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Message from the Program Manager

Welcome to the 5th edition of the Division of Malaria Control Surveillance Bulletin. In this issue we will focus on the milestones achieved during the fourth quarter of 2012/2013, running from April to June 2013. As was in the case with the last issue of the bulletin, we present achievements in key malaria indicators using six (6) surveillance core graphs, including the outpatient and test positivity rate graphs disaggregated along the four malaria epidemiological zones in the country.

During the quarter under review, the DOMC commemorated the 6th World Malaria Day at a function held in Kericho on April 25th. This year's theme was, ***"Invest in the Future: Defeat Malaria"***. The theme is expected to run up to 2015. The localized slogan for Kenya was, ***"Pamoja Tuendelee Kuangamiza Malaria"***.

As part of the ongoing efforts to strengthen capacity for malaria surveillance, monitoring and evaluation, three (3) officers drawn from the national and sub-national level attended a month long training on malaria M&E held at Accra in Ghana. These trainings aims to strengthen the capacity to routinely monitor and evaluate key malaria indicators. In addition, the DOMC participated in a baseline assessment to establish the current capacity to identify monitoring and evaluation information and promote the use of quality health information for decision making. The assessment marked the first step towards a new five year support to the division by the PMI/MEASURE Evaluation, to strengthen the Program's M&E capacity.

During the quarter under review, the malaria surveillance curriculum package development approached its finalization with review from external experts and incorporation of their comments. The curriculum package is currently being edited before presentation to the ministry of health for final approval. This curriculum is expected to strengthen the malaria surveillance system by equipping health care workers with knowledge and skills on surveillance.

Photo courtesy of Arne Hoel, World Bank

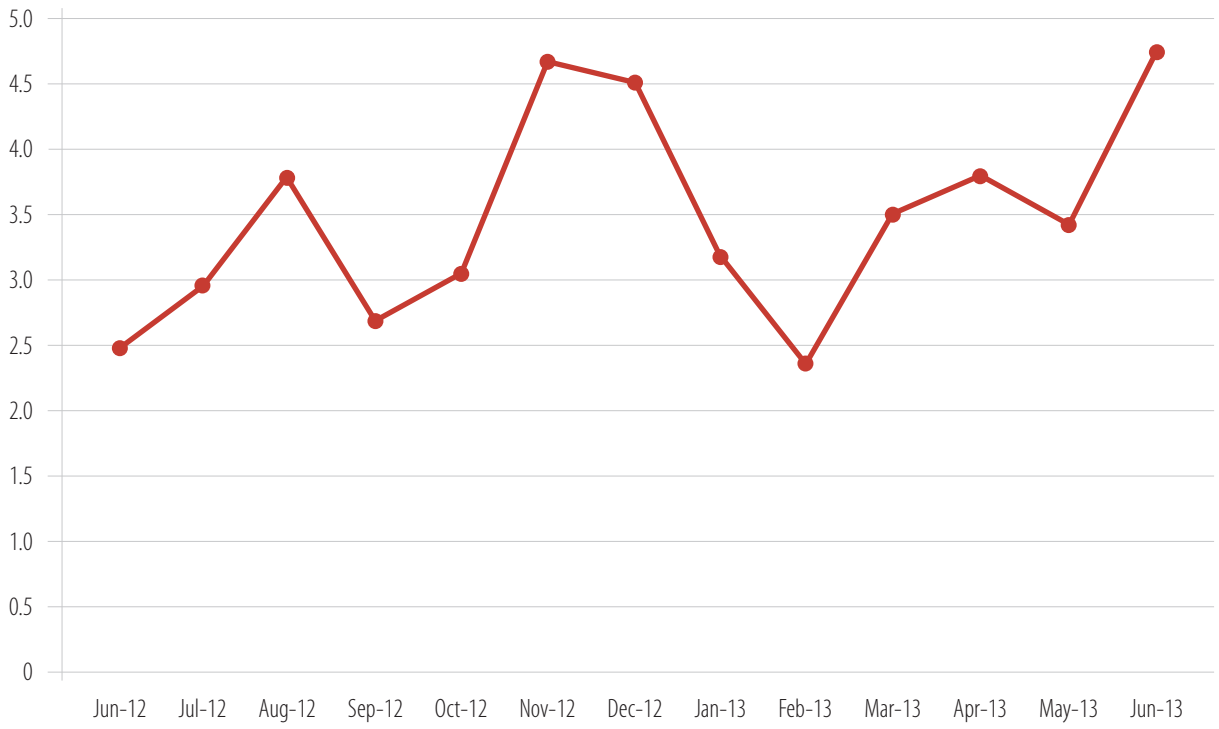
Additionally, the 6th cycle of Quality of Care Survey (QOC 6 started with training of research assistants and fieldwork has since been completed. Data entry, cleaning, analysis and reporting writing are currently ongoing. Also, in this quarter dissemination of QoC5 findings was carried out both at the national and sub-national levels. The Quality of Care Survey takes place biannually and monitors health care workers adherence to national treatment guidelines.

Lastly, I wish to acknowledge the contribution of the malaria surveillance bulletin since its inception towards informing strategic program decisions. The bulletin has for instance been instrumental in informing our need to prioritize the seasonal malaria transmission zones in the planned roll out of malaria surveillance training and in defining operation research agenda among others.

OUTPATIENT CONFIRMED MALARIA CASES

During the quarter under review, the number of aggregated confirmed outpatient malaria cases (country wide) was observed to sharply increase from around 3.5 in April–May to above 4.5 cases per 1000 person in June 2013. Although the pattern of outpatient confirmed cases observed in the quarter (April–June 2013) showed a similar upward trajectory to one experienced in July 2012, the upsurges this year was higher. Graph 1a shows the trends in the number of outpatient suspected malaria cases confirmed to have malaria parasite by microscopy or RDT per 1000.

Graph 1a: Number of Outpatient Confirmed Malaria Cases per 1,000

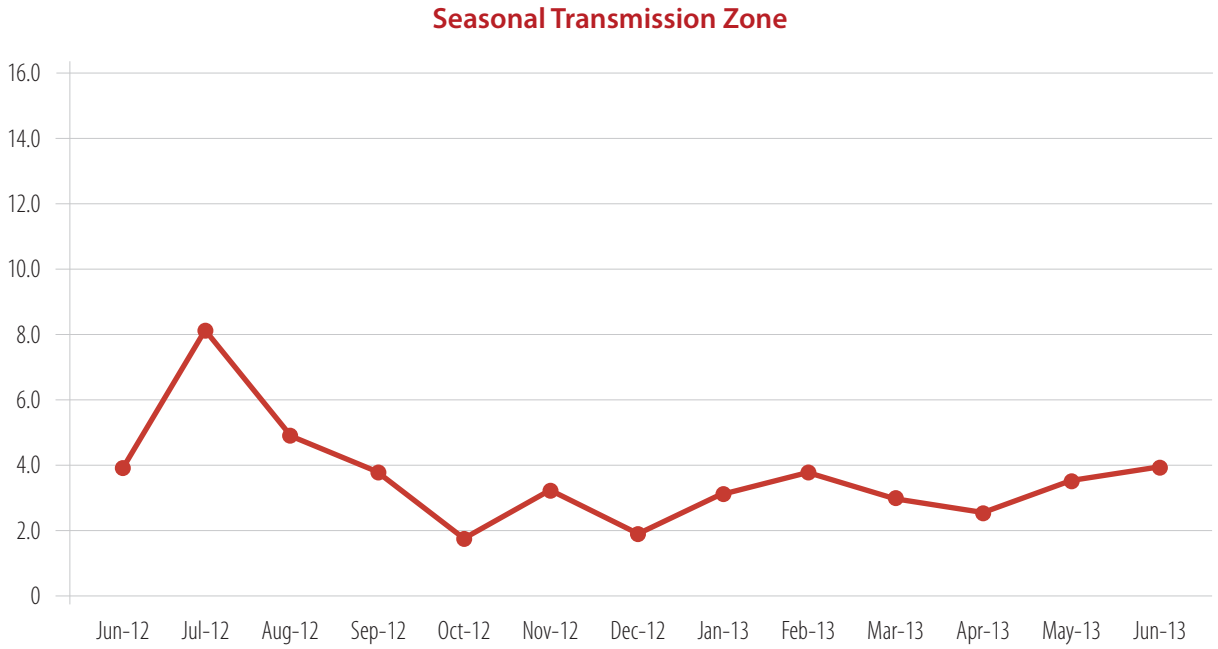


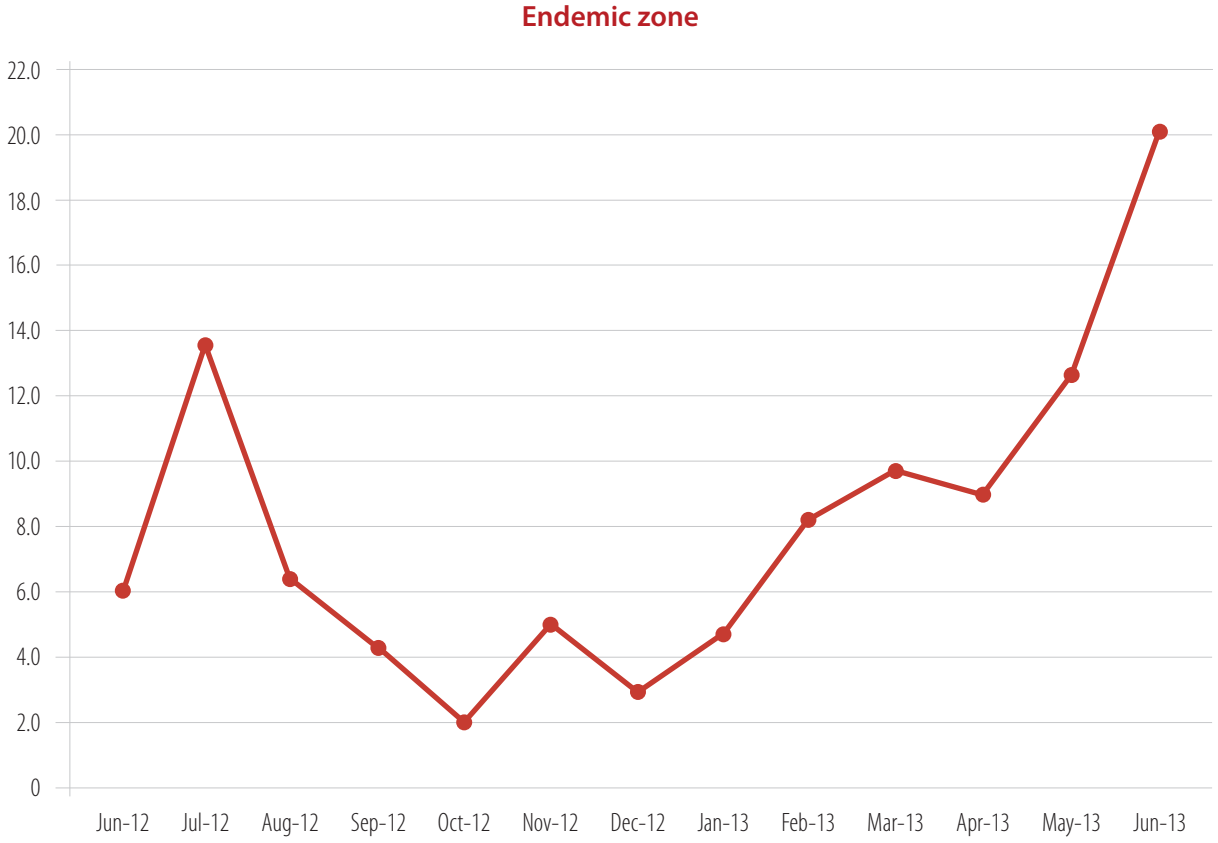
Sources: DDSR, HMIS, Census 2009

After data aggregation to the four epidemiological zones, the endemic regions (Lake Endemic plus coastal endemic) showed a sudden sharp increase in confirmed malaria cases (from about 9.0 to 20 cases per 1,000 persons). However, confirmed malaria cases remained relatively stable in other three zones (seasonal, highland epidemic, and low transmission areas). No sudden upsurge was observed during the period.

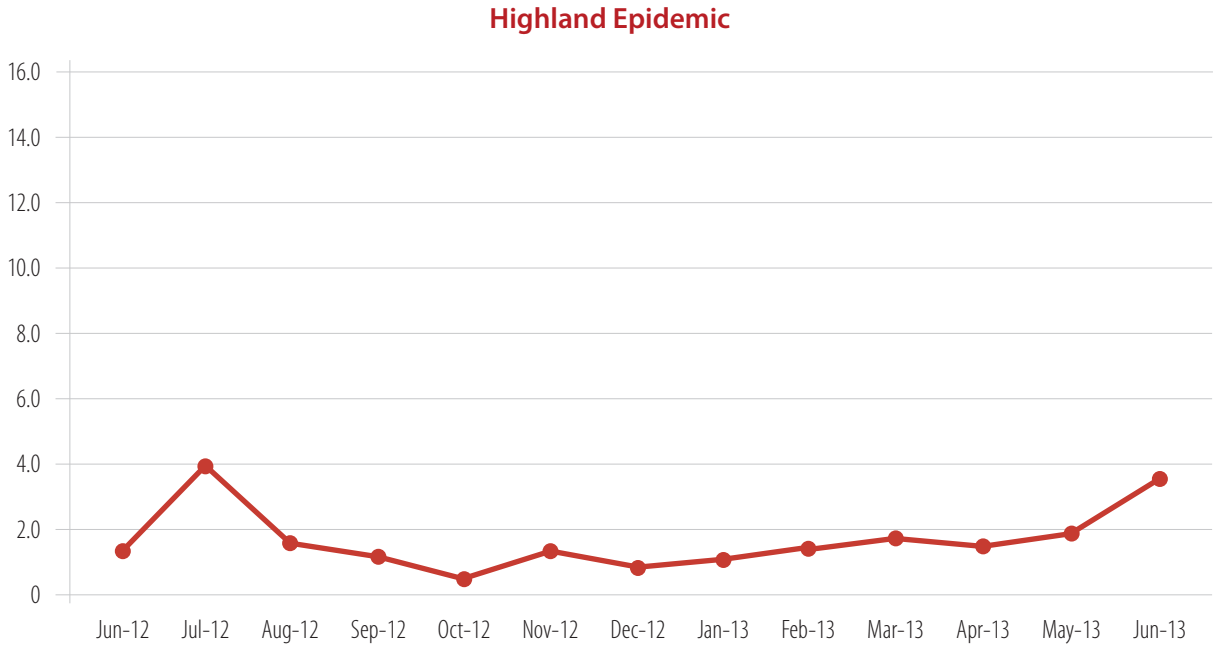
Graph 1b: Outpatient Confirmed Malaria Cases per 1,000 population by epidemiological

Percentage of outpatient suspected malaria cases confirmed to have malaria parasite using microscopy or RDT by epidemiological zones.





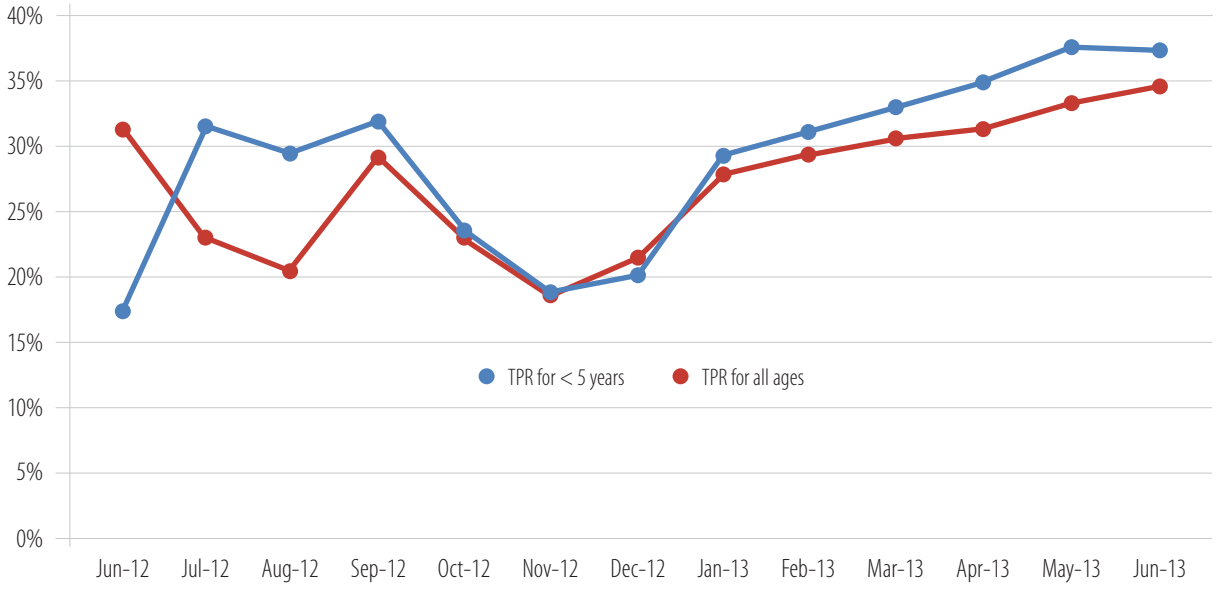
Graph 1b: Outpatient Confirmed Malaria Cases per 1,000 population by epidemiological *continued*



OUTPATIENT TEST POSITIVITY RATES AMONG THE UNDER5 YEARS AND ALL AGES

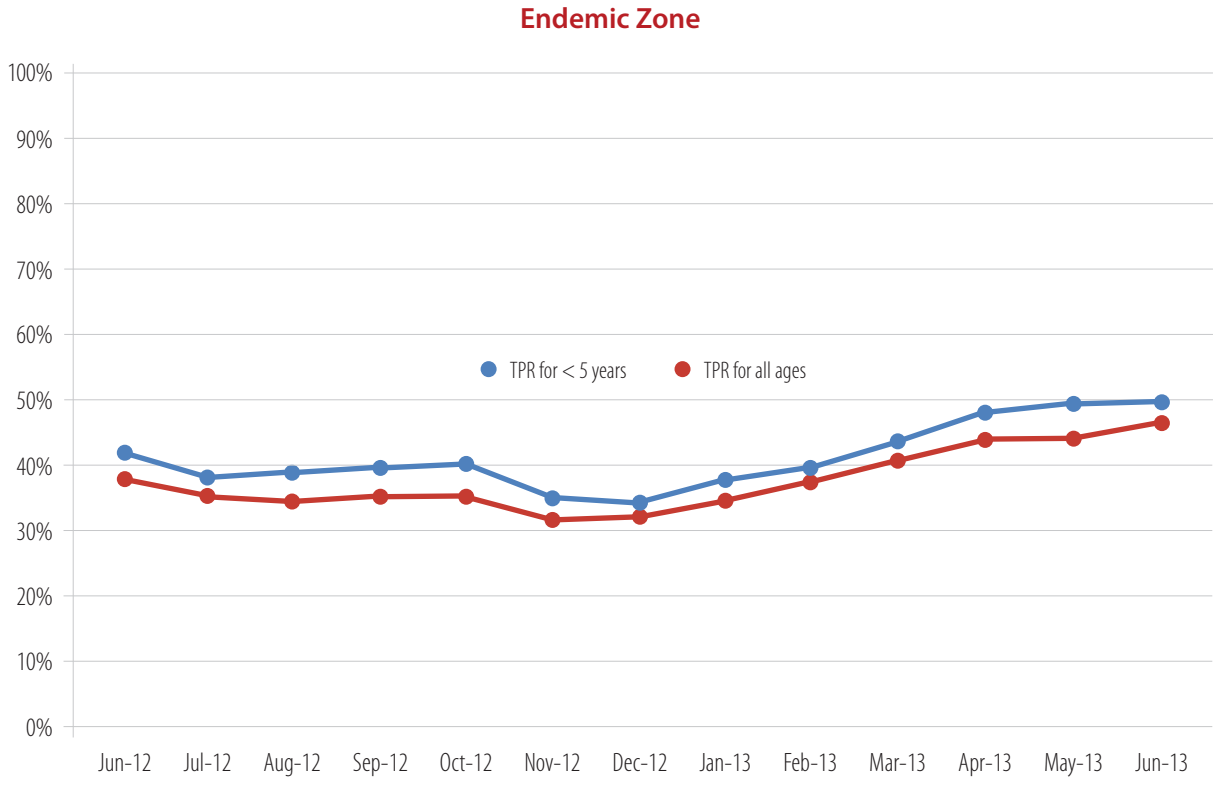
A gradual increase in outpatient test positivity rate for both under fives and all ages was observed during the last quarter. On average TPR for all ages increased from about 30% to 35% during the period. Graph 2a presents the overall outpatient test positivity rates (TPR) for the under fives and all ages in Kenya. Graph 2a show the aggregated outpatient test positivity rate (TPR) for the whole country.

Graph 2a: Outpatient TPR for < 5yrs and all ages



The outpatient test positivity rates for the under-fives and all ages within the different epidemiological zones are presented in Graph 2b. The graphs are based on data from the weekly reports by the division of diseases surveillance and response (DDSR). In the disaggregated data, the test positivity rate showed very slight gradual increase for the malaria endemic and the highland epidemic prone regions, but remained stable in the seasonal and low malaria transmission areas.

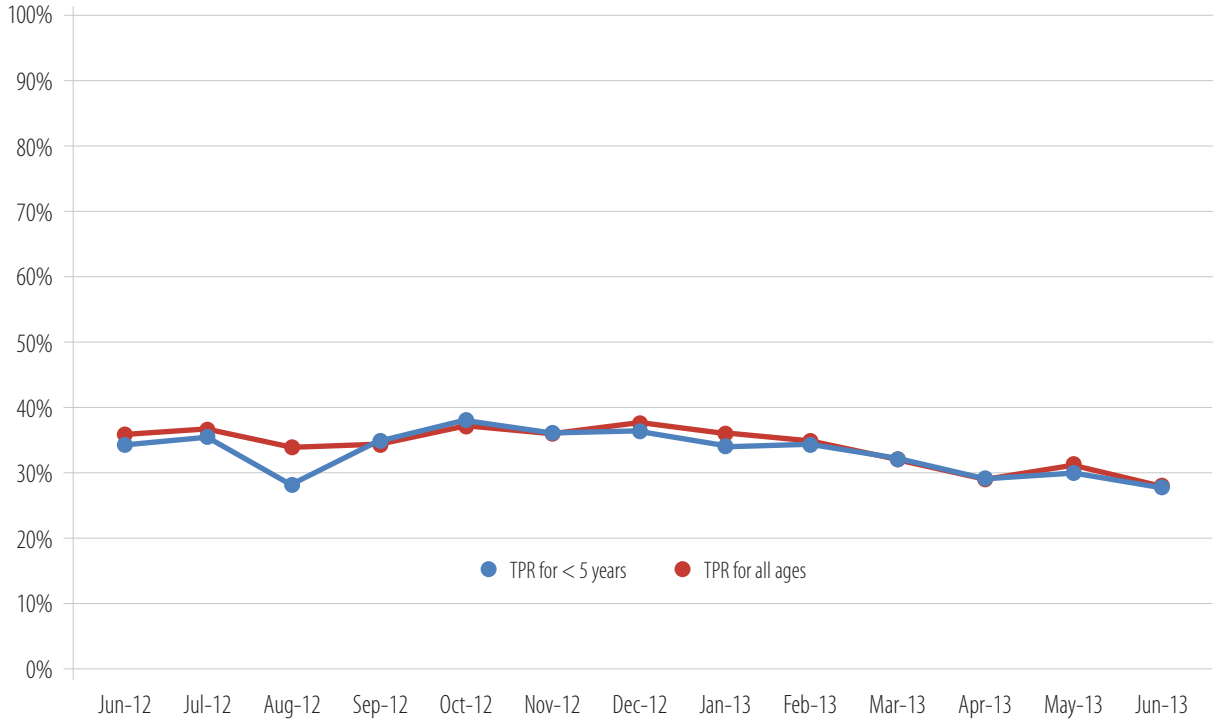
Graph 2b: Outpatient TPR for < 5yrs and all ages by malaria epidemiology zones



Source: DDSR

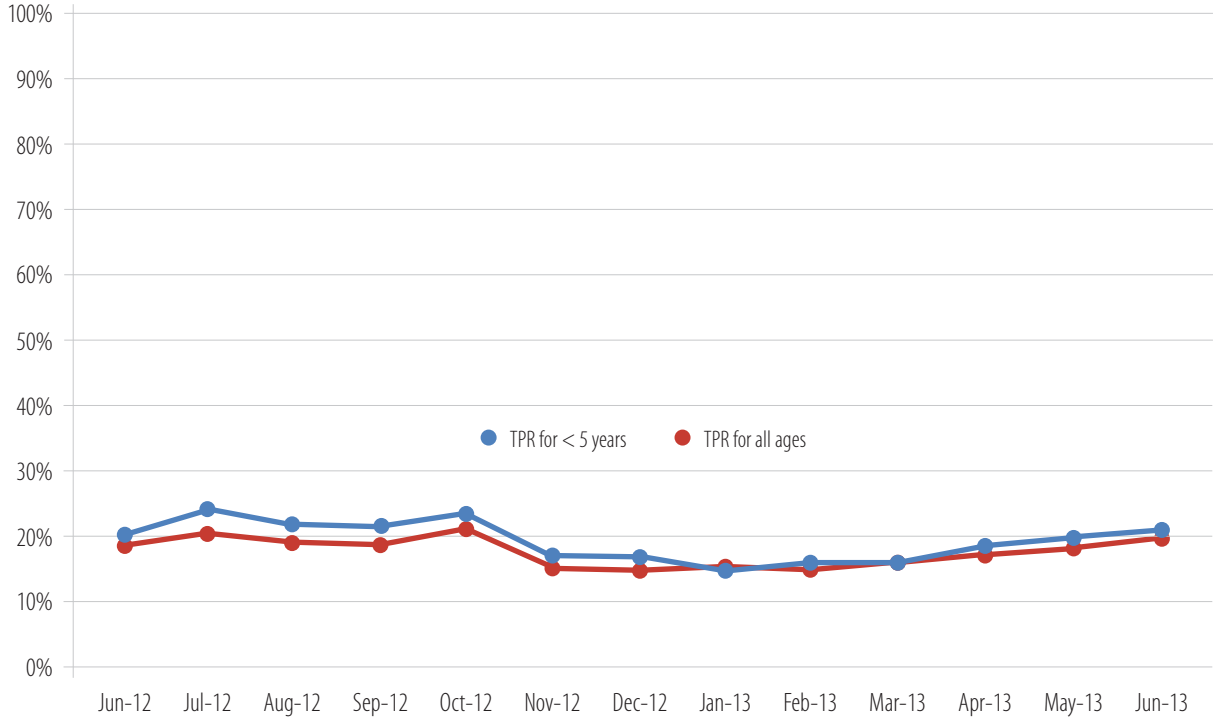
Graph 2b: Outpatient TPR for < 5yrs and all ages by malaria epidemiology zones *continued*

Seasonal Transmission Zone



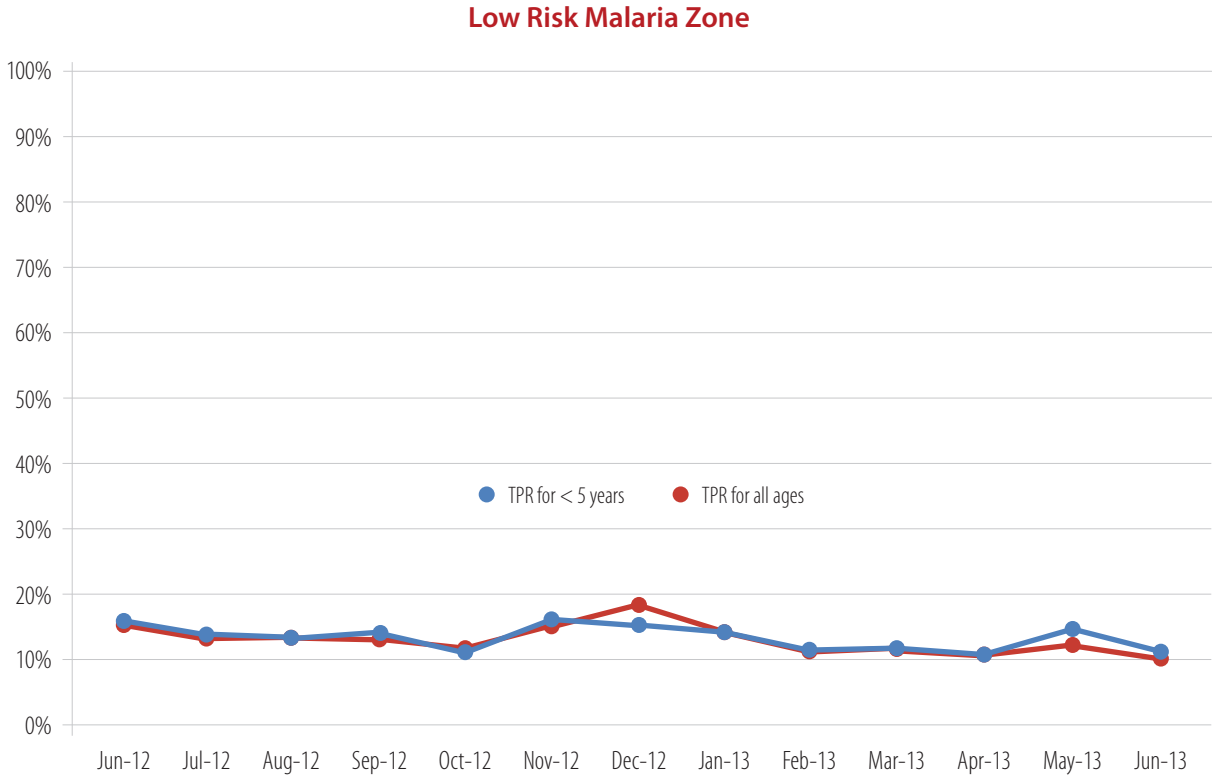
Source: DDSR

Highland Epidemic Zone



Source: DDSR

Graph 2b: Outpatient TPR for < 5yrs and all ages by malaria epidemiology zones *continued*



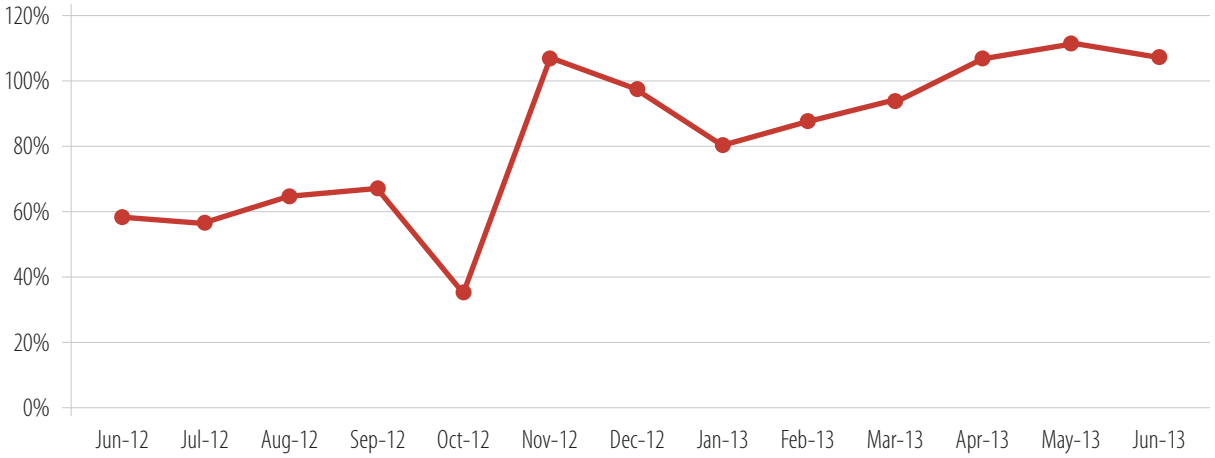
Source: DDSR

SUSPECTED MALARIA CASES TESTED WITH PARASITE-BASED TEST

The diagnostic capability of health facilities in the country is illustrated through the data presented in Graph 3, which is expressed as the percentage of the suspected malaria cases among the outpatient that underwent a laboratory diagnosis over the reporting period are presented. This demonstrates the diagnostics capability of health facilities in Kenya which has steadily improved with the supply of RDTs at the health facilities. Previously the diagnostics capability of health facilities in Kenya was very low given the number of facilities that could perform microscopy.

The testing rate (percentage of suspected malaria cases tested using a parasite based test) has steadily increased from 80% in January 2013 and has remained slightly above 100% in this quarter under review. This high testing rate is not consistent with the quality of care 5 survey findings which showed a testing rate of about 50%. Nevertheless, the observed increase in testing rate could be attributed to increased use of rapid diagnostic kits that was rolled out in October 2012 and thus, showing a progress in this aspect. Although we can speculate and attribute this to possible double counting of tests undertaken using microscopy and RDTs we are not able explain >100% TR.

Graph 3: Percentage of Suspected Malaria Cases Tested with Parasite-Based Test

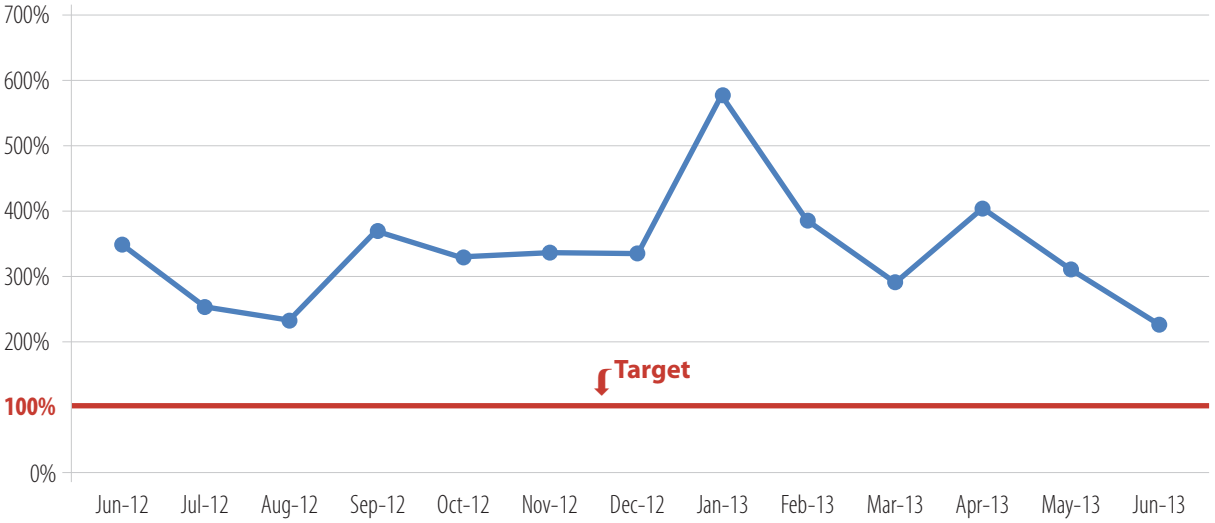


Source: DDSR

COVERAGE FOR OUTPATIENTS TREATED WITH ARTEMISININ-BASED COMBINATION THERAPY

The policy of test, treat and track has been adopted in Kenya. In addition, only AL should be used to treat cases confirmed uncomplicated malaria cases. Graph 4a demonstrates the percentage of outpatient cases that were treated using artemisinin-based combination therapy such as the AL over the reporting period. Over the last quarter, a promising decrease from 400% in April to 200% over treatment was observed. This positive trend, could in part be attributed to increase in testing capacity of health facility (due to increased availability of rapid diagnostic kits in the country), and perhaps an, improvement in compliance to national treatment guidelines among health workers.

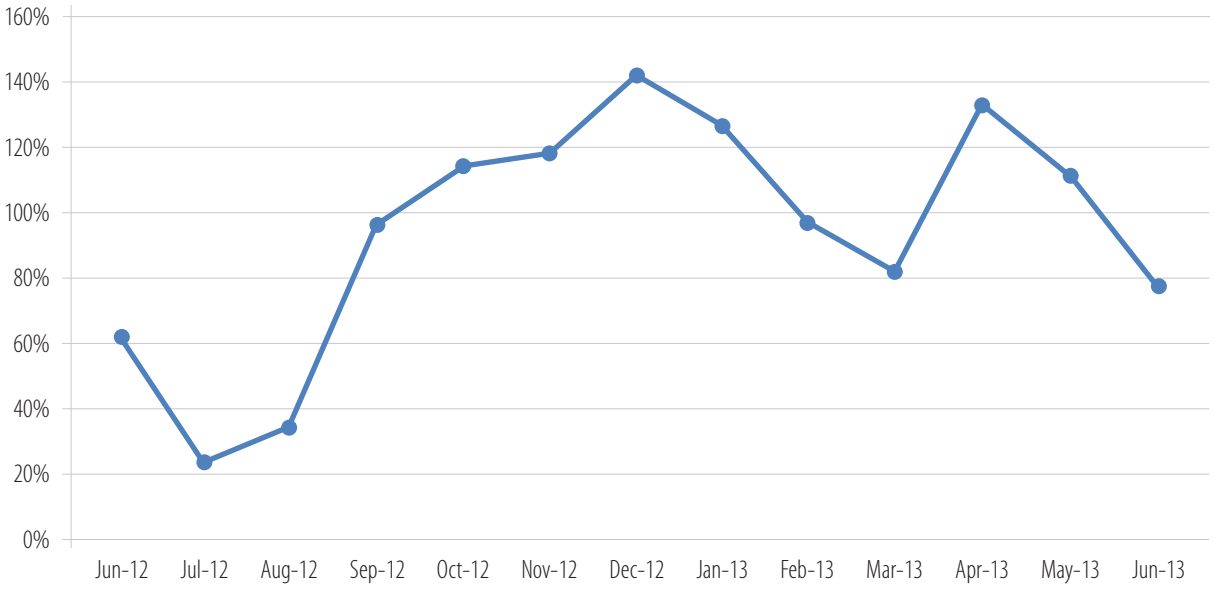
Graph 4a: Percentage of Outpatient Cases Treated with Artemisinin-Based Combination Therapy



Sources: DDSR/LMIS/DHIS

Whereas Graph 4a shows over treatment of malaria cases, there is a reduction in suspected cases treated being treated with ACTs as shown in Graph 4b.

Graph 4b: Percentage of outpatient suspected malaria cases treated with artemisinin-based combination therapy



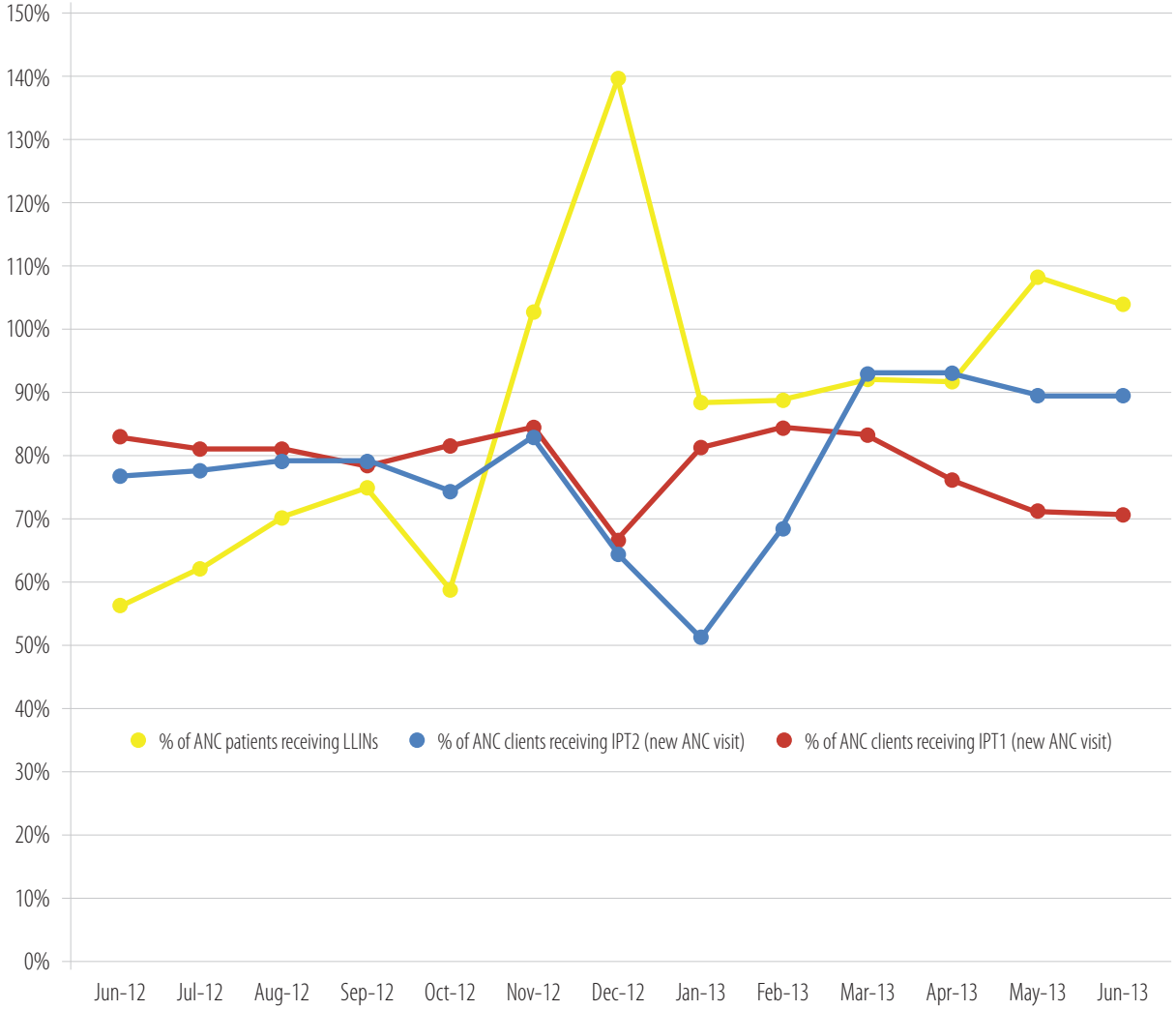
Source: DDSR/LMIS/DHIS

PERCENTAGE OF ANC MOTHERS RECEIVING LLINS AND TWO DOSES OF IPT

The prevention of malaria in pregnancy uses combination of interventions that together are aimed at reducing maternal and perinatal morbidity and mortality occasioned by malaria. Comprehensive antenatal care (ANC) package comprises of at least two doses of intermittent preventive treatment for expectant mothers (IPT2), provision of Long Lasting Insecticide Nets (LLINs) and the provision of prompt diagnosis and treatment of suspected malaria cases.

In the last quarter, the percentage of ANC mothers in the endemic regions who received IPT1 remained between 70–80%, while about 90% received IPT2. On the other hand, the percentage of ANC mothers who received LLINs increased slightly from about 90% in April to over 100% in May and June 2013.

Graph 5: Percentage Coverage of Antenatal Care Clients Receiving Insecticide Treated Nets (LLINs) and at Least Two Doses of Intermittent Preventive Treatment (IPT1 & 2)



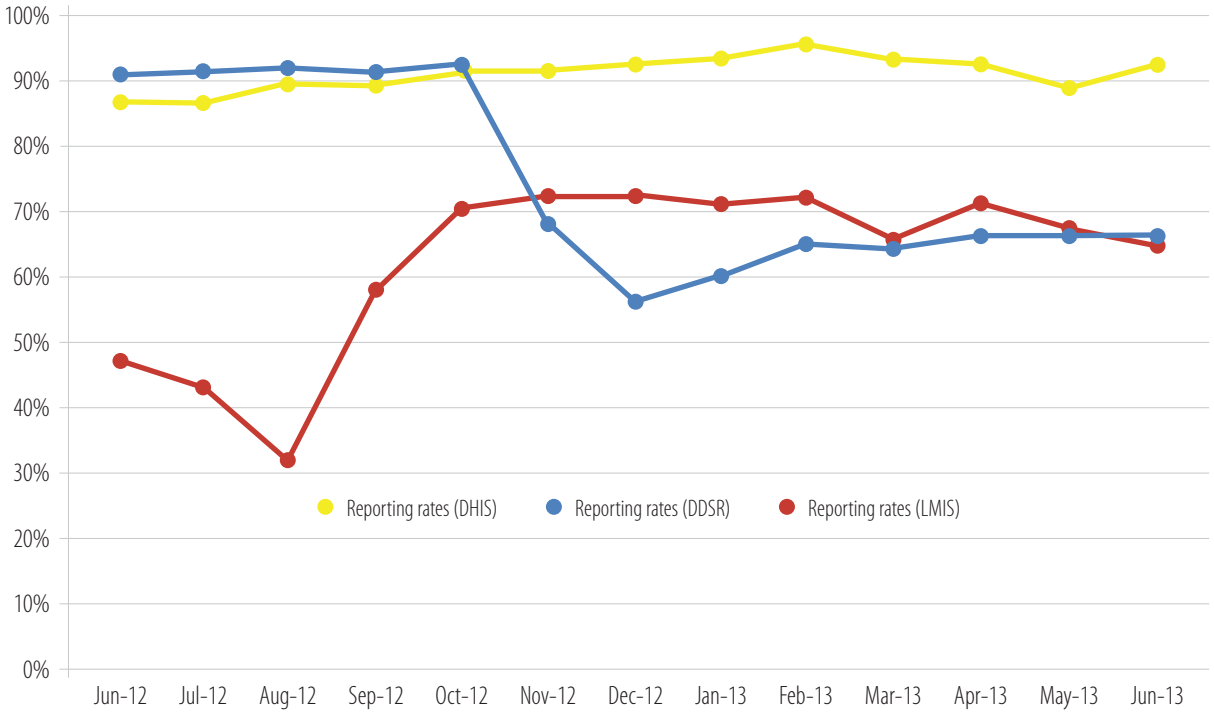
Source: DHIS/DDSR/LMIS

REPORTING RATES BY DATA SOURCES

Surveillance monitoring and evaluation (SM&E) data is derived from various routine data reporting systems that include the District Health Information Systems (DHIS), Integrated Disease Surveillance and Response (IDSR), the Logistics Management Information System, and Laboratory Information Management System (LIMS). The reporting rates presented in Graph 6 for DHIS, IDSR and LMIS were derived from the number of health facilities who send in monthly reports against the number expected to report every month. The IDSR data is an average of the weekly data that was reported during the reporting months.

The reporting rates remained steady over the last quarter at 90% for DHIS, at round 65–70% for LMIS and 65% for e-IDSR. The low rates for e-IDSR is due to the migration to the electronic systems and is expected to improve as the system stabilizes.

Graph 6: Reporting Rates



Source: DHIS/DDSR/LMIS

From the Counties

Table 1 presents an overview of performance per county in terms of data collection and reporting for selected malaria indicators over the reporting period.

Table 1: County Performance in Data Collection and Reporting for Selected Malaria Indicators

Province	County	No. suspected malaria cases	No. suspected malaria cases tested	No. out-patient confirmed malaria cases	No. out-patients treated for malaria	No. LLINs distributed to pregnant women	No. LLINs distributed to under 5 yrs
Western	Bungoma*	191,386	207,879	80,337	58658	12,080	15,028
	Busia	234,083	182,658	97,204	47695	6,634	5,538
	Kakamega	315,168	273,885	122,007	74195	14,606	14,680
	Vihiga*	105,704	114,131	56,993	40439	3,486	4,168
Nyanza	Homa Bay	235,780	159,709	72,031	78566	7,261	10,169
	Kisii	165,638	148,986	16,776	33407	9,607	8,801
	Kisumu	198,924	170,786	75,434	35206	8,547	7,514
	Migori	220,430	142,334	61,694	36468	8,882	14,938
	Nyamira	58,447	33,981	1,577	3989	3,420	7,064
	Siaya	317,181	261,550	142,736	82810	8,639	13,315

Table 1: County Performance in Data Collection and Reporting for Selected Malaria Indicators *continued*

Province	County	No. suspected malaria cases	No. suspected malaria cases tested	No. out-patient confirmed malaria cases	No. out-patients treated for malaria	No. LLINs distributed to pregnant women	No. LLINs distributed to under 5 yrs
Rift Valley	Baringo	34,184	17,360	3,898	9510	3,647	3,808
	Bomet	51,622	29,806	1,425	9815	3,852	3,381
	Elgeyo/Marakwet	24,297	13,643	2,838	2842	2,252	2,840
	Kajiado*	21,773	26,716	2,823	589	4,771	5,131
	Kericho	71,346	47,752	6,338	19063	6,022	6,424
	Laikipia*	13,637	16,068	3,398	2627	–	–
	Nakuru	97,601	96,088	20,678	9158	115	105
	Nandi	73,324	36,063	8,702	11919	3,410	2,571
	Narok	40,572	38,220	7,928	5835	5,619	5,393
	Samburu*	8,527	10,365	2,251	1369	29	213
	Trans Nzoia	96,697	82,567	18,692	6890	5,675	4,483
	Turkana	120,302	98,465	52,905	4770	761	104
	Uasin Gishu*	36,022	44,970	9,058	11684	5,446	60,080
	West Pokot	58,808	53,917	18,306	8447	3,781	5,481
Coast	Kilifi*	27,418	59,211	10,048	7757	9,515	9,008
	Kwale	54,653	53,710	16,705	18,128	4,801	3,583
	Lamu*	2,876	14,612	1,354	201	964	–
	Mombasa*	49,287	113,357	21,864	3,050	5,532	4,067
	TaitaTaveta*	14,648	41,803	3,878	1,520	1,430	914
	Tana River*	4,816	11,594	1,276	1,246	1,168	259
Eastern	Embu*	54,924	84,551	19,312	7,092	2,544	3,347
	Isiolo*	5,544	5,911	1,332	2,446	1,582	363
	Kitui	89,217	63,272	21,958	15,530	7,270	10,074
	Machakos*	47,945	75,223	6,725	5,779	6,702	11,277
	Makueni	79,379	66,013	6,618	15,900	4,621	7,045
	Marsabit	7,806	4,449	302	1,355	71	–
	Meru*	173,686	178,934	63,691	25,452	7,239	9,661
	Tharaka-Nithi	62,233	53,198	16,068	11,848	2,134	2,865
North Eastern	Garissa*	1,800	26,824	1,672	4,276	111	243
	Mandera	8,237	7,435	1,230	132	–	89
	Wajir*	3,888	6,334	1,509	1,946	45	44
Central	Kiambu*	39,649	125,968	8,672	1,200	5,330	4,242
	Kirinyaga*	6,207	22,885	382	2,167	2,580	–
	Murang'a*	551	14,453	362	1,744	3,678	2,693
	Nyandarua*	5,080	17,995	1,144	1,050	58	–
	Nyeri*	654	7,471	83	191	29	84
Nairobi	Nairobi*	40,834	131,944	17,363	4,569	438	180

**Counties which had more cases tested than the number of suspected malaria cases*

Table 2: Malaria Treatment by County

Province	County	No. oupatient suspected Malaria cases	No. oupatient confirmed Malaria cases	Aggregated Patients on AL	% of outpatient suspected malaria cases treated with ACT	% of outpatient confirmed malaria cases treated with ACT
Western	Bungoma	191,386	80,337	58,658	31	73
	Busia	234,083	97,204	47,695	20	49
	Kakamega	315,168	122,007	74,195	24	61
	Vihiga	105,704	56,993	40,439	38	71
Nyanza	Homa Bay	235,780	72,031	78,566	33	109
	Kisii	165,638	16,776	33,407	20	199
	Kisumu	198,924	75,434	35,206	18	47
	Migori	220,430	61,694	36,468	17	59
	Nyamira	58,447	1,577	3,989	7	253
	Siaya	317,181	142,736	82,810	26	58
Rift Valley	Baringo	34,184	3,898	9,510	28	244
	Bomet	51,622	1,425	9,815	19	689
	Elgeyo/Marakwet	24,297	2,838	2,842	12	100
	Kajiado	21,773	2,823	589	3	21
	Kericho	71,346	6,338	19,063	27	301
	Laikipia	13,637	3,398	2,627	19	77
	Nakuru	97,601	20,678	9,158	9	44
	Nandi	73,324	8,702	11,919	16	137
	Narok	40,572	7,928	5,835	14	74
	Samburu	8,527	2,251	1,369	16	61
	Trans Nzoia	96,697	18,692	6,890	7	37
	Turkana	120,302	52,905	4,770	4	9
	UasinGishu	36,022	9,058	11,684	32	129
	West Pokot	58,808	18,306	8,447	14	46
Coast	Kilifi	27,418	10,048	7,757	28	77
	Kwale	54,653	16,705	18,128	33	109
	Lamu	2,876	1,354	201	7	15
	Mombasa	49,287	21,864	3,050	6	14
	TaitaTaveta	14,648	3,878	1,520	10	39
	Tana River	4,816	1,276	1,246	26	98
Eastern	Embu	54,924	19,312	7,092	13	37
	Isiolo	5,544	1,332	2,446	44	184
	Kitui	89,217	21,958	15,530	17	71
	Machakos	47,945	6,725	5,779	12	86
	Makueni	79,379	6,618	15,900	20	240
	Marsabit	7,806	302	1,355	17	449
	Meru	173,686	63,691	25,452	15	40
	Tharaka-Nithi	62,233	16,068	11,848	19	74

Table 2: Malaria Treatment by County *continued*

Province	County	No. oupatient suspected Malaria cases	No. oupatient confirmed Malaria cases	Aggregated Patients on AL	% of outpatient suspected malaria cases treated with ACT	% of outpatient confirmed malaria cases treated with ACT
North Eastern	Garissa	1,800	1,672	4,276	238	256
	Mandera	8,237	1,230	132	2	11
	Wajir	3,888	1,509	1,946	50	129
Central	Kiambu	39,649	8,672	1,200	3	14
	Kirinyaga	6,207	382	2,167	35	567
	Murang'a	551	362	1,744	317	482
	Nyandarua	5,080	1,144	1,050	21	92
	Nyeri	654	83	191	29	230
Nairobi	Nairobi	40,834	17,363	4,569	11	26

Table 3: Malaria by Epidemiological Zones

Zones	Quarter	No. cases <5	No. Tested <5	Positive <5	TPR for <5 Years	Total No. of cases	Total no. tested	Total no. positive	TPR for All Ages
Endemic	Qtr 4 11/12	5,656,846	230,018	90,885	40	13,125,350	577,644	209,464	36
	Qtr1 12/13	6,487,270	263,741	102,626	39	15,629,470	688,235	244,302	35
	Qtr2 12/13	2,742,910	135,215	48,687	36	6,679,667	353,189	115,011	33
	Qtr3 12/13	14,887,026	628,974	242,198	39	35,434,487	1,619,068	568,777	35
	Qtr4 12/13	429,301	405,303	199,630	49	1,071,873	1,086,838	491,351	45
Seasonal Transmission	Qtr 4 11/12	2,158,643	99,410	34,324	35	6,228,514	322,125	113,471	35
	Qtr1 12/13	2,509,285	129,078	41,543	32	7,209,170	409,759	143,458	35
	Qtr2 12/13	914,374	54,622	20,019	37	2,765,362	173,913	64,153	37
	Qtr3 12/13	5,582,302	283,110	95,886	34	16,203,046	905,797	321,082	35
	Qtr4 12/13	99,944	97,492	28,264	29	316,318	331,426	97,698	29
Highland Epidemic Prone Areas of Western Kenya	Qtr 4 11/12	1,821,326	60,497	11,974	20	4,842,338	177,342	34,451	19
	Qtr1 12/13	2,233,674	75,561	17,324	23	5,902,037	235,849	46,823	20
	Qtr2 12/13	943,488	43,121	7,531	17	2,632,257	131,598	21,358	16
	Qtr3 12/13	4,998,488	179,179	36,829	21	13,376,632	544,789	102,632	19
	Qtr4 12/13	119,700	100,077	19,745	20	336,388	297,977	56,337	19
Low risk malaria areas	Qtr 4 11/12	1,183,348	69,891	10,423	15	3,290,538	217,259	31,786	15
	Qtr1 12/13	1,202,872	84,768	11,759	14	3,430,367	268,321	35,708	13
	Qtr2 12/13	463,862	44,161	6,543	15	1,382,055	138,202	21,253	15
	Qtr3 12/13	2,850,082	198,820	28,725	14	8,102,960	623,782	88,747	14
	Qtr4 12/13	58,665	104,133	12,548	12	168,917	319,676	35,022	11