Ghana's Implementation of the Test, Treat and Track Policy for Malaria: an assessment of malaria management and control in selected districts in Ghana

Alliance for Reproductive Health Rights

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Acronyms and Abbreviations

AA	Artesunate Amodiaquine
ADDRO	Anglican Diocesan Development and Relief Organization
AL	Artemether Lumefantrin
ARHR	Alliance for Reproductive Health Rights
ACT	Artemisinin-based combination therapies
CHPS	Community Health Planning Services Centres
DHD	District Health Directorates
GHS	Ghana Health Service
IDIs	In-depth interviews
IEC	Institutional Ethics Committee
KHRC	Kintampo Heath Research Centre
LSTM	Liverpool School of Tropical Medicine
NMCP	National Malaria Control Programme
OPD	Outpatient Department
OTCMS	Over the Counter Medicine Sellers
RDT	Rapid Diagnostic Test
SRC	Scientific Review Committee
T3	Test, Treat and Track policy
WHO	World Health Organization

Executive summary

Seven years after the launch of the Test, Treat and Track 3 policy in Ghana, significant gains have been made in reducing malaria morbidity and mortality. Despite this, Malaria continues to be a major cause of illness and death in Ghana.

This report sets out to detail findings from a study undertaken to assess knowledge and adherence of the Test, Treat and Track (T3) policy among selected districts in Ghana and to add to existing national knowledge on the T3 policy. It explores issues relating to the implementation of the policy from the perspectives of health decision makers as well as the measures in place to facilitate health facilities adherence to the policy with the "T3: Test, Treat and Track" serving as a framework for malaria control and elimination.

The report outlines findings from client exit surveys, health facility assessments and interviews from the district health management teams in 31 health facilities (19 CHPS, 7 Health Centres, 5 Hospitals) in across 6 districts sampled from the southern, middle and northern belts of Ghana.

Using the community scorecard approach, a social accountability mechanism, the study documents strengths and weaknesses of Testing, Treatment and Tracking in selected areas and scores them to reflect clients experiences with services within the T3.

Among several findings, the study reveals that testing before treatment is widely practiced by health care providers and clients. Also, although there are some tracking systems in place to follow up on clients treated for malaria, several challenges hinder the tracking of these clients.

In summary, the report provides further evidence that while awareness of the T3 policy is high with many health facilities adopting and are implementing the T3 policy, there are still notable capacity and delivery gaps that need redressing. Various challenges at the local health care setting such as staffing shortages, infrastructure/logistics problems, and a lack of funding for staff training continues to present major barriers for the effective implementation of the T3 policy.

1. Introduction

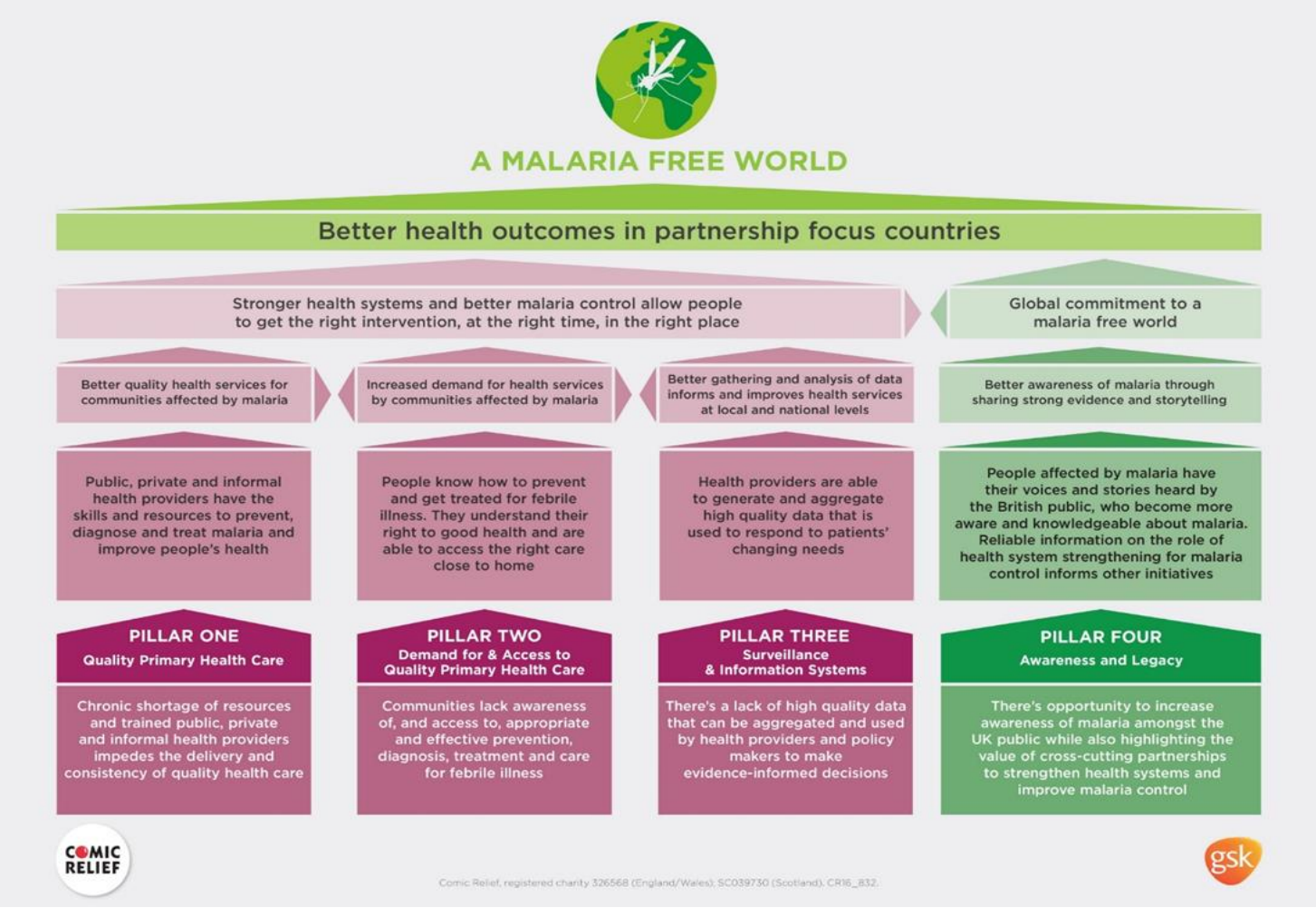
1.1. Background to the 'Fighting malaria, improving health' partnership

In 2016, the UK-based charity Comic Relief and pharmaceutical company GlaxoSmithKline[1] (GSK) formed a strategic partnership to combat malaria and strengthen healthcare systems in countries with particularly acute needs. These countries included Ghana, Mozambique, Sierra Leone, Tanzania and several vulnerable countries in the greater Mekong sub-region.[2] Comic Relief and GSK allocated £5m and £17m respectively to the partnership for disbursement to national partners. The partnership's investment aimed to contribute to three cross-cutting objectives:

- Improve health outcomes for people living in the Partnership's focus countries;
- Strengthen health systems for tackling malaria in the Partnership's focus countries; and
- Inspire global action against malaria by telling compelling stories that demonstrate need and impact.

A summary of the partnership's Theory of Change is presented in Figure 1 below.

Figure 1: Theory of Change for the 'Fighting malaria, improving health' partnership



[1] As one of the world's leading healthcare companies, GSK is committed to supporting vulnerable groups to access the treatment they need. GSK has particularly strong expertise and influencing networks in relation to the development of pharmaceutical products and vaccines.
[2] Myanmar, Laos and Cambodia all benefitted from programme funding.

Introduction to the partnership's collective learning initiative

To help fulfil the partnership's learning vision, Comic Relief and GSK developed a Monitoring, Evaluation and Learning (MEL) strategy. Tetra Tech (formerly Coffey International) in partnership with the Liverpool School of Tropical Medicine (LSTM) was contracted to serve as Learning Coordinator.
One of the Learning Coordinator's primary responsibilities was to help facilitate and support collective learning between participating organisations in focus countries[3]. The partnership allocated modest sums of additional funding to help these organisations explore and learn from each other's work and to generate new knowledge.

The partnership's collective learning approach was grounded in the following organising principles: collaboration, connectivity; inclusivity; local ownership and leadership; openness and transparency; responsiveness and utility.

Identifying collective learning opportunities in Ghana

Three organisations in Ghana were awarded grants through the Comic Relief and GSK partnership. These included:

- the Anglican Diocesan Development and Relief Organization (ADDRO) based from Bolgatanga;
- the Alliance for Reproductive Health Rights (ARHR) based from Accra; and
- the Kintampo Heath Research Centre (KHRC) which is part of Ghana's INDEPTH Network.

In addition to implementing their respective projects across districts in northern, middle belt and southern Ghana, ADDRO, ARHR and KHRC came together for a workshop in Accra in June 2018 to identify and prioritise potential collective learning opportunities.
The three organisations subsequently agreed that they wanted to assess the Government of Ghana's implementation of the test, treat and track (T3) policy. These organisations then developed a concept note for how data would be collected, analysed and shared with district and national level stakeholders. The latter includes district Health Directorates; the National Malaria Control Program (NMCP), Ghana Health Services (GHS) and various civil society partners. This report is the culmination of these efforts.

1.2. Background to the T3 policy in Ghana

What is the T3 policy and how is it relevant to Ghana?

Malaria continues to be a major cause of illness and death in Ghana. In addition to what are often deadly health outcomes, malaria creates a tremendous socio-economic burden and remains a public health menace in Ghana. In 2012, 38.9% of all outpatient illnesses and 38.8% of all admissions were attributed to malaria in Ghana. Moreover, in that same year 16.8% of all admissions of pregnant women were attributed to malaria ((NMCP), 2018; Amponsah, Vosper, & Marfo, 2015).

In 2012, the WHO launched a new initiative called "T3: Test, Treat and Track" as a framework for malaria control and elimination. Ghana adapted this initiative in 2013 and developed guidelines for implementing the T3 policy by updating the 2009 malaria case management guidelines. The update demonstrates a shift from a time when a fever was invariably equated with malaria, to testing of every suspected case of malaria before treatment (Kankpetinge et al.).

[3] The learning coordinator's other responsibilities included: 1) providing direct support to individual organisations to plan and budget for their project MEL systems during proposal development and during the inception phase once grants are awarded; 2) supporting the legacy of the partnership to generate learning beyond the duration of the initiative by sharing relevant lessons learnt with the broader sector.

Since Ghana's adoption of the Roll Back Malaria Initiative in 1999, the country has made important strides in the implementation of both preventative and curative interventions to curb malaria. The country continues to implement strategies like the T3 policy that are designed to achieve global goals to end malaria. If the T3 policy is strictly adhered to, then it will enhance the fight against malaria incidence in the country. Seven years after the launch of the T3 policy in Ghana, ADDRO, ARHR and KHRC felt that it was appropriate to assess the implementation of this policy across different health facilities in Ghana.

T3 implementation in Ghana: summary of status and gaps from secondary literature

Despite the clear benefits of the T3 policy, recent studies from Ghana and other sub-Saharan countries suggest implementation gaps and challenges within the local health care settings. As asserted by Agandaa et al. within the Bongo District there were frequent Rapid Diagnostic Test (RDT) stock-outs, a lack of diagnostic facilities and frequent artemisinin-based combination therapy (ACT) stock-outs. The Community-Based Health Planning and Services (CHPS) compounds were the most affected because RDT was the only diagnostic tool available for testing. Health centres also mentioned lack of diagnostic facilities such as microscopy as a major challenge (Agandaa et al., 2016).

Publications on clinicians' adherence to T3 implementation for malaria control among children under the age of five suggests that apart from recording individual cases, diagnostic test/results and treatments given at health facilities, a significant proportion of all cases treated as malaria were not tracked. Parents/guardians were also not informed by clinicians to return for review to determine treatment outcomes (Agandaa et al., 2016). A study focusing on Ho municipality in the Volta Region of Ghana recorded that 61.5% of cases of malaria were not followed and 38.5% of the respondents were asked to return for follow-up/review; moreover, 61.8% were asked to return only if the child's condition did not improve, whilst 38.2% were given a specific date to return for follow-up (Kankpetinge et al.)

The ability to track malaria cases and the impact of antimalarial interventions through the T3 strategy should support malaria elimination. It is therefore expected that all treated cases would have returned for review in order to ascertain their cure status (Thiam et al., 2011). Studies show however that the tracking of treated cases which involved requesting that patients return for reviews was inconsistent and sometimes did not happen at all (Agandaa et al., 2016).

In order for policy makers to accelerate the elimination of malaria and eventually interrupt its transmission there is the need for accurate community-based data and information on the effectiveness of existing strategies and interventions. Effective surveillance of malaria cases is essential for identifying which areas or population groups are at risk of malaria, which groups are vulnerable to reduced efficacy of interventions and how well health care providers are implementing these strategies (WHO, 2018).

1.3. Purpose of this study

The overarching objective of this study is **to assess the knowledge and adherence of the T3 policy among sampled health facilities in Ghana.**

The specific objectives of the study were to:

1. assess the knowledge of health workers on the T3 policy;
2. assess the knowledge of clients on the T3 policy;
3. determine the level to which health workers adhere to the T3 policy;
4. identify challenges that affect the implementation of the T3 policy in health facilities; and
5. determine the association between knowledge of T3 policy and adherence to the T3 policy.

This study adds to existing knowledge on the T3 policy by examining the adherence of Ghana's health care facilities. Recommendations from this study can be used to improve the way in which malaria cases are tested, treated and tracked.

Implications for COVID-19

This study examines Ghana's patient testing, treating and tracking systems. Understanding the functionality of this system, especially what it reveals about tracking across different regions of Ghana, is relevant not just for malaria control but is also timely given the Government of Ghana's response to the COVID-19 pandemic. The study's conclusions and recommendations therefore reference and are framed against COVID-19 as appropriate.

2. Approach and design of the T3 study

The T3 study was informed by the shared experience of ADDRO, ARHR and KHRC in designing and delivering health research in the context of Ghana. The GHS supported this research process and provided feedback on the research instruments themselves. The study was also approved by KHRC's Scientific Review Committee (SRC) on 30 October 2019. Full ethical approval for the study was provided by the Institutional Ethics Committee (IEC) at KHRC on 8 November 2019. A summary of the study timeline is included in Annex 1.

2.1. Study design

Target Population

The study was conducted primarily at health facilities across the sampled districts (discussed in Section 2.2). Client-exit interviews were conducted to gather evidence on the quality of their treatment against the T3 policy. The focus was on clients who have had an episode of malaria and have received treatment at the health facility. Facility managers were also interviewed in order to assess the extent to which their respective facilities have the infrastructure, staff, training, systems and supplies (such as availability of commodities, information materials) to effectively implement the T3 policy.

Sample Size

Thirty-one (31) health facilities were assessed using the same study tool across the four regions. In each of the selected districts, a mix of government hospitals, health centres and CHPS compounds that provide malaria services were visited to ascertain their readiness to provide malaria services and assess their adherence to the T3 policy. Each partner aimed to deliver 100 client-exit interviews per sampled district (600 total).

Training of Enumerators

To ensure the quality and consistency of data, three days of training (including a pilot exercise) were given to all the data enumerators on the objectives of the study, data collection tool and mode of data collection. An initial training and pilot was provided to the study partners in Accra who then cascaded this training to staff/enumerators in their respective target districts.

Study tools and pre-testing

The study deployed three different tools for data collection.

- Tool 1 – Health Facility Assessment: interviews with staff to assess health facilities in terms of infrastructure, equipment, essential drugs and accessibility within the context of the test, treat and track policy;
- Tool 2 - Client Exit Survey: Exit Interviews with a selected number of clients who have just received malaria service at the health facility (either antenatal, general Outpatient Department or postnatal care services) to assess the T3 policy.
- Tool 3 – District Health Management Knowledge: in-depth interviews with district Health Directorate teams to get feedback on their knowledge of the T3 policy and the opportunities and challenges they have to implement the policy at the district level.

The study instruments (facility assessment and client exit interview tools) were piloted at Princess Marie Louise Children's Hospital in Accra in November 2019. These tools are annexed to this report (see Annexes 2-4).

Using scorecards to assess performance and engage stakeholders

This study used a modified community scorecard approach[4] to collect information on how health facilities adhered to the T3 policy. The scorecard process was adapted to examine whether health providers were aware of and adhered to the policy, as well as focus on the systems they adopted to follow up with clients who use malaria services at their health facilities.

Descriptive analysis of survey results

As part of the T3 client assessment, structured exit interviews were completed with 590 patients (out of a target of 600) at three different types of health facilities across six districts of Ghana. Clients were asked about key demographics (i.e., age, gender) and aspects of the care they had received in relation to the T3 principles of Testing, Treatment, and Tracking. Response frequencies were analysed descriptively by region, partner organisation, and facility type.

Table 1: Number of Clients Surveyed Per District and Partner

Partner and Region		Number of clients surveyed
ADDRO		
	West Mamprusi	104
	Jirapa	105
ARHR		
	Mpohor East	104
	Nzema	105
KHRC		
	Kintampo North	83
	Kintampo South	89
	Total number of completed surveys	**590**

Table 2: Number of completed Clients Surveyed by facility type

Type of facility	Number of facilities surveyed	Number of clients surveyed by facility
CHPs	19	342
Health Centres	7	112
District/Municipal Hospital	5	136
Total	**31**	**590**

Antimalarial Drug Prescriptions

[4] The scorecard process is a community-based monitoring and evaluation tool that enables citizens to assess the quality of priority public services such as a healthcare. It is used to inform community members about available services and their entitlements and to solicit their opinions about the accessibility and quality of these services. By providing an opportunity for direct dialogue between service providers and the community, the scorecard process empowers the public to gain insight into health service delivery and voice their opinion and demand improved service delivery.

One of the exit survey questions asked clients to name the type of Malaria medication they had been prescribed. To facilitate analysis, drugs were grouped into the following categories:

- Artesunate Amodiaquine (AA; incl. Wintrhop, Arsuamoon, Camoquine Plus, Gunate, and Coarsucam)
- Artemether-Lumefantrine (AL; incl. Coartem, Lumarterm, or Lonart)
- Dihydroartemisinin–Piperaquine (DHAP; incl. Palaxin and Duocotexcin)
- Quinine
- Primaquine
- Chloroquine
- Herbal Medicine
- Other medication

Conducting in-depth interviews at the Health Directorate level

Qualitative interviews were conducted to gather information from the District Health Directorates (six of these in total). In-depth Interviews (IDIs) mainly with the Municipal/District Health Directors with complimentary information sometimes provided by the Municipal/District Health Malaria Focal Person and Health Information Officers. All interviews were recorded with permission from the respondents and later transcribed.

Collecting and storing data

Quantitative data was collected on tablets and smartphones using Tetra Tech's digital data collection solution Cosmos. Cosmos is a purpose mobile data collection platform, specifically designed and built by Tetra Tech to support real-time data collection, analysis and decision making. Data encryption and Geo-tagging ensured the safety and reliability of data. All survey respondents signed a consent form (or had a form signed by their guardian).

Score Card Analysis (client surveys)

In addition to the descriptive analysis of survey responses, client survey data was used to generate a score card at the facility level. A number of survey questions were selected as indicators of adherence to the T3 principles, and informed the creation of this care quality score card. Facilities were scored based on:

- the quality of testing and the communication of test results;
- the quality of medical examinations and treatment provided, and the degree to which clients were informed about these aspects of their care;
- the extent to which health care providers performed or initiated follow-ups.

Detailed criteria and scoring principles are provided in the table 3 below.

Score Card Analysis (facility assessments)

The purpose of the Health Facility assessments was to collect data for each of the 31 health facilities that were sampled to determine their reported capacity to provide malaria services and adhere to the policies and procedures related to the T3 policy. Data was collected using a standardised form following interviews with facility managers and other facility staff as required.

Data from each of the facilities was then scored against a scoring system to permit comparison. This data also serves to triangulate the client exit survey data (see Section 3.1) and the qualitative Health Directorate data (see Section 3.4). It should be noted that the maximum number of points looks different for different types of facilities: the maximum score for hospitals is 102 points; for health centres is 94 points; and for CHPs is 69 points. This is because each of these different types of facilities are expected to deliver different levels of services.

Detailed criteria and scoring principles for different health facilities are provided in the table 4 below.

Purpose of the Health Directorate interviews

The purpose of the qualitative interviews with health directors was five-fold to:

- explore knowledge of district health directors of health services on the T3 policy;
- gain information on the training of health personnel on the T3 policy in the district;
- explore the availability, supply, procurement and stock out of mRDT kits at health facilities in the district;
- document measures put in place by the district Health Directorates to monitor adherence to the T3 policy by health personnel in health facilities in the district and
- document challenges faced in the implementation of the T3 policy.

Approach to collecting and analysing qualitative data

The findings presented below come from data collected / in-depth interviews (IDIs) conducted with six District Directors of Health Services (DDHS) in the Bono East, Western North, Upper West and North East regions of Ghana between December 2019 and February 2020. The interviews were tape recorded, transcribed verbatim into Microsoft word and analysed using the Nvivo version 11.0 under themes.

Operationalizing Test, Treat and Track (T3):

In this study Test, Treat and Track were defined and operationalized as the following:

- Test: Testing every suspected malaria case and confirming by microscopy or a rapid diagnostic test prior to treatment. 'Testing' also includes communication of tests results to clients.
- Treat: Treating every confirmed malaria case with the recommended Artesunate Amodiaquine (AA) 156 (26%) and Artemether Lumefantrine (AL) 361 (61%) in line with the government's standards and the T3 policy. This also includes providing clients with information on the prescribed medications.
- Track: The presence of functional malaria surveillance and follow up systems by health care providers to track the progress of clients who have received malaria care.

Table 3: Criteria for Score Card Analysis (client surveys)

Domain	Criterion	Scoring	Explanation of scoring categories
Testing	A1. Awareness of need for testing	0	Client was not aware
		2	Client was aware
	A2. Testing	0	No test taken
		2	Suboptimal test done (i.e., RDT at health centre or hospital)
		3	Optimal test done (i.e., RDT at CHPS, Microscopy with or without RDT at health centres and hospitals)
	A3. Test results communicated	0	Test results not communicated at all / or not by a qualified healthcare professional (pharmacist does not count)
		2	Result communicated by healthcare professional (i.e., nurse, doctor, midwife, or clinical assistant)
	Maximum possible score in this domain	***5***	
Treating	B1. Prescribed treatment	0	No treatment prescribed
		2	Suboptimal treatment prescribed (i.e., Chloroquine, Herbal medicine, other)
		3	Optimal treatment prescribed (i.e., AA, AL, DHAP, Quinine, Primaquine)
	B2. Information on prescribed medication provided	0	No information provided
		2	If one type of information provided
		3	If two types of information provided
		4	If three types of information provided (i.e., dose amount, side effects, dosage schedule)
	B3. Medical procedures or exams	0	No examination performed
		2	Only suboptimal procedure performed (i.e., cannula insertion, turbid sponging, or other)
		3	One optimal procedure performed (i.e., blood test taken, or temperature taken)
		4	Two optimal procedures performed (i.e., blood test taken AND temperature taken)
		4	One optimal and at least one suboptimal procedure performed
	B4. Explanations provided	0	No explanation provided or no procedure performed
		2	If either procedure or results explained
		4	If both procedure and results explained
	Maximum possible score in this domain	***17***	
Tracking	C1. Provider has asked for follow-up	0	No
		2	Yes
	C2. Provider has followed up	0	No
		2	Yes
	Maximum possible score in this domain	***4***	
	Maximum possible total score	***26***	

Table 4: Criteria for Score Card Analysis (facility assessments)

Assessment criteria	Scoring range by facility			Explanation of scoring categories
	Hospitals	H. Centres	CHPS	
A. Facility infrastructure	0,2	0,2	0,2	Designated phone (yes = 2; no = 0)
	0,2	0,2	0,2	Water availability (yes = 2; no = 0)
	1-2	1-2	1-2	Optimal type of water (2) Sub optimal type of water (1)
	0,2	0,2	0,2	Toilet facilities available
	1-2	1-2	1-2	Optimal type of toilet available (2) Sub optimal toilets available (1)
	0,2	0,2	0,2	Access to power (yes =2; no = 0)
	1-2	1-2	1-2	Type of power source (Nat'l grid = 2; other source = 1)
Maximum possible score in this domain	***14***	***14***	***14***	
B. Staffing information	0,2	NA	NA	Full time doctor (yes=2; no =0)
	0,2	0,2	NA	Medical assistants (yes= 2; no=0)
	0,2	0,2	NA	Nursing practitioners (yes=2; no=0)
	0,2	0,2	0,2	Midwife(s) (yes=2; no=0)
	0,2	0,2	NA	Registered general nurse (yes=2; no=0)
	0,2	0,2	NA	Health care assistant nurse (yes=2; no=0)
	0,2	0,2	0,2	Community health nurse (yes=2; no=0)
	0,2	NA	NA	Biomedical scientist (yes=2; no=0)
	0,2	0,2	NA	Lab technician (yes=2; no=0)
	0,2	NA	NA	Pharmacist (yes=2; no=0)
	0,2	NA	NA	Pharmacy technician (yes=2; no=0)
	0,2	0,2	NA	Dispensary assistant (yes=2; no=0)
	0,2	0,2	0,2	Supervisory visits (yes=2; no=0)
	1-2	0,2	1-2	Number of visits (more than one visit in quarter = 2; less = 1)
Maximum possible score in this domain	***28***	***20***	***8***	
C. Facility operations	0,2	0,2	0,2	Providing services 24/7 (yes=2; no=0)
	0,2	0,2	0,2	T3 information/education materials available (yes=2; no=0)
	0,2	0,2	0,2	Guidelines and protocols for malaria management (yes=2; no=0)
	0,2	0,2	NA	Lab functionality (yes=2; no=0)
Maximum possible score in this domain	***8***	***8***	***6***	
D. Testing for malaria	0,2	0,2	0,2	Awareness of T3 policy (yes=2; no=0)
	0,2	0,2	0,2	Training in T3 policy (yes=2; no=0)
	0,2	0,2	NA	Microscopy trained staff (yes=2; no=0)
	0,2	0,2	0,2	Availability of RDT kits (yes=; no=0)

		0,2	0,2	0,2	Testing stockouts hours (yes=0; no=2)
		0,2	0,2	0,2	Provision of Hb test (yes=2; no=0)
		0,2	0,2	NA	Provision of G6PD test (yes=2; no=0)
		0,2	0,2	NA	Microscopy services available (yes=2; no=0)
		0-3	0-3	NA	Number of microscopy consumables (>5=3; 4-5=2; 3=1 or 0)
		0,1	0,1	0,2	Testing using RDTs (yes=1; no=0) – for CHPs (yes=2; no=0)
		0,1	0,1	NA	Testing using microscopy (yes=1; no=0)
		0-3	0-3	0,1	Confirmed cases with RDTs/ microscopy (RDTs=1; microscopy=1; both RDTs and microscopy = 3)
	Maximum possible score in this domain	***24***	***24***	***13***	
	E. Treatment for malaria	5,3,2,0	5,3,2,0	5,3,2,0	Number of equipment available (>5=5; 5-4=3; 3=2; or 0)
		0,2	0,2	0,2	Available medicines (yes=2; no=0)
		0,2	0,2	0,2	Types of medicines (AA/AL=2; other/no=0)
		0,2	0,2	0,2	Treatment stockout hours (yes=0; no=2)
		0,2	0,2	0,2	Treatment for severe malaria (yes=2; no=0)
		0,2	0,2	0,2	Referral for severe malaria (yes=2; no=0)
		0,2	0,2	0,2	Emergency transport (ambulance=2; anything else =1; nothing=0)
		0-3	0-3	0-3	Time for transport (less than 30minutes=3; 30-60 minutes =2; more =+)
	Maximum possible score in this domain	***20***	***20***	***20***	
	F. Tracking clients	0,2	0,2	0,2	Review after treatment (yes=2; no=0)
		0-2	0-2	0-2	Review time frames (4-7 days =2; 1-3 or 7+=1; no review=0)
		0,2	0,2	0,2	System for tracking in place – home visits, telephone; review at site (yes=2; no =0)
		0,2	0,2	0,2	Designated person for tracking (yes=2; no=0)
	Maximum possible score in this domain	***8***	***8***	***8***	
	Maximum possible total score	**102**	**94**	**69**	

2.2. Overview of sampled districts

The districts/municipalities selected for this study cover: Nzema East Municipality, Mpohor District, Kintampo North Municipality, Kintampo South District, Jirapa Municipality and Mamprusi Municipality.

These districts/ municipalities were selected from four regions because they fall across three malaria epidemiologic zones: the northern savannah, the tropical rainforest, and the coastal savannah/mangrove swamps. Since the Ghana's population is spread across the three zones, and subsequently at risk of getting malaria (Akpalu & Codjoe, 2013), the six districts were carefully selected to represent each of the three malaria epidemiologic zones. Secondly, these zones represent areas where malaria interventions, funded by the Comic Relief and GSK partnerships, are being implemented. A summary overview of the sampled districts is presented below:

Mpohor District and Nzema East Municipal are both located in the Western North region. These two districts, which are largely rural, have a total population of about 130,000 inhabitants, the majority of whom engage in fishing, agro-processing and mining. The area has high malaria, has a doctor-patient ratio of 1:21,461. There are district hospitals, five health centres, and nine CHPS compounds by way of public health facilities. Key issues or challenges of the district include poor road networks, poor health infrastructure, inadequate portable water, poor drainage systems, inadequate educational infrastructure, inadequate market structure, poor logistics, high numbers of poor and vulnerable groups and low agricultural production. ARHR led research across sampled facilities in Mpohor District and Nzema East Municipal.

Kintampo North Municipality and Kintampo South District are located within the forest-savannah transitional ecological zone in the Bono East region of Ghana. The two districts together cover an area of 7162km^2, largely rural with a resident population of approximately 160,000 people who are predominantly engaged in subsistence farming. Public health facilities in the two districts include two hospitals, 12 health centres/clinics, and 30 Community-based Health Planning and Services (CHPS) compounds; whilst the privately-owned health facilities include four clinics, two maternity homes, four pharmacies, and 86 Over the Counter Medicine Sellers (OTCMS) (Afari-Asiedu et al., 2018). It has a high incidence of malaria throughout the year. KHRC led research across sampled facilities in Kintampo north municipality and Kintampo south district.

Jirapa and West Mamprusi Municipalities are located in the north western part of the Upper West region and North East regions respectively. The vegetation of the two municipalities is Guinea Savanna woodland with light under growth and scattered trees. The major economic trees are shea, dawadawa, and baobab species. The population for the 2010 population census is 209,519. The main economic activities engaged by the people are farming, livestock rearing and fishing. Malaria ranks tops as a major health problem. Public health facilities in the two districts include two hospitals, two polyclinics, nine health centres/clinics, and 49 CHPS compounds. ADDRO led research across sampled facilities in Jirapa and West Mamprusi Municipalities.

2.3. Research Limitations

The study encountered some challenges that were not originally anticipated in the study design. A summary of these limitations and their implications for the study are discussed below. These limitations do not however compromise the research team's overall confidence in the utility of findings and recommendations from the T3 Study.

The COVID-19 pandemic affected the speed and types of engagement with Health Directorate staff. This report was supposed to have been concluded by May/June 2020, but this work was largely delayed owing to the COVID-19 lockdown. Since March/April 2020, GHS and Health Directorate staff were preoccupied

with COVID-19 response. This meant that partners sometimes had difficulty presenting their study findings and receiving feedback with Health Directorates on a timely basis. All partners eventually shared findings with each of the sampled Health Directorates (either remotely or in person). These engagements formed an important part of the data validation process and to build support for this study with key stakeholders.

Not all partners were able to engage Health Directorate staff and communities in the data collection process.

The scores generated for the scorecards were determined in a consistent way, but it was not feasible for each of the partners to follow the same process for engaging with district level Health Directorates and communities in the data collection process. This limitation means that the potential value of applying a community scorecard approach as a standard and easily replicable tool for assessing the T3 policy is not yet proven.

Some conflicting data and risks of potential bias.

Facility assessment data and the views of Health Directorate staff did not always match. It is possible that both facility managers and Health Directorate staff did not necessarily have all the accurate data available to them when they were interviewed. The qualitative data received from Health Directorate staff and health facility managers may also include positive bias. Partners were generally reassured by the quality of critical self-reflection during interviews, but field teams were not able to verify certain claims, such as stockouts, staffing levels or the functionality of laboratory equipment. This potential limitation was however mitigated through triangulating responses with client exit survey data.

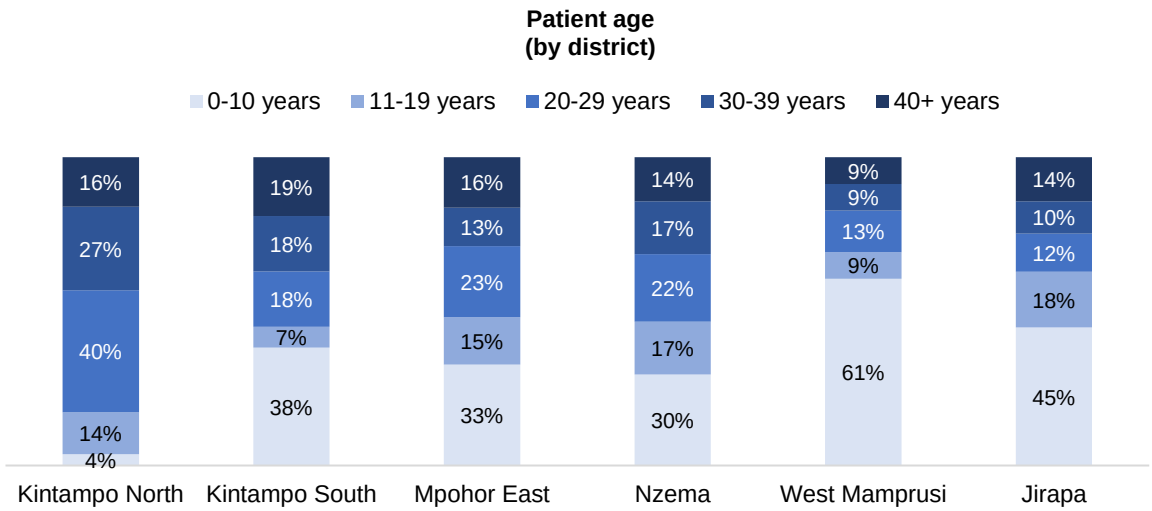
3. Findings

3.1. Findings from client exit surveys

The following section presents the main findings from the client exit interviews. Profile information of survey respondents (age, gender) are followed by headline findings from "Testing", "Treating" and "Tracking" sections of the survey. Qualitative feedback from sampled Health Directorate staff are incorporated into these findings where appropriate

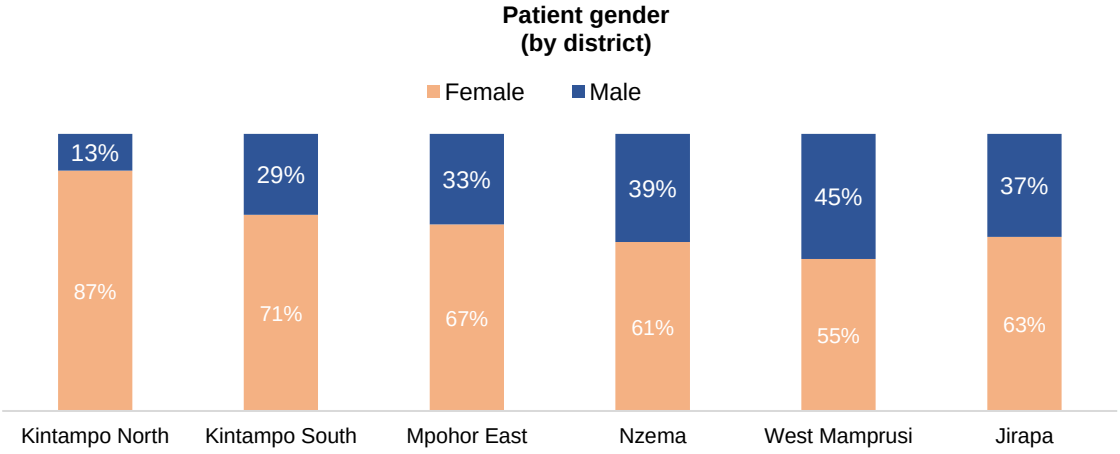
3.1.1. Profiles of client respondents

Figure 2: Age of the clients surveyed



Survey respondents included a diverse age groups, but the largest age group included in the study were under ten years old. Clients' ages ranged between less than 10 years to forty years and above. The majority 212 (36%) of these clients were below the age of ten years followed by those between the ages of twenty and twenty-nine years old, 122 (21%). The least represented age group were between eleven and nineteen years old (79 of them representing 13%). Clients below the age of 18 years were accompanied to the facilities by their guardians. These guardians were interviewed for the survey and gave permission on behalf of minors.

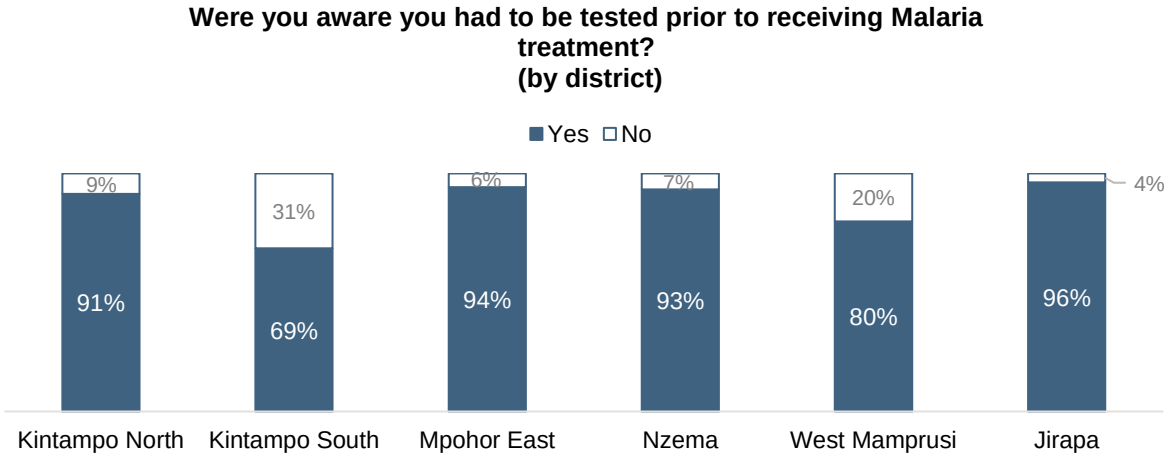
Figure 3: Gender of the clients surveyed



The vast majority of clients surveyed in this study were women (64% women compared to 36% men). This is likely because women mostly accompany their children to facilities and answered the survey on behalf of their children.

3.1.2. "Testing" findings

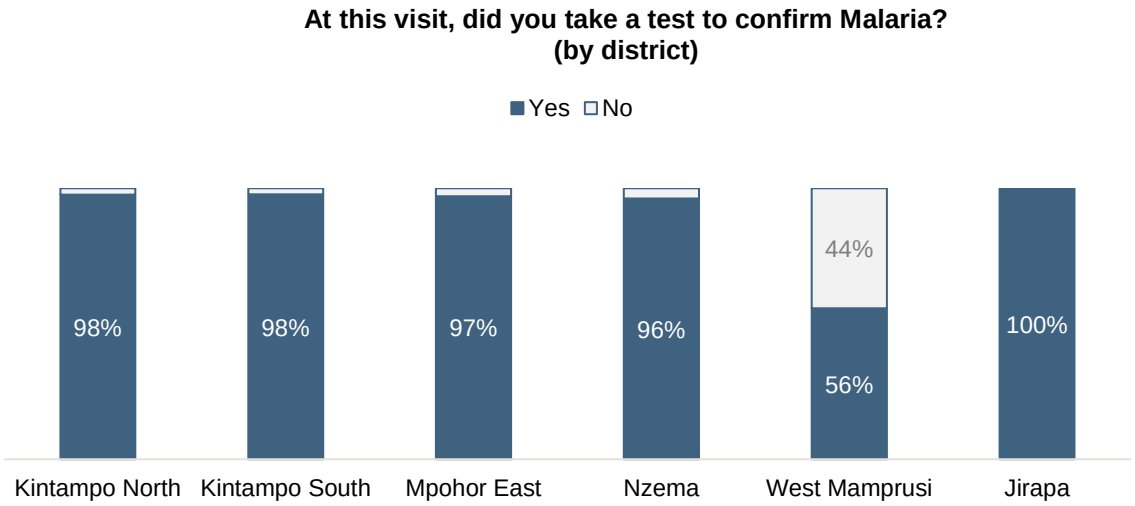
Figure 4: **Awareness of testing before treatment**



Client awareness of the need to be tested is generally high, but there is still variability in how well different districts and facilities ensure that clients understand the need to be tested before being treated. In the survey, clients who came to the facility with malaria cases and were exiting the facilities were asked if they were aware that they should get tested for malaria before being treated. The vast majority of the clients, 516 (88%) exiting the facilities were aware that they needed to get tested before receiving treatment. The districts with clients with the highest and least awareness of being tested before treatment was Jirapa, 101 (96%) and Kintampo South 61 (69%) respectively.

Analysis of testing awareness by facility shows that CHPs were the best at informing clients that they needed to be tested beforehand (93%), followed by health centres (81%) and hospitals (79%). This finding points to greater strains on more urban facilities in terms of providing quality patient care, not least because they serve additional clients who are referred from smaller health facilities.

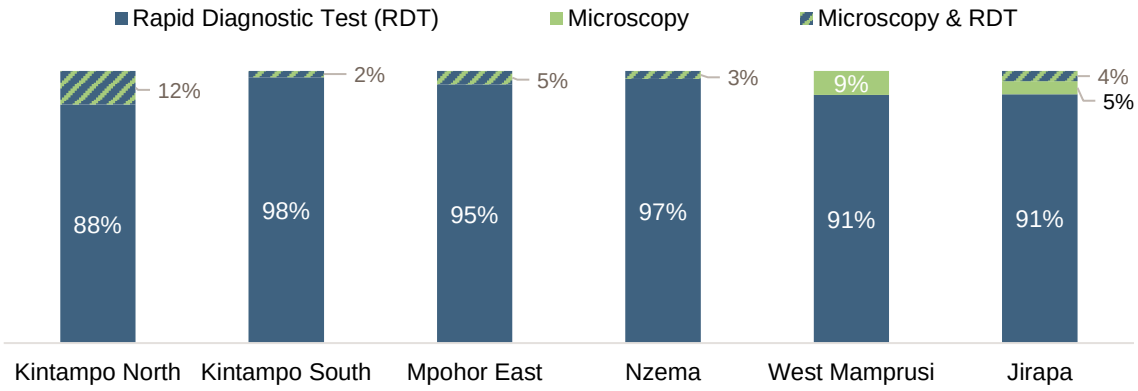
Figure 5: Testing before treatment



Testing before treatment is a broadly adopted practice by health workers and clients. This speaks to the strong implementation of the T3 policy in most areas. However, some exceptional districts (see West Mamprusi) still require significant additional attention to increase malaria testing. If there are other districts with CHPS performing like in West Mamprusi nationally, then this represents an important gap in the implementation of the T3 policy.

As per the T3 policy and Ghana Ministry of Health guidelines, all (100%) of patients should be tested for malaria before being treated. In total, 533 (90%) of the clients in the surveyed districts had a test performed on them to confirm malaria before being treated. All clients interviewed in Jirapa district, 105 (100%) had a test performed on them, however just over half of the clients, 58 (56%) interviewed at West Mamprusi had a test performed on them before treatment was provided. Analysis by facility type shows that health centres tested clients slightly higher for malaria (95%) than at hospitals (91%) and CHPS (88%) respectively. Of the total 54 clients from across the six districts who were treated without a test, 36 of these (67%) were located in two CHPS in West Mamprusi. During the district level report validation and dissemination meeting, the officers' in-charge of Nasia, and Tinguri CHPS (West Mamprusi) attributed the inability to test all clients to shortage of RDTs at the time the survey was conducted.

Figure 6: Type of test performed

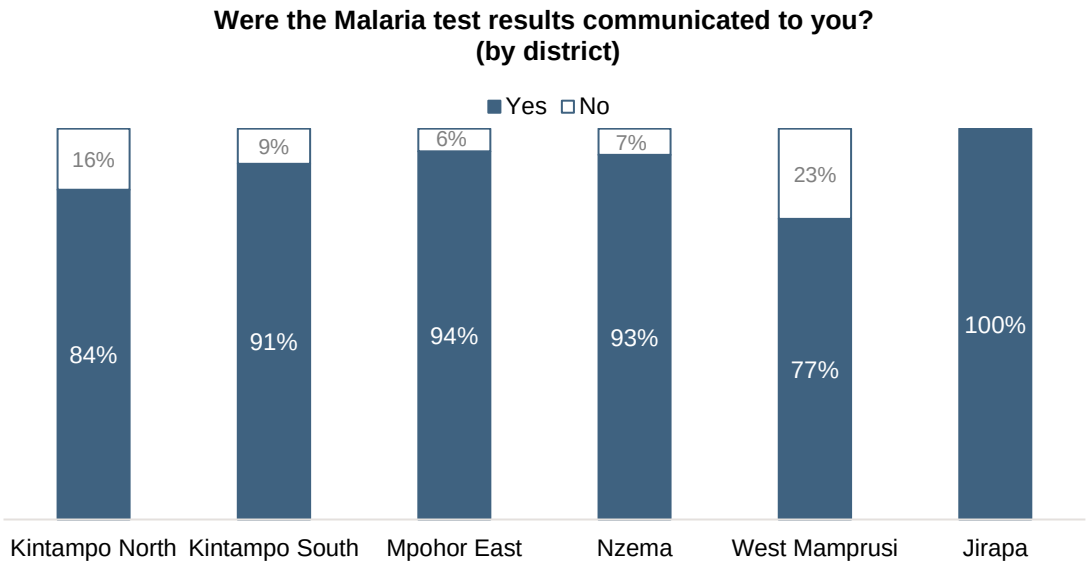


Facilities' malaria testing capabilities – microscopy, RDTs, combination of microscopy and RDTs - were consistent with the level of testing expected at different types of facilities and thus in line with the T3 policy.

However, there is a preference for the use of RDTs given the speed of results regardless of facility type. From the facilities that tested before treatment, Microscopy, 10 (2%), RDT, 498 (93%) and a combination microscopy and RDT 24 (5%) were the different types of test used. Almost all of the 85 tests (98%) performed in Kintampo South were performed by RDT which indicates a gap in microscopy testing services. For those districts using a combination of microscopy and RDT, Kintampo North, 10 (12%) had the highest proportion of use. None of the testing done within West Mamprusi however used a combination of microscopy and RDT.

The facilities which combined RDT and Microscopy are the six hospitals in the districts as well as health centres which have laboratories attached to their facilities. Participants at the report validation and dissemination meetings in Jirapa and West Mamprusi districts confirmed that use of microscopy tests is limited in some facilities because they take a relatively longer time to read the results as compared to RDT tests. They also explained that since facilities receive many clients on a daily basis, the health staff sometimes prefer to conduct RDT tests that provide quick test results for clients.

Figure 7: Communication of results



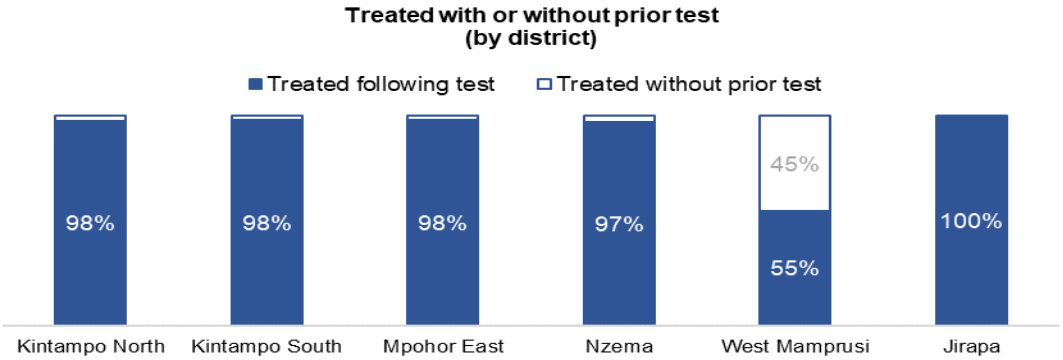
Communication of testing results to client is generally high, but there is still room for improvement. These gaps in the consistent communication of results are important because they negate one of the key pillars of the T3 policy: the effective implementation of the policy depends on all suspected malaria cases being tested and these results clearly conveyed to the clients.

Among those clients who were tested before assigning treatment, 437 (86%) of them had their results communicated to them. To illustrate the range between districts, all the clients who were tested in Jirapa had their results communicated to them 100%, while 77% of the clients in West Mamprusi had their results communicated to them.

Clients survey data by facility type shows that health centres had the highest level of communication with clients (94%) followed by CHPS (91%). Hospitals struggled relative to health centres and CHPS, with only 81% of clients at hospitals receiving communicated results. This finding may be explained by sheer volume of clients that hospitals receive on a daily basis. It should be noted that microscopy testing should only take 45 minutes, and clients are advised to wait to receive results before leaving hospitals.
Further analysis reveals instances where the communication of testing results was well below the expected standard: 42% in Guabuliga CHPS, 38% in Walewale hospital, 20% in Tinguri CHPS. Qualitative anecdotes from West Mamprusi suggest that the language barrier between prescribers in facilities and their clients could possibly add to this communication gap.

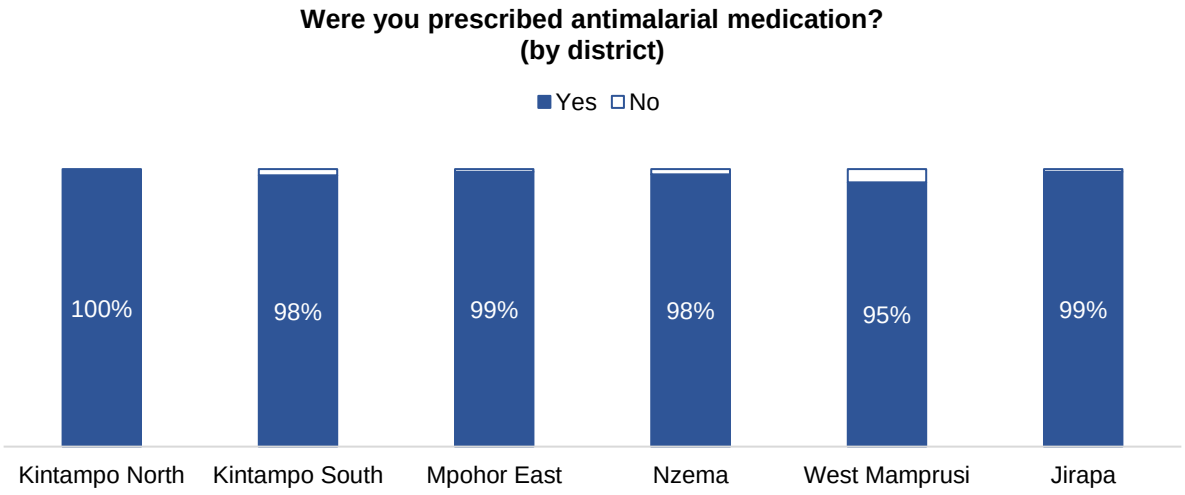
3.1.3. "Treatment" findings

Figure 8: Treatment without testing



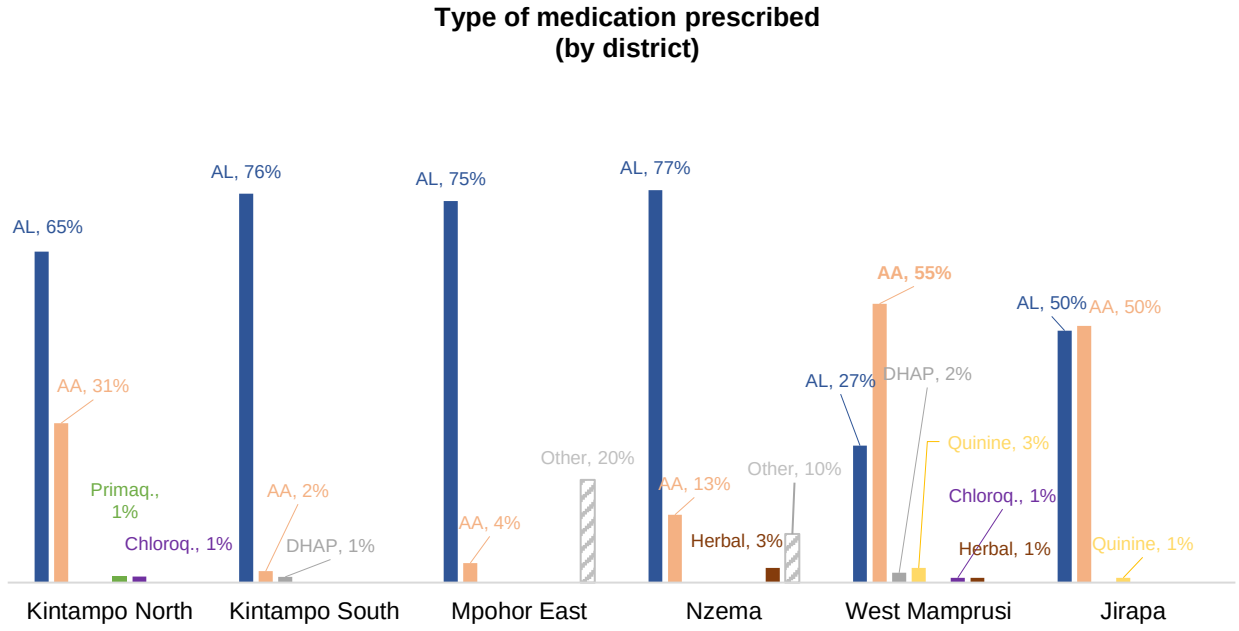
Treatment rates were high across sampled districts which shows an overall adherence to the T3 policy. Yet there were exceptional cases where clients were treated without being tested. Survey data on treatment supports the strong testing data shown in Figure 8 as the vast majority of clients received treatment after being tested in five of the six sampled districts. However, a significant percentage of clients from West Mamprusi (45%) were treated without being tested.

Figure 9: Prescribed medication



Health providers at sampled facilities were consistently able and willing to prescribe antimalarial medications. Almost all clients who were surveyed were prescribed antimalarial medication, indicating a high willingness and capacity to dispense drugs across the sampled districts and facilities. However, some clients should have been prescribed antimalarial medication in light of the observed gaps in the testing regime (see Figure 9).

Figure 10: Type of medication prescribed



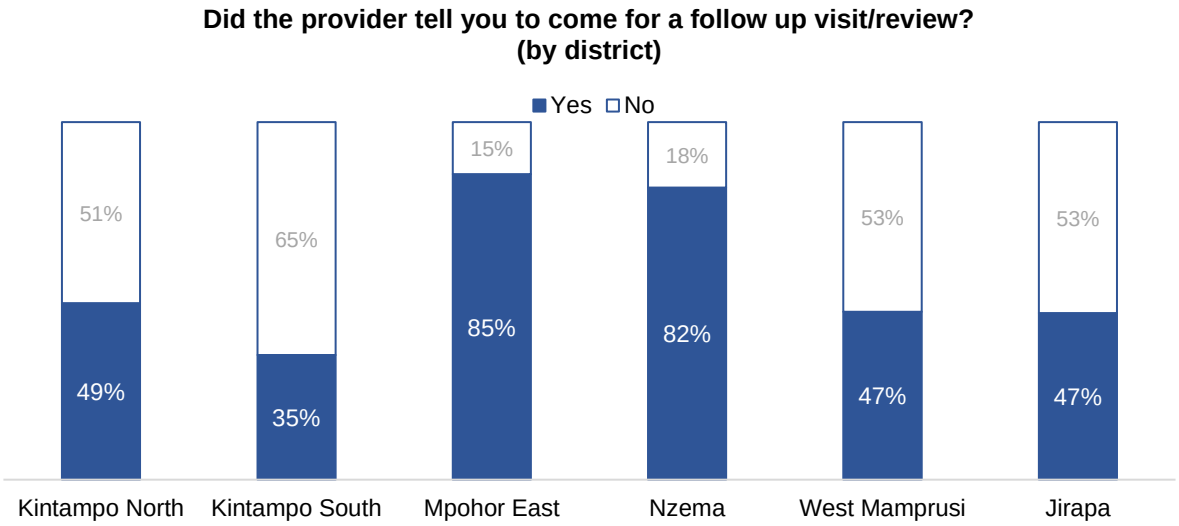
Health facilities are prescribing appropriate anti-malarial drugs in line with the national standards. All the clients interviewed received medications (either from the facility's pharmacy or dispensary) or prescriptions for medication to be bought outside of the facility. The most common drugs that were prescribed

for clients were Artesunate Amodiaquine (AA) 156 (26%) and Artemether Lumefantrine (AL) 361 (61%). The use of these drugs is in line with the government's directive and the T3 policy.

Apart from AA and AL which were prescribed to the vast majority of clients, two (>1%) clients also reportedly had chloroquine prescribed. Since this involves only two out of 590 clients that were surveyed, it is likely that clients/enumerators misinterpreted the drugs that were prescribed. During the dissemination meeting at West Mamprusi and Jirapa, GHS staff explained that none of their facilities prescribes chloroquine. They attributed the reference of chloroquine to the misinterpretation of the drugs (locally, clients often call antimalarials chloroquine).

3.1.4. "Tracking" findings

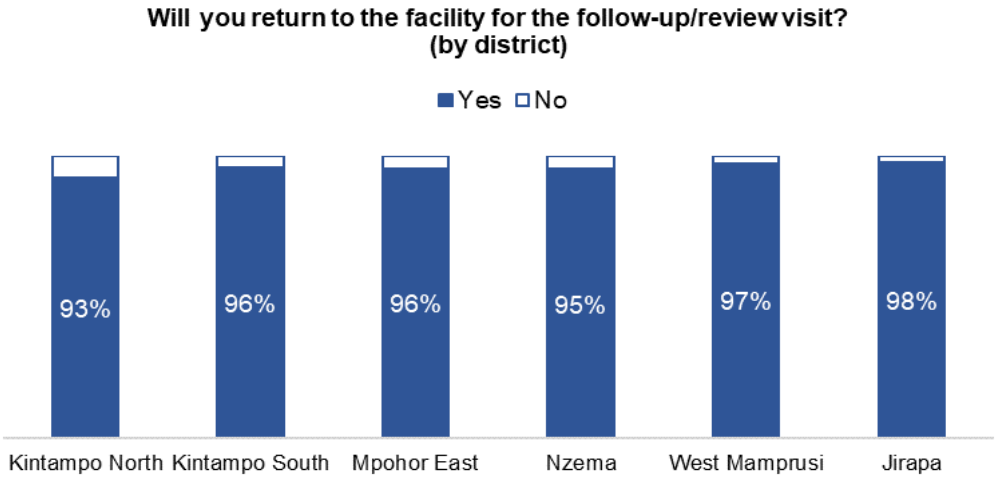
Figure 11: Follow up after visit



Many facilities did not ask clients to return for follow-up review visits after treatment. The inconsistency of the follow-up protocols and client review process requires attention. Just over half of the client population, 327 (59%), was asked to return for a follow-up visit. Mpohor East and Kintampo South were the districts with the highest and lowest client's follow-up request rates respectively. The need for facilities to improve staff and client sensitization and systems for follow-up were both areas that were flagged through the other data sources as well (See Section 3.3 and 3.4).

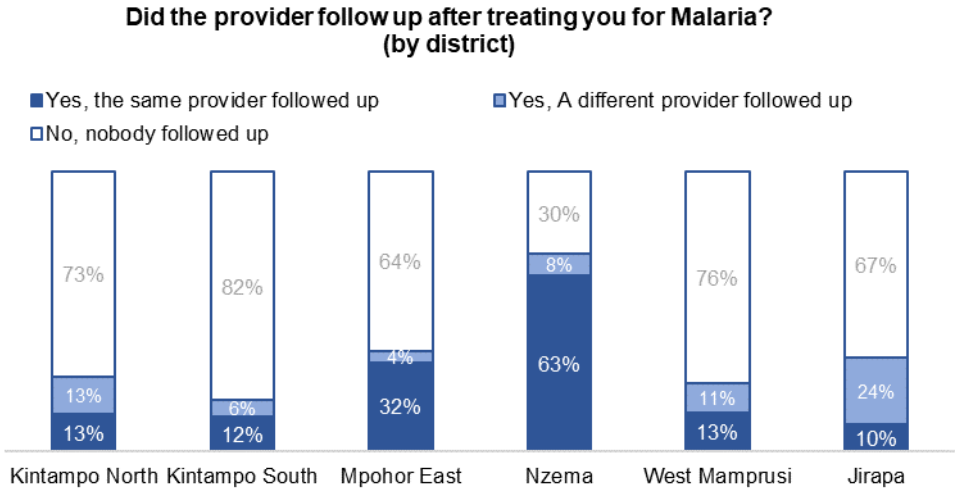
During the Kintampo district dissemination workshops, health care providers acknowledged that they sometimes forget to ask the clients to come back for review. Health care providers also reported that many people do not return to health facilities if they get well after taking the medication. Distances to health facilities, long waiting times and the cost of transportation to facilities were other reported barriers to a more effective follow-up system.

Figure 12: Intent to return for treatment



Clients indicated their high willingness to follow-up with a return visit if they were asked to. Although this survey question may lend itself to positive response bias, the vast majority of clients who were asked to return for a follow-up visit by health providers reported their intent to return. Analysis by facility type shows that the clients who were least likely to return for a follow-up visit, despite being asked, were treated in hospitals (7% of clients).

Figure 13: Health provider follow-up after treatment

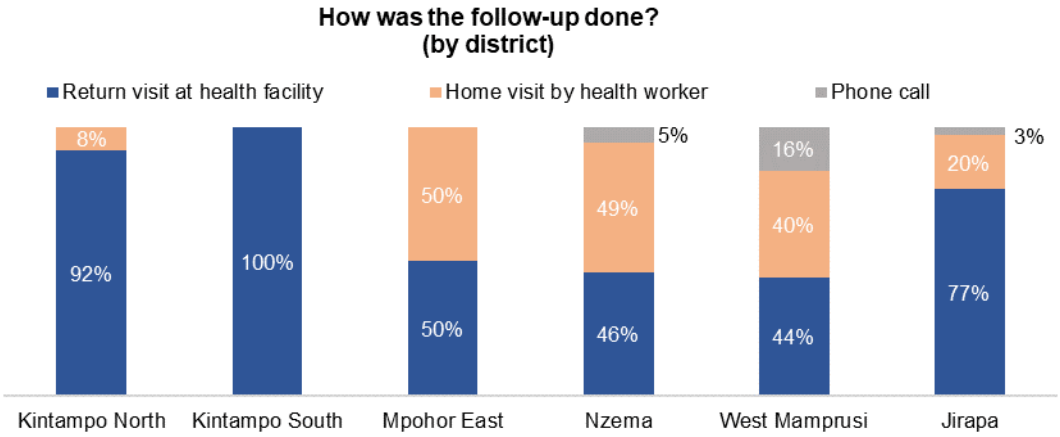


Follow-up capacity is a weakness in five of the six sampled districts. Challenges in tracing and following-up with clients represent a sizeable gap in the implementation of the T3 policy. With the exception of the Nzema district, the large majority of clients (65%) who were treated reported not receiving follow-up checks by health providers. While it is likely that *some* of the clients who were surveyed were visiting health facilities for malaria treatment for the first time (and thus health providers could not have yet followed-up), the low follow-up rates in Figure 13 show that there is a sizable gap in the tracking systems for many health facilities across sampled districts. This finding was corroborated through the qualitative data presented in Section 3.4

Analysis by facility type shows that CHPS facilities tended to follow-up at a higher rate (41%) than health centres (29%) and hospitals (28%). This finding underscores the client-care challenges for those facilities in more urban areas that are treating large numbers of clients. These high-client burdens make it difficult for

facilities to implement the tracking standards from the T3 policy. During the dissemination meetings, District Health Directorate (DHD) staff attributed tracking gaps to inadequate staff; logistics challenges such as motor bikes, and no funds to buy credit for follow-ups through calls.

Figure 14: Systems for follow-up with clients



Health facilities are using a wide range of systems for following up with clients. These vary depending on the type of facility and the types of clients that use their services. Of the 210 clients who said they had received follow-ups by health providers, the survey findings illustrate the diversity of systems that health facilities are using. Most clients from hospitals (90%) and health centres (83%) returned to the same facility for a follow-up. Clients who were treated at CHPS had a high percentage of home visits by health care providers (46%). It is worth noting that relatively few clients were followed-up by phone (4%).

3.2. Client exit survey: Score card analysis

Summary findings score card analysis

- "Testing" is the strongest component of the T3 policy, whereas "tracking" is consistently the weakest. These findings are consistent with the facility assessment scores and qualitative data presented in Sections 3.3 and 3.4.
- Nzema and Mpohor East rated strongest against the scorecard criteria, whereas Kintampo (North and South) and West Mamprusi relatively struggled.
- Facilities where one would expect greater capacity, including hospitals and health centres, often scored poorly against the score card criteria used here. Many of the best scoring facilities against the scorecard criteria were CHPS.

Purpose of the summary scorecard

While section 3.1 sets out client survey data, this section provides a more holistic overview of how each sampled district facility performed against the study's scorecard criteria. This overview allows facilities to benchmark themselves against other facilities in different districts and regions.

Overview of scoring system

The client survey score cards are presented in Table 5. This Table is divided into four sections, covering the three domains the facilities were assessed on- testing, treatment and tracking and their total score. Each domain is divided into three parts: score, percentage and rank. The score accounting for the facilities raw score out of the total possible score for each domain, the percentage is the raw score converted into percentage and then ranking the facilities based on their performance in the particular domain compared to other facilities.

Scoring colours

- Facilities that scored between 80%-100% have been allocated bright green. Indicating that comparatively these facilities scored higher in the implementation of the T3 policy.
- Facilities that scored between 60%-79% were allocated light green to amber/yellow depending on their score. The higher the score, the closer the colour is to green. These facilities performed fairly compared to other facilities in the areas of testing, treating and tracking.
- Facilities that scored 59% and below were allocated the colour red indicating that they performed poorly compared to all other facilities surveyed.

Summary Client Survey Scorecard findings

"Test" scores

Facilities scored highly in the domain of testing. Nine facilities across surveyed districts scored 100% in testing and 19 out of 30 facilities scored at least 80%.

"Treat" scores

Facilities had more mixed scoring in terms of treatment. Mphor East and Jirapa scored highest for their treatment scores, yet in these districts, several CHPS facilities scored poorly against the scorecard criteria. Kintampo North and West Mamprusi relatively struggled, with none of the facilities in these districts scoring above 80% for treatment. Overall, only eight of the 30 facilities scored over 80% which suggests a sizable gap in actual treatment capacity when compared to the score card criteria.

"Track" scores

Tracking was the weakest scoring area across sampled facilities. Overall, 21 out of the 29 facilities surveyed across districts scored lower than 50% in tracking. Dumso CHPS in Kintampo South and Nambeg CHPS in Jirapa scored the lowest in tracking. As Section 3.3 shows, all sampled facilities reportedly have a system for tracking clients in place, but the client survey data show that these systems are not effective/working. Additional qualitative data unpacks some of the challenges facing health providers in Section 3.4.

Table 5: client exit survey scorecard summary

			Test			Treat			Track			Total		
Partner	District	Facility	Score	Percent of total	Rank	Score	Percent of total	Rank	Score	Percent of total	Rank	Score	Percent of total	Rank
ADDRO	Jirapa	St. Joseph's Hospital (CHAG)	6.1	88%	16	13.4	89%	1	3.3	83%	6	22.9	88%	3
ADDRO	Jirapa	Sigri CHPS	7.0	100%	1	12.5	83%	4	2.0	50%	12	21.5	83%	6
ADDRO	Jirapa	Jirapa Urban Health Center	6.0	86%	17	10.6	71%	15	1.6	40%	15	18.2	70%	14
ADDRO	Jirapa	Gbare CHPS	7.0	100%	1	11.0	74%	13	0.1	2%	28	18.1	70%	15
ADDRO	Jirapa	Nambeg CHPS	6.6	94%	11	8.8	59%	22	0.0	0%	29	15.4	59%	22
ADDRO	West Mamprusi	Nasia CHPS Compound	4.7	67%	27	10.7	71%	14	3.1	79%	7	18.5	71%	12
ADDRO	West Mamprusi	Walewale Municipal Hospital	4.1	59%	29	9.6	64%	17	1.0	24%	21	14.7	56%	26
ADDRO	West Mamprusi	Guabuliga CHPS Compound	5.8	83%	19	7.0	47%	28	0.7	18%	23	13.6	52%	28
ADDRO	West Mamprusi	Our lady of Rocio Health Centre (CHAG)	5.3	75%	24	5.5	36%	30	1.8	45%	14	12.5	48%	29
ADDRO	West Mamprusi	Tinguri CHPS	3.9	55%	30	8.2	54%	25	0.1	3%	27	12.1	47%	30
ARHR	Mpohor East	Mpohor Health Centre	5.8	83%	20	12.0	80%	8	4.0	100%	1	21.8	84%	5
ARHR	Mpohor East	Adum Dominase CHPS	6.6	94%	11	12.5	83%	5	2.4	60%	8	21.5	83%	7
ARHR	Mpohor East	Obrayebona CHPS	6.8	97%	8	12.2	82%	6	2.4	59%	9	21.4	82%	8
ARHR	Mpohor East	Adum Banso Health Centre	6.0	86%	17	13.0	87%	3	1.4	35%	17	20.4	79%	9
ARHR	Mpohor East	Ayiem CHPS	6.7	96%	10	8.9	59%	21	2.1	52%	11	17.7	68%	16
ARHR	Nzema	Dadwen CHPS	6.9	98%	7	13.3	88%	2	3.7	93%	4	23.8	92%	1
ARHR	Nzema	Apewosika CHPS	7.0	100%	1	12.2	82%	6	3.9	98%	2	23.1	89%	2
ARHR	Nzema	Kegyina CHPS	7.0	100%	1	11.2	74%	12	3.8	96%	3	22.0	85%	4
ARHR	Nzema	Bamiankor Health Centre	5.3	76%	23	9.1	61%	20	2.3	58%	10	16.7	64%	18
ARHR	Nzema	Axim Government Hospital	5.3	75%	25	8.7	58%	24	0.9	23%	22	14.9	57%	24
KHRC	Kintampo North	New Longoro Health Centre	6.2	88%	15	11.6	77%	10	1.9	47%	13	19.6	75%	10
KHRC	Kintampo North	Asantekwaa CHPS	7.0	100%	1	6.0	40%	29	3.3	83%	5	16.3	63%	19
KHRC	Kintampo North	Babator CHPS	6.9	99%	6	8.8	58%	23	0.4	11%	25	16.1	62%	20
KHRC	Kintampo North	Kintampo Municipal Hospital	5.5	79%	22	9.2	61%	19	0.7	18%	24	15.4	59%	21
KHRC	Kintampo North	Gulumpe CHPs	5.6	80%	21	8.1	54%	26	1.0	25%	20	14.7	57%	25
KHRC	Kintampo South	Krabonso CHPS	6.8	97%	9	11.7	78%	9	0.2	5%	26	18.7	72%	11
KHRC	Kintampo South	Apesika CHPS	6.5	93%	13	10.3	68%	16	1.5	38%	16	18.3	70%	13
KHRC	Kintampo South	Kintampo South District Hospital	5.0	71%	26	11.5	77%	11	1.0	26%	19	17.5	67%	17
KHRC	Kintampo South	Anymua Health Centre	4.4	63%	28	9.3	62%	18	1.2	30%	18	14.9	57%	23
KHRC	Kintampo South	Dumso CHPS	6.3	90%	14	7.8	52%	27	0.0	0%	29	14.2	55%	27

3.3. Health Facility assessments

Summary findings from Facility assessments

- Awareness amongst facilities of the T3 policy is high, and almost all facilities in the selected areas had T3 materials, guidelines and protocols for malaria treatment on display. However, some facilities, particularly those at the CHPS level, have reportedly not had recent training on the T3 policy.
- As with Sections 3.1, testing scores and availability of RDTS were generally high, but there were capacity gaps, especially for testing for severe malaria at the health centre and CHPS level.
- Treatment capacity was also mixed. While facilities reportedly stocked the correct drugs, stock-outs of anti-malarial drugs was similar across the project regions where the study was undertaken. Out of the 10 facilities assessed by each partner, three facilities (per partner) reported stock outs lasting beyond the standard set out in government guidelines.
- Different tracking systems exist at the different healthcare facilities with at least one person in charge of tracking patients after received treatment. However, the client exit surveys and qualitative interviews with Health Directors suggest these systems are not effective, despite the high scores presented here.

Overview of scoring system

The facility assessment scorecards are presented in Table 6. This Table is divided into six sections, covering infrastructure, facility staffing, facility operations, as well testing, treatment and tracking capacity. Each domain is divided into three parts: score, percentage and rank. The ranking of facilities based on their performance in the particular domain is compared to other facilities of the similar type (for example, comparing hospitals to other hospitals and CHPS to other CHPS).

Scoring colours

The scoring colours follow the same approach used for the client exit surveys (Section 3.2).

Summary Facility Assessment findings

Facility infrastructure

As might be expected given their rural locations, CHPS tended to score lower against facility infrastructure criteria, such as type of toilet facilities, power and water sources. Hospitals consistently scored well. However, seven health centres, two hospitals and 13 CHPS lacked a designated phone. This is a resource gap that restricts options for follow-up/client tracking.

Staffing scores

Facility assessment scores showed that staffing levels were more mixed than might be expected, including for facilities that should have greater staff resources available. For example, while all hospitals had full time medical assistants, two of the six sampled hospitals reportedly did not have full time doctors. Three of the health centres frequently lacked laboratory technicians which limited their ability to conduct microscopy tests. More positively, all CHPS facilities had midwifes and community health nurses.

Supervision was also mixed. There were three CHPS facilities and one health centre that reportedly had not had a supervision visit within the last quarter. If accurate, this suggests a gap in management monitoring.

Facility operations scores

Almost all facilities reported being open on a 24/7 basis. The presence of T3 information and guidelines and protocols for malaria management was consistently high across the sampled facilities as well. There were other gaps in terms of services and functional equipment: five of the seven health centres reportedly did not have operational laboratories, even though this service should be available to clients at these facilities. This capacity gap affected the types of malaria testing they could provide which partly explains the overwhelming use of RDTs.

"Test" scores

All facilities were aware of the T3 policy, and 23 of the 31 sampled facilities had reportedly received training on the T3 policy according to facility managers. These are positive findings which speak to the widespread knowledge and implementation of the policy. Six of the facilities that had reportedly not received T3 trainings were CHPS (the other was a health centre). This suggests a disparity in training access between high-level and lower-level facilities.

There were also some testing capacity gaps: 11 CHPS and two health centres reportedly were not able to conduct haemoglobin (Hb) tests and none of the health centres were reportedly offering G6PD tests when the study was conducted. Linked to the absence of functional lab facilities (above), most health centres were not using microscopy tests to confirm malaria, nor were most health centres able to test for severe malaria (an important gap in the expected level of service from this kind of health facility).

"Treat" scores

Sampled facilities generally scored high for their capacity to treat malaria, including consistently having access to RDT tests. However, nine of the 31 facilities reported having malaria medication stockouts (including one hospital and three health centres). This is a significant percentage of facilities, and, if accurate, flags a logistics/supply chain gap district Health Directors were not aware of. Facilities scored well in terms of referrals and transport services that were expected at their respective levels, however four health centres were reportedly unable to treat severe malaria.

"Track" scores

All facilities reportedly have a system in place for tracking patients (e.g. designated focal point) and providing follow-up support. Almost all facilities scored well for instructing patients to return for follow-up visits between four and seven days after first being tested and treated. However, as Sections 3.1, 3.2 and 3.4 illustrate, these systems face major challenges. Client survey data shows that staff often do not ask clients to come back for follow-up visits and relatively few clients receive tracking checks from health providers.

Tables 6: facility assessment scorecard summary

			Infrastructure			Staffing			Facility Operation			Test			Treat			Track			Total		
Partner	District	Facility	Score	Percent of total	Rank	Score	Percent of total	Rank	Score	Percent of total	Rank	Score	Percent of total	Rank	Score	Percent of total	Rank	Score	Percent of total	Rank	Score	Percent of total	Rank
ADDRO	Jirapa	St. Joseph's Hospital (CHAG)	12.0	86%	3	26.0	93%	2	8.0	100%	1	24.0	100%	1	19.0	95%	1	8.0	100%	1	95.0	97%	1
ADDRO	West Mamprusi	Walewale Municipal Hospital	12.0	86%	3	27.0	100%	1	8.0	100%	1	20.0	83%	5	16.0	80%	5	8.0	100%	1	92.0	90%	3
AHRH	Nzema	Axim Government Hospital	14.0	100%	1	25.0	89%	3	8.0	100%	1	24.0	100%	1	18.0	90%	3	8.0	100%	1	95.0	97%	1
KHRC	Kintampo North	Kintampo Municipal Hospital	13.0	93%	2	24.0	86%	4	8.0	100%	1	21.0	88%	4	17.0	85%	4	8.0	100%	1	91.0	89%	5
KHRC	Kintampo South	Kintampo South District Hospital	11.0	79%	5	24.0	86%	4	8.0	100%	1	22.0	92%	3	19.0	95%	1	8.0	100%	1	90.0	92%	4
ADDRO	Jirapa	Jirapa Urban Health Center	8.0	57%	5	18.0	90%	2	4.0	50%		12.0	46%	6	17.0	85%	5	5.0	83%	6	64.0	68%	7
ADDRO	West Mamprusi	Our lady of Rocio Health Centre (CHAG	12.0	86%	2	19.0	95%	1	8.0	100%	7	22.0	85%	1	19.0	95%	1	6.0	100%	1	86.0	91%	1
AHRH	Mpohor East	Mpohor Health Centre	10.0	71%	4	17.0	85%	3	8.0	100%	1	20.0	77%	2	18.0	90%	3	6.0	100%	1	79.0	84%	2
AHRH	Mpohor East	Adum Banso Health Centre	11.0	79%	3	14.0	70%	4	6.0	75%	4	10.0	38%	7	18.0	90%	3	6.0	100%	1	65.0	69%	6
AHRH	Nzema	Bamiankor Health Centre	13.0	93%	1	14.0	70%	4	6.0	75%	4	13.0	50%	5	17.0	85%	5	5.0	83%	6	68.0	72%	4
KHRC	Kintampo North	New Longoro Health Centre	11.0	79%	3	13.0	65%	6	8.0	100%	1	19.0	73%	3	13.0	65%	7	6.0	100%	1	70.0	74%	3
KHRC	Kintampo South	Anymua Health Centre	11.0	79%	3	11.0	55%	7	6.0	75%	4	14.0	54%	4	19.0	95%	1	6.0	100%	1	67.0	71%	5
ADDRO	West Mamprusi	Guabuliga CHPS Compound	13.0	93%	1	6.0	75%	12	4.0	67%	18	13.0	100%	1	17.0	85%	4	8.0	100%	1	61.0	88%	2
ADDRO	West Mamprusi	Tinguri CHPS	10.0	71%	8	8.0	100%	1	2.0	33%	19	5.0	38%	19	12.0	60%	19	8.0	100%	1	45.0	65%	19
ADDRO	Jirapa	Sigri CHPS	7.0	50%	13	8.0	100%	1	6.0	100%	1	11.0	85%	7	18.0	90%	2	7.0	88%	11	57.0	83%	8
ADDRO	Jirapa	Gbare CHPS	4.0	29%	17	6.0	75%	12	6.0	100%	1	9.0	69%	13	18.0	90%	2	7.0	88%	11	50.0	72%	17
ADDRO	Jirapa	Nambeg CHPS	4.0	29%	17	8.0	100%	1	6.0	100%	1	9.0	69%	13	19.0	95%	1	7.0	88%	11	53.0	77%	14
ADDRO	West Mamprusi	Nasia CHPS Compound	7.0	50%	13	8.0	100%	1	6.0	100%	1	7.0	54%	18	14.0	70%	11	8.0	100%	1	50.0	72%	17
ADDRO	West Mamprusi	Tampaala CHPS	12.0	86%	5	6.0	75%	12	6.0	100%	1	9.0	69%	13	14.0	70%	11	7.0	88%	11	54.0	78%	13
AHRH	Mpohor East	Adum Dominase CHPS	13.0	93%	1	8.0	100%	1	6.0	100%	1	13.0	100%	1	15.0	75%	9	7.0	88%	11	62.0	90%	1
AHRH	Mpohor East	Obrayebona CHPS	13.0	93%	1	8.0	100%	1	6.0	100%	1	11.0	85%	7	14.0	70%	11	8.0	100%	1	60.0	87%	5
AHRH	Mpohor East	Ayiem CHPS	12.0	86%	5	6.0	75%	12	6.0	100%	1	13.0	100%	1	16.0	80%	7	8.0	100%	1	61.0	88%	2
AHRH	Nzema	Dadwen CHPS	10.0	71%	8	4.0	50%	19	6.0	100%	1	11.0	85%	7	17.0	85%	4	7.0	88%	11	55.0	80%	9
AHRH	Nzema	Apewosika CHPS	12.0	86%	5	8.0	100%	1	6.0	100%	1	11.0	85%	7	17.0	85%	4	7.0	88%	11	61.0	88%	2
AHRH	Nzema	Kegyina CHPS	8.0	57%	11	8.0	100%	1	6.0	100%	1	11.0	85%	7	15.0	75%	9	7.0	88%	11	55.0	80%	9
KHRC	Kintampo North	Asantekwaa CHPS	7.0	50%	13	6.0	75%	12	6.0	100%	1	12.0	92%	5	13.0	65%	17	8.0	100%	1	52.0	75%	15
KHRC	Kintampo North	Babator CHPS	8.0	57%	11	6.0	75%	12	6.0	100%	1	8.0	62%	17	16.0	80%	7	7.0	88%	11	51.0	74%	16
KHRC	Kintampo North	Gulumpe CHPs	10.0	71%	8	8.0	100%	1	6.0	100%	1	13.0	100%	1	13.0	65%	17	8.0	100%	1	58.0	84%	7
KHRC	Kintampo South	Krabonso CHPS	13.0	93%	1	8.0	100%	1	6.0	100%	1	11.0	85%	7	14.0	70%	11	8.0	100%	1	60.0	87%	5
KHRC	Kintampo South	Apesika CHPS	7.0	50%	13	8.0	100%	1	6.0	100%	1	12.0	92%	5	14.0	70%	11	8.0	100%	1	55.0	80%	9
KHRC	Kintampo South	Dumso CHPS	7.0	50%	13	6.0	75%	12	6.0	100%	1	9.0	69%	13	14.0	70%	11	8.0	100%	1	50.0	72%	17

3.4. Findings from Health Directorate interviews

Summary findings from Health Directorate interviews

- Health Directors have a strong understanding of the T3 policy and its purpose.
- Health staff in the six districts are trained on the T3 policy as trainers who are then expected to cascade this knowledge to colleagues. However, the frequency of training on the T3 policy is highly variable across districts.
- Health Directors believe more regular training is needed on T3, but insufficient funding makes it difficult to provide this.
- Sampled districts have regular and adequate supply of mRDT kits throughout the year. Facilities do not experience regular shortages and stock outs.
- Inadequate supply of ACTs to health facilities in the six districts is a major challenge to the implementation of the T3 policy. This corroborates facility assessment data that suggests there were medical stockouts in at least some facilities (Section 3.3).
- The Health Directorates in the six districts embark on supportive and supervisory visits at least once every quarter as a measure to monitor the adherence of the T3 policy. However, the facility assessment data suggests there were at least some gaps in supervision visits (Section 3.3).

Theme 1: knowledge on T3 policy

Health Directors demonstrated an in-depth knowledge of the T3 policy and what it entails. Respondents understood that 'T3' is an acronym which stood for Test, Treat and Track. They said it was a policy introduced by the World Health Organization (WHO) and adopted by Ghana in 2012 and requires that suspected cases of malaria should first be tested, then treated if test result is positive and tracked to find out if patient is getting better. They added that the T3 policy was meant to replace the then presumptive malaria treatment which was based on history and clinical examination as part of the country's malaria case management. A supporting quote is included below:

> *"So what I know about the T3 is basically, years ago I think 2013 when Ghana adopted it, it is actually a WHO policy of test, treat and track; and I think. before 2013, Ghana we were not going religiously by that. We were doing a lot of presumptive malaria treatment where it was mostly based on history and clinical examination findings. I think 2013 we adopted it and then we brought it on board as part of our malaria case management and I think we have developed since 2009. So I think to the best of my knowledge that's what I know about the T3. We brought it as a policy, we trained staff, then we started working with it and implement it. And it also goes with the use of ACTs – artemisinin-based combination therapy." – Respondent 2*

Theme 2: T3 training

There is no uniform approach for selecting which health staff attend T3 trainings, but staff who are most responsible for malaria care tend to be chosen. Respondents explained that the identification of staff for T3 training is based on roles and duties of the staff at their respective facilities. For example, prescribers such as Physician Assistants (PAs) and Enrolled Nurses are often selected in more rural areas because they are the first point of contact for clients. At hospitals, training is often provided to a mix of doctors, pharmacies, and lab technicians reflecting the spectrum of staff at the hospital-level involved in malaria care. Supporting quotes are included below:

> *"In the health facilities we have staff who are prescribers so they are those who are trained then when they go back to their facilities, the other staff who did not get the opportunity are also trained on the job." –Respondent 1*
>
> *"ADDRO with the support of comic relief has been organizing trainings for my staff on yearly basis over the last two years" – Respondent 5*
>
> *"I think basically what happen was, it was selected staff from the various levels, I happened to be part of the trainers by then. So basically we did two types of training; one for the hospital level and then one for the district level. For the district level we brought on board physician assistants and enrolled nurses because they are the*

first point of contact or who see to the management of client at the district level. And for the hospital level, it was a mixed of doctors, pharmacies, lab technicians, I think the various cadre of staff who were in the spectrum of malaria management. It varied and the content also varied a bit but the main theme runs through the principle of the T3; the Test, Treat and Track." – Respondent 2

Respondents highlighted that T3 trainings are not done frequently enough, and highlighted lack of funding for training as an important constraint. They explained that the frequency of trainings range from between six months to 24 months since it is mostly determined at the national level as and when funds are made available. Supporting quotes are included below:

"The frequency always comes from the national level. As and when there is money earmarked for training or the refreshers that are done, so there is no fixed period for training. So I'll say averagely twice a year." – Respondent 1

"If I must be very honest with that, the frequency is nothing to write home about because it's usually funding base, [lack of funding support regular training] and it was usual run by the malaria control programs, as and when funds will come, I think we started in 2015 and then 2016, I think it ended in 2017. To the best of my knowledge 2018, 2019 we did not have any training. So it's not all that frequent, some of the years we have not have trainings." – Respondent 2

Respondents also explained the cascade system. Trainings are mostly led by focal persons at the regional Health Directorate (for those staff at the district level) and focal persons at the district health management are then expected to refer cases to lower level facilities. A supporting quote is included below:

"For the trainings, at the regional level thus the regional level we have various facilitators selected from all the districts. So for example each district will have about two or three people selected to be part of the regional team and then the various districts were now zoned. Resource persons from both the regional and district level and then they are all being given trainings at the regional level to form a regional TOT and then the training is being cascaded down. We encourage some of the bigger hospital to also form their own teams, build their capacity so that the regional team will come there to train them and also they could train new staff who are coming on board. I don't know how effective it works though, I didn't have the capacity to follow up and to do a further study on that one." – Respondent 2

When asked if there is a formal T3 training plan in place across sampled districts, all respondents said "'yes". This training plan includes six months refreshers for old/existing staff then also as and when the need arises such as when new staff are posted to the municipality/district. Supporting quotes are included below:

"Yes, there is. As part of our training program we schedule it to the middle part of the year; half year and the reason is simply we are expecting new staff to come on board in April and May and our thinking is if we go ahead and train now those new staff who may be posted to the CHPS compound and the health centre level will not benefit from that training thus why we shifted it to the middle of the year so once we get the new staff, we want to make them part of that training. I think is even critical for them, they are new and whatever they learn in school is different from what is at the policy level." – Respondent 2

"Yes. We have it, every year the directorate draws its training plan and we always take the new staff who have been posted in, they are taken through; then old ones too are refreshed according to the policy." – Respondent 1

Health Directorates have systems in place for assessing knowledge of the policy, but these can look different between districts. Respondents indicated that a review is done to check staff knowledge and adherence to the malaria management and treatment protocol. This review is typically managed through a checklist during monitoring and supervision visits. Supporting quotes are included below:

"We have a checklist when we go on monitoring. We make sure they [health workers] test for us to see when there is a client, the steps that they use in testing and then the drug that they give whether it is apparent with

the protocol the ACT drugs that we are giving and then from their folders whether they are asked to come for follow up. And also when the community health nurses go on visit whether they do visit such people."- Respondent 1

Respondents differed in their opinion on assessing knowledge of staff through a pre and post-tests during trainings. One respondent said "yes" these pre/post tests are done, the other said "no", it is not done.

"… Yes they are pretested from the national level and then post-test to check the level of knowledge gained." - Respondent 1

"… no because technically is like a supportive supervision thing, it becomes difficult to do your typical pre-test and post-test because we try not to make it like you have come and you are doing a classroom approach. So basically what we do is we sample some of their folders to see the work they have done, I don't know whether that qualifies for a pre-test, we see what they have done and so for example if it is been recorded we retrieve retrospectively some folders, look through the lab records, do they do the test, if they did fine, did it test positive or negative, if it tested negative why did you go ahead and treat, does how we but we don't do typical, where we do the post-test will be. For the training I told we did last year, they did the pre-test and post-test because that one we brought all of them to the centre and then they went through that one, so we were also thinking that the June one they will go through the pre-test and post-test especially for the new staff, we have to know their knowledge level, awareness is and then we can build on it." – Respondent 2

Theme 3: RDT availability, supply, procurement and stock outs

Respondents said that their facilities had availability of mRDTs during the whole of 2019 and did not experience shortages. They attributed the all-year-round availability of mRDT at the facilities to the last mile distribution policy.[5] Supporting quotes are included below:

"It used to be when your stock is getting to the minimum level but now as and when it comes to the region or when the facility request for drugs they pack and then add, so it is part of the milestone distribution. So it's packed according to what is used in the district and the facility." – Respondent 1

"So with RDTs I'm happy you are bringing it on board, in fact with RDTs it's been very, very much decentralized now. So now RDTs doesn't even come to us at the district level, it goes straight to the facility level and this is how it work, so national and regional teams pick the malaria figures from DHIMS and they make their projections and then they send straight to the facility level they do their work ups on it, they sent straight to the facilities so is now facility specific, is more unless we don't have any role to play, I don't have any role to play. DHIMS is speaking for itself and now it's quite very effective because during our supportive supervision we realised that one of the facilities even have enough RDTs and some were even nearing expiring and am not even too sure about this because they don't channel it through us because I'm not too sure whether it was already nearly expiring or is being there for a while. But none of the facilities that we visited have run out of the RDTs." – Respondent 2

When asked how the mRDTs get to facilities, respondents using the last mile distribution policy explained that once requests are received by the regional medical stores from the facilities, the region efficiently provides supplies/stocks to the facility without having to go through the districts. Supporting quotes are included below:

"In as much as we are supposed to undertake quarterly visits, sometimes we have other programme areas [that provide resources to undertake monitoring visits]. For instance, yesterday, we went for a monitoring visit on tuberculosis (TB) at Bamiankor [a community in Nzema East] so depending on availability of resources, we use an integrated approach and when this done, we have selected staff undertaking this since we can't have all the directorate staff on board one vehicle". – Respondent 4

[5] The last mile distribution policy means that mRDTs are now supplied directly to the facilities by the regional medical stores instead of through the districts.

> *"Requisition is written to the regional medical stores and it is packed and sent to them [that is the facilities]" – Respondent 1*

On the issue of how mRDTs are procured, participants said that they do not buy RDTs from the open market because they get their supplies from the medical stores.

> *"we normally get them from the central medical stores, so we don't buy from outside." - Respondent 1*

With regards to stock outs of mRDT at facilities within the districts, participants said that they do not experience stock out due to the availability of mRDT supplied by the regional medical stores.

> *"As I said earlier 2019 we didn't experience any stock out it was the previous years that we had that experience. I think now the supply is regular, I don't know what will happen in the first quarter of 2020 but 2019 we were ok." – Respondent 1*

Theme 4: systems for monitoring the adherence of the T3 policy.

Officials have a system in place for monitoring T3 adherence. Health Directorates explained that they conduct supportive and supervisory visits at least once every quarter as a measure put in place to monitor the adherence of the T3 policy. Though this is supposed to be done at least quarterly, the directorates respond immediately where particular facilities require assistance and often conduct multiple visits. Supporting quotes are included below

> *"At least we do one visit per quarter and then we ride on the back of programs to sometimes do some of these supportive and supervision visits. Example, if a particular facility from the previous supportive supervision has a peculiar challenge, we don't wait till the next quarter before we provide feedback or help solve their problem. if we are not able to go for a monitoring visit, we try and then pay them unscheduled visit to help solve their challenges. We can't do that for all the facilities because of logistical constraints so we limit it to the facilities with very peculiar challenges." – Respondent 2*

> *"We have this malaria care NGO that support us to do monitoring and supervision. And that one ideally it should have been quarterly visits but sometimes it is done twice in a year." – Respondent 1*

> *"In as much as we are supposed to undertake quarterly visits, sometimes we have other programme areas [that provide resources to undertake monitoring visits]. For instance, yesterday, we went for a monitoring visit on tuberculosis (TB) at Bamiankor [a community in Nzema East] so depending on availability of resources, we use an integrated approach and when this done, we have selected staff undertaking this since we can't have all the directorate staff on board one vehicle" – Respondent 3.*

Respondents explained that during the monitoring and supportive visits they check: facility staffs' adherence to the protocol on malaria management and treatment, weighing clients and administering medication according to the clients' weight.

> *"for malaria, we look at the RDT; the quantity they have, the potency, we observed them going through the steps, the number of minutes they use and look at the change whether it's within the approve one then we follow up with the treatment. Are they going according to the protocol? Are they using the ACTs? Are they weighing the clients before giving the drugs according to the weight? Do they report for follow up visits after the treatment?" – Respondent 1*

Following supportive supervision visits, the Health Directorate monitoring team meets with the facility staff to draw action plan where they see gaps and then determine what can be done locally to improve before the issue is escalated to the district level.

> *"We sit down with them and draw action plan where we see gaps and they themselves come out with what they can do and what they can't then the district takes it up". – Respondent 1*

Theme 5: Challenges of effective implementation of T3 policy

Major challenges identified by participants in the implementation of the T3 policy include the management of other non-malaria causes of febrile illness, inadequate supply of ACTs, delays in payment of NHIS claims and staffing shortages. Supporting quotes are included below:

"*The challenges were inadequate and erratic supply of the RDT'., Sometimes some RDTs have challenges with their potency but when we reported we are not experiencing anything. As I said 2019 was ok and we are hoping 2020 would be better with the supply because if the kits are there the testing would be done, the correct treatment would be given and there would be the tracking..." Yes, especially now that the payment for National Health Insurance is being delayed. So if there is no RDTs at the medical stores, we have to go and buy from the open market, I don't have money because you cannot take money from your accounts. There is even none for you to take to go and buy. So we write for the clients to go and buy. What they are going to buy we don't know the potency; those who are selling they just want their money so you send the prescription they will give you what they have. – Respondent 1*

"So for me as it is now, the major challenge is the management of the other non- malarial causes of febrile illness because sometimes they need a lot of diagnostic test and labs to be able to diagnose other conditions. For example, Pneumonia or UTI [urinal tract infection] will behave very similar to malaria and then if the person can't do simple urine test then diagnosing UTI becomes difficult if they don't have otoscope to look in to ears of these kids. So diagnosis is usually a major challenge and like I said the laboratory is also another challenge. But in terms of drugs and RDTs it is not a major issue. Sometimes the level of the personnel who is attending to these clients. Sometimes you may have a community health nurse who is attending to patients as the clinician and these are on the job transformations which are not backed with training, so all these things are sometimes major challenges in the policy. You wouldn't understand it as a clinician. So these are the major challenges we are encountering." – Respondent 2

"Some of the major challenges face by the Jirapa district in the implementation of the T3 policy are delays in logistics supply especially RDTs, inadequate registers, as well as poor funding for the training of service providers and monitoring and supervision" – Respondent 5

"The challenges to include; inadequate staff to do follow-ups: client's reluctance to return for review, inadequate transport and poor road network hindering effective monitoring of hard-to-reach communities, communities that are out of coverage areas (inaccessible through phone calls), intermittent shortages of RDTs, antimalarial and other consumables during malaria peak seasons, and lack of adequate funds to train staff on the T3 policy" – Respondent 6

4. Conclusions

The conclusion section is first framed by an overarching assessment of Ghana's implementation of the T3 Policy based on this study's findings. This study updates and expands on the literature presented in Section 1.2[6]. The rest of the conclusion section responds to each of the study's five research objectives as introduced in Section 1.3. The conclusions section ends with process lessons about implementing this study.

Overarching conclusions

Seven years since it was adopted by Ghana, the effective implementation of T3 policy remains a vital national health priority. By strengthening the testing, treatment and tracking pillars of the policy, malaria endemic regions of Ghana will substantially improve child and maternal health while lifting the challenges caused by malaria towards economic development. The scale-up of the T3 pillars will also provide the much-needed bridge between efforts to achieve universal coverage with prevention tools and the goal of eliminating malaria deaths, and eventually the eradication of the disease. Effective testing, treatment and tracking will also provide the DHD staff, GHS and policy makers with a greater understanding of the disease burden and enable the National Malaria Control Programme (NMCP) to better direct available resources to where they are most needed.

This study provides further evidence that while awareness of the T3 policy is high, and many health facilities across Ghana have adopted and are implementing the T3 policy, there are still notable capacity and delivery gaps. Various challenges at the local health care setting such as staffing shortages, infrastructure/logistics problems, and a lack of funding for staff training continue to present major barriers for the effective implementation of the T3 policy. Providing comprehensive malaria case management is proving especially difficult in urban settings which are often overwhelmed by the volume of client they receive on a daily basis. Testing capacity is the strongest pillar of the T3 policy. RDTs are widely available and are being used.

However, while the large majority of clients are being tested for malaria before treatment, others are not. The limited use of microscopy testing also speaks to diagnostic weaknesses, particularly at the health centre level. Additionally, there is often a gap in terms of test results being communicated to clients on a consistent basis. Together these areas require further attention and improvement.

Evidence from this study shows that Treatment capacity is more uneven. Clients are being prescribed the correct ACTs, but instances of stock-outs show further improvement is required in the last mile distribution policy. Clinicians' ability to adhere to the T3 policy remains highly dependent on supplies and commodities. While the referral system across sampled districts is operational, too many health centres are unable to treat severe malaria, and many lack emergency transportation that can serve clients quickly.

Tracking remains the weakest pillar of the T3 policy. Despite the presence of systems for tracking clients and providing follow-up care across sampled districts, these systems are under-resourced and clients are often not being asked to return to determine treatment outcomes. This represents a sizable gap in the implementation of the T3 policy and speaks to a structural weakness in Ghana's health system. Improving these tracking systems is a priority, both to enable malaria elimination and to help control other diseases with high burden

[6] Most notably: Agandaa SA, Kweku M, Agboli E, Takase M, Takramah W, et al. (2016). Implementation and challenges of test, treat and track (T3) strategy for malaria case management in children under five years in the Bongo District, Ghana. Clin Res Trials 2: DOI: 10.15761/CRT.1000154.

rates, such as COVID-19. Additional resources and different strategies for facilities in various urban, peri urban, and rural settings.

1. Knowledge of health workers on T3 policy.

Knowledge of the T3 policy is consistently high across sampled districts health facilities which speaks to the broad success of the government in sensitizing staff to the policy. Health workers in the districts demonstrated a strong understanding of T3 as the primary policy of malaria case management in Ghana and its implementation towards effective malaria service delivery. The majority of workers in the sampled districts were also reportedly trained on the policy and were expected to pass on their knowledge to their colleagues. This study however revealed important gaps in knowledge such as in-service training and refreshers which are hampered by limited training budgets. Training gaps were most evident for staff at CHPs facilities.

Facilities in the surveyed districts are performing relatively well in the domain of testing which shows the high knowledge of workers, with RDTs being the preferred method of testing. This testing findings represent a significant strength in the implementation of the T3 policy. The appropriate treatment of malaria in most of the assessed facilities also indicates that healthcare workers are aware of the appropriate treatment to be administered to clients under the T3 policy.

Tracking proved to be the weakest domain in administering the T3 policy in the sampled districts. There is urgent need for additional intervention to improve these standards. The study highlights that CHPS health care workers often conduct home visits in small communities, but this approach cannot be replicated at scale with facilities located in areas with denser populations. Whether health workers fully understand the tracking standards of the T3 policy remains unclear, but this study shows that tracking in more urban centres with larger numbers of clients requires a different approach to be successful.

2. Knowledge of clients on the T3 policy

It is not strictly necessary for clients to understand the T3 policy in order to receive good quality care, but the fact that the large majority of clients exiting facilities were aware that they needed to be tested before receiving treatment for malaria speaks to how sharing knowledge on malaria care has become an accepted part of client/patient practice. This is an achievement for DHDs and the GHS.

This success can largely be attributed to efforts by DHDs to disseminate T3 information across health facilities. The use of information materials and the education of clients by health workers appears to be paying off. Clients using CHPS facilities also benefit from particularly high following up visits at home. These efforts need to be continued and sustained, and additional funding for the replacement of IEC materials needs to be made available to avoid situations where they are worn out or absent across facilities.

Other elements of client knowledge were weaker. A significant percentage of clients were treated without being tested, or were prescribed medicines without the test results or medications explained to them. The challenges were especially acute in more urban centres. In these contexts, providing good quality malaria case management care was especially difficult.

3. Level to which health workers adhere to the T3 policy

Adherence to the T3 policy by health workers at sampled facilities can be usefully separated summarized against the policy's three domains: test, treat and track

Testing: Testing of clients for malaria was consistently high across the sampled districts which shows that health workers are broadly adhering to the testing pillar of the policy. Microscopy is the gold standard diagnostic test which should be carried out at all health facilities where available. RDTs are being deployed at all levels of facilities and is being used as an alternative where or when microscopy is not feasible. This is a notable achievement since it shows that at least one of the required tests of the T3 policy is being used. This study further supports national data suggesting significant increases in malaria testing of suspected cases which rose from 39% in 2012 to 94% in 2016 (GHS, Fact and Figures, 2018)[1]. However, the study also highlights gaps in access to microscopy with most health centres unable to test for severe malaria. Communication of testing results is also variable, especially at hospitals.

Treating: All the clients interviewed had received medications (either from the facility's pharmacy or dispensary) or prescriptions for medication to be bought outside of the facility. The most common drugs that were prescribed for clients were Artesunate Amodiaquine (AA) 156 (26%) and Artemether Lumefantrine (AL) 361 (61%). The use of these drugs is in line with the government's standards and the T3 policy. These findings show that health workers used Artemisinin and its derivatives which are the most rapidly acting and effective antimalarials available as prescribed according to the T3 policy. The relatively high percentage of facilities that reported ACT stockouts however speaks to supply chain issues that will continue to require improvement.

Tracking: As previously described, there are major tracking gaps. Improving tracking systems requires urgent attention. Health workers in hospitals struggled relative to health centres and CHPS with tracking clients who had received malaria treatment. Some stakeholders attributed this challenge to the number of clients they had to attend to, poor infrastructure for following up with communities (no phones, credit or affordable transport), and unreliable contact details.

4. Challenges that affect the implementation of the T3 policy in health facilities

The challenges that limit adherence to the T3 policy can be broadly grouped under two categories: 1) challenges that are structural in nature and cannot be overcome without significant government and/or private sector intervention; and 2) challenges that are more specific to the Ministry of Health and Ghana Health Service. A summary of both types of challenges are set out below.

Structural challenges limiting adherence to the T3 Policy

- The problem of poor road networks and poor communication networks in rural areas is of major concern to the stakeholders regarding the T3 strategy. Bad road networks and weak cellular service does not give health providers room to adequately follow up on their clients. This is in addition to the challenge of inadequate resources to support staff travel, all of which negatively affect the effective follow-ups and tracking of clients.
- Gaps in data, particularly private facilities which do not submit malaria data, is another challenge. Private facilities, especially pharmacies and chemical shops, do not submit data on malaria to the district Health Directorate. Lower level facilities submit manual copies to the district directorates of health which are screened, verified and validated before being uploaded on DHIMS.
- The existing Legal Framework does not empower districts to regulate private pharmacies and chemical shops to test before treatment of every case. The district directorates of health are not mandated or empowered by law to hold private pharmacies or chemical shops accountable for adherence to this national directive on T3 policy. Moreover, private pharmacies or chemical shops are not trained to test

every client before administering anti malaria medications as they do not supply RDTs or provide supportive supervision to these facilities. For example, In Nzema East, the Health Directorate tried to engage the chemical shops in the district but they have not been very successful.

Challenges specific to the Ministry of Health and Ghana Health Service

- The number of clients being treated at the hospitals and health centres make it difficult for medical staff to treat and track client outcomes. Some facility heads reported that poor public postal/address systems makes tracking difficult, as do issues with inadequate staff numbers for treatment and follow ups. Some clients do not show up for review appointments or follow up on their recovery progress.
- Inadequate supply of ACTs to health facilities in two districts was observed as a major challenge to the implementation of the T3 policy. Delays in NHIS payments makes some private chemical shops reluctant to dispense to clients should the drug be available in their shops. These challenges mean that some clients go to the grey or black-market and buy drugs that may be counterfeit or unsuitable treatment options.
- Another challenge cited by district officials is that logistics are kept at the national level till they are nearing expiry before they are released to the regions and then to the districts. Some districts then receive large quantities of commodities and drugs that are near expiration.
- Lack of a structured and standardized framework for staff evaluation is another limiting constraint. Health workers in two of the project districts reported that the knowledge of staff was assessed in different formats with no structured questionnaire in place.
- Inadequate funds for staff training and refreshers is affecting implementation. The districts are supposed to have in-service training plans but due to the lack of funds, they rely mostly on regional training programmes while also piggybacking on other programmes to conduct training for health personnel in the district.

5. The association between knowledge of T3 policy and adherence to the T3 policy.

Strong knowledge of the T3 policy does not equate to strong adherence. As the section above highlights, there are a number of key constraints that are limiting the effective implementation and adherence to the T3 policy. Although knowledge about the T3 policy is largely high and contributes to adherence to the policy, efforts to adhere are hindered by inadequate financial resources, challenges with stock management and an unregulated private sector with respect to the T3 policy. The results of the study show a high level of understanding by managers of the policy. In the cases with poor performance, it was observed that challenges in adherence rose from external factors, especially with tracking. These findings show the importance of continued knowledge building and learning but these efforts are not in themselves sufficient for adherence. Additional resources and strategies are required if Ghana is to effectively implement the T3 policy on a consistent basis.

One area where knowledge can be improved is with respect to a national, regional or district wide systematic framework for learning and knowledge management. The absence of this coordinated knowledge management system has led to fragmented training designs and effort by different facilities. The lack of required funding for meeting training needs illustrates that this element of the T3 policy is relatively unprioritized. The study revealed that health workers in CHPS facilities require additional capacity building support to effectively implement the T3 policy.

Process lessons from implementing the T3 study

The effort of bringing together four different organisations to identify an issue of collective concern, design a study and then combine their efforts to deliver a study of this size and complexity should not be understated. Coordinating work remotely, defining and maintaining a shared vision and communicating across different regions of Ghana and the UK presented real challenges. More frequent in-person meetings and shorter break periods between identifying the T3 policy as a collective issue of concern, and then designing and delivering the study likely affected the speed of the research. The ways in which Health Directorate stakeholders were engaged through the scorecard approach also incurs additional costs and energy.

However, this study shows how with the right collective issue, team of dedicated people, and modest investment, four different organisations can successfully overcome organisational barriers and work together. Each of the Ghana partners - ARHR, KHRC and ADDRO - were able to leverage their access, health expertise and ingenuity to design and deliver this study. External facilitation to bring partners together and manage this study, as well as financial support through the Comic Relief/GSK Malaria Partnership were also important enabling factors. Together partners have successfully captured evidence and generated learning that will be used to engage national and sub-national stakeholders with the T3 policy.

Partners have also learned from this collective experience. For two of the partners, the use of scorecards was a novel approach to engaging with stakeholders. Some partner staff also learned from the process of preparing a study for ethical and scientific approvals, as well as using the diversity of instruments/tools. For these efforts, the response by district stakeholders to the study's scorecard and dissemination approach has been positive thus far. District Health Directorates, the district assemblies, and key stakeholders have expressed their endorsement of the study's results and an interest in implementing follow up recommendations. District stakeholders have also called for similar studies as a way of helping them to identify challenges and propose solutions for their districts. Moving forward, partners will encourage DHDs, the GHS and other civil society organisations to refine and adopt these tools to help strengthen the implementation of T3 in Ghana and eliminate malaria.

5. Recommendations

The following draft recommendations were developed with two overarching factors in mind: 1) some of these recommendations are ambitious. It is recognized that funding constraints and the nature of some the structural barriers to adhering to the T3 policy means that implementing these recommendations changes cannot be simply or quickly overcome; and 2) there are more immediately achievable recommendations that can be implemented to strengthen adherence to the T3 policy. Both types of recommendations are presented below.

These draft recommendations will be reviewed together with GHS, NMCP, DHD and other relevant stakeholders to ensure that they are as relevant and useful as possible. The national dissemination event in Accra on 22 September 2020 will be an as an opportunity to engage with these recommendations and find opportunities to take them further.

Recommendations for national-level policy makers to consider

1. The Ministry of Health/Ghana Health Service should adopt the last mile distribution policy used in supplying mRDTs to the districts to ensure that a consistent supply of ACTs is available to clients.

2. The Ministry of Health/Ghana Health Service should adopt an efficient system to track the stock outs of mRDTs and undertake supervisory visits to districts and health facilities to ensure adequate distribution and stocks of mRDTs and antimalarial drugs.

3. Where possible, additional funding from health sector funding allocations should be made available to the District Health Directorates to enable regular training and refreshers for healthcare providers at the district and sub-district level.

4. The Ministry of Health / Ghana Health Service along with civil society partners should undertake additional research into the extent to which testing, treating and tracking performance varies across other districts in Ghana. While this study was constrained by budget limits, it was able to collect data from across three ecological zones. However, still more representative national data from more districts can form the evidence base for investing in more targeted efforts to improve adherence to the T3 policy. This study can be replicated else, and the tools designed for this study can be used for this purpose.

Recommendations for District Health Directorates

Planning recommendations

5. DHDs are encouraged to provide frequent refresher trainings on the T3 policy at the lower level facilities, especially CHPs compounds.

6. A structured and standardized framework for staff evaluation on T3 should be developed. This could also be expanded to provide a knowledge management function by capturing learning lessons from implementing the T3 policy and shared through coordinated training formats for health workers.

Testing and treating recommendations

7. District-level supervision needs to continuously monitor and appraise the extent to which health facilities are testing clients before they receive treatment, and how well health facility staff are communicating test results and medical procedures to clients.

8. IEC materials provided to facilities should be regularly checked by Health Promotion Officers. Additional posters for replacing these will be needed in the cases where the materials are worn out or are out of stock.

Tracking recommendations

9. GHS should work with DHDs to devise a tracking strategy that is contextually appropriate for more urban and peri-urban facilities that service a large number of clients. While home visits will be impractical for these types of facilities, investing in more telephones and a standardised protocol for tracking clients will be a cost-effective for improving tracking.

10. The functionality and effectiveness of tracking systems at all facilities needs to be monitored by DHD officers.

11. The GHS/DHD may want to consider engaging more closely with faith-based organisations (Christian council, Moslem Mission, etc) to help emphasise and amplify the importance of tracking across local communities.

Annex 1: Timeline of the study

A summary of the timeframe for the study are set out below:

T3 concept note: August 2018

Preparation of study / drafting research protocol: September – October 2019

Tool refinement, piloting and launch event (ACCRA): w/c 11 November 2019

Recruitment and training of enumerators and participating key health stakeholders and community members: w/c 25 November 2019

Data collection activities in sampled Regions/Districts: December 2019

Preliminary quantitative and qualitative analysis: January 2010

Complete all analysis: April 2020

Scorecard validation meetings at district levels (with revisions as appropriate): July/August 2020

Final reporting and dissemination: September 2020

Annex 2: Health Facility Assessment

Facility Assessment

1 Health Directorate Identification & characteristics

1.1 Name of enumerator
Text

1.2 What is the name of the community?
Text

1.3 Type of community?
Select
- Urban
- Periurban
- Rural
- Dont know

1.4 What type of health facility is this?
Select
- Private
- Government
- CHAG

1.5 What level of health facility is this?
Select
- CHPS
- Health Centre
- Polyclinic
- Government hospital

Display condition
- *Type of facility has selected Government*

1.6 Is there a designated telephone available for this facility (a functional land line or mobile phone- NOT personal)?
Yes / No

1.7 Do you have a main source of water in this facility?
Yes / No

1.8 If yes, please specify the main source of water used in this facility
Select
- Piped
- Bore Hole Well (Bore HoleWell)
- Rain collection
- River
- Tanker

Display condition
- *Water availability has selected Yes*

1.9 Are there functional toilet facilities available for client use in the facility
Yes / No

1.10 If yes, what type of toilet facility is available for clients? multiple select
Multi-select (Max = 4)
- Flush or pour flush
- Ventilated Improved Pit Latrine (VIP) (Ventilated Improved Pit Latrine VIP)
- Pit Latrine
- Bucket

1.11 Does the facility have a power source?
Yes / No

1.12 If yes, what is the primary source of power available today in this facility?
Select
- National grid
- Generators
- Solar

Display condition
- *Power access has selected Yes*

2 Staffing Information

2.1 In the last three months, how many part time Doctors have worked or currently work in this facility? (ask facility manager, administrator or senior staff member)
Whole number (Min = 0)

2.2 How many full time physician/medical assistants currently work in this facility? (ask facility manager, administrator or senior staff member)
Whole number (Min = 0)

2.3 How many part time physician/medical assistants currently work in this facility? (ask facility manager, administrator or senior staff member)
Whole number (Min = 0)

2.4 How many full time nursing practitioners currently work in this facility?
Whole number (Min = 0)

2.5 How many part time nursing practitioners currently work in this facility?
Whole number (Min = 0)

2.6 How many midwives currently work in this facility?
Whole number (Min = 0)

2.7 How many registered general nurses currently work at this facility?
Whole number (Min = 0)

2.8 How many health care assistants clinical nurses currently work at this facility?
Whole number (Min = 0)

2.9 How many community health nurses currently work at this facility?
Whole number (Min = 0)

2.10 How many Biomedical scientists currently work at this facility?
Whole number (Min = 0)

2.11 How many laboratory/technical offers currently work at this facility?
Whole number (Min = 0)

2.12 How many pharmacists work at this facility?
Whole number (Min = 0)

2.13 How many pharmacy technicians work at this facility?
Whole number (Min = 0)

2.14 How many pharmacy assistants work at this facility?
Whole number (Min = 0)

2.15 How many dispensary assistants work at this facility?
Whole number (Min = 0)

2.16 Was there any supervisory visit to this facility by the district health administration in the last three months? (ask facility manager, administrator or senior staff member)
Yes / No

2.17 If yes, how many times over the last 3 months?
Whole number (Min = 1)
Display condition
- *Supervisory visits has selected Yes*

3 Facility Operation

3.1 Does this facility provide 24 hours/7 days a week service? (Ask facility manager or assessment facilitator
Yes / No

3.2 Are there Information, Education &Communication materials displaying the availability of malaria services? (enumerator to verify)
Yes / No

3.3 Are guidelines and protocols for malaria care available? (ask facility in-charge to see copies of guidelines or protocols) (enumerator to verify if Malaria case management and treatment guidelines are available at the facility)
Yes / No

3.4 Is there a functioning laboratory that does malaria microscopy at this facility?
Yes / No

4 Testing at the Facility

4.1 Are you aware of the T3 policy?
Yes / No

4.2 Have you received any training on the T3 strategy within the last two years?
Yes / No

4.3 Details of the training
Text

4.4 Is there at least one health provider trained in this facility to perform malaria Rapid Diagnostic Tests?
Yes / No
Display condition
- *Training on T3 has selected No*

4.5 (only to be asked at Health Centre, Polyclinic and ospital levels) Is there at least one health provider trained to perform microscopy for malaria diagnosis?
Yes / No

4.6 Are there test kits (malaria RDT) available for testing malaria at this facility?
Yes / No

4.7 In the last 3 months, have you had any RDT stock-outs for more than 72 continuous hours? (Verify from RDT stock cards)
Yes / No

4.8 In the last 3 months, have you had any RDT stock-outs for more than 7 continuous days? (Verify from RDT stock cards)
Yes / No

4.9 Does this facility check Hemoglobin for patients?
Yes / No

4.10 Does the facility perform G6PD test? glucose-6-phosphate dehydrogenase (G6PD)
Yes / No

4.11 Does the facility perform microscopy services for malaria?
Yes / No

4.12 (to be asked only at Health Centre, Polyclinic and Hospital levels) Are there available microscopy consumables here ?(Multiple Responses Allowed - should be verified by interviewer)
Multi-select (Max = 7)
- Functioning Microscope
- Reagent
- Pippette

- Slides
- Buffer tablets
- Methanol (alcohol) (Methanol alcohol)
- Tally Counters

4.13 How many people were tested for malaria at this facility in the last complete calendar month? (verify with register)
Whole number (Min = 0)

4.14 How many of these people were tested using malaria RDTs in the last complete calendar month? (verify from register)
Whole number (Min = 0)

4.15 (Question to be asked only at Health Centre, Polyclinic and Hospital levels)How many of them were tested using microscopy in the last month? should be verified by interviewer)
Whole number (Min = 0)

4.16 How do you confirm (diagnose) malaria in this facility? (multi select option)
Multi-select (Max = 3)
- RDTs
- Microscopy
- Taking temperature

5 Treat Questions

5.1 Which of the following basic equipment/commodity is available in the facility today? (Multiple responses allowed - should be verified)
Multi-select (Max = 7)
- Clinical thermometer
- RDT kit
- Disposable syringes and needles
- Stethoscope
- Disposable gloves
- Cannulas
- Weighing scale

5.2 Are there anti-malarial medicines available in this facility?
Yes / No

5.3 If Yes, What antimalarial drugs does this facility prescribe for patients both for complicated and uncomplicated malarial? (multiple responses allowed)
Multi-select (Max = 7)
- Artesunate amodiaquine
- AL/Artemether Lumefantrine (ALArtemether Lumefantrine)
- DHAP/ Dihydroartemisinin Piperaquine (Dhap Dihydroartemisinin Piperaquine)
- Quinine
- Primaquine

- Chloroquine
- Herbal medicine

Display condition
- *Available medicines has selected Yes*

5.4 In the last 3 months, has this facility had any stock-out of anti-malarial medicines for more than 72 hours?
Yes / No

5.5 Is there at least 1 health provider trained to offer treatment for severe malaria?
Yes / No

5.6 Does the facility refer severe malaria cases?
Select
- Yes
- No, we dont refer client (No we dont refer clients)
- No, we treat clients here (No we treat clients here)

5.7 What is the primary emergency transport vehicle you use for emergencies?
Select
- Ambulance
- Private vehicle (Private vehicle)
- Taxis
- Motor bikes

5.8 How long (in minutes) does it take to travel to the nearest higher level facility, via the means of transport stated above? (If there is no higher level facility answer zero) (Ask facility manager or assessment facilitator)?
Select
- less than 30 minutes
- 31-60 minutes (3160 minutes)
- 1-2 hours (12 hours)
- 2+ hours (2 hours)

6 Track Questions

6.1 Do providers at this facility ask patients to return for review after malaria treatment?
Yes / No

6.2 If yes, what time frame are patients usually given to return for review after treatment?
Select
- within 3 days (1-3 days)
- 4-7 days (4-7 days)
- 8-14 days (8-14 days)

Display condition
- *Review after treatment has selected Yes*

6.3 What systems are in place for tracking malaria cases, referrals and recovery, at this facility?

Multi-select (Max = 4)
- Telephone calls
- Home visits
- Review visit at this facility
- We dont have any systems for tracking

6.4 Does the facility have a designated staff responsible for tracking malaria cases, referrals and recovery, at this facility?
Yes / No

6.5 Who is primarily responsible for tracking malaria cases, referrals and recovery, at this facility?
Select
- Doctor
- Medical/physician assistant (Medical physician assistant)
- Midwife
- Nurse (RGN) (Nurse RGN)
- Community health nurse
- Health Assistant Clinical

Annex 3: Client Exit Survey

1 Introduction, patient profile

1.1 Name of enumerator
Text

1.2 Please enter the name of the facility
Text

1.3 Read out-loud and explain the consent form. Has the respondent consented to carry on with the interview?
Yes / No
Action END
· *Consent has selected No*

1.4 Type of facility where the interview takes place
Select
· Private
· Government
· CHAG (Chag)

1.5 What is the sex of the respondent?
Select
· Male
· Female

1.6 What is the age range of the respondent?
Select
· 10 or under (with parental consent) (10 or under)
· between 11-17 (with parental consent) (between 11 and 17)
· Between 18 and 19 years (18 and 19 years)
· Between 20 and 24 years (20 and 24 years)
· Between 25 and 29 years (25 and 29 years)
· Between 30 and 34 years (30 and 34 years)
· Between 35 and 39 years (35 and 39 years)
· Between 40 and 44 years (40 and 44 years)
· Greater than 45+ years (45 years plus)

2 Testing for Malaria

2.1 During the past 12 months, have you suspected an episode of malaria?
Yes / No

2.2 If yes, why did you think you had malaria? (multi select)
Multi-select (Max = 3)
· Personal assumption based on signs and symptoms
· Pharmacy/Chemist Shop assumption based on description of signs and symptoms (PharmacyChemist Shop assumption based on description of signs and symptoms)
· Family member/Friend assumption based on description of signs and symptoms (Family memberFriend assumption based on description of signs and symptoms)
Display condition
· *Suspected malaria episode has selected Yes*

2.3 The last time you had malaria, did you seek advice or treatment from any health facility?
Select
· Yes

· No
· Don't remember (Dont remember)
Display condition
· *Suspected malaria episode has selected No*

2.4 For this visit (that you're leaving from), did you take a test to confirm malaria?
Yes / No

2.5 If yes, what type of test?
Select
· Rapid diagnostic test RDT (RDT)
· Microscopy
· Both RDT and microscopy
Display condition
· *If yes, did you take a test has selected Yes*

2.6 Where did you take the malaria test for the last episode?
Select
· Community pharmacy
· CHPS compound
· Health Centre
· District Hospital
· N/A - didnt take a test (NA didnt take a test)
Display condition
· *If yes, what type of test? has selected RDT,Microscopy,Don't know,Both RDT and microscopy*

2.7 Were you informed you had malaria at the facility?
Yes / No
Display condition
· *If yes, did you take a test has selected Yes,No*

2.8 Who from the facility told you that you had malaria?
Select
· Doctor
· Nurse
· Midwife
· Pharmacist
· Community Health Nurse
· Medical/Physician assistant (MedicalPhysician assistant)
Display condition
· *Informed of malaria test has selected Yes*

3 Treatment for malaria
3.1 Are you aware that you must be tested for malaria before treatment?
Yes / No

3.2 To treat malaria, were you prescribed any antimalarial medicine?
Yes / No

3.3 What antimalarial medicines were you prescribed/given or did you take for your last episode of malaria?
Multi-select (Max = 8)
· Artesunate Amodiaquine - wintrhop (wintrhop)
· Artesunate Amodiaquine - Arsuamoon (Arsuamoon)
· Artesunate Amodiaquine- Camoquine plus (Camoquine plus)
· Artesunate Amodiaquine- Gunate (Gunate)
· Artesunate Amodiaquine - Co-arsucam (Coarsucam)
· AL/Artemether-Lumefantrine - Coartem (Coartem)
· AL/Artemether-Lumefantrine - Lumarterm (Lumarterm)
· AL/Artemether-Lumefantrine - Lonart (Lonart)
· DHAP/DIHYDROARTEMISININ -P-alaxin (Palaxin)
· DHAP/DIHYDROARTEMISININ -Duo-cotexcin (Duocotexcin)
· Quinine
· Primaquine
· Chloroquine
· Herbal medicine
Display condition
· *Treatment has selected Yes*

3.4 Did the health provider perform any examinations, procedures or tests on you?
Yes / No

3.5 If Yes, what procedure or examination or test was conducted by the provider? (multi-select)
Multi-select (Max = 5)
· RDT (RDT)
· Blood sample taken for lab test (blood sample for lab test)
· Temperature Taken (temperature taken)
· Turbid Sponging
· Cannula Insertion
Display condition
· *Exams, procedures or tests has selected Yes*

3.6 Was the procedure explained to you?
Yes / No
Display condition
· *Exams, procedures or tests has selected Yes*

3.7 Did the provider explain the results of the health examinations, procedures or tests?
Yes / No
Display condition
· *Exams, procedures or tests has selected Yes*

3.8 Were you provided education at the dispensary or pharmacy about how to take the medication?
Select
· Yes
· No
· I didnt receive any medication

Display condition
· *Treatment has selected Yes*

3.9 If Yes , What education were you provided? (multiple responses allowed)
Multi-select (Max = 3)
· Dosage amounts
· Side effects
· dosage schedule
Display condition
· *Education on taking medication has selected Yes*

4 Tracking for malaria
4.1 Will you come for a follow up visit/review?
Yes / No

4.2 If Yes, Will you return to the facility for the follow-up/review visit?
Yes / No
Display condition
· *Follow up visit / review has selected Yes,Other*

4.3 If not, what is the main reason you will not return for a visit?
Select
· I will feel better
· No money for transport
· I did not like the service
Display condition
· *Follow up visit / review has selected No*

4.4 Did a health provider tell you to come for a follow up visit/review?
Yes / No
Display condition
· *Explanation of results has selected Yes or Explanation of procedure has selected Yes or Exams, procedures or tests has selected Yes*

4.5 Which health provider asked you to come back for a review?
Select
· Health Assistant Clinical
· General Nurse (RGN) (General Nurse RGN)
· Medical/physician assistant (Medicalphysician assistan)
· Midwife
· Doctor
· Community health nurse
Display condition
· *Follow up visit / review has selected Yes*

4.6 Did the provider follow-up after treating you for malaria during your last malaria episode?
Select

· Yes, the same provider followed up with me (Yes the same provider followed up)
· A different provider from the facility followed up with me (A different provider followed up)
· No one from the facility followed up with me (No one from the facility followed up)

4.7 If yes, how was the follow-up done?
Select
· Home visits
· Phone call
· Return to health facility (Return)
Display condition
· *Follow up from provider has selected Yes the same provider followed up,A different provider followed up*

Annex 4: District Health Management Knowledge Guide

	FACILITY ASSESSMENT		

1.0	**Tool 1 - Section I – Health Directorate identification & characteristics**		
1.1	Name of Interviewer		NAME_INT
1.2	Date of assessment		D_ASSESS
1.3	Region		REG
1.4	District		DST
1.5	How many communities do you have in the district?		COMM
1.6	Type of district?(Multiple answers allowed)	Urban……..1 Periurban……..2 Rural……3	T_COMM
1.7	What type of functional health facilities do you have in the district?(multiple answers allowed)	Private…….1 Government……2 CHAG……3 Others ,specify……4	HF_TYPE
1.8	How many of each type do you have?	Private…… Government…… CHAG……..	HF_EACH

1.9	If government, what level of facilities are these? (multiple answers allowed)	CHPS……1 Health Centre……2 Polyclinic……..3 District/Government Hospital……....4 Others, specify……5	LEV_GOV
1.10	How many of each level of facilities do you have?	CHPS…… Health Centre…….. Polyclinic…… District/Government Hospital…….	LEV_EACH
2.0	**Tool 1 - Section ii - Staffing**		
2.1	Name of Interviewer	……	NAME_INT2
2.2	Date of facility assessment	……	D_ASSESS2
2.3	How many Biomedical scientists currently work in all your facilities?	……	NUM_BMS
2.4	How many laboratory technicians currently work in all your facilities?	……	NUM_LABTECH
2.5	How many pharmacists work in all your facilities?	……	NUM_PHARM
2.6	How many pharmacy technicians work in all your facilities?	……	NUM_PHARMTECH

2.7	How many dispensary assistants work in all your facilities?	……	NUM_DISPEN
3.0	**Tool 1 - Section iii – Functions & Operations of Directorate**		
3.1	Name of Interviewer		NAME_INT3
3.2	Date of facility assessment		D_ASSESS3
3.3	Are there IE&C materials or advertisement displaying the T3 policy in health facilities within the district?	Yes……..1 No…….2	NUM_DAYSOP
3.4	Are there guidelines and protocols for malaria testing, treatment and tracking in all your facilities?	Yes……..1 No…….2	MAL_PRO
3.5	Has there been any supervisory visit to all these facilities by the district health directorate in the last three completed months?	Yes……1 No…….2	SUP_VST
3.6	Qualitative questions 3.6a What measures are in place to monitor the adherence of the T3 policy? 3.6b What training is available for new staff that have been posted to the district? 3.6c How many times does the district go for supportive supervision and 3.6d what do you check for during the supportive supervision visit? 3.6e What kind of support do you offer to health workers after supportive supervision visits?		
4.0	**Tool 1 - Section A - Test**		
4.1	Are you and your team (directorate) aware of the T3 policy?	Yes……1 No…….2	3T_AWARE
4.2	Has your directorate received any training on the T3 strategy within the last two years? (On-site training, on the job training and workshop training both acceptable	Yes……1 No…….2 (If No, skip to Q4)	3T_TRAIN
4.3	Training / treatment qualitative questions 4.3a How are staff identified for the T3 training? 4.3b What is the frequency of trainings conducted? 4.3c Who does the T3 training? 4.3d Is there a training plan in place? 4.3e How is the knowledge of the staff assessed? Is there a pre/post test?		

4.5	In the last 3 months, have you had any RDT stock-outs for more than 7 continuous days? (Verify from RDT stock cards)	Yes……1 No……2	RDT_STK
4.7	Do you supply all your facilities RDT kits?	Yes……1 No……..2	SUPP_KIT
4.8	If No, which of your facilities do you supply RDT kits?(Multiple answers allowed)	CHPS……1 Health Centre…..2 District/Government Hospital….3 CHAG……..4 Private Facility……..5	FAC_RDT
4.9	RDT qualitative questions 4.9a How often are RDT requests made? 4.9b Is RDT availability at the district level able to meet the demand of facilities? 4.9c How are RDT's procured and distributed? 4.9d How often does the district experience stock outs and what are the causes of this? 4.9e What do you do when you have run out of RDTs?		
4.10	How many facilities in this district perform microscopy for malaria?(optional disaggregation by facility type)	Health Centre…..1 District/Government Hospital….2 Private health facilities….3	FAC_MIC
4.11	Based on reports from your facilities, how many people were tested for malaria in the last complete calendar month?	…….	NUM_MALTEST
4.12	How many of them were tested using malaria RDTs in the last month?	……..	NUM_RDTMALTEST
4.13	How many of them were tested using microscopy in the last month?	……..	NUM_MICMALTEST
4.14	Do you train the private pharmacies or chemical shops to test every client before administering anti malaria medications?	…	PRIV_TEST
4.15	Do you supply these private pharmacies or chemical shops with RDT kits?	Yes…….1 No……2	PRIV_RDT
4.16	Do you provide supportive supervision to the private pharmacies or chemical shops on malaria	Yes…….1 No……2	PRIV_RDT

4.17	Do you monitor to know if the private pharmacies or chemical shops test clients to know their malaria status before providing malaria medication	Yes…….1 No……2	PRIV_RDT
4.18	Have you provided training AND supervisory visits in the last year with private pharmacies or chemical shops? (both training and supervision must be completed)		
5.0	**Tool 1 - Section B – Treat**		
5.1	Name of Interviewer	……	NAME_INT4
5.2	Do you supply anti malaria medicines to all your facilities?	Yes…… ……1 No…… …….2	ANTMAL_FAC
5.3	Where do you receive your supplies from? (Multiple answers allowed)	Regional Health Directorate ……1 Regional Medical Stores……2 Private entities …….3 (specify)	DIS_SUPP
5.5	Which of the anti-malaria medicines do you supply?(Multiple answers allowed)	AA/ARTESUNATE AMODIAQUINE ……..1 AL/ARTEMETHER-LUMEFANTRINE…… ……...2 DHAP/DIHYDROARTEMISININ PIPERAQUINE …….3 QUININE…… ……..4 PRIMAQUINE…… ……5 CHLOROQUINE …… 6 OTHERS ……..9	ANTMAL_SUPP
5.6	In the last 3 months, has your directorate had any stock-out of anti-malarial medicines for more than 7 days?	Yes…… ……1 No…… …….2	STOUT_MAL

5.7	If yes, how long did it take to get stock in of the anti-malaria medicines?	……	STIN_MAL
5.8	Why did this happen?	Open response	STOUT_MAL
5.9	Who is responsible for monitoring malaria supplies including anti-malarial medicines and ITNs (multiple answers allowed)	District Director……1 Malaria Focal Person……2 Other…… ……3 Specify (……)	STIN_MAL
5.10	How would you rate the quality of the referral system?	Weak Mixed strong ……	REF_AUG
6.0	**Tool 1 - Section C - Track**		
6.1	How do you receive district data on malaria cases?	Manual…… …1 Electronic…… ……2	DAT_REC
6.2	Do you receive data on malaria from all facilities within the district?	Yes……..1 No…….2	DAT_FAC
6.3	If no, which facilities fail to submit regular data?	CHPS……1 Health Centre…..2 District/Government Hospital….3 CHAG……..4 Private Facility……..5 Private pharmacies/Chemist shops……..6	DAT_FRM
6.4	From your records, was testing done on majority of the malaria cases data you received over the past 6months?	Yes……..1 No…….2	TEST_CAS
6.5	Do you capture records of clients being asked to come back for malaria treatment across all facilities?	Yes……..1 No…….2	REV_FAC
6.6	Is there a district level system to track whether review schedules are adhered to	Yes…… ….1 No…… …..2	SYS/TRA

6.7	Please describe the systems used for tracking adherence		SYS/TRA

Closing policy questions to ask

- What are the major challenges you face in the implementation of the T3 policy?
- What are some of the gaps you have identified in the T3 policy that affects its smooth implementation?
- How do you suggest these gaps should be addressed?
- Any other questions or points of feedback for us?