

REPUBLIC OF KENYA

# MONITORING OUTPATIENT MALARIA CASE MANAGEMENT UNDER THE 2010 DIAGNOSTIC AND TREATMENT POLICY IN KENYA

**2010-2013 Progress Report**

**Malaria Control Program  
Ministry of Health**

**With the support of  
The Global Fund to fight AIDS, Tuberculosis and Malaria  
&  
KEMRI/Wellcome Trust Research Programme, Nairobi, Kenya  
&  
Management Sciences for Health, Nairobi, Kenya**

**August 2013**

Any part of this document may be freely reviewed, quoted, reproduced or translated in full or in part, provided the source is acknowledged. Please use the following citation.

Nyandigisi A, Machini B, Kigen S, Memusi D, Kimbui R, Muturi A, Otieno G, Githinji S, Kiptui R, Nyamuni J, Zurovac D. *Monitoring outpatient malaria case management under the 2010 diagnostic and treatment policy in Kenya-2010-2013 progress report*. Malaria Control program, Ministry of Health, August 2013.

Published by: Malaria Control Program  
Ministry of Health  
P. O. Box 1992 KNH  
Nairobi 00202, Kenya  
Email: [Head.domc@domckenya.or.ke](mailto:Head.domc@domckenya.or.ke)  
<http://www.nmcp.or.ke>

# TABLE OF CONTENTS

<b>FOREWORD</b> .....	<b>iv</b>
<b>ACKNOWLEDGMENTS</b> .....	<b>v</b>
<b>Abbreviations</b> .....	<b>vi</b>
<b>SUMMARY</b> .....	<b>vii</b>
<b>1. BACKGROUND</b> .....	<b>1</b>
<b>2. METHODS</b> .....	<b>1</b>
<b>3. RESULTS</b> .....	<b>1</b>
3.1. Study populations.....	1
3.2. Health systems support.....	2
3.2.1. Availability of basic equipment and malaria diagnostics.....	2
3.2.2. Availability of antimalarial drugs.....	5
3.2.3. Availability and completeness of antimalarial drug management records.....	6
3.2.4. Availability of guidelines and job aids.....	8
3.2.5. Health workers' exposure to in-service training and supervision.....	9
<b>3.3. Malaria case-management</b> .....	<b>10</b>
3.3.1. Main patients' characteristics.....	11
3.3.2. Performance of the new diagnostic and treatment policy .....	11
3.3.3. Health workers adherence to the new diagnostic and treatment policy.....	14
3.3.4. Case-management practices stratified by type and result of malaria testing.....	16
3.3.5. Correctness of AL dosing .....	19
3.3.6. Dispensing and counseling practices.....	20
<b>4. CONCLUSIONS AND RECOMMENDATIONS</b> .....	<b>22</b>
<b>5. REFERENCES</b> .....	<b>24</b>
<b>6. ANNEXES</b> .....	<b>25</b>
Annex 1: Summary of key health systems support M&E indicators.....	25
Annex 2: Summary of key malaria case-management M&E indicators .....	26
Annex 3-5: Health facility, health worker and exit interview questionnaires.....	27-38

## FOREWORD

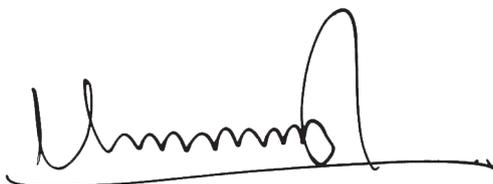
One of the objectives outlined in the Kenya National Malaria Strategy (NMS) 2009/2017 is to have 80 per cent of all self-managed fever cases receive prompt and effective treatment and 100 per cent of all fever cases who present to health facilities receive parasitological diagnosis and effective treatment. This will be achieved by strengthening capacity for malaria diagnosis and treatment, increasing access to affordable malaria medicines through the private sector and strengthening community case management of malaria. By 2013, the time of mid-term policy performance review, the NMS specified programmatic directions to ensure universal availability of ACTs and diagnostics, universal coverage of health facilities and health workers with health systems support activities, and universal health worker's adherence to malaria case-management treatment guidelines.

The Ministry of Health's Malaria Control Program (MCP) has been undertaking national monitoring surveys on a biannual basis to assess the Quality of Care (QOC) accorded to malaria patients and also monitors the policy adherence; a total of six national health facility surveys have been undertaken. The baseline survey was carried out in January/February 2010 and the last follow-up survey in June 2013 prior to the mid-term policy performance review. The successful consistence of biannual evaluation of quality of care by the MCP provides a recipe upon which the success of interventions in the prevention and control of malaria in Kenya is to be gauged. This report presents the progress in key national M&E malaria-related health systems and case-management indicators during this period.

The report provides useful information as regards to our achievements and gaps on monitoring outpatient malaria case management in the country. The findings showed that nearly all key indicators around the test and treat policy for malaria had shown significant improvements by mid-2013. Recommendations have been made to effectively reduce the gaps in an attempt to achieve universal availability of malaria case-management commodities and strengthen health workers adherence to national guidelines for malaria case management.

It is therefore our pleasure to present this sixth QOC survey results. I appreciate all the stakeholders for their continued support both technically and financially in conducting the survey and writing the report.

I wish to recommend this survey report and urge all partners and malaria stakeholders in the country to internalize the conclusions and recommendations, as it will guide future management of malaria and help us take the next strides in the journey to achieve our vision of a malaria-free Kenya.



**DR WILLIAM MAINA OGW**  
**HEAD, DIRECTORATE PREVENTIVE AND PROMOTIVE HEALTH SERVICES.**

## ACKNOWLEDGMENTS

Funding for this project is provided by The Global Fund to Fight AIDS, Tuberculosis and Malaria round 4 grant number KEN-405-G06-M and U.S. President's Malaria Initiative/USAID through the Management Sciences for Health/Health commodities and Services Management (HCSM) program. DZ is grateful for the support from the Wellcome Trust-UK, Kenya Medical Research Institute and University of Oxford. The authors of this report would like to thank all the Malaria control program personnel and Provincial Malaria Coordinators who participated at various stages of the project. Finally, our sincere gratitude to all data entry clerks, supervisors, data collectors, health workers, patients and caretakers of children who participated in the study.

## ABBREVIATIONS

<b>ACT</b>	Artemisinin Combination Therapy
<b>AL</b>	Artemether Lumefantrine
<b>AM</b>	Anti malarials
<b>B</b>	Baseline
<b>CM</b>	Case management
<b>DHA-PPQ</b>	Dehydroartemisinin-piperaquine
<b>DX</b>	Diagnosis
<b>FU</b>	Follow up
<b>HF</b>	Health Facility
<b>HW</b>	Health Workers
<b>IPT p</b>	Intermittent Preventive Treatment in pregnancy
<b>M&amp;E</b>	Monitoring and Evaluation
<b>MOPHS</b>	Ministry Of Public Health and Sanitation
<b>NMS</b>	National Malaria Strategy
<b>QN</b>	Quinine
<b>QOC</b>	Quality of Care
<b>RDT</b>	Rapid diagnostic Test
<b>Rx</b>	Treatment
<b>SP</b>	Sulphadoxine Pyrimethamine

## SUMMARY

Malaria case-management based on confirmed parasitological diagnosis and artemisinin-based combination therapy (ACT) is the cornerstone of the 2009-2017 National Malaria Strategy (NMS) in Kenya. By 2013 and the time of mid-term policy performance review, the NMS specified programmatic directions to ensure universal availability of ACTs and diagnostics, universal coverage of health facilities and health workers with health systems support activities, and universal health worker's adherence to malaria case-management guidelines. To monitor the policy progress, the Ministry of Health's Division of Malaria Control undertook six national health facility surveys. The baseline survey was carried out in January/February 2010 and the last follow-up survey in June 2013 prior to the mid-term policy performance review. This report presents the progress in key health systems and case-management indicators in this period.

The range of randomly sampled facilities across six surveys was between 172 and 176. Comparing baseline results with the results of the last survey, significant declining trends in AL stocks-outs were observed. Total AL stock-out and stock-out of one or more AL packs respectively declined by 20% and 38% resulting in only 7% of facilities experiencing total AL stock-out and 45% stocked out of one or more AL packs during the three months prior to the last survey. Significant improvements were also observed in parasitological capacity of health facilities – the availability of at least one malaria diagnostic service increased from 55% to 90%, mainly due to massive increase in RDT availability (8% vs 70%). RDTs were however more commonly stocked by government (77%) compared to faith based facilities (35%) and by health centres and dispensaries (75%) compared to hospitals (26%). Yet despite a modest increase in the coverage of facilities receiving quality control activity, only 18% of facilities providing microscopy and 20% stocking RDT had received a supervisory visits at the time of the last survey. With respect to the policy change for the second-line therapy (DHA-PPQ) and the treatment of severe malaria (parenteral artesunate), these commodities are still rarely available at public facilities. Finally, during all surveys over three-quarters of facilities had various drug inventory materials which also include RDTs however the quality of recording and reporting was substantially lower.

Health facility and health workers coverage with guidelines, wall charts, in-service training and supervisory activities substantially improved during the monitoring period. In comparison with the baseline results when health workers were neither trained on the new case-management policy nor had access to new guidelines and wall charts, the last survey revealed that the coverage with the in-service training, guidelines and new case-management wall charts increased to 50%, 58% and 29% respectively. Regarding the supervision, there was an increase from 42% to 69% of health workers who received supervisory visit; however malaria case-management activities and observation of consultations, although showing an improvement trend, were less commonly components of these visits.

The case-management results have shown significant improvement trends in the management of febrile patients. The composite performance defined as febrile patient tested and treated in accordance with national guidelines improved from 16% to 50% at all study facilities and from 28% to 55% at facilities with diagnostics and AL in stock. At the latter facilities, significant improvements were also observed in testing of febrile patients (43% to 63%), recommended treatment for test positive patients (83% to 90%) and in adherence to the test negative results (47% to 83%). Health workers adhered equally to guidelines with respect the availability of RDT or microscopy at facility, type of malaria test performed and the result reported. However, health

workers performed significantly better at facilities where both RDTs and malaria microscopy were available – composite performance at these facilities was 66% while 76% of febrile patients were tested.

With respect to AL dosing, dispensing and counseling practices significant improvements were observed for the majority of tasks. Correct AL dosing was high throughout the monitoring period, however 10% improvement was observed at the time of the last survey resulting in nearly all patients having AL correctly prescribed. During the same survey, of seven measured dispensing and counseling tasks, three were performed for more than three-quarter of the patients - advice on correct dosing (95%), advice on need to complete all doses (90%) and advice on the second dose after 8 hours (76%). Another three tasks were performed less optimally but still for 50-70% of patients - advice on taking AL after the meal (68%), weighing of patients (64%) and administration of the first dose at health facility (52%). The only counseling task rarely performed was provision of advice on what to do in case of vomiting (7%).

In conclusion, the findings revealed by mid 2013 showed that nearly all key indicators around test and treat policy for malaria have shown significant improvements. Yet at the time of the mid-term policy performance review, there were still some important gaps towards targets aiming at universal availability of malaria case-management commodities, universal coverage of health facilities and health workers with malaria related health systems support activities and universal health worker's adherence to national outpatient guidelines for malaria diagnosis, treatment, counseling, and drug dispensing. To effectively reduce the gap in reasonable time the following recommendations are made:

- Effective supply chain for RDTs should be maintained including improved supply of the commodity to hospitals and faith based facilities.
- Quality control for malaria microscopy and RDTs supported by field supervision should be scaled-up in line with the national policy guidelines for parasitological diagnosis of malaria.
- The routine supervisions should include malaria case-management component and be quantitatively increased and qualitatively improved in line with national supervisory manuals.
- The new national malaria case-management guidelines and wall charts should be repeatedly disseminated to the peripheral health facilities through the implementation channels such as in-service training for health workers and KEMSA supply chains.
- Drug management activities should focus on strengthening of logistic management information systems for antimalarial medicines and RDTs, discontinuation of SP supply to non-IPTp areas, and large scale procurement and distribution of antimalarial therapies for management of treatment failures (DHA-PPQ) and severe malaria (parenteral artesunate).
- The major case-management emphasis during the in-service training, health facility supervisory visits and IEC campaigns targeting health workers should be placed on the message of universal testing of all febrile patients for malaria. The following case management messages should be also reinforced: 1) antimalarial treatment should not be provided to patients with negative test result, 3) all patients should be weighed, 4) the first AL dose should be administered at facilities even in the absence of food, and 5) patients should be advised to return for replacement dose to complete full treatment course in case of vomiting.

- Regular monitoring of test and treat malaria case management indicators on the national scale should continue biannually by the end of 2009-2017 National Malaria Strategy while the methods and operational modalities of decentralizing the activity to provide county level estimates and trends should be simultaneously explored.



# 1. BACKGROUND

Effective malaria case-management based on confirmed parasitological diagnosis and artemisinin-based combination therapy (ACT) is the cornerstone of the 2009-2017 National Malaria Strategy (NMS) in Kenya (MOPHS 2009a). The NMS launched in November 2009, specified programmatic directions to ensure availability of ACTs, malaria diagnostics and effective case-management based on the use of malaria microscopy or rapid diagnostic tests (RDT) for all febrile patients and subsequent treatment of only test positive patients with nationally recommended first-line ACT, artemether-lumefantrine (AL).

Alongside the NMS, the national Malaria Monitoring and Evaluation (M&E) Plan 2009-2017 has also been developed. The M&E plan has specified that, by 2013, 100% of health facilities should have AL and malaria diagnostics and 100% of fever cases who present to health workers should receive parasitological diagnosis and effective treatment (MOPHS 2009b). As part of the new NMS and M&E plan, nationally representative monitoring surveys undertaken on biannual basis are undertaken to capture case-management indicators and timely inform national policy makers, and donor organizations, on the progress of the new NMS. By mid 2013 and prior to mid-term policy performance review in this year, six health facility surveys were performed. The first, baseline survey, was undertaken prior to the implementation activities under the new NMS. This report presents progress in the key national M&E malaria-related health systems and case-management indicators in this period.

## 2. METHODS

The methodological details were provided in the previous reports (Memusi et al. 2010; Nyandigisi et al. 2011). Briefly, cross-sectional health facility surveys were undertaken. National representativeness was assured drawing a stratified random sample of the public health facilities. Prior to the surveys the training of data collectors was undertaken over five days. At each of the survey facilities data were collected over one day using three methods. First, all patients presenting to the outpatient departments during the survey day underwent rapid screening when they were ready to leave the facility. All non-referred and non-pregnant febrile patients presenting for an initial visit and weighing  $\geq 5$ kg proceeded with an evaluation during which information was collected about main patients' characteristics, diagnostics requested, results reported and medications prescribed and dispensed. Second, each facility was assessed to determine the availability of medicines, RDTs, malaria microscopy as well as the support tools such as weighing scales, guidelines, job-aids and medicine inventory materials. Finally all health workers who saw patients on the survey day were interviewed about their demographics, pre-service training, access to guidelines, and retrospective exposure to in-service training and supervision.

## 3. RESULTS

### 3.1. Study populations

The first, baseline survey, was carried out in January/February 2010. Subsequently, four follow-up surveys were respectively undertaken in November/December 2010, July/August 2011, March/April 2012, November 2012 and in June 2013. The Table 1 shows numbers of assessed facilities, interviewed health workers and evaluated outpatient consultations for patients who met inclusion criteria across surveys.

**Table 1: Number of health facilities assessed, health worker interviews performed and outpatient consultations evaluated for patients at all facilities and facilities with commodities in stock, by survey**

Survey	HFs assessed	HWs interviewed	Outpatient consultations at all HFs		Outpatient consultations at HFs with diagnostics and AL in stock	
			<5 years	≥5 years	<5 years	≥5 years
<b>Baseline (Jan-Feb 2010)</b>	174	224	1,070	1,335	591	648
<b>Follow-up 1 (Nov-Dec 2010)</b>	176	237	675	781	420	441
<b>Follow-up 2 (July-Aug 2011)</b>	174	233	535	673	301	333
<b>Follow-up 3 (Mar-Apr 2012)</b>	172	220	581	710	340	428
<b>Follow-up 4 (November 2012)</b>	172	216	510	735	383	536
<b>Follow-up 5 (June 2013)</b>	172	227	592	839	549	753

## 3.2. Health systems support

The results presented in this section compare the key health facility and health worker characteristics important for the performance of adequate malaria case-management between six surveys.

### 3.2.1. Availability of basic equipment and malaria diagnostics

Four different types of weighing scales were found at health facilities and the majority of facilities had each type of scale during all surveys (Table 2). At least one functional thermometer was present at the large majority of facilities during all surveys (survey range: 86.6-94.8%). A significant increase in overall capacities of health facilities to provide parasitological malaria diagnosis was observed between the baseline and the last follow-up survey (55.2% vs 90.7%; 35.5% increase) mainly due to major increase in the availability of RDTs (7.5% vs 69.8%; +62.3% increase)(Table 2 and Figure 1). The capacity of facilities to provide malaria microscopy was similar across all survey rounds (survey range: 50.6-56.4%). Of interest, while no significant difference was observed in overall diagnostic capacities between government and FBO/NGO facilities (82.8% vs 92.3%), RDTs were however significantly more common in stock at government facilities (76.9% vs 34.5%) while FBO/NGO facilities were more commonly providing malaria microscopy (79.3% vs 45.5%). Furthermore, dispensaries and health centres more commonly stocked RDTs compared to hospitals (75.2% vs 26.3%) while on the contrary hospitals more commonly provided malaria microscopy (84.2 vs 47.1%).

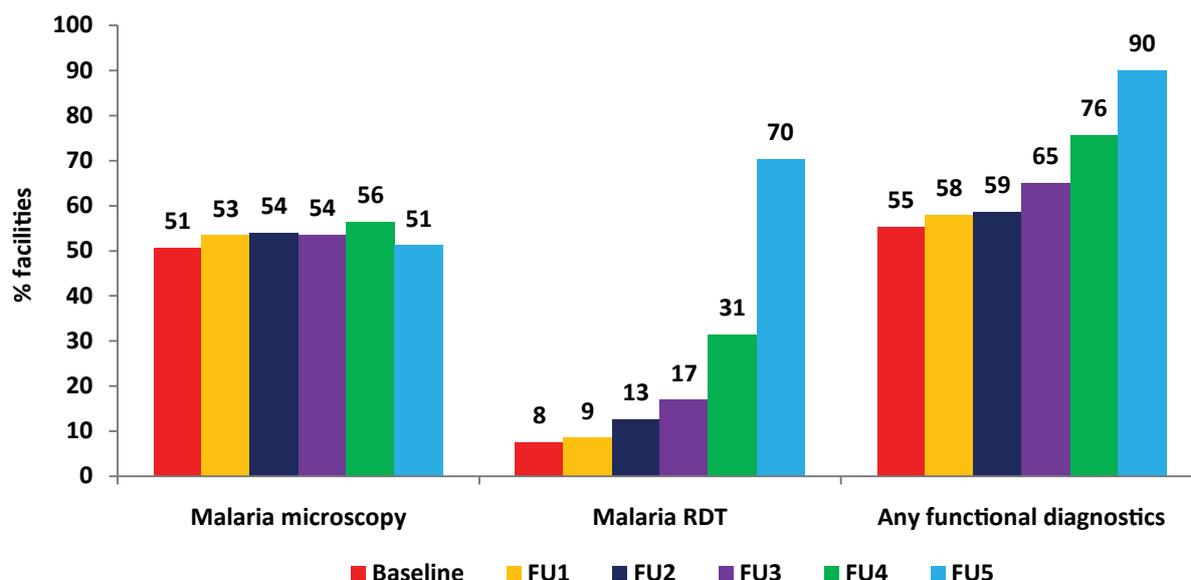
**Table 2: Availability of basic equipment and malaria diagnostics**

	Baseline N=174 (%)	FU 1 N=176 (%)	FU 2 N=174 (%)	FU 3 N=172 (%)	FU 4 N=172 (%)	FU 5 N=172 (%)	% change B vs FU5
<b>Availability of weighing scales<sup>a</sup></b>							
Salter hanging scale	58.1	61.4	64.9	61.1	57.4	58.1	<b>0</b>
Infant scale	83.9	80.1	79.3	79.7	81.3	80.8	<b>-3.1</b>
Bathroom scale	75.9	69.9	69.0	63.4	73.1	75.6	<b>-0.3</b>
Balance scale	50.6	50.6	54.0	58.1	53.2	66.9	<b>+16.3</b>
<b>Availability of thermometer</b>	90.8	90.3	93.1	87.2	86.6	94.8	<b>+4.0</b>
<b>Availability of diagnostics</b>							
Functional malaria microscopy	50.6	53.4	54.0	53.5	56.4	51.2	<b>+0.6</b>
Non-expired malaria RDT	7.5	8.5	12.6	16.9	31.4	69.8 <sup>b</sup>	<b>+62.3</b>
Expired malaria RDTs	3.5	0.6	1.2	0.0	2.9	2.9	<b>-0.6</b>
Any functional diagnostics	55.2	58.0	58.6	65.1	75.6	90.7	<b>+35.5</b>

a Denominator during FU 4 survey does not include 1 facility with missing information for the availability of Salter scale and 2 facilities with missing information for the remaining 3 scales

b the availability of non-expired RDTs at level 2 and 3 facilities was 75.2%

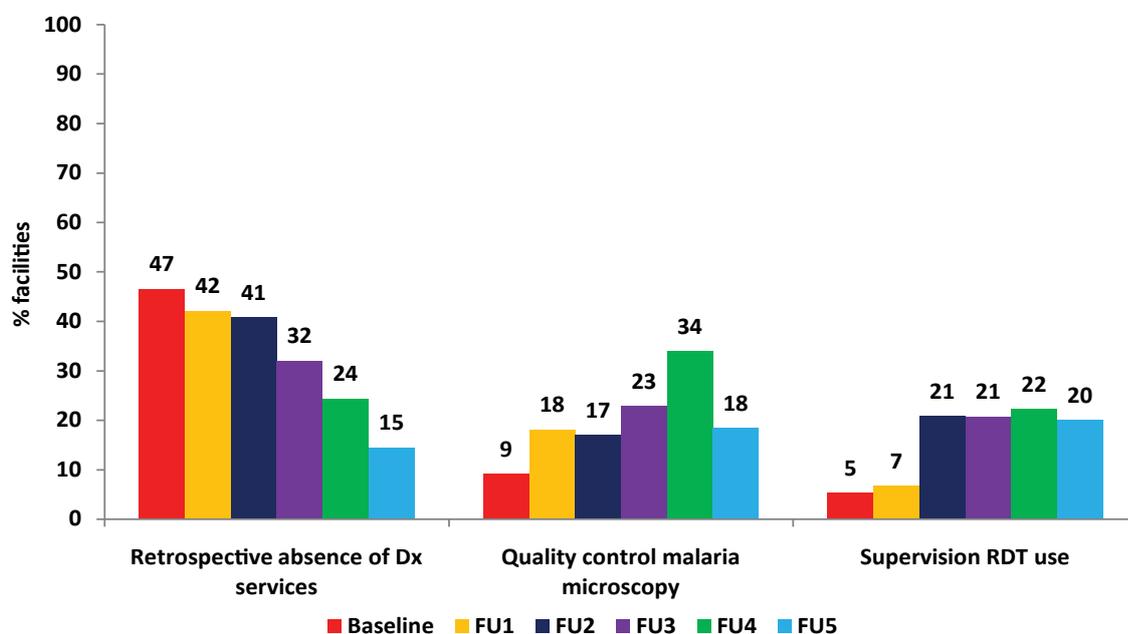
**Figure 1: 2010-2012 national trends in the coverage of health facilities with malaria diagnostics**



Retrospective availability of malaria diagnostic services was assessed for 3 months period prior to the surveys (Figure 2). The new malaria policy recommends universal parasitological diagnosis, using either malaria microscopy or RDTs. Therefore, comparing all facility results between the baseline and the last follow-up survey, the results showed a substantial decreasing trend (46.6% vs 14.5%; 32.1% decrease) in the absence of both malaria diagnostic services in duration of at least 7 consecutive days. Among health facilities which had functional microscopy on survey days, an absence of this service prior to the surveys was uncommon and similarly distributed across survey rounds (survey range: 1.1-9.6%). Finally, at facilities providing malaria microscopy services, an increase in the quality control visits that was observed prior to the round 5 survey was not confirmed during the last follow up survey. The coverage during the last survey remained on similar scale compared to rounds 2-4 and resulted in only minor

improvements compared to the baseline results (9.1% vs 18.4%; 9.3% increase). At facilities providing RDT testing, a modest increase in the coverage of facilities with supervisory visits on the use of RDTs was observed (from 5.3% at baseline to 20.0% at the last follow-up; 14.7% increase) however without any improvement trends during the last four survey rounds (Figure 2).

**Figure 2: 2010-2012 national trends in the retrospective absence of malaria diagnostics and the coverage with quality control and supervisory activities for microscopy and RDTs**



### Highlight: Malaria diagnostic capacities

#### KEY FINDINGS:

By mid 2013, the large majority (90%) of facilities provided at least one malaria diagnostic service. The coverage with malaria microscopy was similar throughout the monitoring period (51-56%). An increasing trend in the capacity of health facilities to provide parasitological diagnosis of malaria was due to significant 62% increase in the availability of malaria RDTs. By the end of the monitoring period, 70% of all facilities, 75% of level 2 and 3 facilities and 83% of government facilities stocked RDTs. RDTs were however less common in FBO/NGO facilities (35%) and in hospitals (26%). At facilities with microscopy, there was modest 9% increase in the facilities receiving quality control visit while at facilities with RDTs there was 15% increase in the supervisory visits on the use of RDTs. However, at these facilities the overall coverage with quality control activities at the end of the monitoring period was still very low for both diagnostic services (18% for microscopy and 20% for RDTs).

#### IMPLICATIONS:

The first national distribution of RDTs initiated in the last quarter of 2012, subsequent establishment of supply chain and the presence of malaria microscopy in about half of the facilities resulted in high coverage of Kenyan public health facilities providing at least one diagnostic service for parasitological confirmation for malaria. Further increase in the availability of RDTs will be dependent on the maintenance of the effective supply chain and improved RDT supply to FBO/NGO facilities and hospitals. Yet distribution of RDTs should be accompanied with the scale-up of the quality control systems for both RDTs and malaria microscopy in line with the national policy for parasitological diagnosis of malaria.

### 3.2.2. Availability of antimalarial drugs

The stock assessments on survey days showed that the availability of at least one AL pack was high at facilities during all survey rounds (survey range: 89-97%), however facilities less commonly had all four packs in stock (survey range: 45-72%)(Table 3). Similarly, a fluctuating pattern without significant changes was observed between survey rounds in the availability of individual AL packs (Table 3). With respect to other antimalarials, the availability of SP substantially declined from 88.5% at baseline to 59.9% at the last follow-up survey. Interestingly, during the last survey in 2012, SP was found at 86.4% of facilities in IPTp districts but also at 46.0% of facilities in districts where IPTp policy was discontinued during 2010. During the last survey only 4.1% of facilities stocked dehydroartemisinin-piperaquine (DHA-PPQ) and 20.3% of facilities stocked injectable artesunate, the respective treatments nationally recommended during 2010 (but not yet supplied) for the management of treatment failures and severe malaria. Finally, during all survey rounds expired antimalarial drugs were not common, however compared to the baseline results, the findings of the last survey have shown an increase from 2.9% to 16.3% of facilities stocking at least one expired AL pack.

**Table 3: Facilities with non-expired antimalarial drugs in stock**

	Baseline N=174 (%)	FU 1 N=176 (%)	FU 2 N=174 (%)	FU 3 N=172 (%)	FU 4 N=172 (%)	FU 5 N=172 (%)	% change B vs FU5
<b>Any AL pack</b>	94.3	97.2	89.1	93.0	92.4	96.5	<b>+2.2</b>
<b>All AL packs</b>	64.9	71.6	45.4	61.1	71.5	71.5	<b>+6.6</b>
<b>AL 6 pack</b>	81.0	89.2	78.2	78.5	83.1	86.6	<b>+5.6</b>
<b>AL 12 pack</b>	79.9	86.4	59.8	73.3	85.6	83.7	<b>+3.8</b>
<b>AL 18 pack</b>	79.3	81.8	66.7	72.7	80.7a	83.7	<b>+3.8</b>
<b>AL 24 pack</b>	86.2	86.9	73.6	85.5	84.9	89.0	<b>+2.8</b>
<b>SP tablets</b>	88.5	88.0a	73.6	72.5a	65.3b	59.9	<b>-28.6</b>
<b>Quinine tablets</b>	69.0	84.6a	80.5	83.5b	79.1	80.8	<b>+11.8</b>
<b>Quinine injections</b>	77.6	84.5b	78.6	69.0a	69.0	80.2	<b>+2.6</b>
<b>DHA-PPQ</b>	0	0	2.9	0.6	3.5	4.1	<b>+4.1</b>
<b>Artesunate injections</b>	0	0.6	1.1	1.2	14.0	20.3	<b>+20.3</b>

a Denominator does not include 1 health facility without information

b Denominator does not include 2 health facilities without information

Retrospective stock-out data were collected for periods prior to the physical surveys. In accordance with international standards the stock-out of at least 7 consecutive days over 3 months period was used as the criterion for the stock-out presence. A declining trends in all stock-out indicators was observed. Between the baseline survey and the last follow up survey simultaneous stock-out of all four AL packs decreased from 27.2% to 7.0% (decrease 20.2%), stock out of one or more AL packs from 59.5% to 21.6% (decrease 37.9%), while stock-outs of individual AL packs ranging prior to the baseline between 37.6-52.0% decreased to 14.6%-21.6% (AL pack decrease range: 22.4-35.0) (Table 4 and Figure 3).

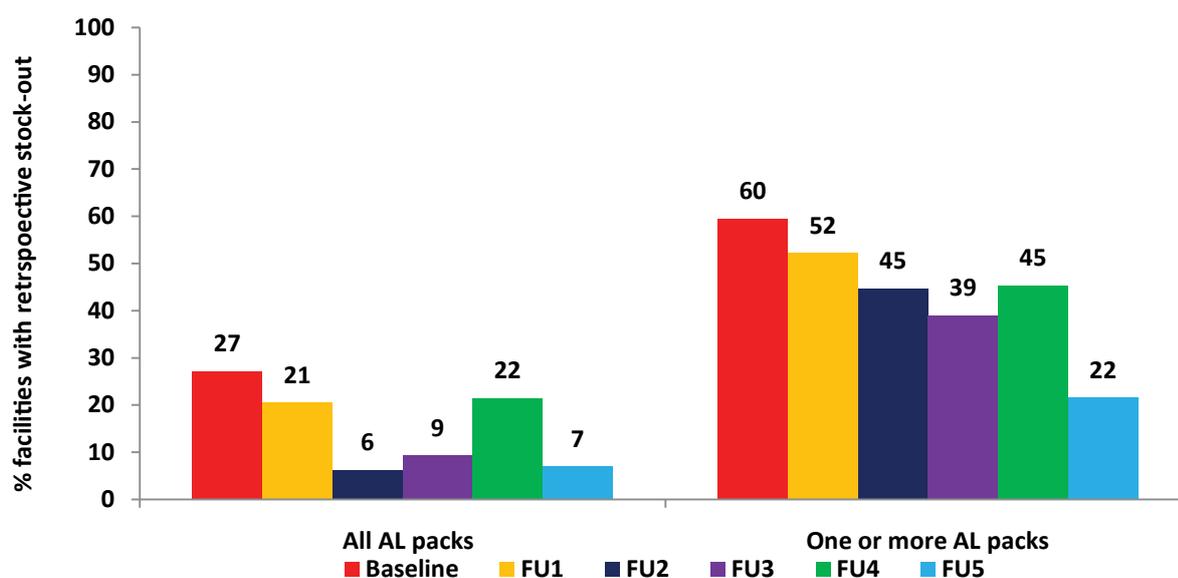
**Table 4: Retrospective stock-outs of antimalarial drugs during 3 months prior to the surveys**

Stock out of at least 7 consecutive days in 3 months prior to the surveys	Baseline N=174 (%)	FU 1 N=176 (%)	FU 2 N=174 (%)	FU 3 N=172 (%)	FU 4 N=172 (%)	FU 5 N=172a (%)	% change B vs FU5
All AL packs	27.2a	20.6	6.3	9.4	21.5	7.0	-20.2
AL 6 pack	37.6	30.1	19.5	21.1a	27.9	15.2	-22.4
AL 12 pack	43.9	32.4	31.6	28.7a	34.9	14.6	-29.3
AL 18 pack	52.0	42.1	27.6	29.8a	39.0	17.0	-35.0
AL 24 pack	39.3	35.2	19.5	19.9a	34.3	10.5	-28.8
One or more AL packs	59.5	52.3	44.8	39.0	45.4	21.6	-37.9
SP tablets	14.4	9.1	16.1	20.4	31.8b	39.2	+24.8
Quinine tablets	25.4a	22.2	16.1	15.1	24.0a	19.9	-5.5
Quinine injections	20.8a	20.5	17.2	20.9	43.9a	22.2	+1.4

a Denominator does not include one facility where information was not available

b Denominator does not include two facilities where information was not available

**Figure 3: 2010-2012 national trends in the retrospective AL stock-out indicators**



### 3.2.3. Availability and completeness of antimalarial drug management records

During all surveys, the availability of antimalarial drug management inventory materials was relatively high, ranging from 73.2% to 91.3% without significant changes between survey rounds (Table 5). However the quality of updating and completing of the inventory materials was suboptimal. Of particular interest for antimalarial drug and RDT management activities, updating of AL dispenser book for a month prior to the survey declined from 66.7% at baseline to 44.1% at the last follow up survey. Completion of monthly summary forms for antimalarial drugs had shown a fluctuating trend over the monitoring period with only modest improvements compared to baseline results (7.9%). During the last

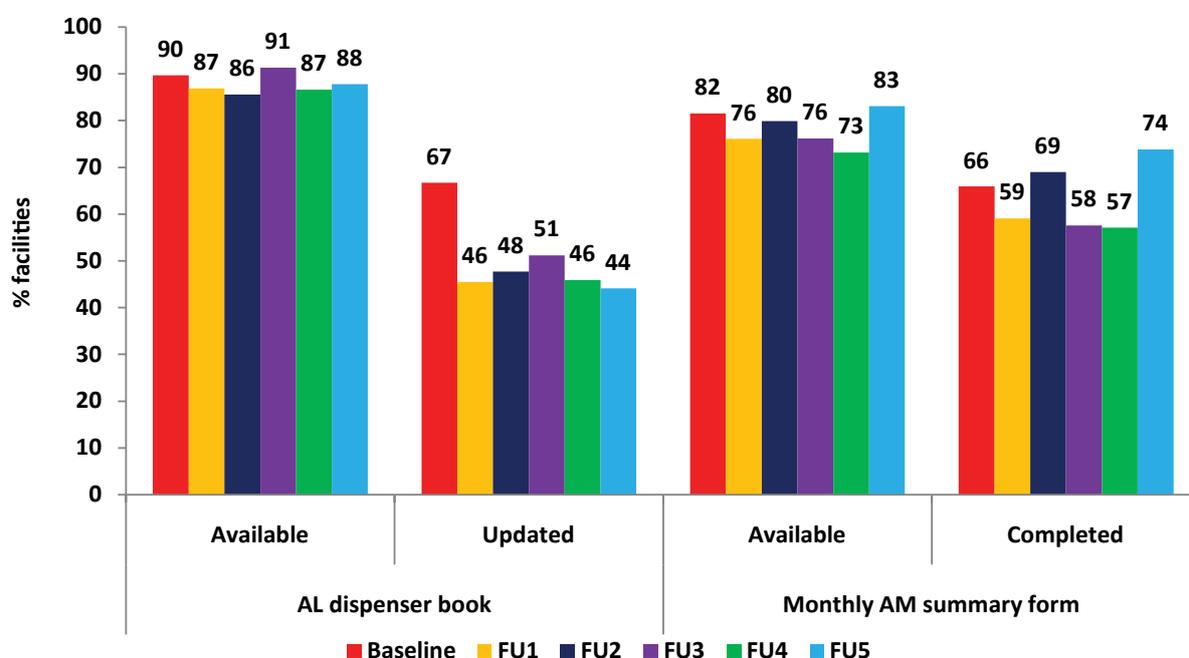
survey 73.8% of facilities have completed monthly summary forms for antimalarial drugs for the period 3 months prior to the surveys (Table 5 and Figure 4).

**Table 5: Availability and quality of antimalarial drug management records**

	Baseline N=174 (%)	FU 1 N=176 (%)	FU 2 N=174 (%)	FU 3 N=172 (%)	FU 4 N=172 (%)	FU 5 N=172 (%)	% change B vs FU5
Stock cards available	86.2	77.3	74.7	79.7	84.2a	90.1	+3.9
Stock cards updated (1m)	44.8	38.6	44.3	42.4	51.2	60.4c	+15.6
AL dispenser book available	89.7	86.9	85.6	91.3	86.6	87.8	-1.9
AL book updated (1m)	66.7	45.5	47.7	51.2	45.9	44.1b	-22.6
Monthly summary form available	81.5a	76.1	79.9	76.2	73.2	83.1	+1.6
Summary form completed (3m)	65.9a	59.1	69.0	57.6	57.1b	73.8d	+7.9

- a. Denominator does not include one facility with missing value
- b. Denominator does not include two facilities with missing values
- c. Denominator does not include three facilities with missing values
- d. Denominator does not include four facilities with missing values

**Figure 4: 2010-2012 national trends in the availability and the quality of key antimalarial drug management records**



## Highlight: Availability of antimalarial medicines and antimalarial drug management

### KEY FINDINGS:

A substantial decline in AL stock-outs was observed during the monitoring period. The latest results showed that in the period 3 months prior to the survey, only 7% of facilities experienced total AL stock-out while 22% were stocked out of one or more AL packs over the period of 7 or more consecutive days. With respect to the national policy change for the second-line therapy (DHA-PPQ) and the treatment of severe malaria (parenteral artesunate), these commodities are still rarely available at public health facilities. Finally, despite the widespread availability of inventory materials the quality of antimalarial drug recording and reporting was suboptimal throughout the monitoring period.

### IMPLICATIONS:

Future drug management activities should focus on the maintenance of the effective supply chain for antimalarial medicines, procurement and distribution of new therapies for treatment failures and severe malaria, and on improving routine recording and reporting which is of critical importance for consumption monitoring of both, antimalarial drugs and RDTs.

## 3.2.4. Availability of guidelines and job aids

The new national malaria guideline for health workers was officially launched in September 2010 and subsequently disseminated nationwide during two major rounds of national trainings for health workers in 2010 and 2012/2013. The wall chart on malaria outpatient algorithm specifying new malaria diagnostic recommendations was finalized in 2010 and disseminated in the first half of 2011 as well as during the in-service trainings for health workers. The coverage of health facilities with new guidelines increased from 5.7% at the first follow-up survey to 58.1% during the last survey while the coverage of health facilities with the new diagnostic algorithm chart was 27.9% at the last survey. Simultaneously, a decline trend was observed in the availability of obsolete guidelines and wall charts. The proportion of facilities having displayed old algorithm charts promoting presumptive treatment in children decreased from 44.8% to 25.6% while the availability of old malaria guidelines providing the same presumptive recommendations decreased from 69.5% to 56.7%. During the last survey round, a significant proportion of facilities (30.2%) were found with both copies of guidelines (valid and obsolete).

## Highlight: Availability of new case-management guidelines and wall charts

### KEY FINDINGS:

By mid 2013, the majority (58%) of health facilities had new malaria case-management guidelines. The charts with new diagnostic algorithms were however available at only 28% of facilities. Despite a declining trend, old guidelines and wall charts are still available at substantial proportion of health facilities.

### IMPLICATIONS:

The coverage with new national malaria case-management guidelines and wall charts has significantly increased however it is still below universal targets. These job aids should be repeatedly disseminated to the peripheral health facilities through the implementation channels such as in-service training for health workers and KEMSA supply chains. The obsolete guidelines and wall charts should be removed from health facilities.

### 3.2.5. Health workers' exposure to in-service training and supervision

General characteristics of outpatient health workers who saw patients on survey days were similar. During all surveys the majority of health workers were female (survey range: 53-60%), health workers not in-charge of facilities (survey range: 54-62%) and by cadre nurses (survey range: 59-66%) followed by clinical officers (survey range: 28-31%). The main case-management activity undertaken in 2010 (between the baseline and the first follow-up survey) and subsequently at the end of 2012/beginning of 2013 (prior to the last survey) were nationwide trainings for front-line health workers. The trends in the health workers' training coverage observed during the monitoring period reflected time periods when this activity was delivered. The first follow-up survey showed that 21.5% of health workers were trained on the new case-management policy; the subsequent four surveys have not shown significant changes while the last survey after the second round of the trainings reached coverage of 50% trained health workers (Table 6 and Figure 5). With respect to the supervision, there was a significant increase from 41.5% of health workers receiving at least one supervisory visit in 3 months prior to the baseline

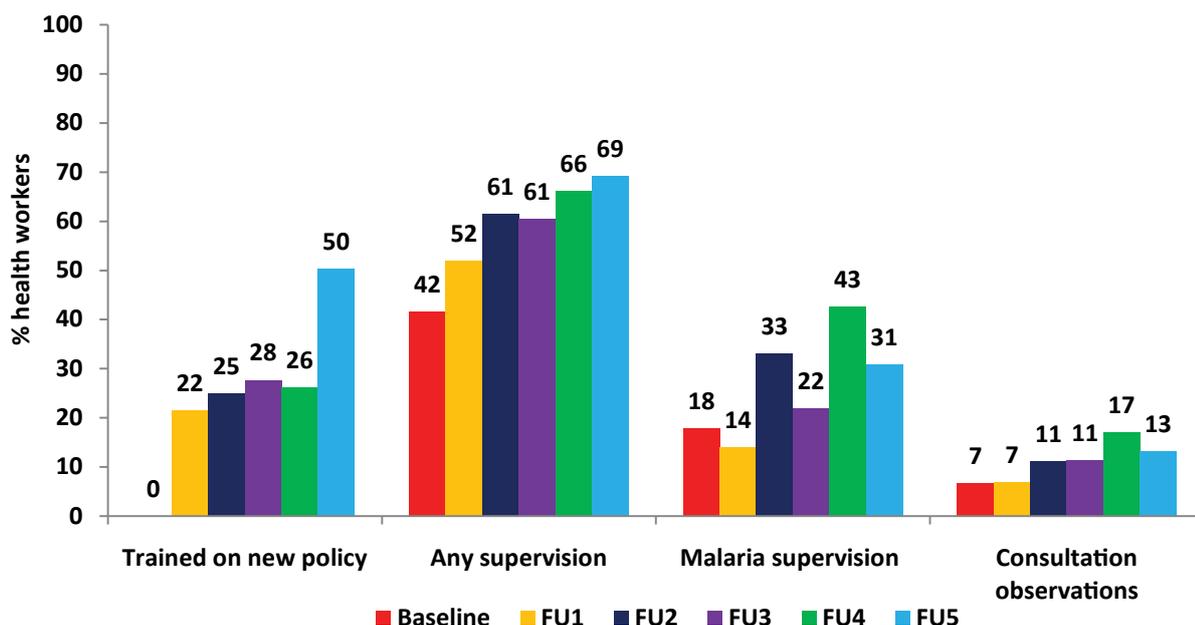


to 69.2% (27.7% increase) prior to the last follow-up survey. Compared to the baseline results, there was also a modest increase in the coverage of health workers with supervisory visits including malaria case-management (12.9%) and with the visits including observations of outpatient consultations (6.5%). Yet despite an overall increasing trend in malaria supervision the overall coverage at the end of the monitoring period was low and still well below universal targets (Table 6 and Figure 5).

**Table 6: Health workers exposure to in-service training and supervision**

	Baseline N=224 (%)	FU 1 N=237 (%)	FU 2 N=233 (%)	FU 3 N=220 (%)	FU 4 N=216 (%)	FU 5 N=227 (%)	% change B vs FU5
<b>In-service training</b>							
Trained on new CM policy	0	21.5	24.9	27.7	26.2	50.2	<b>+50.2</b>
<b>Supervision</b>							
Any supervisory visit in past 3m	41.5	51.9	61.4	60.5	66.2	69.2	<b>+27.7</b>
Any visit including malaria CM	17.9	13.9	33.1	21.8	42.6	30.8	<b>+12.9</b>
Had visit including observations	6.7	6.8	11.2	11.4	17.1	13.2	<b>+6.5</b>

**Figure 5: 2010-2012 national trends in health workers exposure to in-service training on the new case-management policy and supervision**



**Highlight: Health workers’ coverage with in-service training and supervision**

**KEY FINDINGS:**

Following two rounds of national in-service training programs for health workers the coverage of trained health workers on the new case-management policy is 50%. An increasing trend in health workers’ exposure to supervisory activities has been observed however the coverage of visits that include malaria case-management (31%) and observations of consultations (13%) remained low by the time of the last survey.

**IMPLICATIONS:**

Despite a substantial increase in the coverage of trained health workers over 3 years, half of the front-line health workers are still untrained. To close the gaps towards universal targets the activities involving further in-service training, on-job training and trainings included into pre-service curricula are justified. Furthermore, despite the improvements demonstrated, routine supervisory activities at district level focusing on malaria case-management activities are still suboptimal and should be quantitatively increased and qualitatively improved in line with recently produced supervisory manuals for malaria control.

### 3.3. Malaria case-management

This section presents results on the case-management practices for febrile, non-pregnant patients weighing  $\geq 5\text{kg}$  and presenting for an initial outpatient visit without being referred for hospitalization. The presentation of the results followed the multi-level analytic approach of the study. First, to assess the performance of the new case-management policy the results are presented from all health facilities regardless of the availability of case-management commodities. Second, to assess health workers adherence to the new guidelines the same results were restricted to the facilities where AL and diagnostics were in stock on the survey day. Third, at facilities with available AL, the quality of AL dosage prescriptions, and the quality of dispensing and counseling practices was respectively restricted

to patients who had AL prescribed and to those who had both, AL prescribed and dispensed at facility. Fifth, to assess health workers adherence with respect to recently introduced RDTs case-management indicators during the last survey were stratified based on the type of malaria testing performed. Finally, case-management results were stratified for children below 5 and above 5 years of age.

### 3.3.1 Main patients' characteristics

Main patients' characteristics were similar between surveys with respect to patients' sex, age, weight, body temperature and prior use of antimalarial drugs (Table 7).

**Table 7: Main characteristics of febrile patients across surveys**

	<b>Baseline N=2,405 (%)</b>	<b>FU 1 N=1,456 (%)</b>	<b>FU 2 N=1,208 (%)</b>	<b>FU 3 N=1,291 (%)</b>	<b>FU 4 N=1,245 (%)</b>	<b>FU 5 N=1,431 (%)</b>
<b>Female</b>	56.1	53.8	55.3	57.9	58.1	55.2
<b>Age</b>						
<1 year	12.0	13.7	9.3	13.5	11.4	9.2
1-4 years	32.5	32.6	35.0	31.5	29.6	32.2
5-14 years	21.1	18.1	18.8	19.2	21.3	28.6
≥15 years	34.4	35.5	36.9	35.8	37.8	30.1
<b>Weight<sup>a</sup></b>						
5-14 kg	41.0	41.4	39.1	41.7	37.1	36.1c
15-24 kg	17.1	17.3	16.8	15.5	17.2	23.4c
25-34 kg	5.0	4.3	4.2	4.6	5.6	7.1c
≥35 kg	37.0	36.7	38.9	38.3	40.1	33.4c
<b>Temperature ≥37.5<sup>°</sup>C<sup>b</sup></b>	26.3	31.1	30.9	23.8	27.6	35.1c
<b>Prior use of any AM</b>	5.0	4.6	4.6	3.3	4.8	4.5d
<b>Prior use of AL</b>	1.9	1.5	2.4	2.4	3.1	3.4
<b>Prior use of complete AL dose</b>	0.5	0.6	1.2	0.6	0.7	1.0

- Denominator does not include respectively 2 and 4 patients with missing values during the FU 1 and FU 4 surveys
- Denominator does not include respectively 1 and 3 patients with missing values during the FU 1 and FU 4 surveys
- Denominator does not include 1 patient with missing values during the FU 5 survey
- Denominator does not include 8 patients with missing values during the FU 5 survey

### 3.3.2 Performance of the new diagnostic and treatment policy

The national case-management guidelines recommend that 1) “all patients with fever or history of fever should be tested for malaria and only patients who test positive should be treated for malaria” and 2) “the recommended first line treatment for uncomplicated malaria is artemether-lumefantrine” (MOPHS 2010). We considered composite case-management performance in line with guidelines if the following criteria were met: 1) febrile patient was tested for malaria; 2) if positive test result was reported patient was treated with AL, and 3) if negative test result was reported patient was not treated for malaria.

Overall, at all study facilities the composite performance improved significantly from 15.7% at the

baseline to 49.9% at the last follow-up survey (34.2% increase) (Table 8 and Figure 6). The same upward trend was observed in children below 5 years (11.8% vs 49.0%; 37.2% increase) and in patients 5 years and older (18.9% vs 50.5%; 31.6% increase). A similar improvement trend was observed in testing rates of febrile patients – from 23.9% at the baseline to 57.9% at the last follow-up survey (34.0% increase). Testing rates in children below 5 years increased from 20.5% to 55.2% (34.7% increase) while performance of the same task for patients 5 years and older improved from 26.7% to 59.7% (33.0% increase).

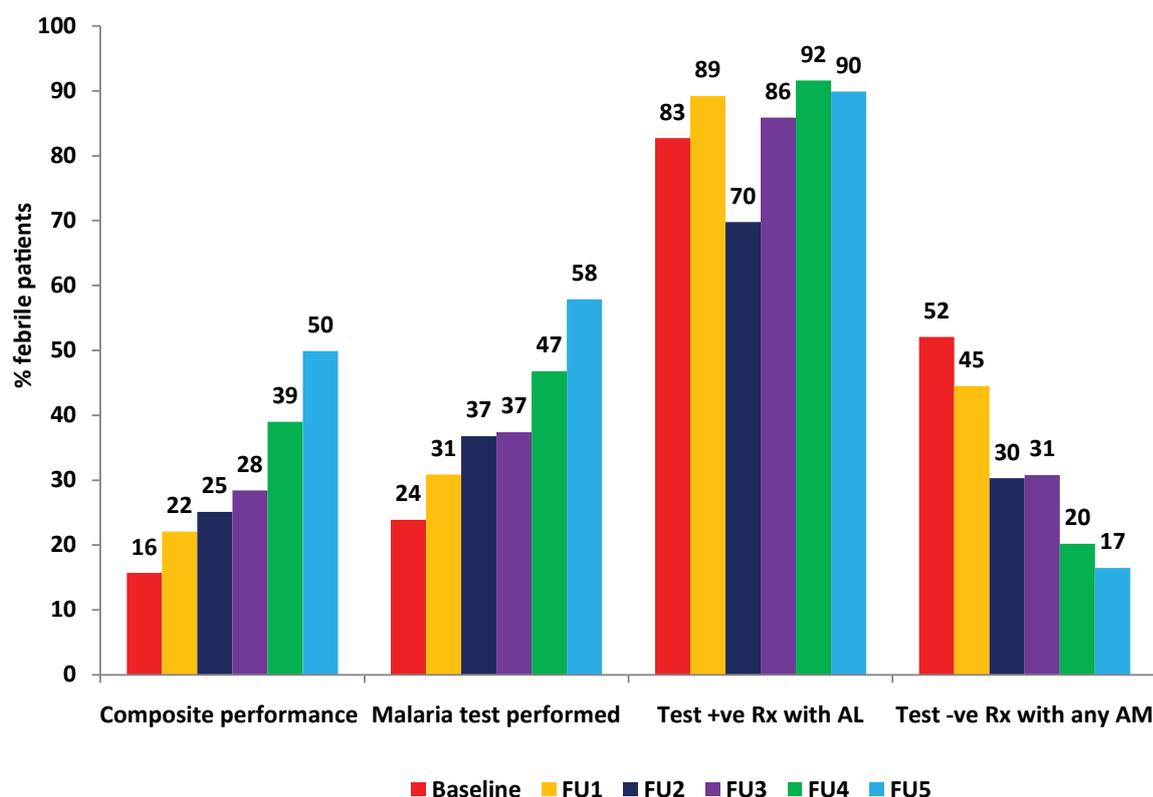
Stratified analysis by the use and result of malaria test provides further light on the case-management practices (Table 8 and Figure 6). First, recommended AL treatment for test positive patients was relatively high but not optimal during the baseline survey. Comparing the baseline results with the results of the last survey an improvement of 7.4% was observed in correct treatment of test positive patients (from 82.7% to 90.1%). Interestingly, during the last survey, correct treatment was higher for children below 5 years of age (94.4%) compared to older children and adults (87.6%) and similar pattern was observed during the prior surveys. In the same period a decline of 6.1% was observed in the treatment of test positive patients with non-recommended combination of AL and quinine. Second, among patients with negative test result, a substantial decline in proportion of patients treated for malaria during the last survey was observed compared to the baseline results (52.1% vs 16.5%; 35.6% decrease). The decline in this practice was seen in both age groups and reached similar, fairly low levels during the last survey – in children below 5 years (56.7% vs 15.1%; 41.6% decrease) and in patients 5 years and older (48.7% vs 17.6%; 31.1% decrease). Finally, a significant decline of 44.1% of antimalarial prescriptions was observed among patients without malaria test performed. This has resulted in 23.7% of these patients treated for malaria during the last survey, nearly all with AL therapy (Table 8).



**Table 8: Performance of the new case-management policy - diagnostic and treatment practices for febrile patients presenting to all health facilities regardless of the availability of commodities**

	<b>Baseline N=2,405 (%)</b>	<b>FU 1 N=1,456 (%)</b>	<b>FU 2 N=1,208 (%)</b>	<b>FU 3 N=1,291 (%)</b>	<b>FU 4 N=1,245 (%)</b>	<b>FU 5 N=1,431 (%)</b>	<b>% change B vs FU5</b>
<b>Composite performance</b>	15.7	22.1	25.1	28.4	39.0	49.9	<b>+34.2</b>
<b>Malaria test performed</b>	23.9	30.9	36.8	37.4	46.8	57.9	<b>+34.0</b>
<b>Rx among test positives</b>	<b>N=295</b>	<b>N=212</b>	<b>N=205</b>	<b>N=191</b>	<b>N=180</b>	<b>N=343</b>	
AL	82.7	89.2	69.8	85.9	91.6	90.1	<b>+7.4</b>
AL+QN	10.2	0.9	12.2	9.9	2.8	4.1	<b>-6.1</b>
QN	4.1	3.3	12.7	1.6	4.4	3.8	<b>-0.3</b>
<b>Other AM</b>	2.4	3.8	2.9	1.0	0.6	0.6	<b>-1.8</b>
<b>No AM prescribed</b>	0.7	2.8	2.4	1.6	0.6	1.5	<b>+0.8</b>
<b>Rx among test negatives</b>	<b>N=280</b>	<b>N=238</b>	<b>N=239</b>	<b>N=292</b>	<b>N=402</b>	<b>N=485</b>	
AL	34.6	39.9	24.3	25.7	17.2	12.8	<b>-21.8</b>
SP	11.4	3.4	2.5	1.7	1.2	0.6	<b>-10.8</b>
AL+QN	2.9	0	1.3	2.1	0.3	0.2	<b>-2.7</b>
QN	1.8	0.4	1.7	0.7	0.3	2.5	<b>+0.7</b>
<b>Other AM</b>	1.4	0.8	0.4	0.7	1.2	0.4	<b>-1.0</b>
<b>No AM prescribed</b>	47.9	55.5	69.8	69.2	79.9	83.5	<b>+35.6</b>
<b>Any AM prescribed</b>	52.1	44.5	30.3	30.8	20.2	16.5	<b>-35.6</b>
<b>Rx when test not done</b>	<b>N=1,830</b>	<b>N=1,006</b>	<b>N=764</b>	<b>N=808</b>	<b>N=663</b>	<b>N=603</b>	
AL	59.8	55.4	48.2	45.7	31.4	21.6	<b>38.2</b>
AL+QN	3.1	1.5	2.8	1.7	2.3	1.0	<b>-2.1</b>
SP	2.9	1.4	2.5	1.2	1.4	0.2	<b>-2.7</b>
QN	1.6	1.1	2.9	0.4	3.6	0.5	<b>-1.1</b>
<b>Other AM</b>	0.5	0.5	0.3	0.5	0.5	0.5	<b>0</b>
<b>No AM prescribed</b>	32.2	40.2	43.3	50.5	60.9	76.3	<b>+44.1</b>
<b>Any AM prescribed</b>	67.8	59.8	56.8	49.5	39.1	23.7	<b>-44.1</b>

**Figure 6: 2010-2012 national trends in the diagnostic and treatment performance of the new case-management policy**



### 3.3.3 Health workers adherence to the new diagnostic and treatment guidelines

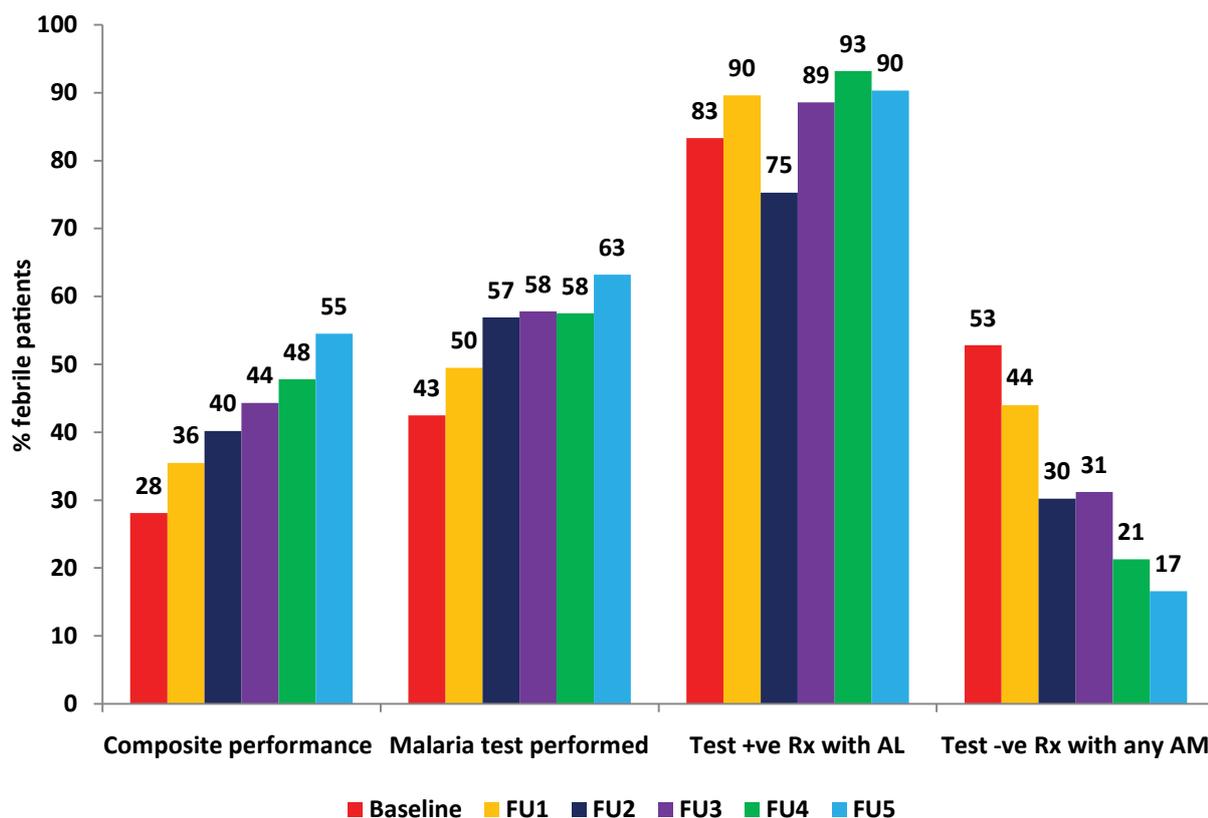
This section reports health workers case-management practices from facilities where diagnostics and AL were in stock during the surveys (Table 9 and Figure 7). At these facilities, the performance of the composite case-management indicator improved from 28.1% at the baseline to 54.5% (26.4% increase) during the last follow-up survey, while testing rates improved from 42.5% to 63.2% (20.7% increase). In children below 5 years of age the composite performance improved from 19.3% to 52.5% (33.2% increase) while testing rates improved from 33.3% to 59.0% (25.7% increase). In patients 5 years and older improvements were lower compared to young children, however the composite performance still significantly improved from 36.1% to 56.0% (19.9% increase) while testing rates increased from 50.8% to 66.3% (15.5% increase).

Since total AL stock-out was present in only 3-11% of facilities across all surveys, the key indicators on treatment practices for test positive and test negative patients were similar to the levels and trends observed at all facilities. In summary, at these facilities AL treatment for test positive patients improved from 83.3% at the baseline to 90.3% at the last follow-up survey (7.0% increase) while in the same period antimalarial treatment for test negative patients decreased from 52.8% to 16.6% (36.2% decrease) (Table 9 and Figure 7). Among febrile patients without test performed, a substantial decline (45.5%) in prescriptions of antimalarial treatments was also observed. However, by the end of the monitoring period and despite the availability of diagnostics at these facilities, 19.2% of patients in this category were still treated for malaria (Table 9).

**Table 9: Health workers adherence to guidelines - diagnostic and treatment practices for febrile patients presenting to facilities where malaria diagnostic services were available and AL was in stock**

	Baseline N=1,239 (%)	FU 1 N=861 (%)	FU 2 N=634 (%)	FU 3 N=769 (%)	FU 4 N=919 (%)	FU 5 N=1,302 (%)	% change B vs FU5
<b>Composite performance</b>	28.1	35.5	40.2	44.3	47.8	54.5	<b>+26.4</b>
<b>Malaria test performed</b>	42.5	49.5	56.9	57.8	57.5	63.2	<b>+20.7</b>
<b>Rx among test positives</b>	<b>N=276</b>	<b>N=201</b>	<b>N=154</b>	<b>N=175</b>	<b>N=162</b>	<b>N=340</b>	
AL	83.3	89.6	75.3	88.6	93.2	90.3	<b>+7.0</b>
AL+QN	10.5	1.0	14.9	8.6	3.1	3.8	<b>-6.7</b>
QN	4.0	3.5	5.2	1.1	3.1	3.8	<b>-0.2</b>
Other AM	1.5	3.5	2.0	1.1	0.6	0.6	<b>-0.9</b>
No AM prescribed	0.7	2.5	2.6	0.6	0.0	1.5	<b>+0.8</b>
<b>Rx among test negatives</b>	<b>N=250</b>	<b>N=225</b>	<b>N=205</b>	<b>N=269</b>	<b>N=366</b>	<b>N=483</b>	
AL	35.6	40.4	23.9	26.4	18.3	12.8	<b>-22.8</b>
SP	10.8	2.7	2.9	1.9	1.1	0.6	<b>-10.2</b>
AL+QN	3.2	0	1.5	1.5	0.3	0.2	<b>-3.0</b>
QN	2.0	0.4	1.5	0.7	0.3	2.5	<b>+0.5</b>
Other AM	1.2	0.4	0.5	0.7	1.4	0.4	<b>-0.8</b>
No AM prescribed	47.2	56.0	69.8	68.8	78.7	83.4	<b>+36.2</b>
Any AM prescribed	52.8	44.0	30.2	31.2	21.3	16.6	<b>-36.2</b>
<b>Rx when test not done</b>	<b>N=713</b>	<b>N=435</b>	<b>N=275</b>	<b>N=324</b>	<b>N=391</b>	<b>N=479</b>	
AL	55.3	42.3	36.7	32.4	19.4	18.8	<b>-36.5</b>
AL+QN	3.2	1.2	1.1	0.3	1.8	0.4	<b>-2.8</b>
SP	3.0	1.6	0.7	1.9	1.3	0	<b>0</b>
QN	1.5	0.7	1.1	0.6	0.8	0	<b>0</b>
Other AM	0.7	0	0.4	0.9	0.3	0	<b>0</b>
No AM prescribed	36.3	54.3	60.0	63.9	76.5	80.8	<b>+45.5</b>
Any AM prescribed	63.7	45.8	40.0	36.1	23.5	19.2	<b>-44.5</b>

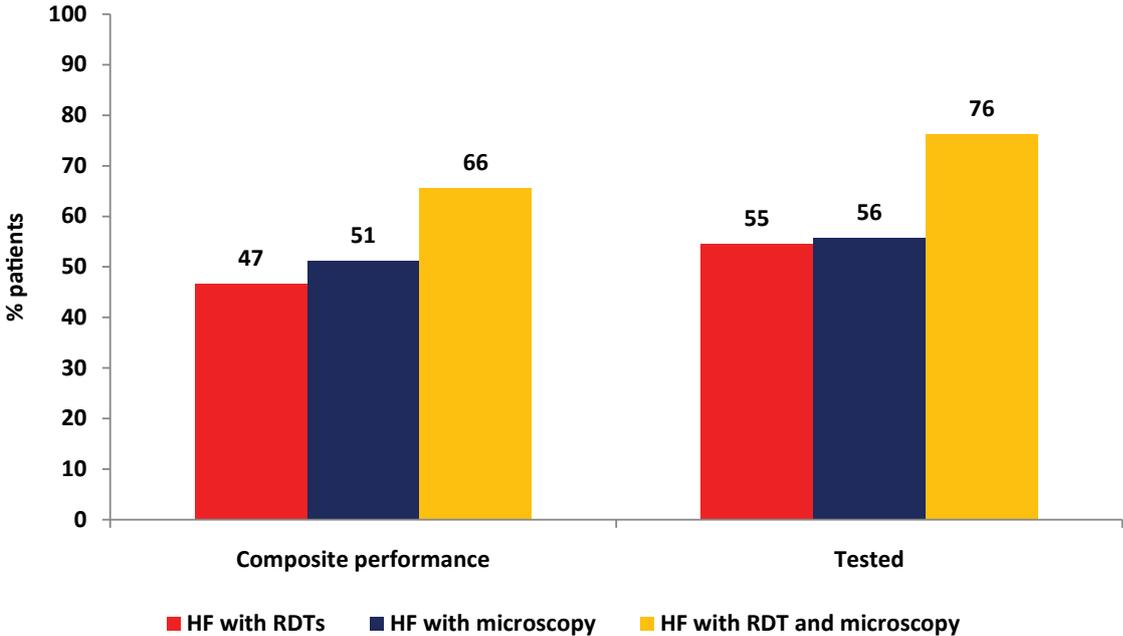
**Figure 7: 2010-2012 national trends in health workers diagnostic and treatment adherence to national case management guidelines**



### 3.3.4 Case-management practices stratified by type and result of malaria testing

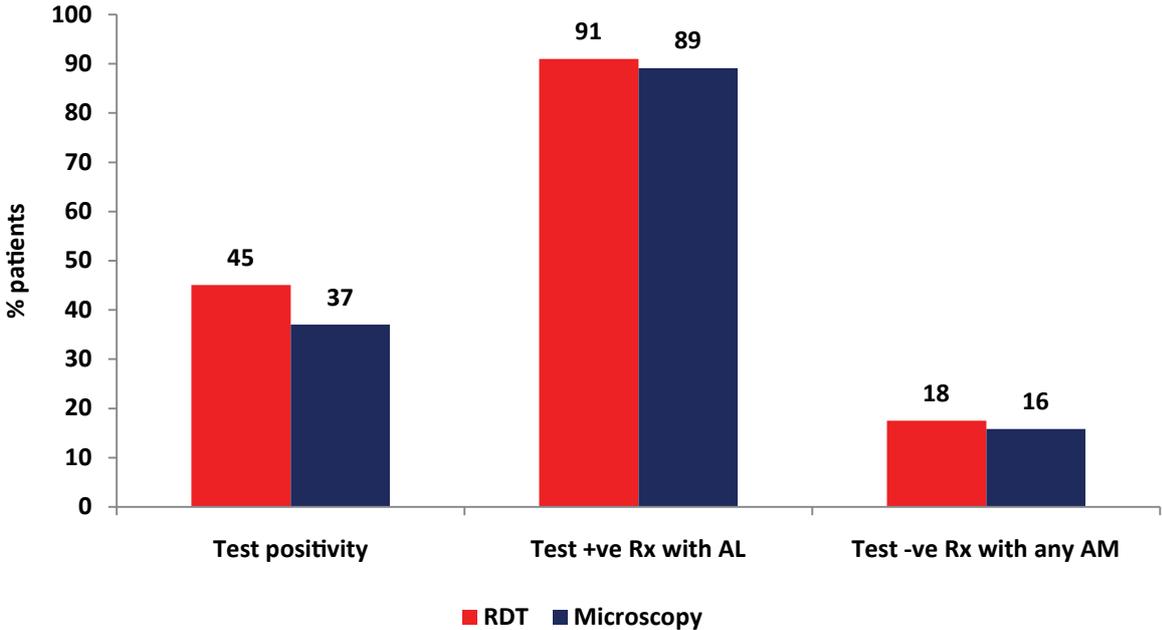
During the last follow up survey the large scale availability of RDTs allowed the first meaningful examination of health workers adherence to test and treat policy stratified by the type of malaria diagnostics. The first analysis examined composite performance and testing rates stratified by three categories of health facilities: 1) facilities providing only RDT diagnostic services, 2) facilities providing only malaria microscopy, and 3) facilities providing both diagnostic services. There were no significant differences observed in composite performance (47% vs 51%) and testing rates (55% vs 56%) between facilities providing exclusively RDTs or malaria microscopy; however health workers adherence was significantly higher at facilities providing both diagnostic services. At these facilities composite performance was 66% while 76% of febrile patients have been tested (Figure 8). Interestingly, at facilities providing both diagnostic services, significantly higher proportion of tested patients had malaria microscopy performed (67.3%) compared to RDTs (31.1%) while only 1.6% of patients had both tests performed.

**Figure 8: Composite performance and testing rates by type of diagnostic services provided**



The second analysis examined treatment practices stratified by the type and the result of malaria diagnostic test performed. Test positivity rates were higher among patients tested with RDTs (45%) compared to those who had malaria blood slide performed (37%). It was however important to observe that no difference in treatment practices was found with respect to the type of testing and the respective test results. In both categories of tests performed, patients with positive test results were nearly equally treated with AL (91% for RDTs and 89% for microscopy). Similarly, regardless of the type of the testing antimalarial treatment was nearly equally prescribed for patients with negative test result (18% for RDTs and 16% for microscopy) (Figure 9).

**Figure 9: Treatment practices by type of malaria test performed and test result reported**



# HOW TO DO THE RAPID TEST FOR MALARIA

## REQUIREMENTS FOR TEST PERFORMANCE



## PROCEDURE

<p>Open &amp; label the test cassette.</p>	<p>Open the alcohol swab. Clean the left finger on the patient's left hand with the alcohol swab. Allow the finger to dry before pricking.</p>	<p>Wipe the first drop with the sterile gauze/cotton wool. Use the Pipette/Blood Collecting Device to collect the drop of blood.</p>
<p>Transfer the collected blood into the sample well marked "S".</p>	<p>Add the required buffer solution into the buffer well marked "B".</p>	<p>Time the test as per manufacturer's instruction after adding the buffer. Read test results. <b>NOTE:</b> Do not read the test cassette later than the recommended time after adding the buffer. You may get false results.</p>

## TEST RESULTS

	<p><b>POSITIVE</b> A line near letter "C" and a line near letter "T" means the patient is <b>POSITIVE</b> for malaria in single species detection tests.</p>
	<p><b>POSITIVE</b> The test is positive even if the line near "T" is faint.</p>
	<p><b>NEGATIVE</b> A line near letter "C" and NO LINE near letter "T" means the patient <b>DOES NOT</b> have malaria.</p>
	<p><b>INVALID</b> NO LINE near letter "C" and one or no line near letter "T" means the test is <b>INVALID</b>.</p>

## WASTE DISPOSAL

<p>Discard the used lancet, pipette, blood collecting device in the Sharps Box immediately after use.</p>	<p>Dispose the gloves, alcohol swab, discart swabs, cassettes and packaging in a non sharps waste container immediately after use.</p>
---	--

## RECORD

Record the test results in your register.  
**NOTE:** Each test can be used **ONLY ONE TIME**. Do not try to use the test more than once.



## Highlight: Case-management policy performance and health workers adherence

### KEY FINDINGS:

- A) The composite case-management performance - measured at all facilities regardless of the availability of the commodities as an indicator of the policy performance - increased from 16% to 50%. The changes in individual case-management components were as follows: 1) testing rates increased from 24% to 58%, 2) treatment of test positive patients with AL increased from 83% to 90%, and 3) antimalarial treatment of test negative patients decreased from 52% to 17%.
- B) The same composite performance - measured at facilities where malaria diagnostics and AL are available as an indicator of the health workers adherence - increased from 28% to 55%. At these facilities the changes in individual case-management components were as follows: 1) testing rates increased from 43% to 63%, 2) treatment of test positive patients with AL increased from 83% to 90%, and 3) antimalarial treatment of test negative patients decreased from 53% to 17%.
- C) Health workers adhered equally to guidelines with respect of exclusive RDT or microscopy availability, type of malaria test performed and result reported. However, health workers performed significantly better at facilities where both RDTs and malaria microscopy were available – composite performance at these facilities was 66% while 76% of patients were tested.

### IMPLICATIONS:

Despite a substantial improvements in the key “test and treat” indicators observed by mid 2013, some gaps still remained towards the universal case-management targets reflected in composite case management performance. The main reasons for these gaps are not yet optimal testing rates at facilities where testing is available (63%) but also to a smaller extent absence of diagnostics in 10% of facilities and non-adherence to malaria test positive (10%) and test negative (17%) results. To bridge the gap the future activities should focus on 1) supply of RDTs to all health facilities irrespective of availability of malaria microscopy and 2) further reinforcement of clinical practices during the in-service training, supervisory visits and IEC campaigns targeting health workers to increase testing of febrile patients and treatment adherence to test results.

### 3.3.5 Correctness of AL dosing

The correctness of AL dosage prescriptions was assessed in comparison with national guidelines dosage recommendations for four weight-specific AL categories. They were classified as: 1) recommended, 2) overdosed, and 3) underdosed prescriptions. The baseline value for AL prescribing in recommended dose was high but not optimal (89.2%). Yet a significant increasing trend in the correct dosing practices was observed (Table 10 and Figure 8). During the last follow-up survey nearly all patients (99.8%; 10.6% increase) were correctly dosed for their weight. Finally, we also observed a decline trend in overall prescriptions of AL below and above recommended dose, the practices that became nearly non-existent by the end of the monitoring period (Table 10).

**Table 10: Correctness of weight-specific AL dosing for patients who had AL prescribed**

	Baseline N=1,328a (%)	FU 1 N=839a (%)	FU 2 N=569a (%)	FU 3 N=568a xxlow-up 4 (%)	FU 4 N=428a (%)	FU 5 N=491a (%)	% change B vs FU5
<b>Recommended dose</b>	89.2	92.4	92.8	97.7	97.9	99.8	<b>-10.6</b>
<b>Underdose</b>	7.2	4.4	3.7	0.2	1.6	0.0	<b>-7.2</b>
<b>Overdose</b>	3.7	3.2	3.5	2.1	0.5	0.2	<b>-3.5</b>

a Denominators do not include incomplete AL prescriptions (107 baseline, 2 at FU 2, 40 at FU 3, 14 at FU 4, 10 at FU5)

### Highlight: Correctness of AL dosing

#### KEY FINDINGS:

An improvement trend was observed in AL prescribing in accordance with weight-specific recommendations. By the time of the last survey nearly all patients had AL correctly prescribed while underdosed and overdosed prescriptions became nearly non-existent.

#### IMPLICATIONS:

Correct weight-based dosing is a critical pre-requisite to ensure high rates of patients' adherence to AL regimen and AL treatment success. The optimistic findings observed by mid 2013 should be regularly monitored.

### 3.3.6 Dispensing and counseling practices

The quality of AL dispensing and counseling was evaluated for 7 performance tasks specified in the national malaria guidelines and training manuals. Compared to baseline results, the performance at the last survey improved for 3 tasks, namely weighing of patients (51.8% vs 63.8%; 12.0% increase), administration of the first AL dose at the facility (32.1% vs 51.5%; 19.4% increase) and provision of advice that all doses should be completed (80.3% vs 90.4%; 10.1% increase). Comparing the same survey periods, no changes were observed for the remaining 4 tasks. Overall, of 7 tasks measured during the last survey, 3 were performed for more than three-quarter of the patients - advice on correct dosing (95.4%), advice on need to complete all doses (90.4%) and advice on the second dose after 8 hours (75.7%).



During the same assessment period, another 3 tasks were performed for 50-70% of patients - advice on taking AL after the meal (67.6%), weighing of patients (64.1%) and administration of the first dose at health facility (51.5%). Importantly, during the last survey, three-quarters (75.7%) of children below 5 years of age were weighed. Finally, the only counseling task that was rarely performed was provision of advice on what to do in case of vomiting (6.9%) (Table 11 and Figure 10).

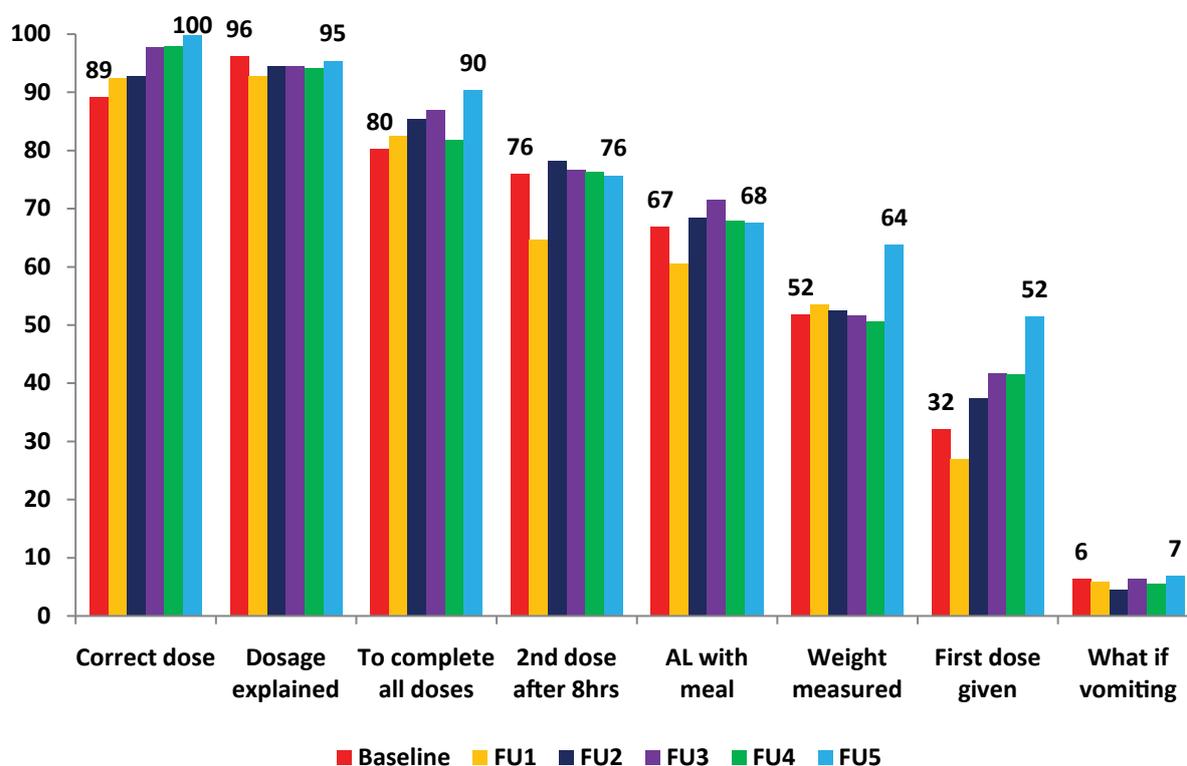
**Table 11: Dispensing and counseling practices among patients who had AL dispensed**

	Baseline N=1,408 (%)	FU 1 N=797 (%)	FU 2 N=478 (%)	FU 3 N=576 (%)	FU 4 N=417 (%)	FU 5 N=478 (%)	% change B vs FU5
<b>Weight measured</b>	51.8	53.6a	52.5	51.7	50.6	64.1b	<b>+12.0</b>
<b>First dose given at facility</b>	32.1	26.9	37.5	41.7	41.5	51.5	<b>+19.4</b>
<b>Dosage explained</b>	96.2	92.8	94.4	94.6	94.2	95.4	<b>-0.8</b>
<b>Told to take 2nd dose after 8hrs</b>	76.0	64.7	78.2	76.6	76.3	75.7	<b>-0.3</b>
<b>Told to take drugs after meal</b>	66.9	60.5	68.4	71.5	67.9	67.6	<b>0.7</b>
<b>Told what to do if vomiting</b>	6.3	5.9	4.6	6.4	5.5	6.9a	<b>0.6</b>
<b>Told to complete all doses</b>	80.3	82.4	85.4	87.0	81.8	90.4	<b>10.1</b>

a Denominator does not include 2 observations with missing values

a Denominator does not include 1 observation with missing values

**Figure 10: 2010-2012 national trends in health workers AL dosing, dispensing and counseling practices**



## Highlight: AL dispensing and counseling practices

### KEY FINDINGS:

Of 7 monitored dispensing and counseling tasks, 3 had shown significant improvement at the time of the last survey. Yet to achieve the universal targets, the main tasks that still require substantial improvements include provision of advice on what to do in case of vomiting (7%), administration of the first AL dose at the facility (52%) and weighing of patients (64%).

### IMPLICATIONS:

The performance of recommended AL dispensing and counseling tasks is critical to ensure high rates of patients' adherence and treatment success. The future in-service training, supervisory and IEC activities targeting health workers should focus on these tasks and in particular on those for which suboptimal practices are still present.

## 4. CONCLUSION AND RECOMMENDATIONS

The findings of six rounds of national surveys revealed that nearly all key indicators around test and treat policy for malaria have shown significant improvements by mid-2013. Yet at the time of the mid-term policy performance review, there were still some important gaps toward targets aiming at universal availability of malaria case-management commodities, universal coverage of health facilities and health workers with malaria related health systems support activities and universal health worker's adherence to national outpatient guidelines for malaria diagnosis, treatment, counseling, and drug dispensing (Annexes 1-2). To effectively reduce the gap in reasonable time the following recommendations are made:

- Effective supply chain for RDTs should be maintained including improved supply of this commodity to hospitals and faith based facilities.
- Quality control for malaria microscopy and RDTs supported by field supervision should be scaled-up in line with the national policy guidelines for parasitological diagnosis of malaria.
- The routine supervision should include malaria case-management component and be quantitatively increased and qualitatively improved in line with national supervisory manuals.
- The new national malaria case-management guidelines and wall charts should be repeatedly disseminated to the peripheral health facilities through the implementation channels such as in-service training for health workers and KEMSA supply chains.
- Drug management activities should focus on strengthening of logistic management information systems for antimalarial medicines and RDTs, discontinuation of SP supply to non-IPTp areas, and large scale procurement and distribution of antimalarial therapies for management of treatment failures (DHA-PPQ) and severe malaria (parenteral artesunate).
- The major case-management emphasis during the in-service training, health facility supervisory visits and IEC campaigns targeting health workers should be placed on the message of universal testing of all febrile patients for malaria. The following case management messages should be also reinforced: 1) antimalarial treatment should not be provided to patients with negative test

result, 3) all patients should be weighed, 4) the first AL dose should be administered at facilities even in the absence of food, and 5) patients should be advised to return for replacement dose to complete full treatment course in case of vomiting.

- Regular monitoring of test and treat malaria case management indicators on the national scale should continue biannually by the end of 2009-2017 National Malaria Strategy while the methods and operational modalities of decentralizing the activity to provide county level estimates and trends should be simultaneously explored.

## 5. REFERENCES

- Memusi D, Nyandigisi A, Mbithi A, Shieshia M, Muturi A, Zurovac D, Juma E. *Monitoring outpatient malaria case management under the 2010 diagnostic and treatment policy in Kenya-baseline results*. Division of Malaria Control, Ministry of Public Health and Sanitation, June 2010.
- MOPHS (2009a). *National Malaria Strategy 2009-2017*. Ministry of Public Health and Sanitation, Division of Malaria Control, Nairobi.
- MOPHS (2009b). *Kenya Malaria Monitoring and Evaluation Plan 2009-2017*. Ministry of Public Health and Sanitation, Division of Malaria Control, Nairobi.
- MOPHS (2010). *National Guidelines for Diagnosis, Treatment and Prevention of Malaria for Health Workers*. Ministry of Public Health and Sanitation, Division of Malaria Control, Nairobi.
- Nyandigisi A, Memusi D, Mbithi A, Ang'wa N, Shieshia M, Muturi A, Sudoi R, Githinji S, Juma E, Zurovac D (2011). Malaria case-management following change of policy to universal parasitological diagnosis and targeted artemisinin-based combination therapy in Kenya. *PloS One* 6(9): e24781

## Annex 1: Summary of key health systems support M&E indicators

Health systems support M&E indicators	2010 Rd 1	2010 Rd2	2011 Rd 3	2012 Rd 4	2012 Rd 5	2013 Rd 6	Target 2013
<b>% of facilities with AL stock out on survey day</b>							0
All AL packs	5.7	2.8	10.9	7.0	7.6	3.5	0
AL 6 pack	19.0	10.8	21.8	21.5	16.9	13.4	0
AL 12 pack	20.1	13.6	40.2	26.7	14.4	16.3	0
AL 18 pack	20.7	18.2	33.3	27.3	19.3	16.3	0
AL 24 pack	13.8	13.1	26.4	14.5	15.1	11.0	0
Any AL pack	35.1	28.4	54.6	38.9	28.5	28.5	0
<b>% of facilities with stock out of AL for 7 or more consecutive days in past 3 months</b>							
All AL packs	27.2	21.0	6.3	9.4	21.5	7.0	0
AL 6 pack	37.6	30.1	19.5	21.1	27.9	15.2	0
AL 12 pack	43.9	32.4	31.6	28.7	34.9	14.6	0
AL 18 pack	52.0	42.1	27.6	29.8	39.0	17.0	0
AL 24 pack	39.3	35.2	19.5	19.9	34.3	10.5	0
Any AL pack	59.5	52.3	44.8	39.0	45.4	21.6	0
<b>% of facilities with stock out of recommended antimalarials for 7 or more consecutive days in past 3 months</b>							
Quinine tablets	25.4	22.2	16.1	15.1	24.0	19.9	0
Quinine injections	20.8	20.5	17.2	20.9	43.9	22.2	0
<b>% of facilities without any malaria diagnostic support (RDT or microscopy) for 7 or more consecutive days in past 3 months</b>	46.6	42.1	40.8	32.0	24.4	14.5	0
<b>% of facilities having national malaria case-management guideline</b>	0	5.7	47.7	45.3	56.7	58.1	100
<b>% of HWs trained on new malaria case-management policy</b>	0	21.5	24.9	27.7	26.2	50.2	100
<b>% of HWs who had at least one supervisory visit in past 3 months that included observation of malaria case-management</b>	6.7	6.8	11.2	11.4	17.1	13.2	100
<b>% of facilities which had at least one visit in past 3 months that included quality control of malaria microscopy</b>	9.1	18.1	17.0	22.8	34.0	18.4	100
<b>% of facilities which had at least one visit in past 3 months that included use of malaria RDTsa</b>	5.3	6.7	20.8	20.7	22.2	20.0	100

aThe indicator includes only facilities which provide these services on survey days

## Annex 2: Summary of key malaria case-management M&E indicators

Malaria case-management M&E indicators	2010 Rd 1	2010 Rd2	2011 Rd 3	2012 Rd 4	2012 Rd 5	2013 Rd 6	Target 2013
<b>Indicators showing overall performance of the new case-management policy - all facilities regardless the availability of the commodities</b>							
% of febrile patients who are managed according to national guidelines (tested for malaria AND only positive test results are treated with AL)	15.7 (11.8<5,18.9≥5)	22.1 (18.7<5,25.0≥5)	25.1 (21.5<5,27.9≥5)	28.4 (23.6<5,32.3≥5)	39.0 (37.8<5,39.9≥5)	49.9 (49.0<5,50.5≥5)	100
% of febrile patients who are tested with RDT or microscopy	23.9 (20.5<5,26.7≥5)	30.9 (25.6<5,35.5≥5)	36.8 (31.0<5,41.5≥5)	37.4 (31.5<5,42.3≥5)	46.8 (44.1<5,48.6≥5)	57.9 (55.2<5,59.7≥5)	100
% of febrile patients with positive test result who are treated with AL	82.7 (74.8<5,86.7≥5)	89.2 (90.9<5,88.2≥5)	69.8 (70.3<5,69.5≥5)	85.9 (84.1<5,86.9≥5)	91.6 (90.9<5,92.1≥5)	90.1 (94.4<5,87.6≥5)	100
% of febrile patients with negative test result who are not treated for malaria	47.9 (43.3<5,51.3≥5)	55.5 (58.3<5,53.5≥5)	69.8 (68.7<5,70.6≥5)	69.2 (69.3<5,69.1≥5)	79.9 (83.7<5,77.4≥5)	83.5 (85.1<5,82.4≥5)	100
<b>Indicators showing health workers adherence to guidelines - facilities where malaria diagnostics and AL are available</b>							
% of febrile patients who are managed in accordance with national guidelines (tested for malaria AND only positive test results treated with AL)	28.1 (19.3<5,36.1≥5)	34.6 (29.0<5,41.7≥5)	40.2 (32.6<5,47.2≥5)	44.3 (37.9<5,49.3≥5)	47.8 (44.9<5,49.8≥5)	54.5 (52.5<5,56.0≥5)	100
% of febrile patients who are tested with RDT or microscopy	42.5 (33.3<5,50.8≥5)	49.5 (38.8<5,59.6≥5)	56.9 (46.8<5,66.4≥5)	57.8 (50.6<5,63.6≥5)	57.5 (52.2<5,61.2≥5)	63.2 (59.0<5,66.3≥5)	100
% of febrile patients with positive test result who are treated with AL	83.3 (75.3<5,87.4≥5)	89.6 (91.8<5,88.3≥5)	75.3 (71.9<5,77.3≥5)	88.6 (85.5<5,90.3≥5)	93.2 (93.1<5,93.3≥5)	90.3 (95.2<5,87.4≥5)	100
% of febrile patients with negative test result who are not treated for malaria	47.2 (42.3<5,50.7≥5)	56.0 (61.1<5,52.6≥5)	69.8 (67.1<5,71.7≥5)	68.8 (69.1<5,68.6≥5)	78.7 (83.1<5,75.9≥5)	83.4 (84.9<5,82.4≥5)	100
<b>Indicators showing quality of AL prescribing, dispensing and counseling - febrile patients with AL prescribed and dispensed</b>							
% of patients with AL prescribed in recommended weight-specific dose	89.2 (88.7<5,89.6≥5)	92.4 (93.8<5,91.3≥5)	92.8 (93.4<5,92.3≥5)	97.7 (99.1<5,96.7≥5)	97.9 (99.4<5,97.0≥5)	99.8 (99.5<5,100≥5)	100
% of patients with AL dispensed who had weight measured	51.8 (60.0<5,45.1≥5)	53.6 (71.4<5,39.4≥5)	52.5 (57.3<5,50.8≥5)	51.7 (58.6<5,46.9≥5)	50.6 (56.7<5,46.9≥5)	64.1 (75.7<5,57.2≥5)	100
% of patients with AL dispensed who had first dose given at facility	32.1 (35.7<5,29.2≥5)	26.9 (29.3<5,24.9≥5)	37.5 (31.0<5,42.2≥5)	41.7 (42.7<5,41.0≥5)	41.5 (46.5<5,38.5≥5)	51.5 (53.7<5,50.2≥5)	100
% of patients with AL dispensed who were explained on dosing at home	96.2 (96.2<5,96.1≥5)	92.9 (92.4<5,93.2≥5)	94.4 (93.2<5,95.3≥5)	94.6 (95.0<5,94.4≥5)	94.2 (94.3<5,94.2≥5)	95.4 (94.9<5,95.7≥5)	100
% of patients with AL dispensed who were advised what to do if vomiting occurs	6.3 (7.8<5,5.0≥5)	5.9 (6.5<5,5.4≥5)	4.6 (5.0<5,4.4≥5)	6.4 (7.5<5,5.6≥5)	5.5 (10.2<5,2.7≥5)	6.9 (7.3<5,6.6≥5)	100

## Malaria Control Program, Ministry of Health

### Malaria OPD case management survey – Health facility assessment

**P**      **HF**

**ID Number** ..... [ ] - [ ] [ ]

Date ..... [ ] [ ] [ ] [ ] [ ] [ ]

Name of province..... [ ]

Name of district..... [ ]

Name of health facility..... [ ]

Name of data collector ..... [ ]

#### **1. Basic health facility infrastructure**

- a. Does the health facility have **electricity** today? (Y/N) ..... [ ]
- b. Is any **water** available at health facility today? (Y/N) [If No go to Q1c] ..... [ ]  
**If Yes, source** of the water? [Check all that apply]
- Running** water at the facility? (Y/N) ..... [ ]
- Pumped** water at the facility (e.g. borehole)? (Y/N)..... [ ]
- Rainfall** collection from the water tank? (Y/N) ..... [ ]
- Water brought in from **outside** of the facility? (Y/N) ..... [ ]
- If Yes, the cost of 20 liters?** (number in KSh) ..... [ ]
- Other source (specify)? (Y/N) ..... [ ] [ ]
- c. Is there a functioning **weighing scale** at the OPD of health facility? [Check all that apply]
- Hanging Salter scale? (Y/N) ..... [ ]
- Infant scale? (Y/N)..... [ ]
- Bathroom scale? (Y/N) ..... [ ]
- Adults scale? (Y/N)..... [ ]
- Others (specify)? (Y/N) ..... [ ] [ ]
- d. Is there at least one functioning **thermometer** at the OPD of health facility? (Y/N) ..... [ ]
- e. Is there a **mobile phone network** at this health facility? (Y/N)..... [ ]
- f. Name of **contact HW** for follow up calls on stocks ..... [ ]  
     Mobile **phone number(s)** of the contact HW ..... [ ]
- g. Name of **alternative HW** for follow up calls on stocks..... [ ]  
     Mobile **phone number(s)** of the alternative HW ..... [ ]

#### **2. Guidelines and wall charts**

- a. Is there a facility copy of **2006 or 2008 malaria guideline** for HWs [Show example]? (Y/N). [ ]
- b. Is there a facility copy of **2010 or 2012 malaria guideline** for HWs [Show example]? (Y/N). [ ]
- c. Is there a facility copy of **IMCI guideline** for HWs [Show example]? (Y/N) ..... [ ]
- d. Is there a facility copy of **malaria management chart booklet** [Show example]? (Y/N) ..... [ ]
- e. Is there a facility copy of **Coartem-D health workers workbook** [Show example]? (Y/N) .... [ ]
- f. Is there a facility copy of **malaria user's guide for laboratory**? (Y/N)..... [ ]
- g. Are the following malaria **wall charts exposed** at the facility [Check examples]?
- Algorithm for assessing and treating children <5 yrs with fever? (Y/N) ..... [ ]
- AL dispensing procedure and dosing schedule? (Y/N) ..... [ ]
- Malaria outpatient algorithm for older children and adults? (Y/N)..... [ ]
- Malaria outpatient algorithm for children and adults (**new chart**)? (Y/N) ..... [ ]

**3. OPD clinical staffing and relevant case management training**

a. How many of the following health workers perform outpatient consultations, and how many of these have received training on malaria case management (CM), use of RDTs and IMCI?

	All HWs (number)	Malaria CM trained since 2010 (number)	Malaria CM trained 2006-2009 (number)	RDT trained (number)	IMCI trained (number)
Doctors					
Clinical officers					
Nurses					
CHW					
Others (specify):					
Others (specify):					

**4. Laboratory staffing and relevant in-service training**

a. How many of the following laboratory health workers perform malaria testing and how many of these have received in-service training on malaria microscopy (since 2006) and RDT use?

	All HWs (number)	Malaria microscopy trained (number)	RDT trained (number)
Lab technologists			
Lab technicians			
Others (specify):			

b. What cadre is performing malaria microscopy today? .... [\_\_\_\_\_]

c. What cadre is performing malaria RDTs today? ..... [\_\_\_\_\_]

**5. Drug dispensing staffing and in-service training**

a. How many of the following health workers dispense antimalarial drugs and how many of these have received in-service training on antimalarial drug management?

	All HWs (number)	Trained on management of malaria medicines (number)
Pharmacy technologists		
Pharmacists		
Nurses		
CHWs		
Others (specify):		

b. What cadre is dispensing drugs today? ..... [\_\_\_\_\_]

**6. Supervision**

a. Has facility had any supervisory visit in past 3 mths (Aug-Oct)? (Y/N) [If No go to Q6b].... [\_\_]

**If Yes, was malaria case management topic of any visit? (Y/N) [If No go to Q6b] ..... [\_\_]**

**If Yes,**

What is source? (KEPI book, visitors book, verbal). [\_\_\_\_\_]

Was outpatient malaria case management observed? (Y/N) ..... [\_\_]

**If Yes, by who? (title)..... [\_\_\_\_\_]**

b. Has facility had any quality control visit of malaria microscopy? (Y/N)..... [\_\_]

**If Yes, by who? (title)..... [\_\_\_\_\_]**

c. Has facility had any supervisory visit on malaria RDT use? (Y/N)..... [\_\_]

**If Yes, by who? (title)..... [\_\_\_\_\_]**

d. Has facility had any supervisory visit on drug management? (Y/N) ..... [\_\_]

**If Yes, by who? (title)..... [\_\_\_\_\_]**

**7. Availability of malaria diagnostic services**

a. Is malaria **microscopy routinely provided** at health facility? (Y/N) ..... [ ]

**If Yes**, is malaria **microscopy** service functional **today**? (Y/N)..... [ ]

b. Availability of **malaria RDTs today**? [If different RDT tests separate information by product]

	<b>Non-expired quantity? (number of tests)</b>	<b>Expired quantity? (number of tests)</b>
<b>RDT 1 (write test name):</b>		
<b>RDT 2 (write test name):</b>		

c. **Source of RDTs** for health facility? ..... [\_\_\_\_\_]

**8. Availability of AL and malaria medicines inventory materials on survey day**

a. Availability of **AL on survey day**?

	<b>Non-expired quantity [physical count]</b>			<b>Non-expired quantity [record count]</b>			<b>Expired quantity [physical count]</b>
	<b>Store</b>	<b>Dispensing area</b>	<b>Total</b>	<b>Stock card</b>	<b>AL register</b>	<b>Total</b>	
AL 6 pack [No of blisters]							
AL 12 pack [No of blisters]							
AL 18 pack [No of blisters]							
AL 24 pack [No of blisters]							
Coartem <b>D</b> 6 pack [No of blisters]							
Coartem <b>D</b> 12 pack [No of blisters]							

b. Is drug **stock/bin card** available at HF? (Y/N) ..... [ ]

**If Yes**, is it regularly updated [check for last one month]? (Y/N) ..... [ ]

c. Is **AL dispenser's book** available at HF? (Y/N) ..... [ ]

**If Yes**, is it regularly updated [check for last one month]? (Y/N) ..... [ ]

d. Is **monthly summary form for malaria medicines** available at HF? (Y/N)..... [ ]

**If Yes**, is it regularly completed [check for last 3 months]? (Y/N) ..... [ ]

e. Is **ADR form (yellow form)** available at HF? (Y/N) ..... [ ]

f. Is **poor quality medicinal product reporting form (pink form)** available at HF? (Y/N)... [ ]

**9. Availability of other antimalarials on survey day [do physical count]**

	<b>Non-expired quantity?</b>	<b>Expired quantity?</b>
Chloroquine tablets [No of tablets]		
Chloroquine syrup [No of liters]		
Chloroquine injections [No of vials]		
SP tablets [No of tablets]		
SP syrup or drops [No of bottles]		
Amodiaquine tablets [No of tablets]		
Amodiaquine syrup [No of liters]		
Quinine tablets [No of tablets]		
Quinine injections [No of vials]		
Other AM (write name):		
Other AM (write name):		

**10. Availability of NON-EXPIRED medicines in STORE on survey day**

Name of antibiotic	Available (Y/N)	Name of antibiotic	Available (Y/N)
Cotrimoxazol tab		Tetracycline tablets	
Cotrimoxazol syrup		Doxycycline capsules	
Amoxicillin tabs/capsules		Metronidazol tab	
Amoxicillin syrup		Metronidazol syrup	
Ceftriaxone injection		Albendazol tab	
Ciprofloxacin tablets		Chloramphenicol capsules	
Erythromycin tablets		Chloramphenicol syrup	
Kanamycin injection		Chloramphenicol injection	
Procaine penicillin injection		Benzylpenicillin injection	
Tetracycline Eye Ointment		Gentamycin injection	
Paracetamol tab		Chlorpheniramine tab	
Adrenaline inj		Hydrocortisone inj	
ORS Sachets		Clotrimazole cream	
Loperamide tabs		Zinc Sulphate	
Nystatine susp bottle		Magnesium sulphate	
Other AB (write name):		Other AB (write name):	

**11. Quantities of AL ordered and received**

a. Name of regular **AL supplier**?

KEMSA? (Y/N) ..... [\_]

MEDS? (Y/N) ..... [\_]

Others (specify)? (Y/N) ..... [\_\_\_\_\_][\_]

b. **Date of last AL delivery** to the health facility? [check delivery note].....[\_] [\_] [\_]

c. Does the facility function on **pull system - ordering AL**? (Y/N) [If No go to Q11d] ..... [\_]

**If Yes**, enter the quantities of AL ordered and quantities of AL received **for the last order**:

	Quantity ordered? (number)	Quantity received? (number)
AL 6 tabs pack		
AL 12 tabs pack		
AL 18 tabs pack		
AL 24 tabs pack		

**Date of AL order** preceding last AL delivery? [check SOF] .....[\_] [\_] [\_]

d. Does the facility function on **push system – not ordering AL**? (Y/N) [If No go to Q12] ..... [\_]

**If Yes**, enter the most recent quantities of **AL received**:

	Quantity received? (number)
AL 6 tabs pack	
AL 12 tabs pack	
AL 18 tabs pack	
AL 24 tabs pack	

**Date of AL delivery** preceding last AL delivery? [check delivery note][\_] [\_] [\_]



**13. ABSENCE of malaria microscopy service and RDT STOCK-OUT in past 3 months** [for each evaluation day, tick the box if malaria microscopy service was not provided or RDTs were out of stock and calculate Total number of absence or stock-out days over the whole 3 months period; if stock-out day information is not available from laboratory books enter NA in the box and do not count total number of stock-out days]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total		
Malaria microscopy absent																																		
May																																		
April																																		
March																																		
Malaria RDT stock-out	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total		
May																																		
April																																		
March																																		
Both diagnostics absent	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total		
May																																		
April																																		
March																																		

**14. Stock out of antimalarial drugs and absence of diagnostics for 7 consecutive days in past 3 months**

a. Were the following drugs, diagnostic tests or services out of stock or absent for at least 7 consecutive days in past 3 months (March-May)?

	According to record review? (Y/N/NA)	If Not available (NA) in records, according to health worker's report? (Y/N/DK)
Artemether-lumefantrine 6 tablets pack		
Artemether-lumefantrine 12 tablets pack		
Artemether-lumefantrine 18 tablets pack		
Artemether-lumefantrine 24 tablets pack		
All four Artemether-lumefantrine packs		
SP tablets		
Quinine tablets		
Quinine injections		
Malaria RDT		
Malaria microscopy		
Both malaria diagnostics (RDT and microscopy)		

## Malaria Control Program, Ministry of Health

### Malaria OPD case management survey – Health worker interview

P    HF    HW

**ID Number** ..... [ ]-[ ]-[ ]

Date ..... [ ] [ ] [ ] [ ] [ ] [ ]

Name of province..... [\_\_\_\_\_]

Name of district..... [\_\_\_\_\_]

Name of health facility..... [\_\_\_\_\_]

Name of health worker..... [\_\_\_\_\_]

Name of interviewer ..... [\_\_\_\_\_]

#### **1. Background characteristics**

- a. Health worker's **age**? (years) ..... [ ] [ ]
- b. Health worker's **sex**? (M/F) ..... [ ]
- c. What is the health worker's **cadre**?
- Clinical officer? (Y/N) ..... [ ]
- Nurse? (Y/N) ..... [ ]
- Community Health Worker? (Y/N) ..... [ ]
- Others (specify)? (Y/N) ..... [\_\_\_\_\_] [ ]
- d. Are you the facility **in-charge**? (Y/N) ..... [ ]

#### **2. In-service training related to malaria** [If HW trained more than once, enter details for the most recent training]

- a. Have you ever attended **IMCI** training? (Y/N) [If No go to Q2b] ..... [ ]
- If Yes, date** of training? (month-year) ..... [ ] [ ]-[ ] [ ]
- Was use of **AL** part of the IMCI course? (Y/N) ..... [ ]
- Was use of **RDTs** part of the IMCI course? (Y/N) ..... [ ]
- b. Have you attended **malaria** case management training that **included AL use**? (Y/N) [If No go to Q2c] .. [ ]
- If Yes, date** of training? (month-year) ..... [ ] [ ]-[ ] [ ]
- Organization** giving the course? (name)..... [\_\_\_\_\_]
- Course venue**? (town and setting) ..... [\_\_\_\_\_]
- Duration** of training? (number of days) ..... [ ]
- Participants**? (number) ..... [ ]
- Clinical practice** included? (Y/N) ..... [ ]
- Was **use of RDTs** part of the course? (Y/N) ..... [ ]
- c. Have you ever attended **RDT specific malaria** training? (Y/N) [If No go to Q3a] ..... [ ]
- If Yes, date** of training? (month-year) ..... [ ] [ ]-[ ] [ ]

**3. Guidelines**

- a. Do you have access to **2006 or 2008 malaria guideline** for health workers [Show example]? (Y/N)..... [ ]
- b. Do you have access to **2010 or 2012 malaria guideline** for health workers [Show example]? (Y/N)..... [ ]
- c. Do you have access to **malaria management chart booklet** [Show example]? (Y/N)..... [ ]
- d. Do you have access to **IMCI guideline** booklet [Show example]? (Y/N) ..... [ ]

**4. Supervision**

- a. Did you have **any supervisory visit** in the **last 3 months**? (Y/N) [If No go to Q5a]..... [ ]

**If Yes,**

Was **malaria case management topic** of any of these visits? (Y/N) [If No go to Q5a] ..... [ ]

**If Yes, how many** such visits you had in last 3 months? (number)..... [ ]

What did these visits **include related to malaria case management**? [Prompt all responses]

Review of **malaria records** and registers? (Y/N)..... [ ]

**Discussion** with supervisor on malaria case management? (Y/N)..... [ ]

**Observation** of outpatient consultations? (Y/N) ..... [ ]

Provision of **feedback**? (Y/N)..... [ ]

Other component (specify)? (Y/N)..... [ ] [ ]

Other component (specify)? (Y/N)..... [ ] [ ]

**5. Knowledge about malaria case management policies**

- a. Classify following statements according to national recommendations for **use and interpretation of malaria test** in febrile, non-severe patients presenting for an initial outpatient visit at facilities where microscopy or RDTs are available? [Allow health worker to see statements and ask him to classify each statement as true, false or “don’t know”]

All patients with fever or history of fever should be tested for malaria? (T/F/DK) ..... [ ]

Only patients who test positive should be treated for malaria? (T/F/DK) ..... [ ]

- b. Would you classify this area as **high or low** malaria risk area? (H for high / L for low)..... [ ]

- c. What is the **name of the first line** drug recommended for treatment of **uncomplicated malaria**?

[Write health workers’ responses for each category; only **one response** allowed per category]

Children **above 5 kg and adults**?..... [ ]

Children **below 5 kg**? ..... [ ]

Pregnant women in **first** trimester? ..... [ ]

Pregnant women in **second & third** trimester?..... [ ]

- d. What is the **second line** drug recommended for treatment of **uncomplicated malaria**? [only **one response**]  
..... [ ]

**6. Pharmacovigilance**

- a. Have you ever **reported adverse drug reaction** on antimalarial drugs [yellow form]? (Y/N) ..... [ ]

**If No, why not?**..... [ ]

- b. Have you ever **reported poor quality antimalarial** product [pink form]? (Y/N) ..... [ ]

**If No, why not?**..... [ ]

**Malaria Control Program, Ministry of Health**  
**Malaria OPD case management survey – Exit interview form**

P      HF      HW      PAT

**ID Number** ..... [ ]-[ ]-[ ]-[ ]

Date ..... [ ] [ ] [ ]

Name of province ..... [ ]

Name of district ..... [ ]

Name of health facility ..... [ ]

Name of health worker ..... [ ]

Name of data collector ..... [ ]

**1. Rapid screening**

- a. Was patient **referred** to another facility for hospitalisation? (Y/N) [Check card, ask] ..... [ ]
- b. Was patient **admitted** to this facility for hospitalisation? (Y/N) [Check card, ask] ..... [ ]
- c. Is this patient's **follow up visit** for the same illness? (Y/N) [Check card, ask] ..... [ ]
- d. Is patient's **weight less than 5 kg**? (Y/N) [Observe, check card, measure] ..... [ ]
- e. Is patient presenting **without fever** during this illness? (Y/N) [Check card, ask] ..... [ ]
- f. Is patient **likely to be pregnant**? (Y/N) [Observe, check card, ask] ..... [ ]

**If YES to any of the above questions do not proceed with the interview**

**2. History and measurements**

- a. Patient's **age**? (years-months) [Check card, ask] ..... [ ]-[ ]
- b. Patient's **sex**? (M/F) [Observe, ask] ..... [ ]
- c. Patient's **weight** in kg? (one decimal point) [Check card, measure] ..... [ ]
- d. Patient's **temperature** in °C? (one decimal point) [Check card, measure] ..... [ ]
- e. For **how many days** patient was sick? (Today = 1) [Ask] ..... [ ]
- f. Does the patient's **present illness** involve a **fever**? (Y/N) [Check card, ask] ..... [ ]
- g. Was fever present **in last 48 hours**? (Y/N) [Check card, ask] ..... [ ]
- h. How many **illness episodes with fever** in past 1 month? [Ask] ..... [ ]

i. Patient's main **complaints**? [Ask without prompting & enter all complaints reported]

Complaint 1 ..... [\_\_\_\_\_]  
 Complaint 2 ..... [\_\_\_\_\_]  
 Complaint 3 ..... [\_\_\_\_\_]  
 Complaint 4 ..... [\_\_\_\_\_]  
 Complaint 5 ..... [\_\_\_\_\_]  
 Complaint 6 ..... [\_\_\_\_\_]  
 Complaint 7 ..... [\_\_\_\_\_]

j. Did patient take any **antimalarial** for this illness **PRIOR** to this visit?(Y/N) [If No go to Q3] [ ]

**If Yes,**

**Name & formulation** of the **last** antimalarial?..... [\_\_\_\_\_]

When was the **first dose** taken? (Today = 1)..... [\_\_\_\_\_]

When was the **last dose** taken? (Today = 1)..... [\_\_\_\_\_]

Number of **doses taken** in total? ..... [\_\_\_\_\_]

Number of **tablets/spoons taken** in total?..... [\_\_\_\_\_]

IF more than one antimalarial was taken fill the following section for the preceding one

**Name & formulation** of the **preceding** antimalarial?..... [\_\_\_\_\_]

When was the **first dose** taken? (Today = 1)..... [\_\_\_\_\_]

When was the **last dose** taken? (Today = 1)..... [\_\_\_\_\_]

Number of **doses taken** in total? ..... [\_\_\_\_\_]

Number of **tablets/spoons taken** in total?..... [\_\_\_\_\_]

**3. Routine health workers practices**

a. Did any health worker **ask/record patient's age** during this visit? (Y/N) [Check card, ask] .... [ ]

b. Did any health worker **measure weight**? (Y/N) [Check card, ask] ..... [ ]

c. Did any health worker **measure temperature**? (Y/N) [Check card, ask] ..... [ ]

d. Did any health worker **ask about previous use of antimalarials**? (Y/N) [Check card, ask] .... [ ]

**4. Laboratory**

a. Was the patient sent **for malaria blood slide**? (Y/N) [Check card, ask] [If No go to Q4b]..... [ ]

**If Yes,** was **malaria blood slide performed**? (Y/N) [Check card, ask]..... [ ]

b. Did patient have malaria **RDT performed**? (Y/N) [Check card, ask]..... [ ]

c. **Laboratory report?** [Rewrite full report of all laboratory investigations requested, performed and results reported exactly as it is written in the card; if there is no lab report write NONE in the box]

**5. Diagnosis and treatment**

a. **Patient’s diagnosis?** [Rewrite all diagnoses exactly as it is written in the patient’s card; if there is no diagnosis write NONE in the box]

b. **Treatment prescribed?** [Rewrite full prescriptions for all treatments exactly as it is written in the patient’s card; if there is no treatment prescribed write NONE in the box]

**7. Antimalarial drug dispensing** [Complete this section **only if ORAL antimalarial drug** was prescribed]

Identify **ORAL ANTIMALARIAL** drug in the prescription! Ask to **see** drugs!

- a. **Name & formulation of oral antimalarial?** ..... [\_\_\_\_\_]
- b. Was the drug **dispensed** to the patient/caretaker at the facility? (Y/N) [Ask, check drugs] . [\_\_]
- c. Was the **first dose administered** at facility? (Y/N) [Ask, check drugs] ..... [\_\_]
- d. Was the **first dose swallowed in front** of any health worker? (Y/N) [Ask] ..... [\_\_]
- e. Did any of HWs **explain you how to give/take** drug at home? (Y/N) [Ask] ..... [\_\_]
- f. Did any of HWs **tell you to give/take** the second dose **after 8 hours**? (Y/N) [Ask]..... [\_\_]
- g. Did any of HWs tell you to give/take drug **after meal or with food**? (Y/N) [Ask] ..... [\_\_]
- h. Were you told to **complete all doses** even if you/your child feels better? (Y/N) [Ask] .... [\_\_]
- i. Were you advised what to do in case of **vomiting**? (Y/N) [Ask] ..... [\_\_]

If **Yes**, what were you advised?

- j. Were you advised what to do in case of **drug reactions**? (Y/N) [Ask]..... [\_\_]

**IF more than one oral antimalarial is prescribed fill the following section for 2<sup>nd</sup> antimalarial**

Identify **second ORAL ANTIMALARIAL** drug in the prescription! Ask to see drugs!

- a. **Name & formulation** of oral antimalarial? ..... [\_\_\_\_\_]
- b. Was the drug **dispensed** to the patient/caretaker at the facility? (Y/N) [Ask, check drugs] . [ ]
- c. Was the **first dose administered** at facility? (Y/N) [Ask, check drugs] ..... [ ]
- d. Was the **first dose swallowed in front** of any health worker? (Y/N) [Ask] ..... [ ]
- e. Did any of HWs **explain you how to give/take** drug at home? (Y/N) [Ask] ..... [ ]
- f. Did any of HWs **tell you to give/take** the second dose **after 8 hours**? (Y/N) [Ask]..... [ ]
- g. Did any of HWs tell you to give/take drug **after meal or with food**? (Y/N) [Ask]..... [ ]
- h. Were you told to **complete all doses/finish the course**? (Y/N) [Ask] ..... [ ]
- i. Were you advised what to do in case of **vomiting**? (Y/N) [Ask] ..... [ ]  
 If **Yes**, what were you advised?  
 [\_\_\_\_\_]
- j. Were you advised what to do in case of **drug reactions**? (Y/N) [Ask]..... [ ]

**7. Drug dispensing of AL** [complete this section **ONLY** for patients with dispensed AL]

- a. Was patient given **ORIGINAL, not cut AL** pack(s)?(Y/N) [Check pack] [If No go to Q7b] ..... [ ]

**If Yes, which blister pack(s) was given and how many of each was given?**

	<b>Coartem (number)</b>	<b>Artefan (number)</b>	<b>Coartem-D (number)</b>	<b>Co-falcinum (number)</b>
AL 6 tabs pack				
AL 12 tabs pack				
AL 18 tabs pack				
AL 24 tabs pack				

- b. Was patient given any **CUT AL blister** pack(s)? (Y/N) [Check pack] [If No go to Q7c] ..... [ ]

**If Yes, describe which pack was cut and how was AL dose dispensed?**

[\_\_\_\_\_]

- c. Was patient given any **loose AL tablets**? (Y/N) [Check drugs]..... [ ]
- d. Fill this section only for patients with dispensed **Coartem-D**? (Y/N) [Check drugs]

Was first dose of Coartem D **administered at health facility**? (Y/N) [Ask, check drugs] .... [ ]

If **Yes**, was Coartem D administered **dispersed in the water**? (Y/N) [Ask] ..... [ ]

Was mother **instructed** to give Coartem D at **home dispersed** in the water? (Y/N) [Ask]. [ ]