew what to do, were reasons why some health workers did not adhere to the guidelines. Some health workers also mentioned that staff may not know about the guidelines or understand their utility in managing malaria cases.

Negative attitudes towards learning

"Some is laziness, and thinking that he/she know too much on malaria."

While most health workers believe in the usefulness of the guidelines, they suggest that other health workers may not follow the guidelines because they are lazy or think their current knowledge of malaria case management is more than enough and not different from what is in the guidelines. Thus, these health workers may not value the guidelines or perceive any benefits from using it. In addition, they perceive that other health workers may think they are qualified through their education and

experiences and do not need continuing education, so they consider additional learning opportunities from reading the guidelines to be a waste of their time.

> *Some is laziness and thinking that he/she knows too much about malaria. With all this they will see it as a waste of time. If how I know how to treat malaria is what is in the guidelines, why should I be reading it? Not knowing this is a guide because even if you know as human you forget, may be work pressure and the rest, but if you have your guide you will just turn it and watch and continue from where you have block. Well they are failing to read and accept the rule that is in the guideline. (Bo district, Rural, Female)*

> *The health worker does not want to read. Because some health workers think they have qualifications, so they do not want to learn again. (Port Loko district, Rural, Male)*

> *Some understand but will tell you I know what is in the guide off hand so no need for me to use it. (Bo district, Rural, Male)*

These sentiments were confirmed by a health worker who shared that his tenured experience providing malaria services had qualified him to identify malaria and manage patients without performing a diagnostic test.

> *I have been dealing with malaria patients for a very long time and now have vast knowledge in that area and can even handle cases without doing any test. (Port Loko district, Rural, Male)*

Although this provider is not speaking directly to the guidelines, it is clear that the protocols may not be adopted by some health workers who feel they already know how to diagnose and treat patients without the national guidelines. Of note, health workers with extensive experience at their jobs are likely to be in senior and supervisory roles and responsible for training and mentoring younger staff in appropriate provider practices. This raises potential issues for the socialization and training of new health workers to their role.

Overall, the illustrations show that some health workers acknowledge that humans are prone to error, and the pressures of work may cause one to forget information so a culture of continuous learning and use of resources is helpful. Nevertheless, some health workers feel that there are other staff who do not believe the guidelines offer them new knowledge and skills to improve their clinical practice, and this deters them from using the guidelines.

Support for syndromic management of malaria

"I feel that the syndromic approach is very important, it does not need to be ruled out"

Some health workers felt that symptoms of malaria in a patient should carry more weight that the RDT tests alone, in determining a diagnosis of malaria.

Other health workers feel that the guidelines are too rigid when it comes to diagnosing patients and should include clinical determinants based on patient symptoms.

> *The only thing I do not agree with is that if centers are not doing microscopy for testing malaria now the RDT has shown negative, I feel that the syndromic approach is very important, it does not need to*

be ruled out, it need to be included, if you have your clinical proof that this case is a malaria, you have to manage. I want it to be added in the guideline as a CHO [community health officer]. (Port Loko district, Rural, Male)

Mistrust in the diagnostic test

"…all of us know that this malaria test that we have here can only catch one species out of the four"

Closely related to support for syndromic management of malaria were beliefs about the efficacy of the RDT in use in the health facilities. The notion that the tests may not capture all malaria cases and that diagnosis based on symptoms should also be a part of the guidelines came up repeatedly during the analysis. This attitude may reflect both a lack of trust in the testing instruments and/or a belief that clinical discretion in diagnosing malaria should also be included in the guidelines.

The only thing that I do not like about the guidelines is that it states that you will only give anti malaria to a patient who has been tested positive of malaria. But all of us know that this malaria test that we have here can only catch one species out of the four species of malaria. So, the test will capture the falciparum. What if the patient has the other species? The test will not be able to capture that patient. We also have people who are negative but when they do microscopy, they will be tested positive for malaria. My humble submission to that is, the clinicians also should be using their Syndromic approach because there are times the test will be negative but if the guideline should have given the clinician the power to use syndromic approach as well that will be fine. (Port Loko district, Rural, Male)

Insights from this excerpt are that education of health workers may be warranted regarding the difference between prevention and treatment drugs, and the process and criteria used to select the kit in use, including the ability of the test to detect malaria when present. A secondary but important implication from the excerpts is the potential for incorrectly treating illness in the patient, and mixed messages that are conveyed to patients about the value of the RDT when they are provided malaria treatment in spite of a negative malaria test. In order to increase the efficacy of patients to request malaria testing, they need to believe in the value of the test in detecting malaria and accept the results of the test as being accurate. Another implication is providing malaria treatment unnecessarily and potentially contributing to growing drug resistance.

Special cases and considerations

"Some health workers do not follow the national guideline due to the status of the patient."

The health of the patient was identified as another reason why health workers may not follow the national guidelines. This was a perception of others as well as a reason given for personal nonuse. Health worker concerns over patients who are severely ill, very young, and/or malnourished may influence decisions on whether to give patients certain drugs. These are deliberate intentions not to follow the recommendations in the guidelines for the perceived good of the patient.

Some health workers do not follow the national guideline due to the status of the patient. Sometimes a patient can be over a year old but malnourished and you will give such a child three tablets as recommended by the case management guideline. You will have to think about the current health of the patient before giving the drugs. You will instead prefer to give the six drugs to be taken one in the morning and one in the evening. (Bo district, Rural, Male)

Another provider relayed an episode in which an infant came in with a persistent fever and could not be treated because the guidelines at the time did not allow it. The provider tested the infant anyway and began treating the mother instead with malaria medication.

> *I was not able to treat the baby because the protocol again goes against it but since she was still on breastfeeding, I started treating the mother for malaria and the baby started receiving the treatment through the breastmilk of her mother. So, that was what happened. But before that, the condition of the baby started worsening and her body began to get pale because the fever lasted for five days. So, if I had not used my knowledge in that case, we would have lost that child because the protocol didn't recommend it but for now, the new protocol recommends giving the drug to the pregnant woman in every visit of her pregnancy to the facility, but it was not happening before. (Bo district, Rural, Female)*

Evident in these excerpts is the fact that health workers respect the guidelines but feel that in certain situations, it is important for them to use their clinical judgement for decision-making and action about malaria treatments.

Lack of training, time, and resources

"If the provider did not get trained on the national guideline it is very difficult to follow."

Health workers mentioned that there are some that do not have the capacity, either through training or resources, to implement the national guidelines. Simply put it is difficult to adhere to a guideline if one has not studied or trained on it. Some health workers continue to rely on more senior colleagues to teach them on the job, and they worry that in the absence of their 'teacher,' they may not be able to manage cases they have not encountered before.

> *The guidelines I listen it through radio and other health workers who came here with visit and also through mentorship and also sensitization to other people about the malaria. I only have limited knowledge on the guidelines. (Port Loko district, Rural, Female)*

> *If the provider did not get trained on the national guideline it is very difficult to follow… and if the guideline is not available at the facility also the provider may not follow the national guidelines. (Port Loko district, Rural, Male)*

> *Not everybody knows how to use the guide. If they are not really understanding how to use it, it is difficult. (Bo district, Rural, Male)*

> *I'm providing treatment to malaria patients in this community and in the catchment communities but haven't received any training since I came here. I'm doing this based on the knowledge we are gaining from the CHO as he has served as CHA for years before becoming a CHO. We need training as it is possible that the CHO will not be around, and we have cases we haven't handled since. (Bo district, Rural, Male)*

A related factor was the lack of time to study and learn the guidelines (presumably even when they are available to health workers) so they can become part of the health worker's clinical practice. In the quotation below, a health worker suggests that shorter focused refresher sessions might be easier for them to digest compared to a comprehensive training session that includes a lot of content and reading.

I will say the guidelines are standard, but colleagues do not have the time to read them properly. So, you need to be talking about regular refresher trainings that can make you remember things quickly instead of training which colleagues do not have time to read. (Port Loko district, Rural Male)

Overall, while some health workers embrace the written guidelines and take time to read and educate themselves, other health workers may require more direct training or shorter refresher sessions to get educated on the guidelines. Most health workers were aware of and knowledgeable about the guidelines. However, as suggested in the illustrations, some health workers may not know how to use them as a reference guide when providing services.

What is Working Well for Malaria-related Services

Health workers discussed what they thought was working well for the delivery of malaria-related services in general, either within their health facilities, with their colleagues, or the health system in general, and with their clients, the communities they serve. Overall, there was a lot of positive sentiment from health workers regarding what was working well for malaria services with specific reference to the guidelines for malaria care, community outreach activities, patient registers, and onsite rapid testing capabilities.

Guidelines are a great teaching resource and confidence booster

Health workers were enthusiastic about the how the use of guidelines for malaria services impact their professional services and their personal growth. The guidelines provided instructions not just for correct facility-based care but also for effective counseling about prevention behaviors when at home, such as how to use nets correctly.

I am happy about the guidelines because the guidelines are helping me to treat malaria in the correct way. It actually put me on track especially on the area of ages. I agree with the guidelines because I am very sure that if you use the bed nets properly you will never get malaria. You will only get malaria if you do not use the bed net correctly. The guideline teaches me a lot of things that is why I like the guideline and it helps me to be accurate in my work. I like everything about the guidelines. (Port Loko district, Rural, Female)

Health workers reported that use of the guidelines increased their level of confidence in their ability to provide quality care and counseling for malaria.

I feel very good about the guidelines because it builds our confidence for the correct treatment of malaria cases in Sierra Leone. It also builds our confidence in providing counselling to people. Now we have the same message that we give to people. It really builds our confidence in whatever that we are doing. The guideline is making it very simple for us to test and treat malaria cases. Each time you want help, you will just need to go to the guidelines and the guidelines will help you. (Port Loko district, Rural, Male)

Patient registers provide quick information on case histories

A few health workers described the value of patient registers and how this record of past visits and presenting symptoms is a quick source of information about a patient's history of illness.

> *When we are done with our findings, we register the information in the under-fives register. It is one of the documents we use to know and identify the under-five for the treatment at the day clinic. It is very helpful because some mothers come here two to three times but if we record the information to the under-fives register it will easy to trace the person. … After some time, the mother will come back with the child with the same signs and symptoms and we will check into the under-five's register to know whether the mother have visited the facility. (Port Loko district, Rural, Male)*

Outreach and disease surveillance help to identify malaria cases

Several health workers described how house-to-house visits and follow-up on reports of illness in the community helps to quickly identify malaria and initiate treatment early. The ability to perform the RDT in homes also contributes to prompt initiation of malaria treatment.

> *We have the CHWs monitoring every case of fever or other sickness in the community. Those CHWs pay visits to each and every home in the community through disease surveillance to go in search of sick people and urge them to come to the facility for treatment. …. The moment they hear someone complaining fever or about his or her health, they will sometime Paracheck® and send them straight to the facility or accompany them as well. (Bo district, Rural, Female)*

Training improves skills and performance

Health workers described training sessions as beneficial to their work. They appreciate the opportunity to participate in trainings and credit it with correcting mistakes they were making and overall improving the quality of the services they provide.

> *The training modifies our skills, I learnt a lot and I was able to correct some common mistakes that I was doing. The training actually improved my skills in the treatment of malaria. (Port Loko district, Rural, Male)*

> *I have gone through training on case management of malaria. it is very helpful as it guides us and we are not making a mistake again. (Bo district, Rural, Male)*

Some health workers did note (as described in the section on Facilitators of Quality Services), that shorter, focused, refresher trainings were more helpful than long sessions with a lot of content.

Only one health worker specifically mentioned that the net distribution program for pregnant women implemented through the health facility was a service that worked well.

Facilitators of Good Quality Malaria-related Health Care Services

Health workers had many insights about the health facilities where they work, the patients seeking health care services, and the national guidelines for management of malaria. These perceptions include facilitators and barriers to the prevention, diagnosis, and treatment of malaria in their communities.

Facilitators of health workers' ability to provide recommended services for appropriate case management of malaria are described in relation to the health facility, patients of the health facility, and implementation of the national guidelines for malaria case management.

Health workers identified facility-level factors that facilitate activities for prevention, diagnosis, and treatment of malaria. These included human resources and technical capacity, resources such as special clinical equipment, test kits, drugs for prevention and treatment of malaria, and information resources and job aides such as posters, manuals, and reference cards.

The work of CHWs

"The CHWs are crucial in the fight against malaria as they stay in the communities and know how to do RDT and give malaria drugs"

Health workers identified CHWs as strong facilitators of case management activities for malaria. Health workers specifically acknowledged the important community-based work of CHWs in reinforcing malaria prevention behaviors, following-up cases of fever in the community, conducting malaria tests, and encouraging prompt care seeking for illness.

> *The CHWs are crucial in the fight against malaria as they stay in the communities and know how to do RDT and give malaria drugs to patients based on their age and refer for further attention just as we do refer to the main hospital if the illness is not improving for further attention. They do health talk and move from round to ensure that the people are using bed net and are cleaning their environments. (Bo district, Rural, Female)*

In this respect, CHWs support health facilities by conducting community outreach and house visits, conducting RDT in communities, providing treatment and prevention interventions, and referring cases for additional treatment and care. They are based in the communities they serve, and this enables them to actively seek out cases and follow-through with referrals, sometimes accompanying individuals to the health facility. Health workers expressed a lot of support for the work of CHWs and felt they provided a lot of benefit to the work done at the health facilities and to the community.

Use of diagnostic test kits

"The only thing which helps me to identify malaria cases easily is the malaria test."

As noted earlier, health workers rely heavily on the RDT test to diagnose and confirm malaria cases. These rapid tests were mentioned by almost all health workers when asked about what resources help identify and treat malaria cases. Most of the health workers in both districts endorsed the test kits as being a crucial step in the process of correctly identifying malaria.

The only thing which helps me to identify malaria cases easily is the malaria test. After Paracheck® the patient and it is positive that is the only way I will be able to treat you. So that is why they gave us the Paracheck® to test anybody that will present fever. They should be checked first before starting any treatment. The first step that is the rapid test and it is what makes our work easier. And it is always here in the center. (Bo district, Urban, Female)

It will be very easy to identify any malaria or malaria related case because let say if one is at home and feels fever it will be difficult to come to the health facility to do test and wait for the result but if the RDT is there, they can test and know if it malaria or not as it is very fast to read out results of malaria. (Bo district, Rural, Female)

To do the RDT test is very easy because it will take like 5-10 minutes to do the test then the result will be out. It will not cost me anything, I only need to make a request then the supply will be made available to me. (Port Loko district, Rural, Male)

What makes it easy for me to identify malaria in a patient in this facility is the RDT test. When a patient comes at the facility, so many things will come to mind but after the test you will be able to know the exact problem of the patient. (Port Loko district, Rural, Male)

Most health workers felt that the RDT was one of the most useful tools to facilitate diagnosis and early treatment of malaria cases in health facilities, and a few noted that it also was useful as a malaria diagnostic tool in the home. They were especially positive about the ease of use of the test kit.

CEI confirmed that health workers used the RDT to check for malaria among patients who presented at the health facility with a fever, and it was successful in identifying malaria cases. Among all participants who reported visiting the health facility because of fever, 74% stated that they or their child had blood drawn for a test. All but one participant (99%) of those who had blood taken reported that the health worker had explained to them what the test was for. 97% of patients reported that the health workers had informed them that the test was to check for malaria. 96% reported that they had received their test results and 92% of the tests that were done were positive for malaria.

In Bo district, 68% of patients who reported they had gone to the health facility because of fever stated that they had received a blood test. 97% of them reported the health worker had explained what the test was for, and 97% stated it was for malaria. 94% of those tested stated that they were informed of the test results, and 91% had a positive malaria test result.

Estimates for RDT in Port Loko district were higher. 80% of patients who reported they had gone to the health facility because of fever stated that they had received a blood test. All these patients reported the health worker had explained what the test was for, and 98% of the tests done were to check for malaria. 98% of those tested stated that they were informed of the test results, and 93% had a positive malaria test result.

Availability of special equipment

"Without these materials we will not be able to do proper diagnoses."

When asked about what equipment facilitated prevention, diagnosis, and treatment of malaria, many health workers mentioned that proper dosing according to the guidelines for malaria required certain equipment, especially height and weight measurement tools, and thermometers. In the following example, a health worker shared an overview of the most common resources needed to provide quality malaria-related services.

> *We use the thermometer to know if the person is running high fever. We don't have a microscope at this facility to do further malaria test. We have the record book where we keep information about the patients, we have the RDT for testing, and we have the malaria drugs used for treating malaria cases. We also have the thermometer and we have a place to Tempe sponge the patients. You also need to know the weight of the child or the woman before given the malaria drugs as I was saying. We also have the height board to know the height of the children. We use the Z-score for the weight and height, and we use the MUAC to know if the children are not anemic. (Port Loko district, Rural, Female)*

> *We use a scale so that we will be able to know the weight of the patient before we diagnose him or her so that we will not underdose or overdose the patient and we use board height to determine the height of the patient. They are very necessary in the center especially for the under-five children. Without these materials we will not be able to do proper diagnoses. (Bo district, Urban, Female)*

> *To know if the temperature of the person is high, DHM team has given this facility a thermometer which we use to check the temperature of the patients that run a temperature. We also have the weighing scale and the height board, and the drugs are given in line with the body weight and the height or age of the patient. They are good and all we need to do is to do maintenance and change the batteries when due. (Bo district, Rural, Male)*

Health workers utilize scales, height boards, and thermometers to facilitate effective dosing and treatment. Health workers are satisfied with these tools and feel that they facilitate better care for their patients. Many health workers mentioned that without this equipment it would make it very hard for them to deliver appropriate care for malaria patients.

Another resource mentioned by one provider to facilitate malaria case management is the register book. Registers for children under the age of 5 years help the health worker to quickly track a patient's history of visits to the health facility. Facilitating effective malaria treatment requires continuity of care, which can be supported by information recorded in a register book.

> *We have an under-fives register. When we have our findings, we register the information to know and identify the under-five's. It is very helpful because some mothers come here two to three times but if we record the information to the under-fives register it will be easy to trace the person. After some time, the mother will come back with the child with the same signs and symptoms and we will check the under-fives register to know whether the mother have visited the facility. (Port Loko, Rural, Female)*

Information resources and job aids

"You can easily screen the patient with the job aids we have."

Finally, many health workers described specific job aids and information resources at the facility that provide them with guidance on the prevention, diagnosis, and treatment of malaria in patients. These included posters, manuals, checklists, and reference cards, among others. Health workers used these publicly displayed resources at the health facilities to do their work

> *We have posters around the office as you can see them and some of the documents are on the table. If you want to enter the building, you can see them out the wall of the building and other handbooks that is the manual. The posters will show you how you can treat and prevent malaria in a person and also show age category for giving anti malaria drugs to the child not to get malaria. (Bo district, Rural, Male)*

> *They are very useful as these aids help us to diagnose in time and to do timely treatment within twenty-four hours before the situation gets out of hand. You can easily screen the patient with the job aids we have. (Bo district, Rural, Male)*

> *We have malaria complimentary cards which are about five cards that are the job aids to us. We have five books which we consult when we face doubt in providing malaria treatment. We have all the case definitions start from surveillance onwards. (Bo district, Urban, Female)*

In these last two excerpts, health workers specifically address the usefulness of the job aids provided to the health facility and how these resources make their work easier to do.

Available supply of malaria medication

"… the malaria drug is always available in the facility"

Health workers were generally very positive towards the drugs used to treat and manage malaria cases in the health facility. The biggest facilitator to treatment of malaria was recognized as having a ready and available supply of malaria drugs.

> *What will make it easy is when I have the drugs with me in the health facility. (Port Loko district, Rural, Female)*

> *We will go out of stock for so many materials, but the malaria drug is always available in the facility because we know that we are going to receive malaria case every day. (Port Loko district, Urban, Female)*

> *Well, I will say the availability of the malaria drugs. When you identify, you need the drugs to treat the patient as that will increase the confidence level of the patients that seek care at this facility. (Bo district, Rural, Female)*

Having the malaria medication stocked in health facilities resulted in significant benefit to health workers. Not only did it facilitate early and correct treatment of malaria cases, but a consistent supply of drugs instilled confidence in community members that health facilities were prepared to address their health concerns. The effectiveness of the drugs in treating malaria and its tolerance by community members also were perceived to facilitate compliance with prevention and treatment.

We have two types of medicine for pregnant women. We will give quinine for the first trimester and for the second and third we will give the antenatal Lumenfratine. They make our work very easy and the drugs are very effective to identify and treat malaria. (Port Loko district, Rural, Female)

The drug that we were using before for the treatment of malaria was having a lot of side effects that is the ACT but the one that we are using now we are actually not receiving complaints from the people about side-effects. (Port Loko district, Rural, Male)

Free health care for malaria

"When the malaria treatment is free more people will visit the facility for treatment."

A few health workers perceived that the provision of free malaria care facilitates care-seeking at the health facility among community members. When patients are aware that they can receive free care for malaria at the health facility, they may be more likely to come to the clinic for prevention, diagnosis, and treatment services.

When the malaria treatment is free more people will visit the facility for treatment because the treatment is free. And the more people come to the facility the more this will make it easy to identify malaria cases in person and increase the level of malaria prevention and treatment. (Port Loko district, Rural, Male)

Catchment communities are given free treatment as they are poor and we want to encourage them to continue coming to the health facility if they have a problem. … the community people receive free treatment for malaria as long as you are malaria positive. I don't think there is anyone who pays for malaria treatment. Not at all, so it is free for everyone. (Bo district, Rural, Male)

We are not asking them to pay for malaria treatment because malaria treatment is free. These are the little things that build confidence and trust in the minds of people. (Port Loko district, Rural, Male)

While health workers appeared to be aware that malaria-related care was free, some did charge for the malaria services. A CEI participant reported that a health worker asked her to pay for her malaria-related care at the facility because "*they said they are not paid that is why they ask people for money."* This is consistent with information from health worker interviews regarding a need to be provided a pin code and to be put on payroll. Other results from the CEI showed that 41% of all participants reported that they had paid for services received at the health facility that day. More than half of the participants (52%) from Bo district paid for health services compared to in Port Loko district (30%). Fees for health services ranged from 8000-35,000 Leones in Bo district, and 3000-80,000 Leones in Port Loko district.

Overall, among participants who had a positive RDT result, 26% reported that they had paid for the care they received that day. Among all those with a positive RDT test who paid for health services, substantially more (82%) were in Bo district compared to Port Loko district (18%). Patients participating in the CEI described a health worker's response when she could not pay for her treatment for malaria, below:

She shout[ed] at me because I don't have money. She said the money I paid was not enough and she only give the malaria drugs. (CEI, Bo district)

Receiving care at no-cost to patients may facilitate a better relationship between community members and staff at the health facility. One CEI participant from Bo district characterized the experience at the health facility as positive because "*he assured me that the free drugs are available without paying a cent.*"

Several patients perceived a link between the negative attitudes of health workers towards patients and the quality of care given with their [patient's] ability to pay for services at the health facility.

> *She only smiles to you if you have money to give to her, or else, she will not treat you well. (CEI, Port Loko district)*
>
> *I in particular don't like the nurses at this facility because if you don't have money to give to them, the will not treat. (CEI, Port Loko district)*
>
> *She [is] only concerned about those with money or gift. (CEI, Bo district)*

Offering care regardless of a patients' ability to pay may build confidence and trust, as highlighted by this last excerpt. Health workers felt that with the advent of free care for malaria, socio-economic status of patients no longer deters community members from using the health facility. They perceive that individuals are more likely now than they were in the past to seek treatment at the health facility because such care is provided free of charge.

> *Long ago if someone sick the person will say that they do not have money to go to the health facility for treatment. The person will prefer to stay at home with traditional herbs so that the person can cure themselves. … But nowadays people have the awareness that malaria treatment is free and most of them came for treatment also find that the traditional herbs is not good for their health. (Port Loko district, Rural, Female)*

The illustration above shows that health workers perceive that free malaria care not only encourages use of the health facility for malaria treatment but also deters self-treatment and use of traditional herb treatments for malaria.

Education and Community Outreach

"…we give them […] a health talk as it will help those seeking care to be more informed"

Health workers in Bo and Port Loko districts described how education and information-sharing facilitates their work. Malaria prevention strategies and prompt care-seeking for illness were cited as main topics for education. Many health workers spoke about the importance of health talks with the patients who received health care at the health facility. These education sessions included information about the treatment drugs that they had provided the patient, and malaria prevention strategies.

> *Beside the drug the only thing we give them is a health talk as it will help those seeking care to be more informed about the drugs they are using and how to prevent them from contacting malaria. (Bo district, Rural, Male)*
>
> *Now we are giving SP to children as well in other to prevent the disease from them, it not all about curing it about preventing as well. We also tell the mothers to be sleeping under the treated bed net,*

clean their environment, close their windows by 6 O'clock, and if they are staying outdoor for long time, they should were long sleeve trousers. (Port Loko district, Rural, Female)

Many patients participating in the CEI confirmed that the health worker had educated them about malaria prevention and encouraged them to adopt protective behaviors.

They patiently explained what we need to know about malaria and other sicknesses (Bo district, CEI)

She said we should not stay out long at night with the baby as we every night sleep under bed net (Bo district, CEI)

In addition to educating patients at the health facility, health workers also educated community members through community outreach efforts. Outreach included information and discussions about malaria prevention methods and what to do when patients are sick and think they may have malaria.

Every Friday they are coming here for the market. When they are here whether their children are sick or not, we will gather them and talk to them. We have our outreach program which we do at the community level to give them a health talk on what they should do for them not to get malaria, and if they [are] sick let them come to the facility for early treatment. (Bo district, Rural, Male)

We give them health talk and we make sure we go to their houses. (Bo district, Rural, Female)

Support of community leaders

"The leader in the community normally sends people out to go and announce that everybody should clean their environment."

Health workers described how social norms and networks may encourage malaria prevention behaviors among members of some communities. For example, health workers described how in one rural community in Bo District, the community leaders enforce periodic cleaning of the environment to prevent breeding of mosquitoes, and how also they offer support to those who need help to clean their environment.

The leader in the community normally sends people out to go and announce that everybody should clean their environment and a committee is set in this village for that. And for the area where individuals cannot clean alone, they will organize people to do that. With this it has helped minimize malaria here. (Bo district, Rural, Female)

Prevention behavior is encouraged with organized community-wide initiatives and leadership.

Overall, health workers perceive that facilitators to behavior adoption that could be opportunities to expand and build upon include community sensitization, use mother's clubs for health information and support, increased engagement with community leaders to garner their support for community programs, and capacity-building activities such as training, supervision, and peer-to-peer learning, for staff at health facilities.

Barriers to Delivering Good Quality Malaria-related Health Care Services

Health workers offered insight into their perceptions of the facility-level factors that create barriers to the prevention, diagnosis, and treatment of malaria. Health workers identified several factors that negatively affected their work at the health facility. These factors include lack of financial compensation, lack of accommodation for staff, lack of supplies, equipment and drugs, mistrust of the RDT, and patients' negative attitudes about health services delivery at the health facility.

Lack of compensation and incentives

"…some of them do not even do the work because they are discouraged."

A key barrier to delivery of quality health services was expressed as dissatisfaction regarding issues of compensation, benefits, and incentives. This was an issue for facility-based staff and CHWs, and most often, health workers spoke out of concern they had for other cadres of staff they worked with who experienced these issues. Some staff receive no compensation for the work, and those that do receive financial incentives are sometimes unable to claim it. These issues were perceived to manifest as barriers to delivering malaria care when they cause health facility staff to feel discouraged and unmotivated to do their work. Per the narratives, some workers have stopped working because they feel discouraged. Health workers work as a team and rely on these staff to help implement malaria-related activities.

> *Most of our colleagues who are not on pin code and therefore not on payroll. They need to be paid so that they will be motivated to do the job and at the same time support their families. Part of what we call motivation is when a worker work and at the end of every month, he or she receives something at the end that will make him or her be happy all the time. (Bo district, Rural, Female)*

> *Even the CHW's are not on salary. They get annual incentives. And not even all of them are given the incentives, so some of them do not even do the work because they are discouraged. They have done payments twice. This last one, many of the CHW's saw money in their phones but when they go to cash the money, they cannot access the money because the vendor says there is no money. …. If that person quits, there is nothing one can do. So, they need to be encouraged. (Bo district, Rural, Male)*

> *We that are out state [out of status] the government really needs to help us. Most of us are not in pin code. And we are here because we like the job and we want the job. So, let the government help us with pin code and most of us have family behind and if they give us a pin code, we will be able to pay more attention to our work and will be ready to go the extra mile for our job. (Bo district, Rural, Male)*

The sentiments described in the last quotation above show that some health workers who are not compensated for their work are still committed to the work. They feel that they would be able to focus better on the job and exceed performance expectations when these issues are addressed.

Lack of resources and support for staff and work

Health workers believe that more should be done to support staff's ability to provide quality care in health facilities. Suggested resources included structures such as labor rooms, supplies such as drugs and testing supplies, professional development support such as training. In the following illustration, a

health worker specifies that this involves the commitment of more resources to diagnose and treat malaria patients.

> *I live in a small community with little or no support from government, or community support. I need support either direct or indirect support. I need more drugs and equipment to manage effectively malaria cases and malaria serious cases. And more malaria trainings should be provided. (Port Loko district, Rural, Male)*

Inadequate lodging

"Lodging is one of the more difficult issues we face."

For some health facilities, the health workers are provided accommodation, and this is generally considered a positive benefit. However, health workers explained that not all of them receive this support. One provider in Bo district felt very dissatisfied with arrangements for accommodation stating that lodgings frequently were limited and of poor quality that require repairs.

> *Lodging is one of the more difficult issues we face. The center here has quarters with only two rooms. As soon as you hire two staff members, there's no more space left for additions, unless we beg members of the community for lodging. The rooms that were given to us are damaged and we were told to finish them. We don't earn salary so there is no way. (Bo district, Rural, Male)*

Other health workers mentioned not having accommodation posed other challenges for health workers who had to travel to and from the health facility on a daily basis.

> *My prayer always is for us to have quarters here so that we will be able to stay in the facility, but it is really not easy for us to come here and go back every day. (Bo district, Urban, Female)*

Overall, general perceptions were that health workers are not paid or provided incentives to motivate them to deliver high quality services. Health workers mentioned the lack of accommodation near the facility as a barrier and perceive the facilities should be doing more to find suitable places for staff to live where they can easily get to work.

Inconsistent supply of medications

"...we receive drug supply based on what they want to supply not what we want, what we need..."

Generally, health workers have a positive perception of the effectiveness of the medications used to prevent and to treat malaria. However, health workers believe that for the drugs to be useful they must be available at the health facilities. Many health workers brought up the challenges associated with a lack of malaria drugs at the health facility. The general feeling was that supplies were not always aligned with caseload and the needs of the facility. Health workers feel that their requests for specific quantities of drugs are not heard.

> *When it comes to the drugs supply there is a pull system, we receive drug supply based on what they want to supply not what we want, what we need, which is a major challenge. (Bo district, Urban, Female)*

We need enough drugs so that we will be able to reduce malaria cases in our various communities. If I test someone positive for malaria, but I do not have the drugs, no matter the drugs that I will give to that person, if I do not give malaria drugs to that patient, the patient will still have the malaria. (Port Loko district, Rural, Female)

As previous excerpts have indicated, health workers feel that the government has the responsibility to supply appropriate quantities of resources such as drugs and equipment. To help mitigate these situations, health workers report that they may share their supply of drugs with other facilities that need drugs, as shown below or may purchase from retail.

On two occasions, two health facilities [staff] came here for drugs because they lacked drugs at the time. We gave them the drugs because the DHMT has not sent the supply at the moment (Port Loko district, Rural, Male)

A rural-based health worker describes the embarrassment and discomfort associated with having to purchase malaria drugs from a pharmacy to replenish the stock at the government-run health facility.

If the DHMT Port Loko did not supply us these resources, it is difficult for me to buy malaria tablet at the pharmacy. And it is very shameful for a whole health facility that governs many communities when we must buy malaria drugs at a pharmacy. (Port Loko district, Rural, Female)

This embarrassment transfers to the relationship with patients patronizing the health facility. Health workers explained that not having drugs available for treating malaria patients can create problems with community members and patients who do not always understand why the drugs are not available at the health facility. Health workers noted that the lack of drugs and their inability to offer treatment is embarrassing, negatively impacts the provider-patient relationship by introducing elements of distrust in health workers, and also may discourage patients from seeking care at the health facility.

If there are no drugs, we are facing some of these embarrassments from patients because they will be here and you know their conditions but how can you treat them if there are no drugs. So that is making our work difficult. If they are sick and they are here and there is no drugs they will discourage and even stop to come here. (Bo district, Rural, Male)

We often run out of drugs at this facility and when we try to explain things to the patients, they will not understand. They always go with the thinking that we are selling the drugs or we have the drugs but we don't want to give the drugs. We are serving forty-two catchment communities and the population is more than the drugs they supply us. (Bo district, Rural, Female)

Sometimes we do run short of malaria drugs. For the past two months we had stock out of malaria drugs at this facility. It took us two weeks before getting supply. It was really a problem as after testing a patient, we will have to ask them to buy the drugs in Bo town and for those who do not have may be will; result into taking traditional herbs. (Bo district, Rural, Female)

Drug stock out makes it very difficult. Patients do complain if you ask them to buy the drugs when there is drug stock out due to the lack of money. (Bo district, Rural, Female)

CEI participants who had attended the facility with complaints of fever overwhelmingly lamented the lack of drugs for treatment of malaria and confirmed health worker statements about drug stock-outs.

In these cases, patients reported that they were given prescriptions or other drugs that were available at the health facility.

> *They said they didn't have supply of drugs so they just gave what was there. (Bo district, CEI)*

> *The lack of drugs. I have visited this facility more than four times and every time they don't have drugs for adults even to buy. (Bo district, CEI)*

> *Most of the medicines that was prescribed for me are not within the health facility, so I have to go outside and buy them. (Port Loko, CEI)*

In fact, the problem of drug stock outs is so severe that some patients described that there were shortages in the retail sector of the town and some reported traveling from other catchment areas to the facility because they had heard malaria medications were available there.

> *It was good for me because I have come from another catchment through information that this health worker here gives medicine. (Bo district, CEI)*

> *My experience was not good today because most of the medicines that was prescribed for me are not within this village except I have to send for them at a more bigger town. (Port Loko, CEI)*

Such practices have direct implications for delayed treatment, increased drug resistance, ineffective case management, increased complicated malaria, issues of poor trust in the health system, and overall increased malaria morbidity and mortality.

The insights from the aforementioned narratives are that some health facilities are without drugs for extended periods of time. This potentially may influence increased use of alternate sources of care for fever when needs are not met at the health facility, or increased self-treatment and use of home or traditional remedies for treating fever. The need for community members to purchase the malaria treatment drugs also may raise questions about the policy of providing free malaria health services for all.

Lack of equipment to facilitate work

"Without these things all your work will be based on blind treatment."

Health workers lamented the need for structural and work-related resources to support the diagnosis and management of malaria in their communities. Lack of equipment made it challenging for health workers to use recommended approaches to diagnose and care for malaria patients. One provider specifically mentioned the lack of thermometers in the health facility as a barrier to effective diagnosis of cases.

> *Presently we do not even have thermometers to check patient's temperature. One staff donated a thermometer to us. That was what we have been using, but the thermometer has been missing here for the past two days now. If there is no thermometer except you use your bare hand to check the patient temperature and that is risky for us because you do not know what is wrong with the patient. (Bo district, Rural, Female)*

I am also asking the government to equip our labor room and we need a toilet. (Bo district, Urban, Female)

Without needed equipment, health workers may use other less effective methods to check symptoms. The perception is that without these work-related resources health workers cannot be confident in their findings, decisions, and ultimately the accuracy of their diagnosis of patients. Several health workers from both districts mentioned that the lack of access to microscopes was another barrier to proper testing and diagnosis of malaria.

The difficulty is that our health facility lacks microscope, we only have RDT and if we want to know the malaria parasite percentage it will be difficult for our health facility. If we have microscope you can easy identify the malaria percentage because it is very important to know the percentage of the malaria so that it will determine what type of treatment to use. (Port Loko district, Rural, Male)

We are also in need of microscope so that we will be able to do a proper testing to know the real cause of problem well. The information which I think they should add now is the microscopy because if the lab technicians are not around and I know how to do it and a patient is around I will step in and do it in order to save life. (Bo district, Rural, Female)

Of concern is that for some, the RDT may not be considered '*proper testing*.' The need for confirmation of RDT by microscopy testing may be undermining individual understanding of the RDT and trust in RDT results. The most frequently mentioned barrier to effective case management and quality care that was mentioned by health workers was a consistent supply of rapid diagnostic test kits.

Last month we ran short of the malaria test kit but thank God we have received supply and we now have enough that will last us for months. It took us three weeks we don't have malaria test kits. We use the knowledge coupled with the experience to treat those with malaria. It was a blind treatment we were given to children, but it was working though not appropriate (Bo district, Rural, Female).

In these situations, health workers rely on their knowledge and experience of malaria case management to make decisions about case management. Many health workers reported that the main symptom they look for is fever, but without test kits they cannot confirm malaria as the cause of fever.

If the RDT is not available, you will not be able to know if this patient is suffering from malaria or not. Without these things all your work will be based on blind treatment. (Bo district, Rural, Male)

If there is no Paracheck® it will be difficult for us to know that this patient is suffering from malaria. And for you to just look at a patient and say it is a malaria that is not a correct way and so it is a challenge for us and we will just give blind treatment. So that is why it is very important for the malaria test kit to be always available. (Bo district, Rural, Female)

Variable acceptance of the RDT and test results

"Sometimes you can do the RDT test for a child but shows negative, but the child have fever."

A few health workers and patients do not always favor the RDT. A barrier that health workers associated with the RDT is the perceived accuracy of the test in confirming malaria cases. Some health workers do not trust in the RDT's ability to identify all malaria cases because it only works for one type of parasite.

Of note health workers accept positive test results but question the reliability of negative test results. For this reason, some health workers feel negative RDT results should be confirmed with microscopy. The following narratives support these perceptions:

> *Sometimes you can do the RDT test for a child but shows negative, but the child have fever. We must do referral to the government hospital for test and treatment because we not have a lab to do microscopy. (Port Loko district, Rural, Female)*

> *The test is very easy to do and requires less time and no cost for me but what will make it difficult is when the result is negative. Because, this RDT will only attract one species among the four species that are in the malaria parasite, so the remaining three species will not be attracted during the test. This is making it difficult to treat malaria using RDT. (Port Loko district, Rural, Male).*

> *The RDT does not show every malaria case. We can do the test and it is negative. But this person still comes with the same symptoms. Sometimes, when we refer them to Sarabi, another hospital, they will do microscopic test. They discover positive, they treat it there and send the feedback to us. So, that is the difficult area. (Bo district, Rural, Male)*

One health worker spoke to the reliability of the test kits as it relates to the patient's trust in the health worker's capacity to identify malaria cases. Health workers feel that if an RDT has a negative result, but it is later confirmed that the patient does have malaria, this situation reflects poorly on the skills of the health workers and breeds distrust among community members.

> *Sometimes it appears as if we are not doing our work or we do not know what we are doing. When you test a patient using the RDT and it shows negative but the signs and symptoms for malaria are evidenced, you tried and nothing changed and you refer such patients and the microscope shows proof that the person is malaria positive, they will think we do not know what to do. (Bo district, Rural, Female)*

Many health workers report feeling certain that a patient has malaria based on their presenting symptoms, when the RDT test shows that they are negative for malaria. Health workers responded differently to negative RDT results. While some health workers do not feel comfortable treating patients with a negative RDT test, other health workers will proceed with malaria treatment if they feel that their assessment of the patient's history and symptoms is consistent with malaria.

> *We can't say because the patient is not malaria positive, we can't give malaria treatment. We look at certain signs and symptoms and even if the patient is tested negative, we will still give the malaria drugs. Signs like fever, headache, loss of appetite, general body pain and even pneumonia in children as well as convulsion. We will prefer to give malaria treatment even though the patient is tested negative. This is because the RDT we do can only show one set of malaria. We listen more to the explanation of the patient and follow the history. Also, if the parasite load is not heavy, the RDT will not show and if you allow the patient to go home, in two days' time they will come with same complaint. (Bo district, Rural, Male)*

> *The test we do at PHUs is for one type of malaria and can't detect other types of malaria. Even if you do RDT, it will show up, but the child will still be suffering from fever/ it is indicated on the test kit that it is only for one set of malaria and that is the falciparum. For others you will have to use the*

microscope which we don't have in most of the PHUs. Sometimes we do treat children for malaria based on the signs and symptoms they present because we have colleagues who are experienced. (Bo district, Rural, Male)

Finally, a few health workers suggest that the pain and discomfort associated with administering the RDT is another barrier to diagnosing malaria. The discomfort of the finger prick leads to some patients refusing to have the test done.

The test shows quick results with a downside that it is painful. Some adults do not allow us to pinch their hand, and children cry and fight. (Bo district, Rural, Male)

Even some adults will refuse you to prick her finger for you to get their blood sample. It is difficult. Not until you beg upon beg they will refuse you saying they are afraid. And some children when they are here if you want to collect their blood sample, they will say my mother did not want you to prick him. So, if we are unable to get their blood how can we be able to do their test? (Bo district, Rural, Male)

Overall, health workers generally perceive the RDT as very useful for diagnosing and treating malaria cases. However, certain issues, such as supplies, perceived reliability of the test, and the pain associated with testing, do create perceived barriers for health workers to diagnose and treat malaria.

Side-effects of malaria medications

"…when you give them this treatment it reacts on them. And some will not take it at all"

In considering drugs used to prevent and treat malaria, health workers brought up specific barriers related to the drugs themselves. Preventative malaria drugs such as intermittent preventive treatment with Sulfadoxine-pyrimethamine (IPTp-SP) are provided to pregnant women. However, some health workers shared that patients react badly to these drugs and refuse to take them. Patient attitudes and physical reactions to the preventative medication create barriers to prevention since not taking IPTp-SP leaves pregnant women more vulnerable to acquiring malaria. Health workers share that some patients report that they have side-effects from the malaria medication, and consequently, many patients typically fail to complete the full course of medication they are provided because of side-effects. With encouragement some pregnant women may take the drugs, however, this is not always the case.

For the pregnant woman they refuse to take the medicine. More the SP, that three tablets. They will say that they are fed-up, some will vomit it, some will say the smell, and it turn my head, it makes me feel bad when I drink it. Except you have to talk and talk to them before they can take it. (Bo district, Rural, Male)

This oral quinine and clidanac some certain patient when you give them this treatment it reacts on them. And some will not take it at all. (Bo district, Rural, Female)

When we meet them, we will ask them questions like if they give the complete dose to the child. They will also give us feedback; some will say that when they give the drug to the child, the child will become weak, so I stopped. But we keep telling them that just continue to give the drug to the child that weakness will stop after three days. (Bo district, Urban, Female)

Overall, the side-effects from drugs used to prevent and treat malaria can create barriers for effective case management. However, the most cited barrier associated with drugs to prevent and treat malaria is not the drugs themselves but is the lack of consistently available supplies and the fallout that facilities face when the drugs are not in stock.

Costs of medical care

"If they are here with other conditions that is not malaria you have to give us something"

Malaria-related services are provided free of charge at the health facilities, however health workers explained that perceived or actual costs incurred by community members for services received at the health facility can create barriers for patients. Health workers reported that many community members do not believe that malaria-related care is free, and this sometimes deters them from accessing services. It was not apparent from the data why this is so, however, it is possible that prior experiences with having to purchase drugs, and poor communication about fees charged for non-malaria services may influence these beliefs.

> *Even though free health care is available, not all of them are partakers. They believe that as long as it is a hospital, they will have to spend. (Bo district, Rural, Male)*

Some health workers mentioned that there are assessment and laboratory testing costs for pregnant women that are unrelated to malaria. One provider discussed these additional testing costs in the following illustration:

> *The government only provides free malaria tests and not for HB or urine analysis. The lab technician has to buy the reagents and they ask the patient to pay the sum of Le 5,000 for these tests. Even at that not everyone is able to give that money. You cannot treat a pregnant woman without knowing her HB that may cause problems during labor and they are asked in each visit to do that test including urine analysis. (Bo district, Rural, Female)*

Another provider described a similar situation where patients need to pay for the treatment of other health conditions co-existing with malaria not related to the malaria treatment.

> *If they are here with other conditions that is not malaria you have to give us something because we have cost recovering and we have to pay for the drugs we use in treating them. So, at times we will have problems in that area. (Bo district, Rural, Male)*

The ancillary costs associated with seeking care at the health facility may create barriers for patients especially when communication is not clear about what they are paying for.

Finally, a few health workers brought up cost as a barrier for patients who may require referrals to higher level malaria care.

> *If the condition of the child or children is not good, we will refer either to Port Loko or to St. John of God hospital. The problem always is they will refuse to go, they will say that they do not have money. This will sometimes bring arguments because we know if the child is taken to the referral hospital,*

he/she will get better, but they will choose to return at home with the child and we do not want that to happen. (Port Loko district, Rural, Male)

Even if malaria treatment and care are provided free of charge at the local health facilities, many health workers spoke to additional costs that patients may incur that create barriers to effective prevention, diagnosis, and treatment.

Overall, health workers described different barriers that affect their ability to provide effective malaria care to patients. One provider summarized how addressing these gaps and barriers could make it easier for health workers to address malaria cases and improve testing and treating malaria in patients. Health workers feel that when the district health is onsite at the facilities, they are more likely to observe the challenges firsthand and understand better the challenges that health workers face.

And for the DHMT we want them to do continuous supervision to health facilities and even health workers. By doing this it will help the health sectors and the DHMT to know problems facing at the facilities. (Port Loko, Rural, Female)

Client and community factors

Health workers identified individual-level factors which create barriers to prevention, diagnosis, and treatment of malaria including specific behaviors of community members, community norms and beliefs, and socioeconomic conditions and access to care.

Poor attitudes towards environmental sanitation

"When we talk to them about hygiene, they don't listen..."

While most health workers are positive about the relationship with the communities, they provide services to, they suggest that there are specific perceptions and behaviors among community members that may pose barriers to the implementation of health services. Health workers perceive that some community members do not care about the state of the health facility and do not contribute to keep it safe, clean, and habitable. They described poor environmental sanitation, overgrown bushes, and uncaring attitudes that cause them to be unhappy in their current circumstances. The main reason for behaviors is ascribed to not having time and not being interested.

The community doesn't have time to clean the facility and we always live in fear… I have discuss it with the zonal supervisor for him to come so that we can see the community leaders to find out why they are not interested in the health workers and the services we provide. As you can see, we are not happy to work at this facility as the people we are working for. The supervisors will start thinking that it's the relationship between we and community people that is bad but that is not the case as the problem has to do with the way the people in this community perceive things. But we don't have any issues with the community people. To be honest with you, we will not be happy at this facility under such a situation. The facility is dirty and the bush has taken over. We don't have issues with the community people that will warrant them behave like this. (Bo district, Rural, Male)

When we talk to them about hygiene, they don't listen as only few people in this place clean their communities. We pay people to clean the facility even though we have the facility management

committee in this community who are supposed to be working with us. I had to pay fifteen thousand Leones this morning to get this compound clean. (Bo district, Rural, Female)

While health workers feel that the issue is not one of poor relationships with community members, the narratives above show that productive partnership with the community may not be in place, and the sense of ownership and engagement with the health facility is weak. There is not a strong sense of responsibility for the health facility and the community environment, and an effective process of accountability may be needed for individuals and groups tasked to perform specific duties to maintain the health facility.

Further, heath workers explained that poor hygiene behaviors among community members were evident beyond the immediate area around the health facility to the larger community environment. Health workers expressed frustration with the lack of community efforts to prevent malaria by effectively cleaning their surroundings to get rid of mosquitoes. In particular, health workers believe that the dirty and unkempt environment supports increased mosquito density.

The community people do not have time to come together to clean round the hospital for their own good. How do we expect the mosquitoes to go away when people are not prepared to clean their environment? The only way we can get rid of or minimize the flow of mosquitoes is to embark seriously on community cleaning. (Bo district, Rural, Female)

Given the evidence about the positive benefits of nets for prevention of malaria, an increased focus on community efforts for more effective malaria prevention methods such as the consistent and correct use of ITNs, and minimizing risk of mosquito bites in the evening prior to using the ITN, may support behavior change in communities.

Lack of support from community leaders

"Some communities deny their CHW and say that they do not know him."

Health workers discussed the difficulties encountered in conducting their work when community leaders do not welcome or recognize those assigned to provide them health services, as illustrated in the example below. Health workers would like to work more closely with community leaders because they feel that community members may listen to the advice of local leaders.

Another thing, after they had been trained, they were supposed to introduce them to the paramount chiefs, and then the paramount chiefs introduce them to the community. Some communities deny their CHW and say that they do not know him. So, this is a big problem. (Bo district, Rural, Male)

The community leaders and the nurse should work as one as some of these people believe in what their leaders or other influential people in the communities will tell them. We have talked and talked and gone on outreach, but nothing is happening. Maybe if we involve the community leaders in this, communities may help reduce the increase of mosquitoes. (Bo district, Rural, Female)

The situations these health workers describe may be unique, however it suggests that not all communities and community members acknowledge and perhaps accept the health workers that are assigned to the health facility. 'Not knowing' the CHW may be an issue when the CHW is not a

community resident, not originally from the local area, and/or has not been formally introduced to the community leadership, the last being an important cultural expectation that shows respect for the community.

Unable to perform malaria prevention activities

"…they are cluster in a room at night they are more than five, six in a room so even to sleep under a bed net will not be possible"

Almost all health workers agreed with the prevention and treatment approaches outlined in the national guidelines for malaria prevention, but many felt community members were not doing enough to follow the recommendations. However, the evidence from health workers acknowledges the burden these recommendations may place on patients. While patients may have access to information on prevention, they may lack the time required to act on the information or families may not have enough resources to enact some measures that are recommended. For instance, some households don't have ITNs or enough ITNs sleeping spaces may not have beds, and it is not feasible for large families to have no more than 2 people using one net. Although caregivers are provided with bed nets at the health facility, health workers mention that caregivers frequently tell them that they do not have a bed net. These thoughts are described below:

> *When they are here, we will supply them bed net and show them how they should be using the bed nets, and that they should sleep under a bed net, and let them dispose of their rubbish properly. When you tell them to sleep under a bed net, they will tell you that the thing is too hot. And most of them if you see the way how they are cluster in a room at night they are more than five, six in a room so even to sleep under a bed net will not be possible. (Bo district, Rural, Female)*

> *Some of these families only have access to one bed net and only the father and the mother will benefit and the young baby. When you step your feet on the ground, you will have to join others and will not sleep under bed. Also, some of the bed nets have holes which mosquitoes can use to enter and bite those sleeping under it. But most times when you ask people, they will say they don't have bed net. (Bo district, Rural, Male)*

Misuse and non-use of bed nets

"Malaria is a big problem in this community because the people refuse to sleep under the bed net."

Bed nets are primarily supplied through distribution programs and in theory, families should have these resources available for the prevention of malaria. However, in practice ownership and number of ITNs the house may be limited. Nevertheless, health workers reported that some community members do not use the nets that they do have.

> *I have tried to do home visitation in the catchment area to ask the stakeholders, the pregnant women, and the lactating mothers to show me reasons why malaria is very common in these communities. They give me a lot of reasons; some say their bed nets are not in good condition. But during my visits, I look at the rooms some bed nets are in good condition some people have the brand-new bed nets, but they are not using them. (Port Loko district, Rural, Female).*

Health workers also mentioned that ITNs get damaged or used for other activities such as fishing or farming. In addition, negative attitudes towards these bed nets may create barriers to use. For instance, community members frequently complain that ITNs trap heat and this makes it uncomfortable to sleep under the net. Perceptions of the utility of the bed nets among family members also may differ along gender lines, as suggested by health workers, in the following excerpt:

> *Some of the people said that the bed net is too hot and they will prefer not to use it. Especially the husband, they have wrong ideas for not using the bed net but the wife always ready to use the bed because of their children. But the husbands also condemn the bed net. (Port Loko district, Rural, Male)*

> *Malaria is a big problem in this community because the people refuse to sleep under the bed net. Some people said that the bed net is hot and you will have sleepless night. We educate them about the bed net, but some will still condemn that especially the husband. (Port Loko district, Rural, Male)*

A few health workers from Bo district, also identified misuse of bed nets for fishing and farming activities.

> *And majority of them are gardeners I don't know whether it is the old bed net they are using; they are using the bed net as fence for their plantation despite the warning and advice given to them. (Bo district, Rural, Female)*

> *Even when you give them the bed net some will not use it for it purpose instead, they will use it to go and fishing. That all we have talk to them on that but they will not listen. (Bo district, Rural, Male)*

Evidence from the health workers suggests that families may not be using ITNs appropriately and consistently for a variety of reasons, heat being the primary reason. An important insight is the influence of the male partner in adoption of malaria prevention interventions. Health workers perceive that the desire to protect their children motivates some women to use the ITN, however the male their spouse or partner often needs to be convinced and encouraged to use bed nets. Thus, women may not be supported by their partners, and perhaps the head of the household, to follow through with malaria prevention behaviors taught them by health workers to protect them and their children from malaria.

Non-compliance with malaria treatment

"…they don't follow instructions and some often underdose their children."

According to health workers, the failure of some community members to adopt malaria prevention activities also includes non-compliance with the care and treatment instructions they provide caregivers when a patient is diagnosed with malaria. When patients do come to the health facilities to receive treatment, health workers still face challenges in ensuring that patients follow treatment guidance. Health workers stated that some caregivers do not follow instructions and do not provide sick children the full dose of malaria medication, and others complain that the quantity of pills provided is too much. This results in them not taking or giving the full treatment to their child.

> *Well the bad part of our relationship with some is that, they don't follow instructions and some often underdose their children. We are not happy with such attitude and we will not be happy with it. Also, they don't expect the drugs we supply them as they often grumble about the quantity. We give*

according to prescription and not how you want it. Giving the right dosage and for them to accept the right dosage is the issue. (Bo district, Rural, Female)

In some situations, patients stop taking the treatment medications when they start to feel better resulting in a relapse and return of illness, and potentially longer-term resistance to the anti-malarial drug. Other patients save some of the prescribed medication for future use with other children when they get sick, rather than take them to the health facility for an assessment and diagnosis. Health workers stated that it is difficult to teach some community members how to administer medication correctly. In addition, some of them do not understand the importance of the medication schedule and often assign it a lesser priority in lieu of other daily activities.

Some of the patients are very difficult to deal with. When you give them the medicine, they will take inadequate dose, as they start to feel better, they will stop the treatment and at the end they will come back with the same issue. (Port Loko district, Rural, Female)

You give them medicine to take and after taking one or two and start to feel better they will not continue with the treatment. Some do not have the understanding on how to take the medicine even if you teach them. Some, if you give them to take home, they will give it to the child the wrong time or did not give the child at all because early in the morning they are up to their farms and they did not have time for that. (Bo district, Rural, Male)

When you give them drugs for their children, they will not use all but will decide to keep some for other children who may fall ill. They will give say ten or twelve tablets and immediately the fever stopped, they will discontinue the treatment. But the worst they do is to give the balance drug to the other child reporting fever without doing any test. You can observe that after a month or two, they will come with the same child for the same problem. (Bo district, Rural, Male)

Providing comprehensive health education about treatment regimens for malaria, that is not just instructive about dosing and duration of treatment, but that also includes information about the importance of completion of the treatment and the rationale for the specific approach may be necessary to increase compliance with treatment regimens. Nevertheless, some health workers perceive that the root cause of non-compliant behaviors among patients is not due to poor knowledge but rather reflects their lack of trust in the health system. This lack of trust may be connected to the perceived usefulness of the services being offered by health workers at the community health facility to treat and manage patient ailments. Specifically, health workers perceive that some community members may believe that the health facility can do nothing for them. This may be related to health workers not being able to confirm a diagnosis or provide treatment drugs because of inconsistent supplies at the health facility.

We also have patients that are behaving as if they understand more than we do. During our health education programs, we use to tell them that if their children are sick let them come to the health facility earlier so that we can start the treatment earlier. But they always give us bad comments. Some will say even if we bring them to the health facility, what you would do? (Bo district, Urban, Female)

Health care workers also associate impaired relationships with patients and distrust in health workers with a lack of treatment supplies at the health facility.

> *But now that we don't have enough [drugs] and we have even run out of the malaria drug how can we give drugs to the CHWs. It will negatively impact their job and even the relationship they have already built with the community people. (Bo district, Rural, Female)*

Health workers described reasons why patients may not be adhering to treatment and effectively managing malaria cases. Health workers perceive that lack of knowledge, lack of time, poor understanding of the treatment regimen, inability to perform tests and provide drugs, and resulting mistrust of health workers are some of the factors compromising adherence to medication and treatment guidelines.

Delayed care seeking among community members

They will only rush to come to the facility when they can no longer handle the sickness.

Related to health workers' beliefs that community members do not trust them to provide needed health services are delayed care seeking behaviors among community members. Health workers state that some patients believe they will not receive quality care from health workers so they do not visit the health facility early, or first, when they are sick. This is echoed in perceptions from a few health workers who perceive that patients use the health facility as a last resort when an individual or family member is sick. During these situations, the illness is more severe, and the patient needs a referral for more complex care.

> *One of the problems we get with them are that they think they will not have quality service when they come because of some past experiences. So, when their children or themselves get sick, they will decide not to come but sit at home until the situation get worse and when it happens, they will now rush to the facility. At that time the health worker may have limited work to do because the situation has so gone out of hands except to refer for further management. (Bo district, Rural, Female)*

> *They will only rush to come to the facility when they can no longer handle the sickness. So, when they are here, we will know that this child has been sick now for a long time. (Port Loko district, Rural, Female)*

Delaying treatment can make it difficult for health workers to effectively treat patients who have malaria. When patients have to be referred to other facilities for advanced treatment, they may lose trust in the skills of the health worker in their community.

> *Some parents will come here with hope that their problem will be solved immediately. We will tell them and educate them what the guidelines told us. But still they will be in rush because some parent will said that they want to go and do their businesses and some other parent will said that they will go and do their farmer work until we talk to them that health is wealth don't go and leave your own child patient and wait so that they can attend to your child before going home. Some will see reasons while some will not see reason, but we cannot force them. (Port Loko district, Rural, Female)*

> *If the patient does not come earlier, then it will be difficult for us to treat them so [sometimes] we will need to refer them to the referral facility. (Port Loko district, Rural, Female)*

Understanding the complex relationships between several perceived barriers provides important insights. From the above narratives a reinforcing circle of negative behaviors fueled by mistrust is evident. When caretakers are not able to provide services such as confirm a malaria diagnosis because of a lack of supplies, patients have negative experiences at the health facility. This influences delays in future care seeking from the health facility often resulting in serious illness that is beyond the capacity of the health worker to manage. Resultant referrals of complicated malaria reinforce community members' distrust in the skills of the health workers at their community health facility to manage malaria.

CEI results provide some insights into care-seeking behaviors of patients who had been to the health facility with a complaint of fever. Overall, the majority (60%) of patients reported that they first sought care and treatment for their fever from staff at a health facility such as a doctor, nurse, community health officer, or midwife. 21% of patients first went to CHWs and 9% went to a pharmacist. Few patients first sought care from relatives, TBAs and community health volunteers or aides.

There were district-level differences in care-seeking behaviors of patients that were interviewed. The vast majority (85%) of patients in Bo district reported they first sought care for the fever from the health facility staff compared to 36% of patients in Port Loko. In addition, in Port Loko, 32% first went to a CHW, 12% went to a health volunteer or aide, and 12% went to the pharmacist.

Community beliefs and practices

Cause of malaria

"In our community when someone convulses, they will say it is a demon attack."

Health workers perceived that some community norms and beliefs may present obstacles for health workers to effectively prevent, diagnose, and treat malaria among patients. Certain spiritual and cultural beliefs are cited by health workers as barriers to prompt care seeking.

> *In our community when someone convulses, they will say it is a demon attack. That is their own belief. Except when they have tried and failed to stop that, so the time they will come with the patient to the hospital and when we do the test, we will find out that it is malaria. Recently we did a community sensitization in the form of a drama, so we need more support to carry on those messages. (Port Loko district, Rural, Male)*

> *Some of them believe that when you eat a lot of orange it will cause malaria, but we are doing health talks with them so that they will know the causes of malaria. (Port Loko district, Rural, Male)*

Community beliefs about the cause of malaria and some of its more severe symptoms may create barriers to prompt and effective prevention and care seeking. While these barriers were not discussed in the majority of interviews, there was evidence of these beliefs in a number of conversations with health workers. As health workers suggest, community sensitization and health talks may be able to shift erroneous beliefs among community members and facilitate better efforts at prevention, diagnosis, and treatment.

Home remedies and self-treatment

"…they will start the treatment of malaria with herbs until they are not able to cure themselves."

Health workers from both districts noted community norms around the use of self-medication and traditional treatments as barriers to delivering care in the facility. There are beliefs in the community that families can care for sick members by relying on home remedies and using purchased pharmaceutical drugs or traditional herbs. Paracetamol medication was mentioned frequently by health workers as a commonly used drug to treat malaria at home. Health workers report that community members assert that these treatments have worked for them in the past. Self-treatment of malaria has direct implications for delayed seeking of appropriate care at the health facility.

> *Some people will buy paracetamol so that they can reduce the fever. But if there is no improvement for about two days, they will come to the health facility. For the village setting, of course they believe that traditional herbs will cure malaria so they will start the treatment of malaria with herbs until they are not able to cure themselves. (Port Loko district, Rural, Female)*

> *Some use native herbs. Some come to the hospital to be treated. Some do self-medication by buying from drug peddlers, buy panadol, diclofenac; they take it as a very important drug to cure malaria and other general pains. (Bo district, Rural, Male)*

> *Some are using traditional herbs to treat their children and themselves. They always say that let us leave them, they have been using traditional herbs and their children get well. Some even say they are only coming to the health facility because the service is free {and herbs may not be] for children that is why they are coming to the health facility. (Bo district, Urban, Female)*

The last illustration suggests that even among some community members that do seek care at the health facility, the preferred treatment of choice for malaria may be herbal remedies, however the free cost of facility-based care is more attractive than having to spend money to buy herbal remedies. While health workers estimate that a minority of patients are using traditional herbs, it still may present a significant proportion of community members.

Low economic status and work-related risks

"…they will take the child to the farm and stay there until night."

Issues around access and the socioeconomic conditions of patients and community members can be another barrier to prevention, diagnosis, and treatment of malaria. Health workers from Bo district in particular, explained that the majority of patients attending the health facility are farmers who spend significant time away from their home on the farm, and in places where they are exposed to mosquitoes. These conditions increase the risk of malaria among vulnerable individuals like young children in the community.

> *For pregnant women, they will spend almost the whole day in the bush trying to find food for their husbands until late at night. Before they come, a lot of mosquitoes would have bitten them. They will reach home sick. (Bo district, Rural, Male)*

> *The under five children, they are the one who are more frequent with malaria cases here. They cannot take care of themselves and most of their parents are farmers. They will take the child to the farm and*

stay there until night. A lot of mosquitoes will have by then bitten the helpless child. (Bo district, Rural, Female)

Oftentimes the entire family participates in the farming and all are exposed to mosquitoes. A patient's livelihood as a farmer may also impact care-seeking behavior once someone becomes ill with malaria. Health workers explained that farmers are not able to go to work on the farm when they visit the health facility, and this impacts their ability to provide for their family. Lost wages and income are likely another care-seeking deterrent for families.

Let's assume someone's child is sick, and that individual was supposed to go to farm today but he or she decides to take the baby to hospital automatically. The daily activity of the parent will automatically cancel and will also affect his or her financial status. Of course, the treatment is free, but what about the things he or she needs to do to support others in the family and even you, it means economically, it is a setback to the family. (Bo district, Rural, Male)

While malaria treatments are provided free of charge to patients, individuals still face barriers in accessing treatment such as traveling long distances on bad roads to get to the health facility. On some occasions there is no immediate transportation to get to the health facility.

The people themselves do not want to come to the facility here because of the distance. The difficulty is that, financially people are struggling. No money. In terms of transportation there are no good roads, there are no pharmacies around, except serabu, and even serabu, it entails money. The bike riders refuse to transport one passenger but two or three. You saw the nurse lady; they refused to go with her because there was no other passenger. (Bo district, Rural, Male)

It's very difficult for pregnant women to access this facility because of the road network which is terrible and we have a very big river which most of our clients have to cross to get access to the health facility and sometimes the river will prevent them from getting access to the facility because it will be full and malaria will be very common during that time. (Bo district, Rural, Male)

Difficult access to roads and transportation, and out-of-pocket expenses for clinic visits can make it challenging for some community members to access care at the health facilities. Other patients may find it difficult to take time away from work, as mentioned in other excerpts. As community members weigh the costs and benefits of seeking treatment, they may opt to delay or not seek treatment if the barriers are significant.

Improving Malaria Health Services

Most of the recommendations voiced by health workers concerned facility-level efforts including increasing staffing and building capacity through increased training, supervision, and information sharing.

Increase staff and their supervision

Many health workers mentioned that there was a universal need for more trained clinical and support staff such as nurses and CHWs. Some of these staff focus on malaria prevention activities at community

level, ensuring that malaria cases are tracked and followed-up on, and checking that patients are adhering to the treatment provided by the facility-based staff.

> *The DHMT need to train more nurses throughout the country and give them all materials necessary within the guidelines. They need to supply them to all health facilities. (Port Loko district, Rural, Female)*

> *It is impossible for the health workers alone to drag all malaria patients from various communities into this facility. We need the CHWs as backups as you can't go on outreach to all communities at the same time. (Bo district, Rural, Female)*

> *For the government we need structures and improve more staffs so that it will be easy to carry the work. And for the DHMT we want them to do continuous supervision to health facilities and even health workers. By doing this it will help the health sectors and the DHMT to know problems facing the facilities. (Port Loko district, Rural, Female)*

As the last excerpt suggested, health workers feel they may benefit from more supervision of health facilities by the DHMT. They believe that the presence of the district health team in the facilities may make them more cognizant of and sensitive to the challenges faced by health workers in the course of their daily work activities.

Capacity-building

In addition to additional staff, health workers recommend additional capacity building programs for existing staff such as supervision and oversight, training, and information sharing. One of the most commonly requested activities from the health workers was more training programs to support implementation of the national guidelines for malaria prevention and control. In general, health workers are motivated to learn, and feel that periodic training may be effective in ensuring that health workers deliver high quality care that is aligned with new discoveries and approaches for malaria care.

> *We should know that science improves every day and when that happens day-by-day, we believe that the ministry of health should make it known to the PHUs through trainings or designing of a new protocol explaining the changes made. That will make the clients healthier or even minimize the silly mistakes we have been making over the year. (Bo district, Rural, Female)*

> *The DHMT should train us. If we are trained, that will help improve on our skills and will help us to understand in detail what is in the case management or the protocol guide for malaria. (Bo district, Rural, Male)*

> *I think training will be the best way to communicate to health workers as they will gain more each time they undergo training. We can share experiences, and this will help reduce the malaria morbidity in the community and in the catchment villages. (Bo district, Rural, Male)*

As these health workers suggested, training not only serves to communicate the most up-to-date scientific knowledge, but it also serves as facilitators for peer learning and sharing of experiences among health workers.

Another recommendation from health workers is to make the malaria prevention and treatment guidelines and information in general more widely available and accessible.

> *The only suggestion that I have is, let them make the guidelines available in all the departments in the facility even in the HIV department because there are HIV persons that sometimes come with malaria. (Port Loko district, Rural)*

> *About the workshops, we will get the information from the same DHMT but we will appreciate if they can make wall bills or posters or flyers that will be understandable by those who do not go to school. We can also appreciate WhatsApp as we all use WhatsApp at this facility. (Bo district, Rural, Female)*

> *If only the guidelines are available and they are printed out for every health worker to have access to it, then it will be fine. (Bo district, Rural, Male)*

> *I suggest providing more materials both printing and manual for health workers. (Port Loko district, Rural, Female)*

In general, health workers want more frequent trainings, information sharing, and supervision to ensure they are delivering high-quality up-to-date medical care for malaria patients. Health workers suggested a few approaches to dissemination of new information included laminated handouts and posters, guidebooks, and social media messages.

Community engagement

Health workers acknowledge the value of partnering with communities to implement malaria prevention and treatment guidelines. They suggest community sensitization activities to strengthen relationships between the health facility and community, support community-based workers and outreach, and encourage local ownership of, and involvement in, malaria-related activities and programs. Health workers also support discussions with communities to educate and help them identify appropriate ways to incorporate malaria prevention activities into their daily lives.

> *Recently we did a community sensitization in the form of a drama, so we need more support to carry on those messages. (Port Loko district, Rural, Male)*

> *One of the ways to reduce or to get the people involved in this fight is through community sensitization. People should come from either Bo or from Freetown to hold community meetings with the people and the stakeholders and map way forward in reducing mosquitoes in their communities. (Bo district, Rural, Female)*

> *World vision has mother's club on the prevention of malaria. We formed the club but there is no follow up. If there were more incentives, then maybe there would be more interest.*

Summary and Recommendations

In-depth interviews were conducted with health workers in Bo and Port Loko district to explore their perceptions of the national malaria prevention and treatment guidelines, and to identify the facilitators and understand the challenges health workers face in implementing them. The results reveal several key considerations for supporting health workers who provide malaria-related interventions, and enhancing their ability to provide quality services to community members.

National Guidelines for Malaria Case Management

Awareness of the national guidelines for the prevention and treatment of malaria was generally high. Health workers are aware of expectations, motivated, committed, and concerned about the quality of malaria-related health services and relationships with community members. Most health workers reported that they had received training on the guidelines and had print resources for guidance at the health facility where they worked. Health workers described the guidelines as easy to understand and use and characterized them as a useful reference for providing correct and high-quality treatment, and for teaching community members about malaria. Nevertheless, a few health workers, and more from Bo district, reported that they were unaware of the guidelines and did not have information about them at their health facility but were interested in learning about them. Some thought that training was needed to support operationalizing the recommendations. These health workers relied on senior and more experienced staff to teach them on the job how to respond appropriately to different malaria cases. Some health workers felt guidelines for case management of malaria were not necessary and their clinical training and long-term experience managing malaria cases in the community enabled them to provide appropriate care for malaria.

Recommendations

- Re-introduction of the national malaria guidelines to staff at all health facilities may help to normalize the expectations for malaria-related services and introduce the health care workers to the latest and updated information for malaria related services. Training plans may be strengthened with inclusion of refresher sessions and considerations for new and rotating staff.
- Promotion of the guidelines as a resource on new and more effective approaches to case management of malaria. Garner buy-in and ownership of guidelines among the long-term health workers who are usually the senior and experienced staff at facilities.
- Opportunities for health workers to discuss the guidelines may clarify its role as a clinical resource designed to make it easier to deliver high quality services that are in line with global recommendations. Acknowledging the qualifications of health workers and emphasizing the complementary and skills-enhancing nature of the guidelines may facilitate more acceptance and use of them.
- Supportive supervision of staff may be useful for ensuring guidelines are implemented consistently by all staff.

- Development of audience-friendly resources for use in health facilities and during community outreach such as posters, flip charts, pocket reference guides, or Apps that can be used offline, may help increase the utility of the national malaria guidelines in practice settings. Reference resources that are available in formats that are easy to read and that identify essential practice behaviors may accelerate behavior change.
- Introducing malaria prevention and treatment guidelines to communities may influence greater cooperation with health workers implementing malaria control activities. This may involve development of information, education, and communication tools based on the guidelines, that are appropriate for lay audiences.

RDTs and Diagnosis of Malaria

Acceptance of the RDT was variable among health workers. Most health workers acknowledged the value of this diagnostic test and appreciated the opportunity to use it in health facilities and during community outreach, however some were less accepting of negative test results. Use of the syndromic approach to diagnose malaria was still in practice at some health facilities, partially because of inconsistent supplies of test kits and also because some health workers did not consider the RDT to be an accurate diagnostic tool for malaria. Erroneous results from the RDT were blamed for impaired relationships with community members who had received negative test results and delayed care for malaria, eventually needing referrals to more advanced facilities for treatment of severe malaria. Several health workers suggested that they should be trained in microscopy testing so they can confirm RDT results or as an alternative for checking for malaria parasites when the RDT is not available at the health facility. For some health workers, the health facility's usual case load for fever was not supported by the supply of RDTs allocated to the facility, resulting in frequent stock outs and an inability to consistently provide malaria services per the national guidelines. Additionally, community members were not always accepting of the test and some were afraid of the pain associated with the procedure and refused to provide a blood sample.

Recommendations

- Re-training of health workers on how to administer the RDT correctly to increase reliability and credibility of the results.
- Skills-building in differential diagnosis when the RDT is negative may be necessary to ensure that patients with fever that is not confirmed as malaria receive appropriate treatment.
- Activities to increase health workers' acceptance of the RDT are needed. Discussions about the specifics of the RDT currently being used, its strengths in identifying malaria cases, and the basis for its appropriateness for use in Sierra Leone may increase confidence in the test among health workers.
- Periodic or seasonal re-assessment of the health facility's supply of RDTs in the context of fever prevalence in the catchment area, may result in better estimates of anticipated need and the quantities of RDTs to be supplied to the health facility. Improved supply chain processes may

facilitate health workers' ability to perform their work, in turn strengthening their relationships with patients and the community.

- Strengthen IPC between health workers and patients about malaria diagnostic testing and interpretation of results.
- Performance monitoring and supportive supervision of health workers' adherence to expected procedures for diagnosing malaria should be adopted as a routine quality enhancement strategy. The use of syndromic management of malaria is confirmed and should be addressed by district health teams so the standard of care is clearly communicated.

Prevention and Treatment of Malaria in Health Facilities

Overall, health workers were knowledgeable of the malaria treatment recommendations for children, adults, and pregnant women. They relied also on the national guidelines to reference the appropriate case management approach they should use to treat confirmed malaria. Health workers linked appropriate treatment of malaria with confirmation of malaria, noting that supply of both test kits and drugs at the facility were essential for the delivery of correct treatment services. Some health workers did not always have malaria treatment drugs available at the facility and had to purchase them from local vendors or provide a prescription for the patient to purchase drugs. Free malaria services are a selling point for care-seeking at the health facility, however, costs of health care unrelated to malaria are often misunderstood by patients and a cause of concern.

A prevailing challenge faced by health workers that is related to treatment of malaria is lack of prompt care seeking for fever among community members, and adherence to the prescribed treatment regimen. Self-treatment of fever by buying medications from drug vendors, and the use of traditional herbs to first treat fever is a common behavior among community members. Often, patients do not seek care at the health facility until other remedies fail, and the illness has progressed to a severe stage. Failure to follow the health worker's instructions and to complete the malaria treatment regimen is another common occurrence that results in recurrence of the symptoms of malaria in patients.

Recommendations

- Continue to encourage the use of the national guidelines for case management of malaria.
- Community sensitization to malaria prevention and treatment approaches, the importance of malaria prevention during pregnancy, and the importance of compliance with health worker instructions
- Behavior change programs for among community members to increase prompt care seeking for fever at the health facility and adherence to treatment instructions, and to decrease the use of self-treatment and traditional herbs for treatment of fever.
- Better understanding of how to integrate malaria prevention interventions into daily community life. Increased behavior change strategies for communities to decrease risk of exposure to mosquitoes prior to use of the bed net.

- Better approaches for assisting health workers to educate communities on what free care for malaria means. Facilities may need increased support to offer truly free services including increased capacity to dispense free drugs for malaria prevention and treatment.
- Encourage and improve communication between health workers and patients on the costs of services provided. Providing information about assessments and diagnosis and clarifying costs that are related to malaria and those that are not are key to preventing misunderstandings and dissatisfaction with the health care experience at the facility.

Facility Resources and Supplies for Malaria

Health facilities were not equally equipped; some had stable supplies and the necessary equipment to offer malaria services at the facility, while others lacked a variety of important supplies and equipment needed to correctly diagnose and treat malaria. Resources and supplies that were not always available included equipment used on a daily basis such as thermometers, test kits, and measure boards and scales for height and weight respectively, drugs for malaria prevention and treatment, and new equipment such as microscopes to aid in the diagnosis of malaria. Health workers were sensitive to the effect of inadequate facility supplies on the relationship they had with patients. When health workers are unable to complete diagnostic and treatment interventions due to a lack of supplies at the health facility, patients' trust in health workers is undermined as they perceive that health workers lack the skills to effectively manage malaria.

Recommendations

- Provision of supportive equipment to support diagnosis and treatment of malaria
- Development and monitor a supportive drug supply chain that reliably supports the changing needs of health facilities

Relationships Between Health Workers and Communities

There were mixed feelings about the relationship between health facility staff and community members. Health workers value positive relationships with patients but frequently expressed frustration over factors that impaired the development of trusting relationships with community members. Health workers perceive that patients' mistrust of health workers stems primarily from negative RDT results in spite of persistent fever, and manifests as delayed care seeking at the facility and failure to follow instructions about malaria treatment and prevention. Community members, and especially male spouses or partners, frequently do not heed advice to use ITNs and some do not support their wives to do so. Support from community leaders was recognized as a key factor in facilitating community-based malaria prevention activities of CHWs.

Some health workers perceived that the community members they served were not committed to the health facility that provided them services, and did not perform routine cleaning and maintenance tasks that were assigned for the upkeep of the building.

Recommendations

- Promoting the health worker as a competent resource and a community advocate with a genuine interest in the welfare of individuals and the community as a whole.
- Community engagement activities to strengthen relationships between health facilities and communities emphasizing partnerships for the delivery of malaria prevention interventions. For instance, formal introductions of facility- and community-based staff to the full hierarchy of community leaders may facilitate acceptance of health workers and their outreach activities, and regular meetings with community leaders or health committees about health concerns in the community and how to collectively address them may foster greater collaboration between facilities and communities.
- Promoting partnerships with the community for the ownership, upkeep, and safety of the health facility.
- Opportunities for community voices to be heard regarding challenges they encounter in implementing malaria prevention activities and open discussions about how to improve their experiences at the health facility may lay a foundation for positive relationships.
- Research to understand the individual and community perspectives of the relationship between health workers and communities they serve, and how to derive a mutually beneficial dynamic between them.
- More deliberate engagement of males in community-based malaria programs implemented by health facility staff, and targeting males with malaria prevention messages.
- Explore human-centered approaches for malaria outreach that include community member perspectives and solutions for fever management and malaria prevention.

Support for Health Facility Staff

Staff identified areas where they need additional support from the health system. Sharing of new knowledge and training in new methods for preventing and treating malaria was of high priority to health workers. While most health workers reported having knowledge of case management of fever and malaria, there were some health workers who stated that they were learning on the job. Others mentioned that they had limited time available to learn about malaria treatment guidelines. Nevertheless, knowledge of malaria could be improved among some health workers. For instance, some health workers believed that pregnant and lactating women were weak and unable to tolerate malaria medications, and that malaria was transmitted through breast milk.

Lodging at the facility is reportedly insufficient for all key staff working at the facility. Many health workers lack appropriate accommodation close to the facility and perceived safety issues during emergencies that occur at nighttime. Living far from the facility impacts quick response times and effectiveness of some health workers during emergencies. Daily transportation to and from the facility was a challenge for many especially among those who did not have accommodation close to the health

facility. Compensation and incentives for some cadres of staff, especially CHWs, were not available or consistently paid with direct implications for morale and motivation of support staff.

Recommendations

- Increase opportunities for sharing new knowledge about malaria and for learning about national standards of care. Supplemental learning through Apps and reference cards may help to reinforce main education on the national guidelines and cement knowledge of appropriate care practices.
- Explore low-cost and community -sourced resources for providing accommodation for staff that is close to the health facility.
- Assessment of the efficiency of the current compensation system for support staff and ways to enhance it.
- Explore utility of non-financial rewards for health workers such as celebrations of achievements and certifications.