



Malaria Surveillance Bulletin

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EDITORIAL TEAM

PROGRAM MANAGER

Dr. Waqo Ejersa

EDITOR

Dr. Ahmeddin Omar

WRITERS

Dr. Rebecca Kiptui

James Kiarie

Caroline Maina

Dr. Ann Buff

Dr. Geoffrey Lairumbi

Dr. Abdinasir Amin

Peter Nasokho

DESIGN

MEASURE Evaluation PIMA

CONTACT

Ministry of Health
Malaria Control Unit
P.O. Box 19982-00202
KNH, Nairobi

Tel: (020) 2716934
Fax: (020) 2716935

Web site: www.nmcp.or.ke
E-mail: AOMar@domkenya.or.ke



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Message from the Program Manager

Welcome to the 7th issue of the Malaria Control Program's Surveillance Bulletin. This issue will focus on the second quarter of 2013/2014 (October to December 2013) with key malaria indicators demonstrated using six (6) surveillance core graphs. Due to the differences in malaria transmission in Kenya, the graphs for outpatient confirmed malaria cases and test positivity rate are disaggregated into the four malaria epidemiological zones. Also included are tables showing county data for selected malaria indicators like number of suspected malaria cases, number of confirmed cases, number treated, number of LLINs distributed to expectant mothers etc.

During the quarter under review, the Malaria Control Program was majorly involved in review and finalization of the county malaria operational 3-year work plans for all the 47 counties in Kenya. The malaria county plans will inform the mid-term review of the national malaria strategy 2009–2017 and will also be a resource mobilization for malaria activities.

The Malaria Surveillance Curriculum development was finalized and approved by Ministry of Health and will be used to training health workers on how to effectively carry out malaria surveillance activities. A model TOT training was carried out for 3 counties (Isiolo, Moyale and Meru) of upper Eastern region of Kenya and 20 county health management team members (CHMT) were trained as TOTs. The Malaria Control Unit (MCU) plans to roll out the malaria surveillance TOT and health workers trainings for all the counties in the 3rd and 4th quarters of 2013/2014.



Photo courtesy of Arne Hoel, World Bank

During the quarter under review, a drug availability survey for private retail outlets in the country was carried out with the objectives of assessing availability of ACTs and RDTs, and the quality of dispensing practices in the sector. The survey was an end line evaluation of the AMFm project achievements. The AMFm project was launched in June 2010 with four main objectives of increasing ACT affordability, ACT availability, ACT use, including among vulnerable groups and to “crowd out” oral artemisinin monotherapies, chloroquine and sulfadoxine-pyrimethamine (SP) by gaining market share. The final survey report will be shared with malaria stakeholders during the 3rd quarter of 2013/2014.

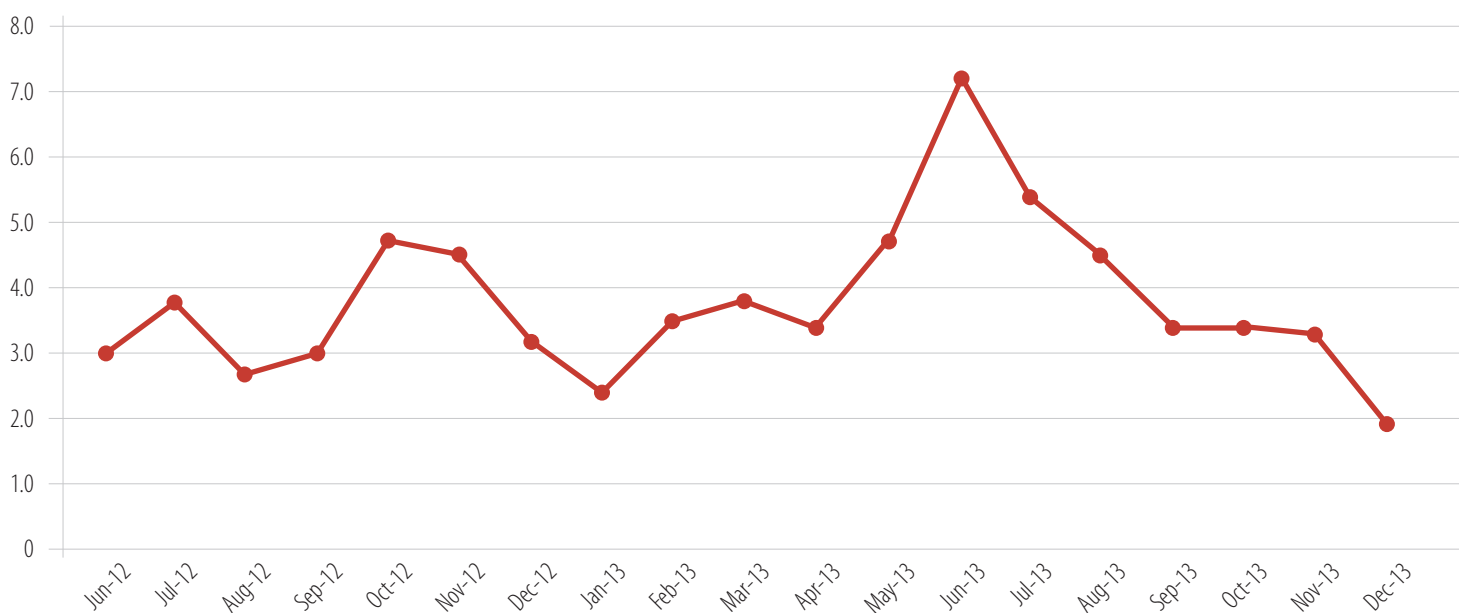
During the same period, pharmacovigilance activities were carried out in the endemic region of Western, Nyanza and Coast regions, with the aim of monitoring safety of anti-malarial medicines in the public health facilities (sentinel sites), and also drug inspection visits carried out for the private sector to monitor availability of malaria drugs, malaria management and practices in the private sector.

OUTPATIENT CONFIRMED MALARIA CASES

Figure 1a shows the number of outpatient suspected malaria cases that are confirmed to have malaria parasite by microscopy or RDT per 1000 people resident in Kenya.

In general, the aggregated number of confirmed outpatient malaria cases dropped from 3.5 to below 2 cases per 1000 of the population in the country during the quarter under review (October to December 2013). The cases in December 2013 (<2 cases per 1000 of the population) was the lowest recorded number of confirmed malaria cases in the country since March 2012. This could in part be explained by the low (80%) reporting rate for DHIS in Dec 2013.

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



Sources: DDSR, HMIS, Census 2009

Figure 1b shows the percentage of outpatient suspected malaria cases that are confirmed to have malaria parasite by microscopy or RDT per 1000 people by the malaria epidemiological zones. Ideally, a rate of less than 1 case per 1000 people sustained over a 12-month period indicates readiness for the elimination phase

The disaggregated data showed a spike in confirmed malaria up to 6 confirmed cases/1000 persons in the seasonal transmission areas in October 2013, a marginal decrease the highland epidemic prone region (from 2 to <1 confirmed cases/1000 persons) from Oct. to Dec. 2013. Interestingly, the number of confirmed malaria cases increased from 4.0 to 8.0 cases per 1000 person in the endemic regions, during the same period. The spike in the seasonal transmission is consistent with possible increase in cases during and after the short rains in months of September and October.

Figure 1b: Outpatient Confirmed Malaria Cases per 1,000 of Population by Epidemiology Zones

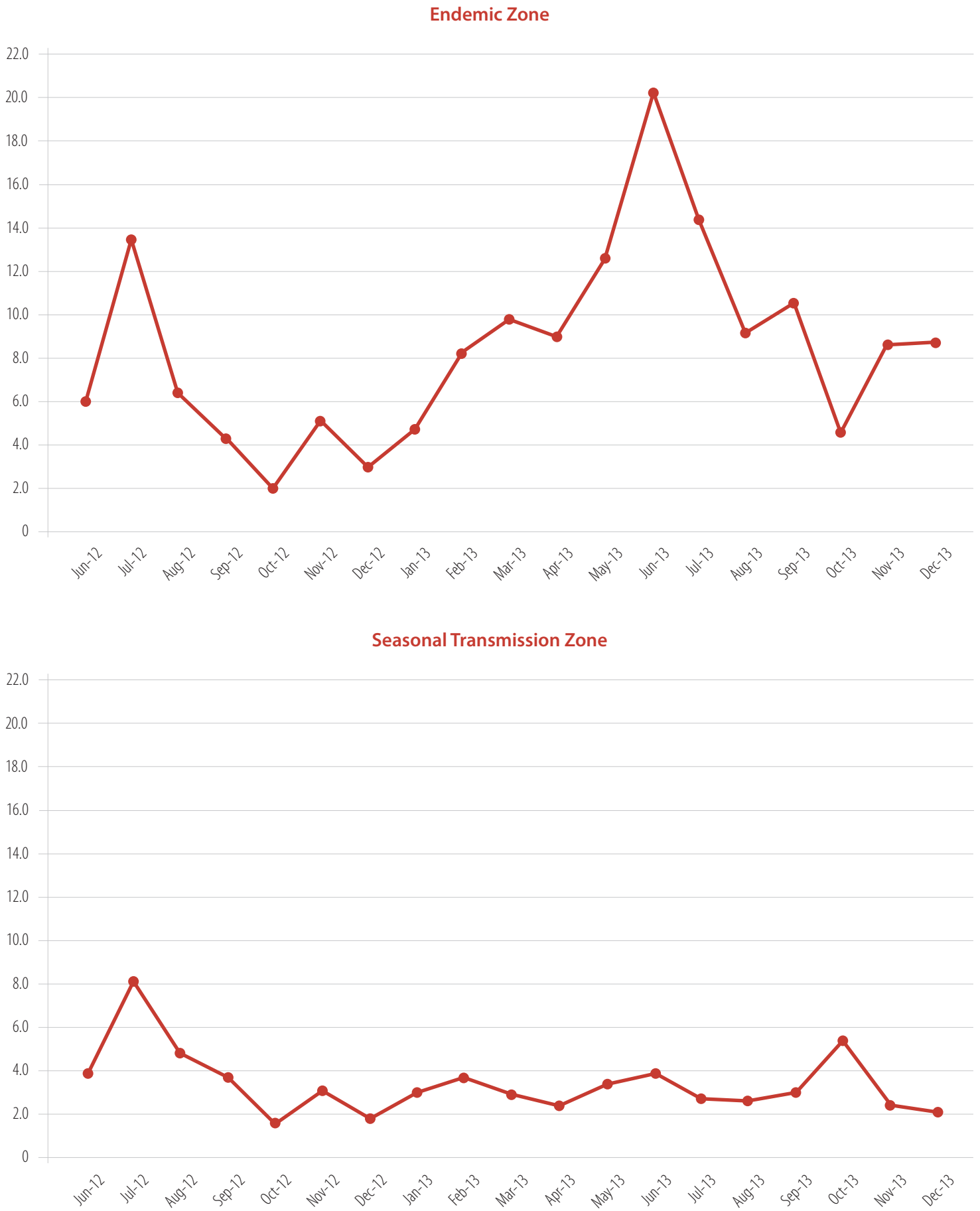
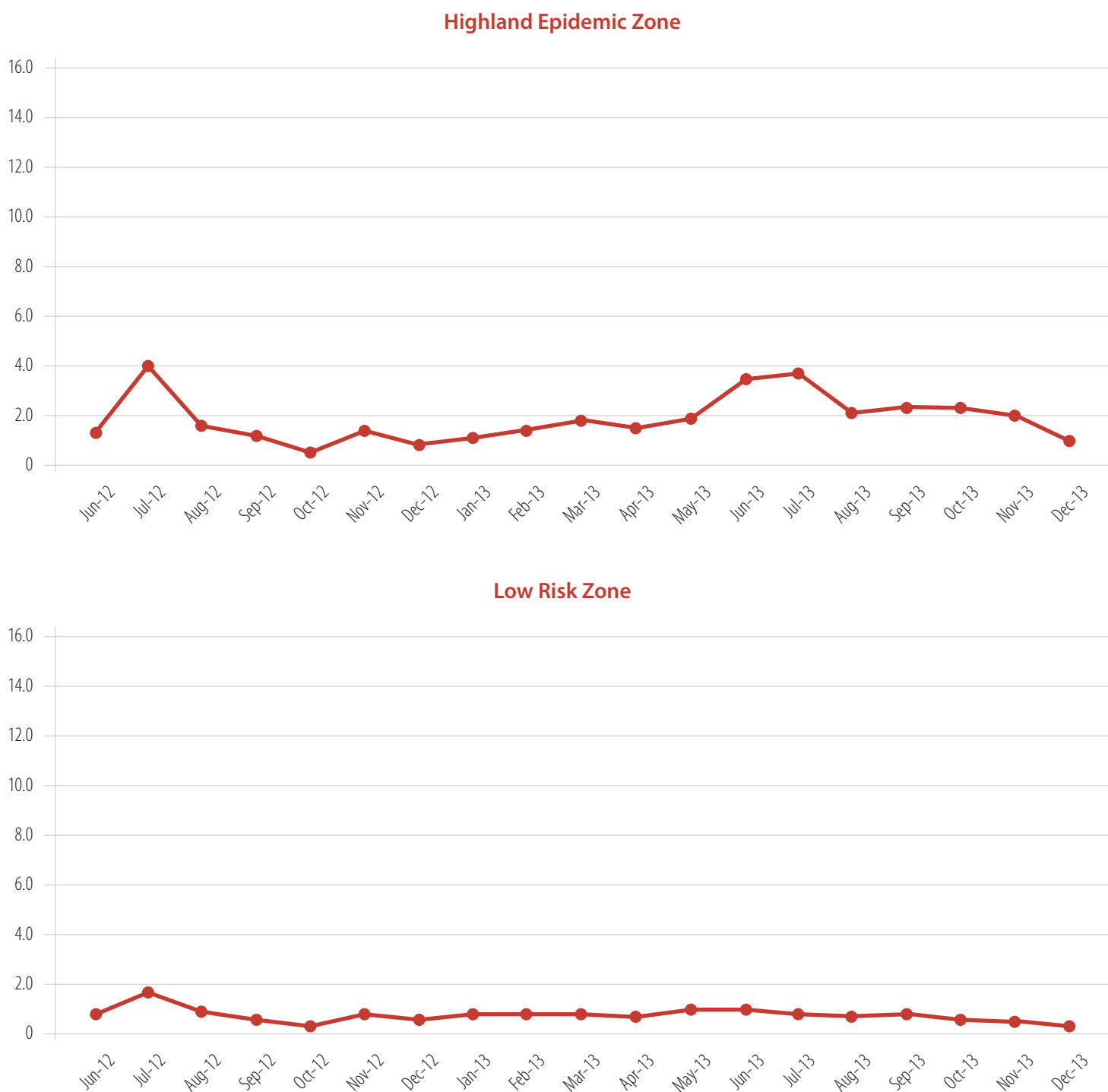


Figure 1b: Outpatient Confirmed Malaria Cases per 1,000 of Population by Epidemiology Zones (continued)



OUTPATIENT TEST POSITIVITY RATES AMONG THE UNDER 5 YEARS AND ALL AGES

Figure 2a presents the overall outpatient test positivity rates for the under fives and all ages in Kenya. In Figure 2b the outpatient test positivity rates for the under fives and all ages by the malaria epidemiological zones. The graphs are based on data from the weekly reports by the department of diseases surveillance and response (DDSR). These graphs show the trends with regard to the percentage of the malaria cases that tested positive against the total number of cases tested for parasites.

The aggregated outpatient test positivity rate (TPR) in the country for both under fives and all age groups, was observed to have remained around 30%, with minimal changes, during the quarter under review.

Figure 2a: Outpatient TPR for < 5 Years and All Ages

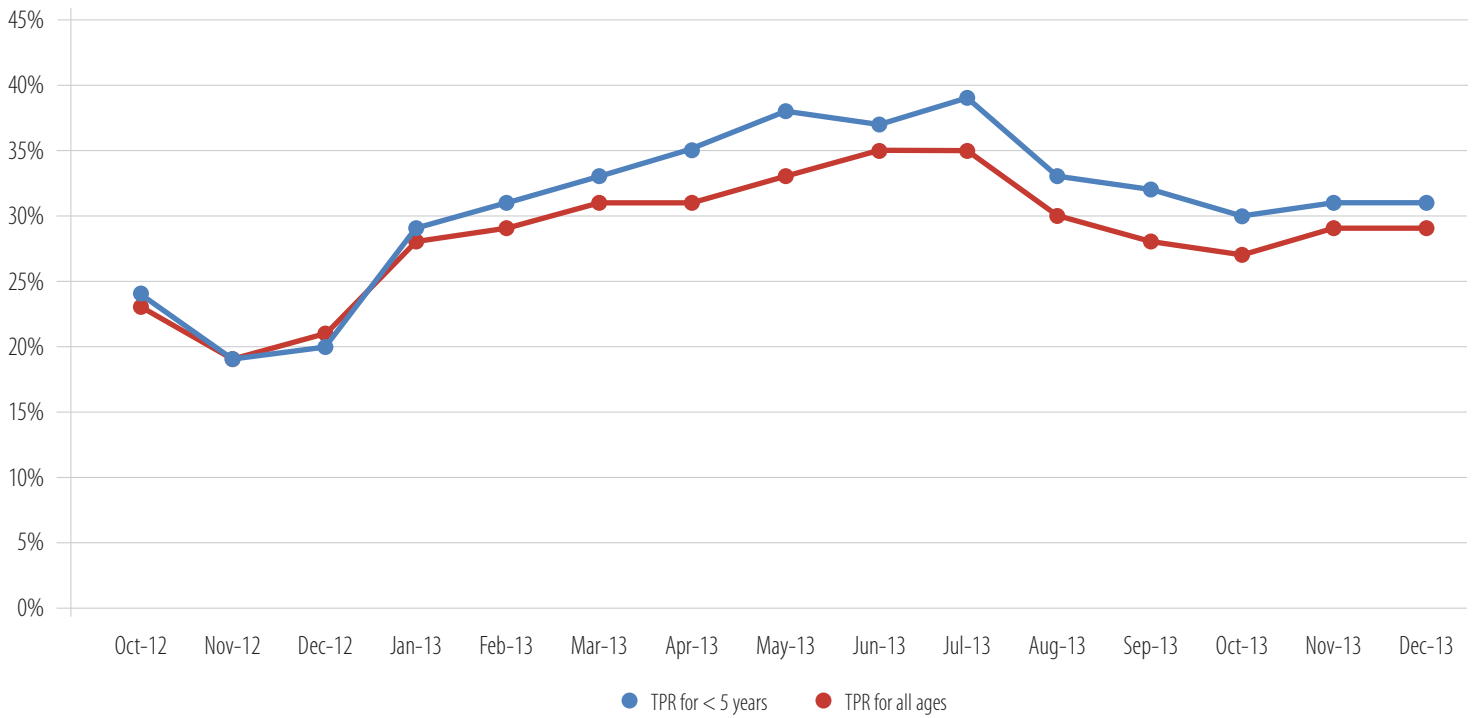
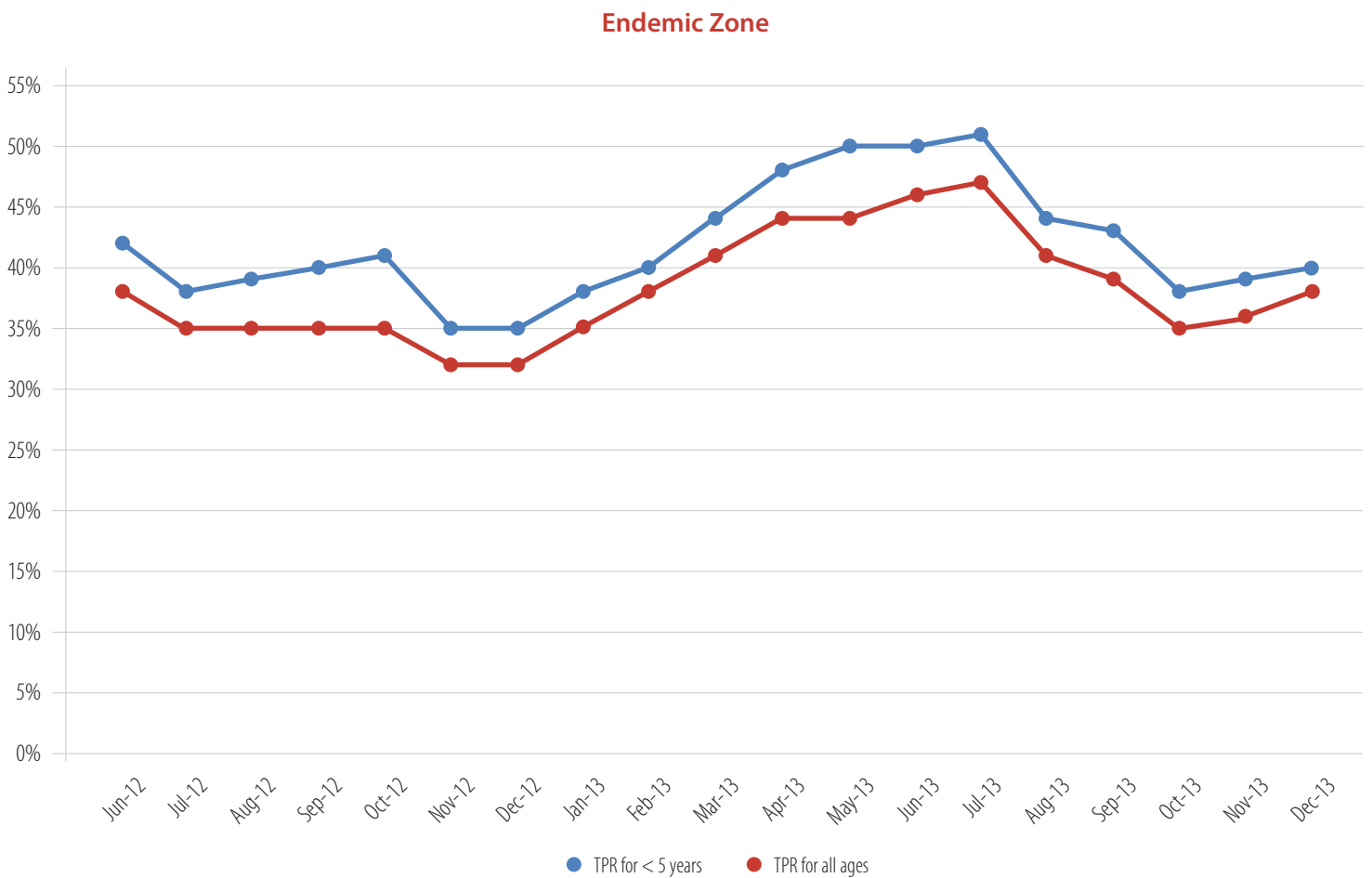
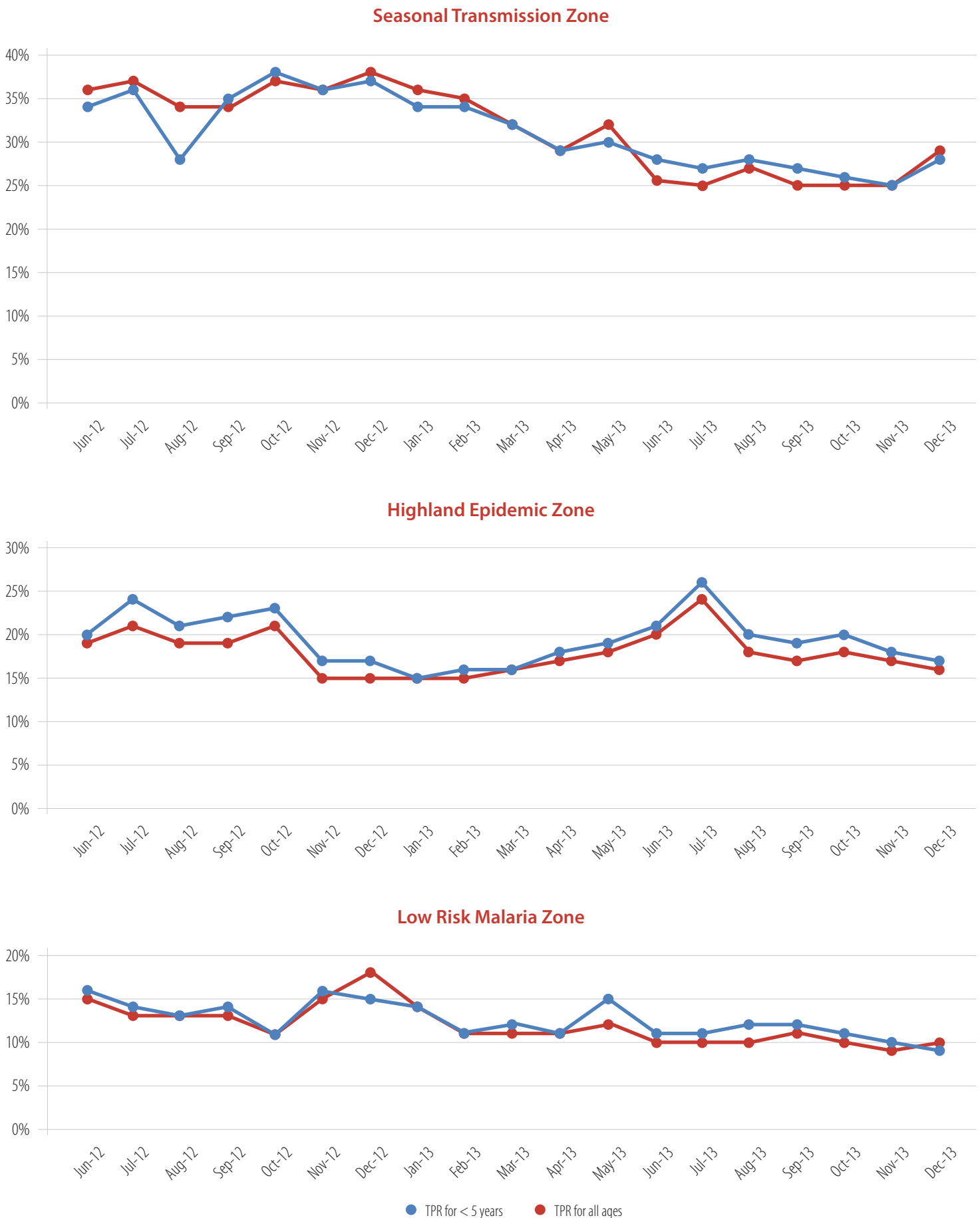


Figure 2b: Outpatient TPR for < 5 Years and All Ages by Malaria Epidemiology Zones



Source: DDSR

Figure 2b: Outpatient TPR for < 5 Years and All Ages by Malaria Epidemiology Zones *continued*

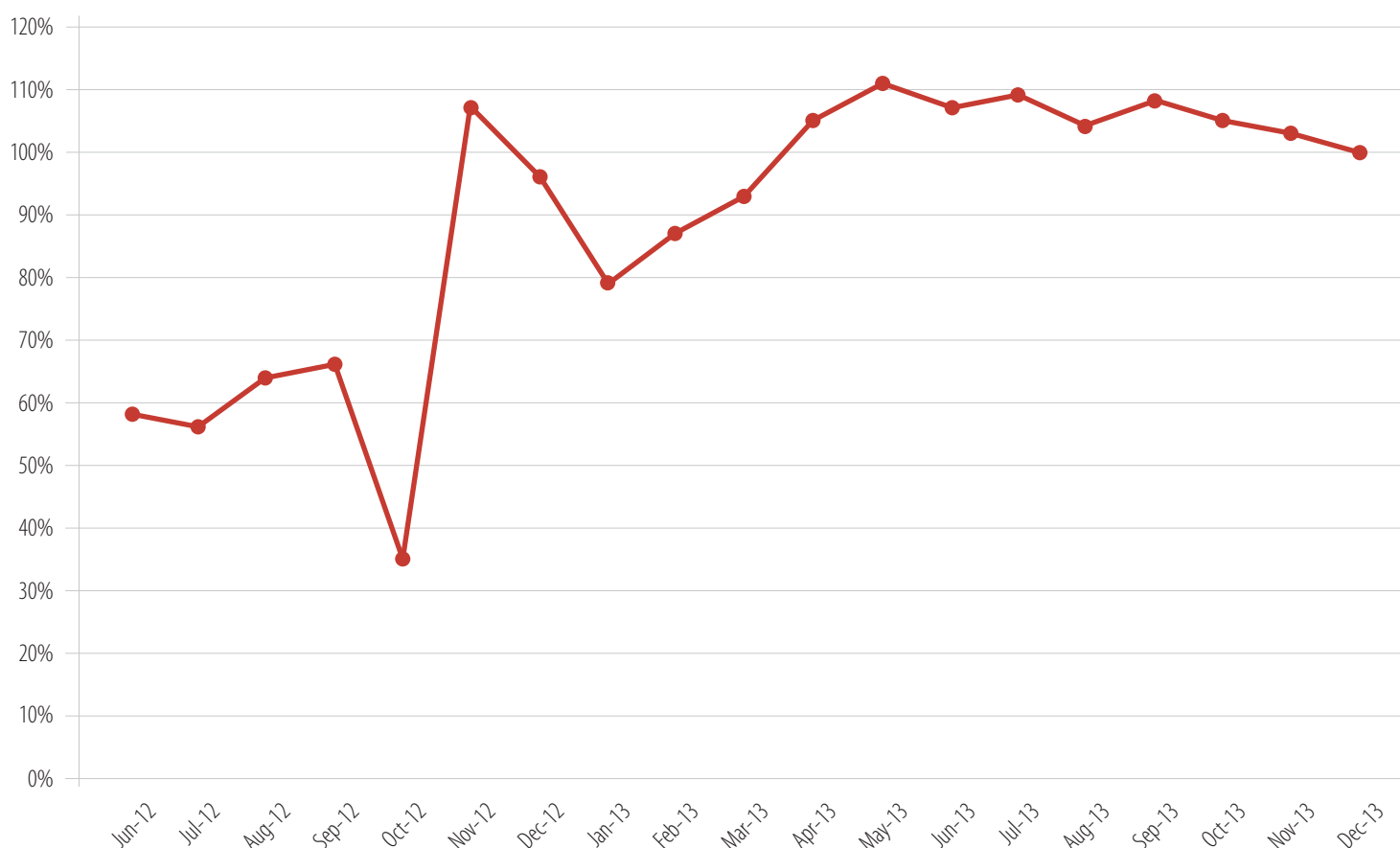


Source: DDSR

SUSPECTED MALARIA CASES TESTED WITH PARASITE-BASED TEST

The malaria 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. The testing rate (percentage of suspected malaria cases tested using a parasite based test) has remained stable, slightly above 100%, in this quarter under review. However, we can't plausibly explain the >100% TR, even though it is possible to speculate that double counting of tests done using microscopy and RDTs, and patients who are referred for laboratory tests with out passing the outpatient clinic could in part explain this observed anomaly (as the numerator {number of outpatient suspected malaria cases that received laboratory testing} was obtained from laboratory register while the denominator {Number of outpatient suspected malaria cases} is from OPD register).

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

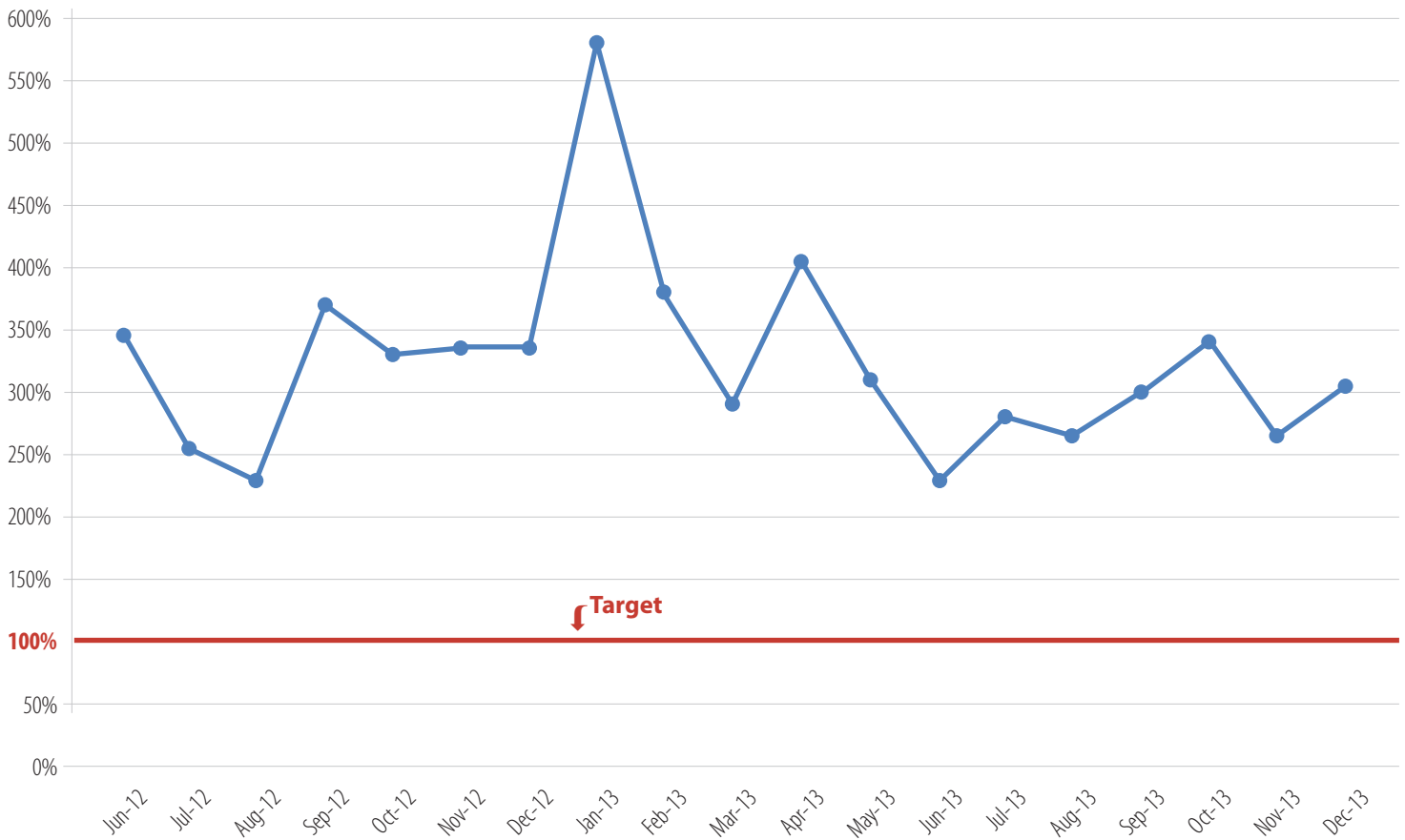


Source: DDSR

COVERAGE FOR OUTPATIENTS TREATED WITH ARTEMISININ-BASED COMBINATION THERAPY

Kenya has adopted the policy of test before treatment and AL should only be administered to patients who are tested for malaria parasites using a parasitic laboratory test, and the results are positive. The ability of health facilities to achieve this has in the past been hampered by low coverage of the rapid diagnostic test kits (RDTs) or microscopy. Graph 4 shows the percentage of outpatient cases that were treated using artemisinin-based combination therapy over the number of confirmed malaria cases (positive parasitological results) expected to be treated with appropriate antimalarial medicines during the reporting period. Over the last quarter, a slight decrease in percentage of over-treatment from about 350% to 300% was observed in the country. This pattern of over-treatment shows that health care workers in the country are yet to fully comply with the national treatment guideline and emphasis on compliance with the national policy needs to be continued as more health facilities gain malaria diagnostic capacity through availability of mRDTs.

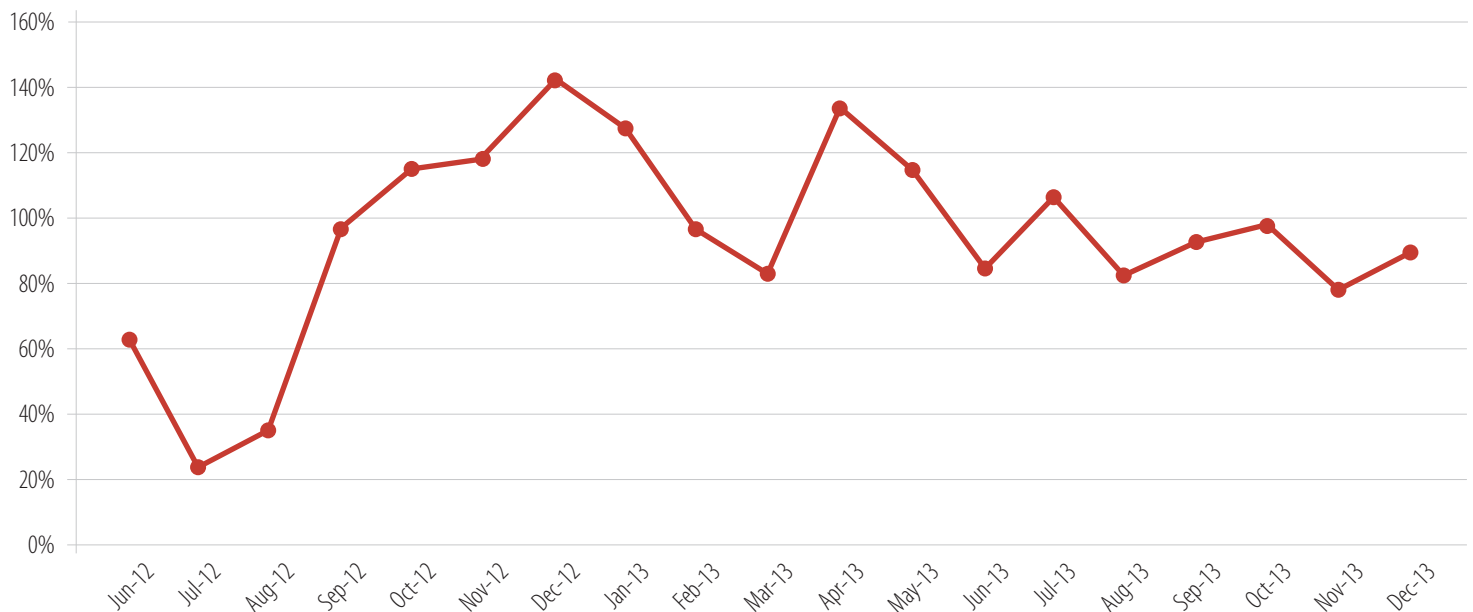
Figure 4a: Percentage of Coverage with Outpatient Cases Treated with ACTs



Sources: DDSR/LMIS/DHIS

Figure 4b shows the percentage of outpatient suspected malaria cases who received appropriate antimalarial treatment (ACTs). Overall, the percentage of suspected malaria cases treated with AL decreased from 100% to 90% during the last quarter under review.

Figure 4b: Percentage Coverage of Outpatient Suspected Malaria Cases Treated with ACTs

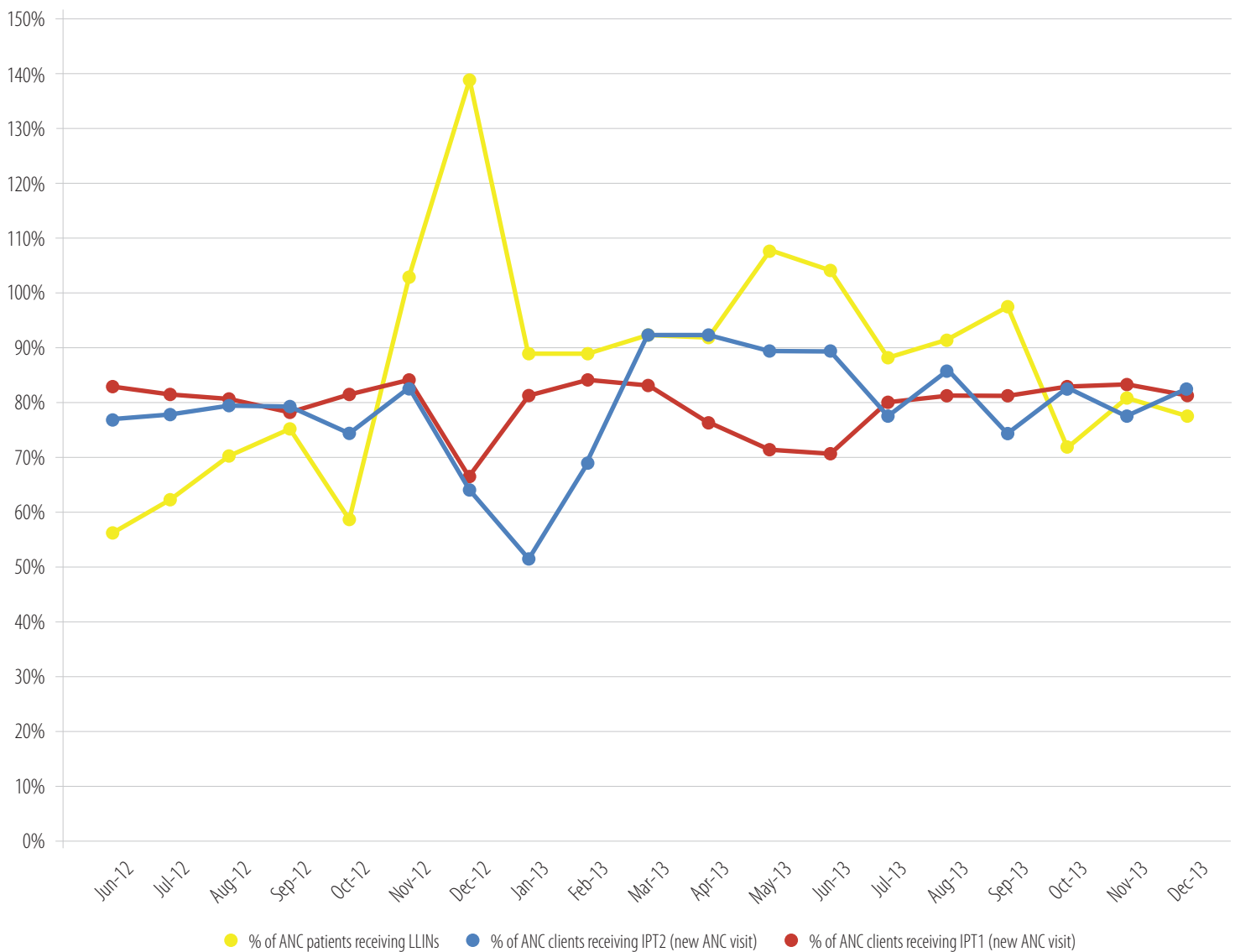


Source: DDSR/LMIS/DHIS

PERCENTAGE OF COVERAGE WITH OUTPATIENTS TREATED WITH ACTS AND NUMBER OF LLINs DISTRIBUTED AT ANC

The prevention of malaria in pregnancy involves combination strategies that together are aimed at reducing maternal and perinatal morbidity and mortality occasioned by malaria. The strategies comprise the antenatal care (ANC) package that comprises at least two doses of intermittent preventive treatment for expectant (IPT₂), Provision of Long Lasting Insecticide Nets (LLINs) and the provision of prompt diagnosis and treatment of fever. In the last quarter, the percentage of ANC mothers in the endemic regions who received IPT_{p1} & IPT_{p2} remained at around 80%. On the other hand, the percentage of ANC mothers who received LLINs slightly increased from about 70% in Oct. to about 78% in Dec. 2013.

Figure 5: Percentage Coverage of Antenatal Care Clients Receiving Insecticide Treated Nets and at Least Two Doses of Intermittent Preventive Treatment (IPT₂)



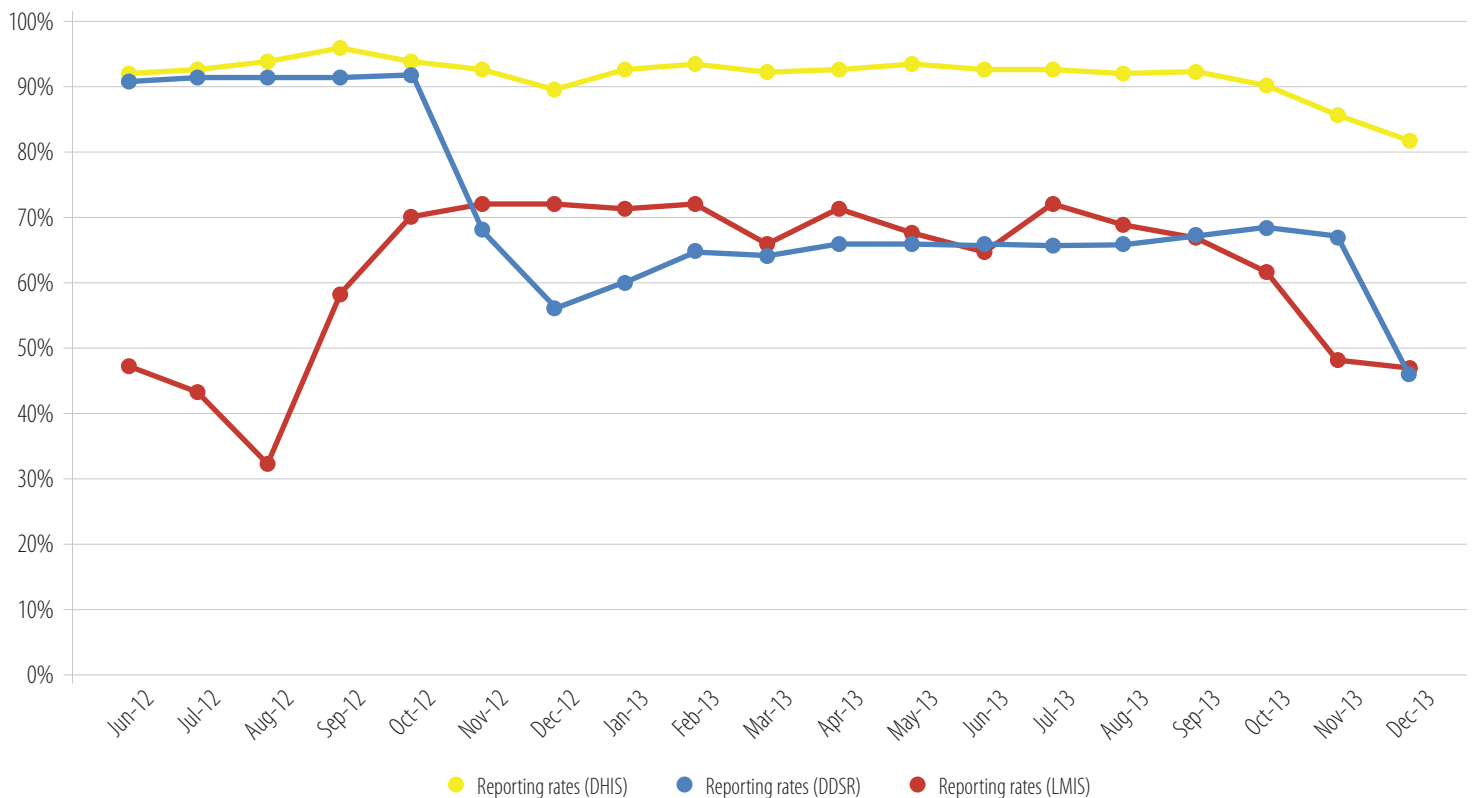
Source: DHIS/DDSR/LMIS

REPORTING RATES BY DATA SOURCES

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

The reporting rates over the last quarter decreased for all the three reporting systems, with DHIS decreasing from 90% to 80%, e-IDSR decreasing from 70% to 45% and LMIS decreasing from 60% to 45%.

Figure 6: Reporting Rates



Source: DHIS/IDSR/LMIS

From the Counties

This section provides a general overview in terms of how the counties performed in data collection and reporting for selected malaria indicators as shown in Table 1 in the reporting quarter 2 of 2012/2013.

Table 1: Overview of 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	% of outpatient suspected malaria cases tested	No. LLINs distributed to pregnant women	No. LLINs distributed to under 5 years
Western	Bungoma*	72,591	82,445	31,850	102,175	114	6,941	8,726
	Busia	69,845	69,005	30,371	86,240	99	4,740	3,698
	Kakamega	130,469	96,049	40,623	84,884	74	7,738	7,892
	Vihiga	45,503	34,977	12,844	58,465	77	2,232	3,485
Nyanza	Homa Bay	104,881	65,436	25,676	167,402	62	6,299	7,708
	Kisii	63,675	57,851	7,996	39,160	91	6,206	3,439
	Kisumu	66,067	56,504	22,123	34,185	86	4,220	2,679
	Migori	86,395	58,150	24,547	64,120	67	4,982	6,161
	Nyamira	22,552	18,068	771	10,368	80	2,774	961
	Siaya	127,107	111,861	54,431	119,715	88	5,072	5,377
Rift Valley	Baringo	19,281	9,575	2,410	15,899	50	2,977	3,497
	Bomet	19,662	15,357	329	13,394	78	3,538	2,896
	Elgeyo/Marakwet	9,521	7,527	1,573	3,481	79	1,859	1,686
	Kajiado*	5,586	9,194	951	4,290	165	4,082	4,856
	Kericho	30,392	15,554	1,094	13,003	51	4,521	4,712
	Laikipia*	3,660	6,937	1,562	5,522	190	7	0
	Nakuru*	34,369	48,108	8,702	12,198	140	637	0
	Nandi	30,589	16,966	3,345	22,209	55	2,866	2,786
	Narok*	16,714	17,585	2,268	8,167	105	4,753	5,530
	Samburu*	838	4,839	834	1,650	577	10	27
	Trans Nzoia	38,858	36,103	7,736	9,709	93	3,925	3,492
	Turkana	34,811	31,862	15,810	17,606	92	666	0
	Uasin Gishu*	13,439	25,594	5,010	22,193	190	3,505	9,253
	West Pokot	42,132	43,040	13,094	9,251	102	2,846	3,040
Coast	Kilifi*	15,031	39,731	7,592	17,776	264	8,222	7,938
	Kwale	13,468	27,118	9,417	34,973	201	4,504	2,132
	Lamu*	927	6,909	602	84	745	803	51
	Mombasa*	19,329	52,130	7,369	2,499	270	4,150	2,055
	TaitaTaveta*	5,691	15,953	1,142	2,293	280	791	370
	Tana River*	4,796	8,663	925	560	181	1,121	646
Eastern	Embu*	15,407	30,897	5,656	15,332	201	2,203	2,424
	Isiolo*	2,244	4,147	885	7,255	185	1,045	836
	Kitui	16,257	16,320	4,471	30,308	100	5,234	7,023
	Machakos*	6,928	26,825	1,386	8,582	387	5,492	7,582
	Makueni*	19,157	22,253	1,814	3,715	116	969	1,179
	Marsabit	1,438	1,315	54	283	91	403	0
	Meru*	59,958	75,244	21,204	34,377	125	5,598	8,198
	Tharaka-Nithi	24,212	20,494	5,011	20,982	85	1,729	2,495

Province	County	No. suspected malaria cases	No. suspected malaria cases tested	No. outpatient confirmed malaria cases	No. outpatients treated for malaria	% of outpatient suspected malaria cases tested	No. LLINs distributed to pregnant women	No. LLINs distributed to under 5 years
North Eastern	Garissa*	326	9,822	371	13,399	3,013	190	0
	Mandera	2,125	1,851	195	70	87	0	0
	Wajir*	629	1,050	241	3,018	167	43	22
Central	Kiambu*	11,466	29,381	1,014	1,435	256	4,490	3,235
	Kirinyaga*	1,819	8,862	78	2,311	487	2,349	0
	Murang'a*	237	2,941	50	3,171	1,241	3,073	4,762
	Nyandarua*	1,230	2,167	109	1,372	176	7	0
	Nyeri*	123	1,624	8	187	1,320	1	0
Nairobi	Nairobi*	8,761	43,752	3,608	4,640	499	485	37
<i>Total</i>		<i>1,320,496</i>	<i>1,388,036</i>	<i>389,152</i>	<i>1,133,908</i>	<i>105</i>	<i>140,298</i>	<i>142,886</i>

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

Table 2: Malaria Treatment by County

This table shows suspected and confirmed malaria cases that were treated as per the national guidelines.

Province	County	No. outpatient suspected malaria cases	No. outpatient 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	72,591	31,850	102,175	141	321
	Busia	69,845	30,371	86,240	123	284
	Kakamega	130,469	40,623	84,884	65	209
	Vihiga	45,503	12,844	58,465	128	455
Nyanza	Homa Bay	104,881	25,676	167,402	160	652
	Kisii	63,675	7,996	39,160	61	490
	Kisumu	66,067	22,123	34,185	52	155
	Migori	86,395	24,547	64,120	74	261
	Nyamira	22,552	771	10,368	46	1,345
	Siaya	127,107	54,431	119,715	94	220
Rift Valley	Baringo	19,281	2,410	15,899	82	660
	Bomet	19,662	329	13,394	68	4,071
	Elgeyo/Marakwet	9,521	1,573	3,481	37	221
	Kajiado	5,586	951	4,290	77	451
	Kericho	30,392	1,094	13,003	43	1,189
	Laikipia	3,660	1,562	5,522	151	354
	Nakuru	34,369	8,702	12,198	35	140
	Nandi	30,589	3,345	22,209	73	664
	Narok	16,714	2,268	8,167	49	360
	Samburu	838	834	1,650	197	198
	Trans Nzoia	38,858	7,736	9,709	25	126
	Turkana	34,811	15,810	17,606	51	111
	UasinGishu	13,439	5,010	22,193	165	443
	West Pokot	42,132	13,094	9,251	22	71
Coast	Kilifi	15,031	7,592	17,776	118	234
	Kwale	13,468	9,417	34,973	260	371
	Lamu	927	602	84	9	14

Province	County	No. outpatient suspected malaria cases	No. outpatient confirmed malaria cases	Aggregated Patients on AL	% of outpatient suspected malaria cases treated with ACT	% of outpatient confirmed malaria cases treated with ACT
Coast	Mombasa	19,329	7,369	2,499	13	34
	TaitaTaveta	5,691	1,142	2,293	40	201
	Tana River	4,796	925	560	12	61
Eastern	Embu	15,407	5,656	15,332	100	271
	Isiolo	2,244	885	7,255	323	820
	Kitui	16,257	4,471	30,308	186	678
	Machakos	6,928	1,386	8,582	124	619
	Makueni	19,157	1,814	3,715	19	205
	Marsabit	1,438	54	283	20	524
	Meru	59,958	21,204	34,377	57	162
	Tharaka-Nithi	24,212	5,011	20,982	87	419
North Eastern	Garissa	326	371	13,399	4,110	3,612
	Mandera	2,125	195	70	3	36
	Wajir	629	241	3,018	480	1,252
Central	Kiambu	11,466	1,014	1,435	13	142
	Kirinyaga	1,819	78	2,311	127	2,963
	Murang'a	237	50	3,171	1,338	6,342
	Nyandarua	1,230	109	1,372	112	1,259
	Nyeri	123	8	187	152	2,338
Nairobi	Nairobi	8,761	3,608	4,640	53	129

Table 3: Reported Malaria Cases 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	Qtr2 12/13	930,194	135,215	48,687	36	2,257,935	353,189	115,011	33
	Qtr3 12/13	359,525	263,615	108,137	41	864,273	684,359	261,907	38
	Qtr4 12/13	418,903	398,240	195,762	49	1,046,465	1,066,682	481,872	45
	Qtr1 13/14	353,270	335,044	154,586	46	953,801	943,034	400,802	43
	Qtr2 13/14	272,405	251,326	100,885	40	726,600	693,328	257,856	37
Seasonal Transmission	Qtr2 12/13	314,785	54,622	20,019	37	948,586	173,913	64,153	37
	Qtr3 12/13	105,172	91,025	30,584	34	310,157	279,425	96,160	34
	Qtr4 12/13	99,933	97,497	28,267	29	316,277	331,412	97,701	29
	Qtr1 13/14	88,138	89,936	24,445	27	293,938	322,387	83,002	26
	Qtr2 13/14	63,852	68,948	17,955	26	200,860	234,265	60,922	26
Highland Epidemic	Qtr2 12/13	330,042	43,029	7,521	17	916,443	131,343	21,333	16
	Qtr3 12/13	116,337	78,878	12,518	16	318,888	227,403	35,557	16
	Qtr4 12/13	119,711	100,120	19,756	20	336,438	298,100	56,377	19
	Qtr1 13/14	116,062	104,913	22,825	22	354,838	328,861	65,341	20
	Qtr2 13/14	96,071	81,773	15,176	19	280,483	247,585	42,520	17
Low Risk Malaria Areas	Qtr2 12/13	157,719	43,754	6,483	15	467,826	137,234	21,104	15
	Qtr3 12/13	56,751	85,312	10,443	12	163,889	255,251	30,428	12
	Qtr4 12/13	58,665	104,138	12,548	12	168,917	319,684	35,022	11
	Qtr1 13/14	46,707	82,107	9,641	12	135,423	270,098	28,167	10
	Qtr2 13/14	32,124	62,319	6,255	10	87,967	193,014	18,331	9