Evidence for Malaria Medicines Policy

ACTwatch Study Reference Document
Benin Outlet Survey
2014

Evidence for Malaria Medicines Policy

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Acronyms

ABMS	Association Beninoise Pour Le Marketing Sociale
ACT	Artemisinin combination therapy
AETD	Adult equivalent treatment dose
AL	Artemether lumefantrine
AMFm	Affordable Medicines Facility – malaria
ASAQ	Artesunate amodiaquine
BMGF	The Bill and Melinda Gates Foundation
CHW	Community Health Worker
DFID	Department for International Development
DHA PPQ	Dihydroartemisinin piperaquine
EMA	European Medicines Agency
GFATM	Global Fund to Fight AIDS, TB, and Malaria
IM	Intramuscular injection
IPTp	Intermittent preventive treatment in pregnancy
IV	Intravenous injection
MOH	Ministry of Health
NGO	Non-governmental Organization
Oral AMT	Oral artemisinin monotherapy
OS	Outlet survey
Pf	*Plasmodium falciparum*
PMI	President's Malaria Initiative
PPS	Probability proportional to size
QA ACT	Quality-assured artemisinin combination therapy
RDT	Rapid diagnostic test
SP	Sulfadoxine pyrimethamine
UK	United Kingdom
USAID	United States Agency for International Development
USD	US Dollar

Definitions

Survey Methods Definitions

Outlet	Any service delivery point or point of sale for commodities. Outlets are not restricted to stationary points of sale and may include mobile units or individuals.
Outlets eligible for inclusion in the study	Outlets were administered a full questionnaire if they met at least one of three inclusion criteria: (1) had one or more antimalarials in stock at the time of the survey visit; (2) reportedly had one or more antimalarials in stock in the previous three months; or (3) provide malaria blood testing (microscopy or rapid diagnostic tests) but do not provide antimalarial treatment. Outlets not providing services to the general public (e.g. army and military clinics) were excluded from the study.
Cluster	The primary sampling unit, or cluster, for the outlet survey. It is an administrative unit that hosts a population size of approximately 10,000 to 15,000 inhabitants. These units are defined by political boundaries. In Benin, they were defined as arrondissement.
Censused Arrondissement	A cluster where field teams conducted a full census of all outlets with the potential to sell antimalarials.
Booster Sample	A booster sample was collected by extending the primary sampling unit to a higher administrative unit for sampling certain outlet types. This extension achieves a larger sample size for specific outlets, allowing for estimates among key outlet types. In this survey, a booster sample was collected for public health facilities, pharmacies and drug stores. The administrative unit for these outlet types was extended beyond arrondissement to the commune level. See Annex 9 for a detailed description of the booster sampling methods.

Malaria Product Indicator Definitions

Antimalarial	Any medicine recognized by the WHO for the treatment of malaria. Medicines used solely for the prevention of malaria were excluded from analysis of key indicators in this report.
Dosing/treatment regimen	The posology or timing and number of doses of an antimalarial used to treat malaria. This schedule often varies by patient weight.
Adult Equivalent Treatment Dose (AETD)	An AETD is the number of milligrams (mg) of an antimalarial drug required to treat a 60 kg adult (see Annex 11).
Monotherapy	An antimalarial medicine that has a single mode of action. This may be a medicine with a single active compound or a synergistic combination of two compounds with related mechanisms of action.
Artemisinin and its derivatives	Artemisinin is a plant extract or synthetic plant extract used in the treatment of malaria. The most common derivatives of artemisinin used to treat malaria are artemether, artesunate, and dihydroartemisinin.
Artemisinin-based Combination Therapy (ACT)	An antimalarial that combines artemisinin or one of its derivatives with an antimalarial or antimalarials of a different class.

Artemisinin monotherapy	An antimalarial medicine that has a single active compound, where this active compound is artemisinin or one of its derivatives.
Oral artemisinin monotherapy	Artemisinin or one of its derivatives in a dosage form with an oral route of administration. These include tablets, suspensions, and syrups and exclude suppositories and injections.
Non-artemisinin therapy	An antimalarial medicine that does not contain artemisinin or any of its derivatives.
First-line treatment	The government recommended treatment for uncomplicated malaria. Benin's first-line treatment for uncomplicated malaria is artemether-lumefantrine (AL). Artesunate-amodiaquine (ASAQ) is recommended for infants under six months of age.
Second-line treatment	The government recommended second-line treatment for uncomplicated malaria. Benin's second-line treatment for uncomplicated malaria is artesunate-amodiaquine (ASAQ).
Nationally registered ACTs	ACTs registered with Benin's national drug regulatory authority and permitted for sale or distribution in Benin. Each country determines its own criteria for placing a drug on its nationally registered listing.
Severe malaria treatment	WHO recommends parenteral artesunate as first-line treatment in the management of severe *falciparum* malaria, with artemether or quinine injections as acceptable alternatives if parenteral artesunate is not available.[1] If complete treatment for severe malaria is not possible, patients with severe malaria should be given pre-referral treatment and referred immediately to an appropriate facility for further treatment. The following are options for pre-referral treatment: rectal artesunate, injectable quinine, injectable artesunate and injectable artemether.
Quality-assured Artemisinin-Based Combination Therapies (QA ACTs)	QA ACTs are ACTs that comply with the Global Fund to Fight AIDS, Tuberculosis and Malaria's Quality Assurance Policy. A QA ACT is any ACT that appeared on the Global Fund's indicative list of antimalarials meeting the Global Fund's quality assurance policy prior to data collection (see http://www.theglobalfund.org/en/procurement/quality/pharmaceutical/), or that previously had C-status in an earlier Global Fund quality assurance policy and was used in a program supplying subsidized ACTs. QA ACTs also include ACTs that have been granted regulatory approval by the European Medicines Agency (EMA) – specifically Eurartesim® and Pyramax®.
Quality-assured ACT with the "green leaf" logo, or "co-paid ACTs"	The "green leaf" logo indicates that a quality-assured ACT was acquired through a co-payment mechanism administered by the Global Fund (Affordable Medicines Facility, malaria – or AMFm). These subsidized (co-paid) quality-assured ACTs were not available to first-line buyers in Benin but were available in countries including Nigeria and Ghana.

[1] World Health Organization. (2010). *Guidelines for the treatment of malaria, 2nd edition*. Geneva: WHO.

Introduction

This Benin reference document is a detailed presentation of the 2014 national ACTwatch outlet survey (OS) conducted in Benin. The 2014 OS follows previous survey rounds conducted by ACTwatch in Benin in 2008, 2009 and 2011.

ACTwatch is a multi-country research project implemented by PSI (www.psi.org). Standardized tools and approaches are employed to provide comparable data across countries and over time. ACTwatch is designed to provide timely, relevant, and high quality antimalarial market evidence. The goal of providing this market evidence is to inform and monitor national and global policy, strategy, and funding decisions for improving malaria case management. The project was launched in 2008 with funding from the Bill and Melinda Gates Foundation (BMGF), and is currently funded through 2016 by the BMGF, UNITAID, and DFID. See Annex 1 for more information about the ACTwatch project.

Antimalarial market monitoring in Benin from 2008 to present has been implemented in the context of strategies designed and implemented to improve coverage of appropriate case management. These include:

- Case management guidelines stipulating confirmatory testing (RDT or microscopy) prior to treatment. ACT treatment should only be given to people with a positive malaria blood test. The National Malaria Control Program and its partners are scaling up access to malaria blood testing using RDTs and microscopy as well as ACT treatment for confirmed cases in the public and private sector.
- A diverse, growing and largely unlicensed private health care sector. More than half of the population is estimated to receive health care from the private sector. Efforts are underway to reform the accreditation process to better align private sector practices with national policies and strategies. Private sector collaboration is important given the growing numbers of private clinics and practitioners.
- Scale up of malaria diagnosis and treatment provided through a national network of community health workers.

The 2014 OS was the fourth round of outlet surveys conducted in Benin. This report presents trend lines with three data points: 1) the 2009 outlet survey; 2) the 2011 outlet survey; and 3) the most recent 2014 survey. These surveys are designed to monitor key antimalarial market indicators at national level and within urban/rural domains. ACTwatch outlet survey findings can inform ongoing monitoring, evaluation, and adjustment to policy, strategy, and funding decisions to strengthen malaria case management.

Report notes

- This document is a complete reference for the 2014 outlet survey. Please see annexes for information about the study context, design, implementation and data analysis.
- Table numbers are consistent across all sections, and are reflective of table descriptions available in Annex 10
- Grey text for data appearing in report tables indicates that the estimate provided was derived from a small sample size. Specifically, grey text is used to indicate point estimates derived from an n of less than 50 and median prices derived from an n of less than 5.
- Malaria testing and treatment prices are reported in US dollars. Price information is captured in local currency and converted to US dollars based on exchange rates available from www.oanda.com using the historical exchange rates tool. The average exchange rate over the entire data collection period is used for converting local currency captured during data collection to US dollars.

Summary of Methods and Data Collection

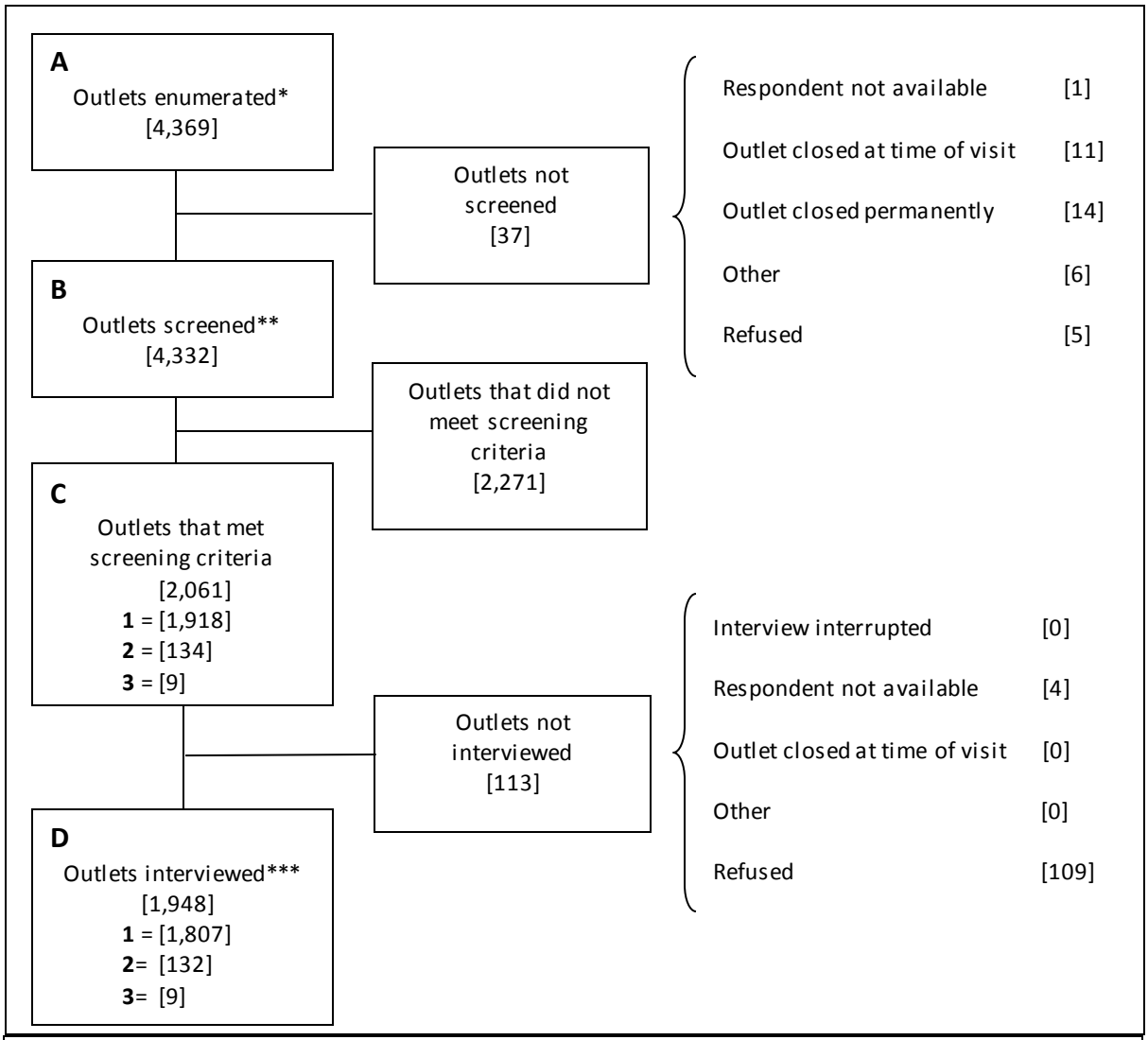
A nationally representative antimalarial outlet survey was conducted in Benin between July 11 and 31, 2014. A full description of research design and methods is provided in Annex 3. Briefly, a representative sample of arrondissements was selected from urban and rural domains (see sampled arrondissements in Annex 4). Within selected clusters, a census of all outlets with the potential to sell or distribute antimalarials and/or provide malaria blood testing was completed. The geographic area for sampling outlets was extended to the commune level to achieve a sufficient sample size for estimating key indicators for important outlet types. This booster sampling strategy was used to obtain a sufficient sample size for indicator estimates within public health facilities, pharmacies and drug stores.

Outlets were screened to determine eligibility. Outlets eligible for the survey met at least one of three criteria: 1) one or more antimalarials were in stock on the day of the survey; 2) one or more antimalarials were in stock in the three months preceding the survey; and/or 3) malaria blood testing (microscopy or RDT) was available. Outlets that do not serve the general public (e.g. military facilities) were excluded from the study. The results of the census are summarized in Figure 1. A detailed sample summary is provided in Annex 5.

A structured questionnaire was used to complete an audit of all antimalarials and malaria rapid diagnostic tests (RDTs) as well as a provider interview (see Annex 6). See Annex 7 and Annex 8 for detailed summaries of antimalarials and RDTs audited. Key informant interviews were conducted with specific stakeholders to supplement information for the Benin background.

Double data entry was completed using Microsoft Access. All data cleaning and analysis was performed using Stata 13.1 (©StataCorp, College Station, TX). Data were weighted to account for variation in probability of outlet selection (see Annex 9), and standard error calculation reflected clustering of outlets at ward and district levels. Standard indicators were constructed according to definitions applied across ACTwatch project countries (see Annex 10).

Figure 1. Survey flow diagram, Benin, 2014



1: Antimalarials in stock on day of visit
2: Antimalarials reportedly in stock during the previous 3 months but not on the day of the visit
3: Malaria blood testing available but no antimalarials in stock
* Identified as outlets with potential to sell or distribute antimalarials and/or provide malaria blood testing during the census or booster sampling
** Administered questions to assess current or recent (previous 3 months) availability of antimalarials and malaria blood testing (microscopy or rapid diagnostic test)
*** A partial or complete interview was conducted with an outlet representative

Summary of Key Findings

	Table S1: Key results, by outlet type - 2014										
	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public/Not For-Profit[1]**	Private For-Profit Facility	Pharmacy	Drug Store	General Retail	Itinerant Vendor	**ALL Private[2]**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Readiness for malaria case management ***Proportion of all screened outlets* with*:**	N= 229	N= 78	N= 45	N= 352	N= 167	N= 184	N=20	N= 3,178	N= 431	N= 3,980	N= 4,332
Availability of malaria blood testing[a]	89.8 (84.2, 93.5)	15.2 (2.4, 57.1)	69.3 (46.0, 85.7)	36.6 (18.3, 59.8)	21.4 (11.9, 35.5)	0.2 (0.0, 1.1)	0.0 -	0.6 (0.1, 2.4)	0.0 -	2.8 (1.7, 4.6)	9.6 (5.8, 15.4)
Availability of QA ACT	87.2 (77.5, 93.1)	50.0 (28.9, 71.1)	58.7 (31.9, 81.2)	58.1 (40.3, 74.1)	39.3 (26.2, 54.2)	79.9 (64.7, 89.6)	49.0 (22.7, 75.9)	12.4 (8.2, 18.3)	19.7 (12.0, 30.8)	15.0 (10.2, 21.4)	20.0 (14.5, 26.8)
Availability of QA ACT and malaria blood testing	80.2 (70.6, 87.2)	5.7 (1.1, 23.7)	52.8 (24.2, 79.8)	23.7 (14.8, 35.8)	7.5 (3.7, 14.7)	0.2 (0.0, 1.0)	0.0 -	0.2 (0.1, 0.9)	0.0 -	0.6 (0.3, 1.2)	3.3 (1.9, 5.5)
Availability of QA ACT, blood testing not available	7.0 (4.3, 11.1)	44.3 (21.4, 69.9)	5.9 (2.7, 12.6)	34.4 (17.7, 56.2)	31.8 (20.8, 45.3)	79.7 (64.6, 89.4)	49.0 (22.7, 75.9)	12.2 (8.0, 18.1)	19.7 (12.0, 30.8)	14.4 (9.8, 20.5)	16.7 (12.1, 22.5)
Availability of QA ACT, malaria blood testing, and provider correct knowledge of first line treatment	78.3 (68.8, 85.5)	5.7 (1.1, 23.7)	51.9 (22.8, 79.7)	23.3 (14.5, 35.3)	7.5 (3.7, 14.7)	0.2 (0.0, 1.0)	0.0 -	0.1 (0.0, 0.2)	0.0 -	0.5 (0.2, 1.0)	3.1 (1.8, 5.2)
Availability of any severe malaria treatment	74.5 (66.6, 81.0)	0.0 -	59.2 (31.2, 82.3)	18.8 (12.0, 28.2)	58.0 (44.4, 70.5)	67.8 (52.8, 79.9)	26.2 (10.4, 52.0)	0.3 (0.1, 0.8)	0.0 -	3.9 (2.6, 5.8)	5.6 (4.2, 7.5)
Readiness for malaria case management ***Proportion of antimalarial-stocking outlets Ψ with:***	N=222	N=42	N=37	N=301	N=132	N=174	N=19	N=889	N=288	N=1,505	N=1,806
Availability of malaria blood testing[b]	90.2 (84.8, 93.8)	10.6 (1.7, 45.4)	71.9 (48.0, 87.6)	40.1 (22.4, 60.9)	21.7 (12.1, 35.7)	0.2 (0.0, 1.1)	0.0 -	0.7 (0.2, 2.7)	0.0 -	3.0 (1.8, 4.8)	9.6 (6.6, 13.6)
Availability of QA ACT	89.7 (80.5, 94.8)	93.9 (80.4, 98.3)	66.6 (37.9, 86.7)	90.4 (81.7, 95.1)	45.5 (31.7, 60.1)	88.1 (73.6, 95.2)	50.7 (22.7, 78.2)	37.1 (28.4, 46.7)	28.9 (16.4, 45.7)	37.8 (29.2, 47.1)	47.0 (38.5, 55.7)
Availability of QA ACT and malaria blood testing	82.5 (73.6, 88.8)	10.6 (1.7, 45.4)	59.9 (28.5, 84.9)	36.9 (20.6, 56.8)	8.7 (4.3, 16.8)	0.2 (0.0, 1.1)	0.0 -	0.7 (0.2, 2.6)	0.0 -	1.5 (0.8, 2.7)	7.7 (4.9, 12.0)
Availability of QA ACT, blood testing not available	7.2 (4.4, 11.5)	83.3 (55.2, 95.3)	6.7 (2.8, 15.0)	53.5 (33.0, 72.8)	36.8 (25.2, 50.2)	87.9 (73.6, 95.0)	50.7 (22.7, 78.2)	36.4 (27.6, 46.3)	28.9 (16.4, 45.7)	36.3 (28.0, 45.4)	39.3 (32.0, 47.1)
Availability of QA ACT, malaria blood testing, and provider correct knowledge of first line treatment	80.6 (71.7, 87.2)	10.6 (1.7, 45.4)	58.8 (26.8, 84.8)	36.2 (20.2, 56.0)	8.7 (4.3, 16.8)	0.2 (0.0, 1.1)	0.0 -	0.2 (0.1, 0.6)	0.0 -	1.1 (0.6, 2.2)	7.3 (4.6, 11.4)
Availability of any severe malaria treatment	76.6 (68.5, 83.1)	0.0 -	67.1 (32.5, 89.6)	29.2 (18.0, 43.7)	67.2 (48.3, 81.7)	74.8 (61.2, 84.9)	27.1 (10.6, 54.0)	0.9 (0.4, 2.3)	0.0 -	9.8 (7.0, 13.5)	13.2 (10.3, 16.8)

Table S1: Key results, by outlet type - 2014

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public/Not For-Profit[1]**	Private For-Profit Facility	Pharmacy	Drug Store	General Retail	Itinerant Vendor	**ALL Private[2]**	**ALL Outlets**
Readiness for IPTp ***Proportion of outlets with SP available*:**	*N=229 ΨN=222	*N=78 ΨN=42	*N=45 ΨN-37	*N=352 ΨN=301	*N=167 ΨN=132	*N=184 ΨN=174	*N=20 ΨN=19		*N=431 ΨN=288	*N=3,980 ΨN=1,505	*N=4,332 ΨN=1,806
Among all screened outlets*	44.7 (37.6, 51.9)	1.7 (0.2, 11.7)	53.7 (29.9, 75.9)	13.6 (8.3, 21.4)	16.6 (8.4, 30.0)	78.8 (64.3, 88.5)	53.7 (39.0, 67.8)	6.1 (4.1, 9.0)	36.5 (18.0, 60.1)	9.7 (6.4, 14.5)	10.2 (7.0, 14.5)
Among antimalarial-stocking outletsΨ	45.9 (38.9, 53.2)	3.2 (0.5, 19.4)	60.9 (35.8, 81.3)	21.2 (13.3, 32.0)	19.2 (10.3, 32.9)	87.0 (75.6, 93.5)	55.6 (39.8, 70.3)	18.1 (10.7, 29.0)	53.4 (24.8, 79.9)	24.5 (14.5, 38.2)	23.9 (15.0, 35.9)
Malaria market performance	%	%	%	%	%	%	%	%	%	%	%
% QA ACT market share within outlet type^	63.5	66.3	31.1	61.3	42.8	11.7	15.0	28.2	15.2	24.7	35.4
Median Price	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] [N]	Median [IQR] [N]	Median [IQR] [N]	Median [IQR] [N]	Median [IQR] [N]
Median price for one QA ACT adult equivalent treatment dose (AETD)	n/a	n/a	n/a	n/a	$2.47 [2.06-4.12] (61)	$5.77 [3.86-8.42] (1,050)	$3.30 [2.06-5.77] (19)	$1.65 [1.24-2.47] (556)	$1.65 [1.65-2.47] (116)	$2.06 [1.44-2.89] (1,802)	$1.65 [1.24-2.47] (2,471)
Median price for one pre-packaged pediatric QA AL #	n/a	n/a	n/a	n/a	$1.03 [0.62-1.03] (15)	$1.44 [1.44-1.44] (155)	$1.03 [0.82-1.44] (6)	$0.52 [0.41-0.62] (212)	$0.62 [0.41-0.62] (31)	$0.62 [0.41-0.82] (419)	$0.41 [0.00-0.62] (608)
Median price for an RDT ##	n/a	n/a	n/a	n/a	$0.00 [0.00-3.09] (15)	- -	- -	$0.00 [0.00-6.19] (2)	- -	$0.00 [0.00-3.09] (17)	$0.00 [0.00-0.41] (230)
Median price for malaria microscopy ##	n/a	n/a	n/a	n/a	$3.09 [2.47-4.12] (55)	- -	- -	$6.19 (1)	- -	$3.09 [2.47-4.74] (56)	$2.27 [1.65-3.09] (95)

1 Inclusive of N= 78 screened and 42 antimalarial-stocking private-not-for-profit outlets and N=45 screened and 37 antimalarial-stocking community health workers. .

2 Inclusive of N= 20 screened and 19 antimalarial-stocking drug stores and N=431 screened and 288 antimalarial-stocking itinerant vendors

* The denominator includes 37 outlets that met screening criteria for a full interview but did not complete the interview (were not interviewed or completed a partial interview).

a N for "Availability of malaria blood testing": Public Health Facility:224; Community Health Worker:62; Private Not-ForProfit: 39; All Public:325; Private For-Profit Facility:144; Pharmacy:174; Drug Store:18; General Retailer:957; Itinerant Vendor:304; All Private:1,597; All Outlets:1,922.

b N for "Availability of malaria blood testing": Public Health Facility:221; All Public: 300; Private-For-Profit Facility:130; Pharmacy:174; Drug Store:18; General Retailer:872; Itinerant Vendor:286; All Private:1,480; All Outlets:1,780.

Ψ Outlets with at least one antimalarial in stock on the day of the survey or reportedly in stock within the past 3 months.

^ Percent market volume (adult equivalent treatment dosages sold/distributed in the previous week) accounted for by quality-assured ACT (QA ACT) sale/distribution within the outlet type.

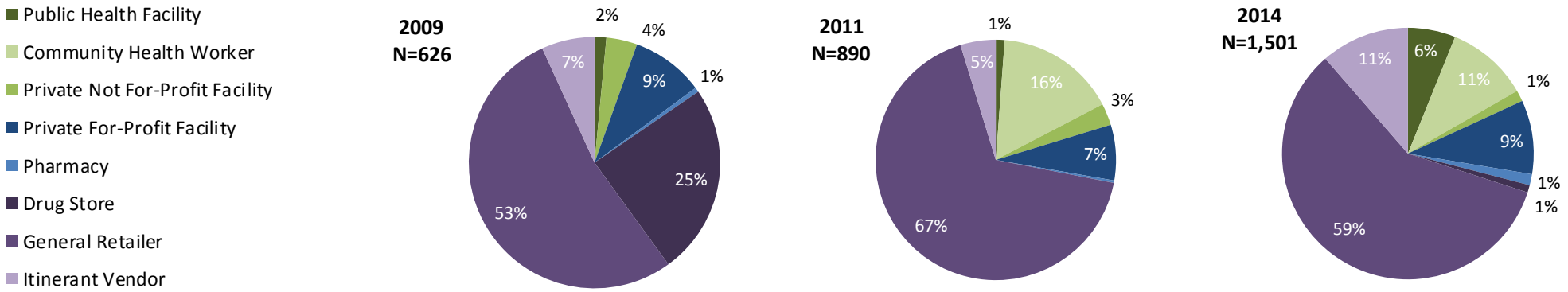
Pre-packaged QA AL for a 10kg child

Price inclusive of consultation / service fees for a child under five

Source: ACTwatch Outlet Survey, Benin, 2014.

Figure 2. Market composition: outlet type distribution, 2009-2014

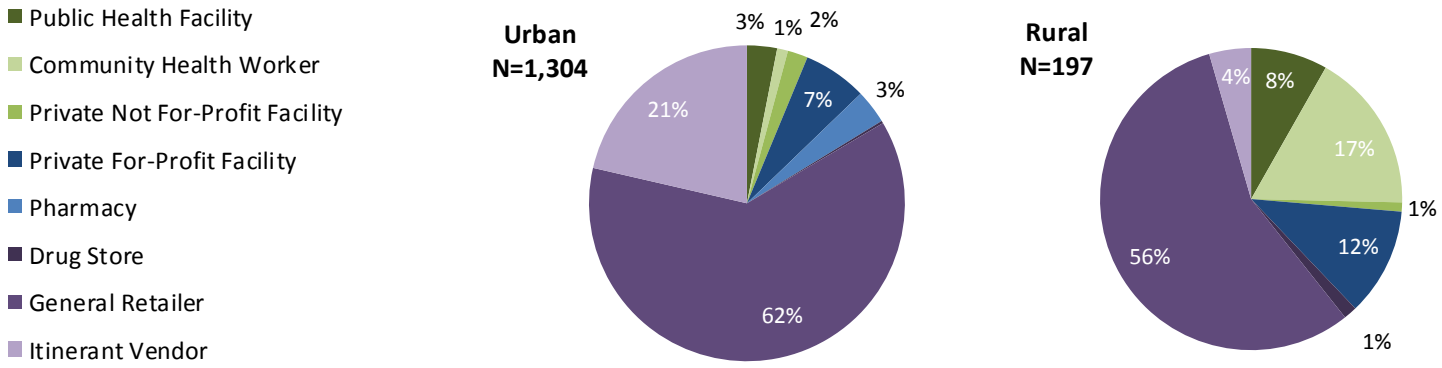
Among all outlets with at least one antimalarial in stock, across survey round



Informal providers accounted for 60-70% of all antimalarial-stocking outlets during each survey round. These include itinerant vendors, as well as general retail outlets which accounted for more than half of all antimalarial-stocking outlets during each survey round (2009, 53%; 2011, 67%; 2014, 59%). Antimalarial-stocking community health workers were not identified in 2009. However, they accounted for more than 10% of all antimalarial-stocking outlets in 2011 (16%) and 2014 (11%).

Figure 3. Market composition: outlet type distribution, 2014, urban/rural

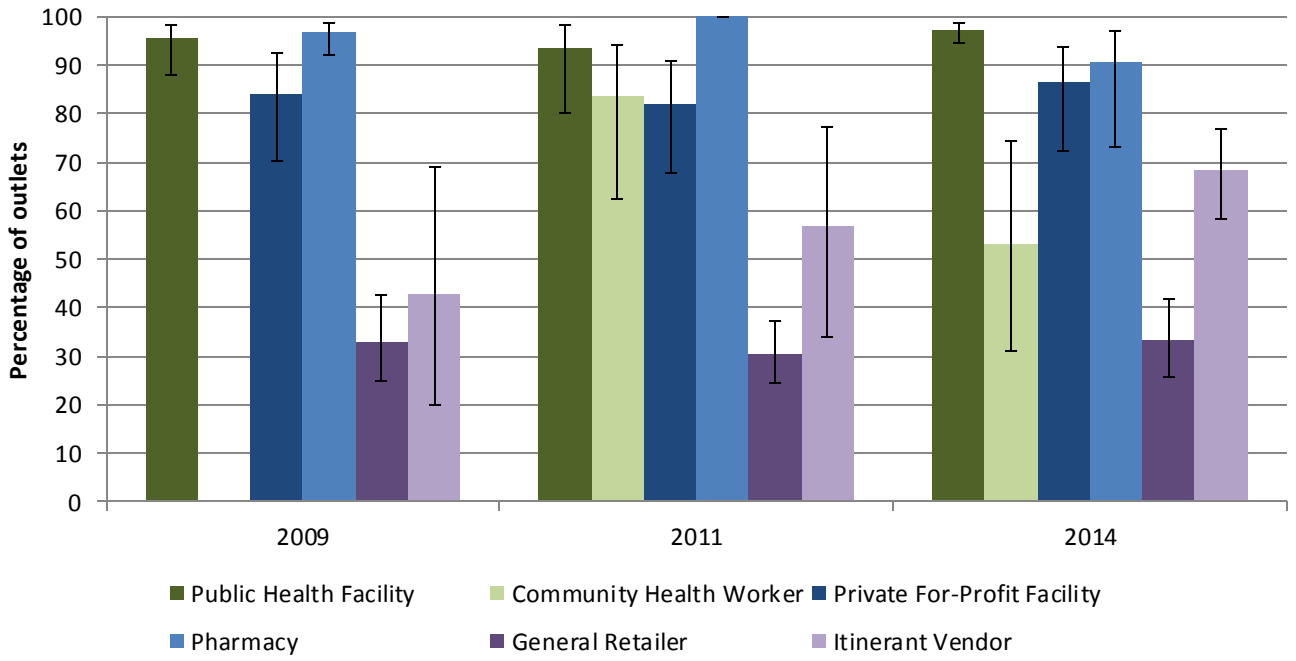
Among all outlets with at least one antimalarial in stock



In urban areas, more than 80% of all antimalarial-stocking outlets were informal providers in 2014 including general retailers (62%) and itinerant vendors (21%). General retailers were a common outlet type in rural areas as well (56%), however, itinerant vendors were less common (4%). Community health workers accounted for 17% of all antimalarial-stocking outlets in rural areas.

Figure 4. Percentage of outlets with at least one antimalarial in stock on the day of the survey, 2009-2014

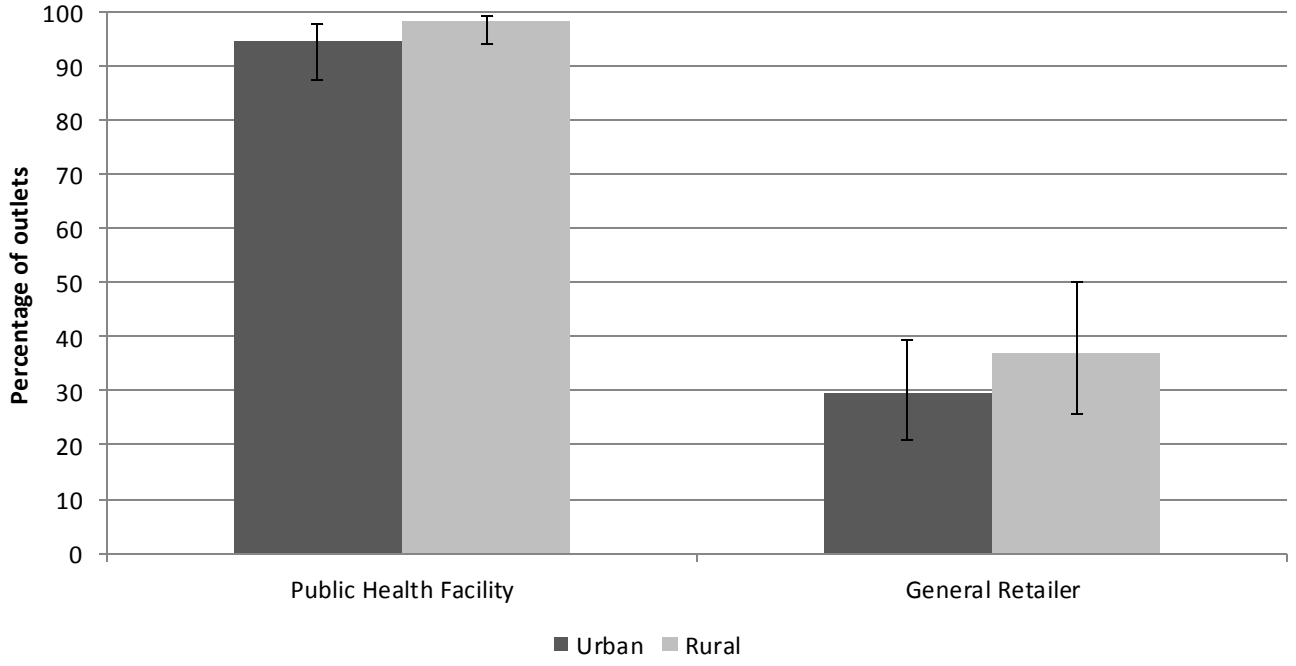
Among all screened outlets, across survey round



Antimalarial availability was high among public health facilities and pharmacies across survey rounds (90% or higher). Among all screened general retail outlets, approximately one-third were stocking antimalarials during each survey round (2009, 33%; 2011, 31%; 2014, 33%). Data trends suggest an increase in the availability of antimalarials among itinerant vendors (2009, 43%; 2011, 57%; 2014, 68%). About half of all screened community health workers (53%) were stocking antimalarials in 2014.

Figure 5. Percentage of outlets with at least one antimalarial in stock on the day of the survey, 2014, urban/rural

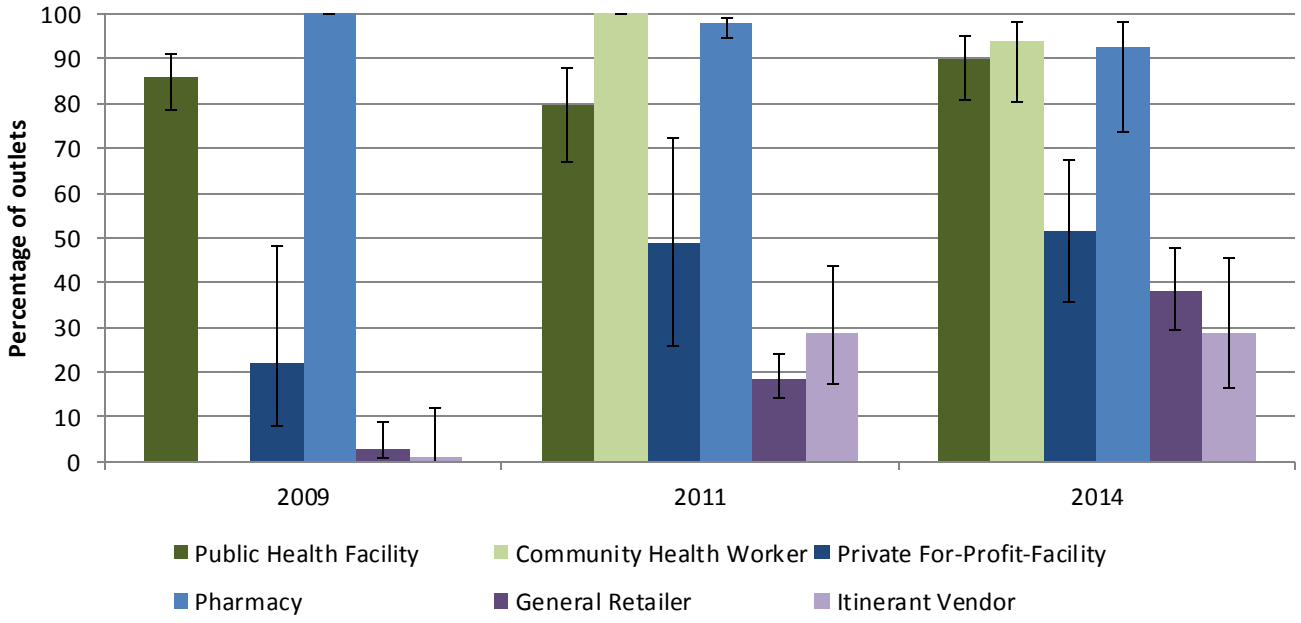
Among all screened outlets



Antimalarial availability was similar across urban and rural locations among public health facilities and general retail outlets. All other outlet types are not shown in urban/rural comparison figures because the outlet types are primarily urban (private for-profit and not for-profit facilities, pharmacies, itinerant vendors) or rural (community health workers), or due to low sample size per domain (drug stores).

Figure 6. Percentage of antimalarial-stocking outlets with ACT in stock on the day of the survey, 2009-2014

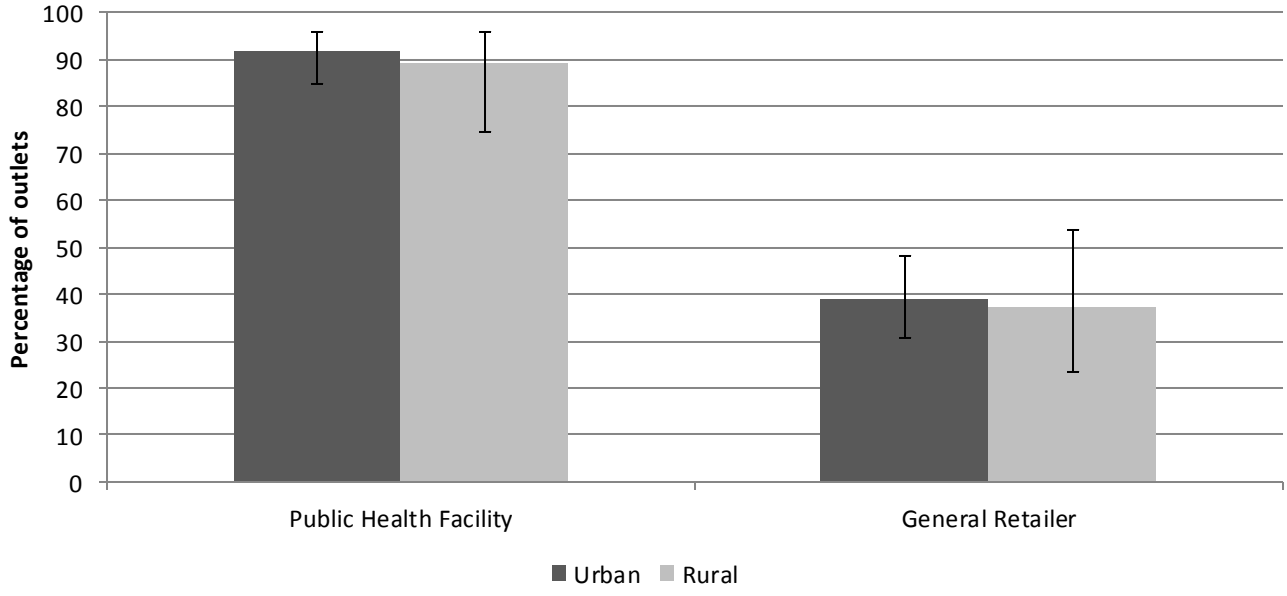
Among all outlets with at least one antimalarial in stock, across survey round



Availability of ACTs among antimalarial-stocking public health facilities has remained high over time (2009, 86%; 2011, 79%; 2014, 90%) and more than 90% of pharmacies were stocking ACTs during each survey round. The majority of antimalarial-stocking community health workers had ACTs in stock in 2011 (100%) and 2014 (94%). In 2009, very few general retailers and itinerant vendors were stocking ACTs. ACT availability increased among general retailers (2011, 19%; 2014, 38%); and remained level among itinerant vendors (2011, 29%; 2014, 29%).

Figure 7. Percentage of antimalarial-stocking outlets with ACT in stock on the day of the survey, 2014, urban/rural

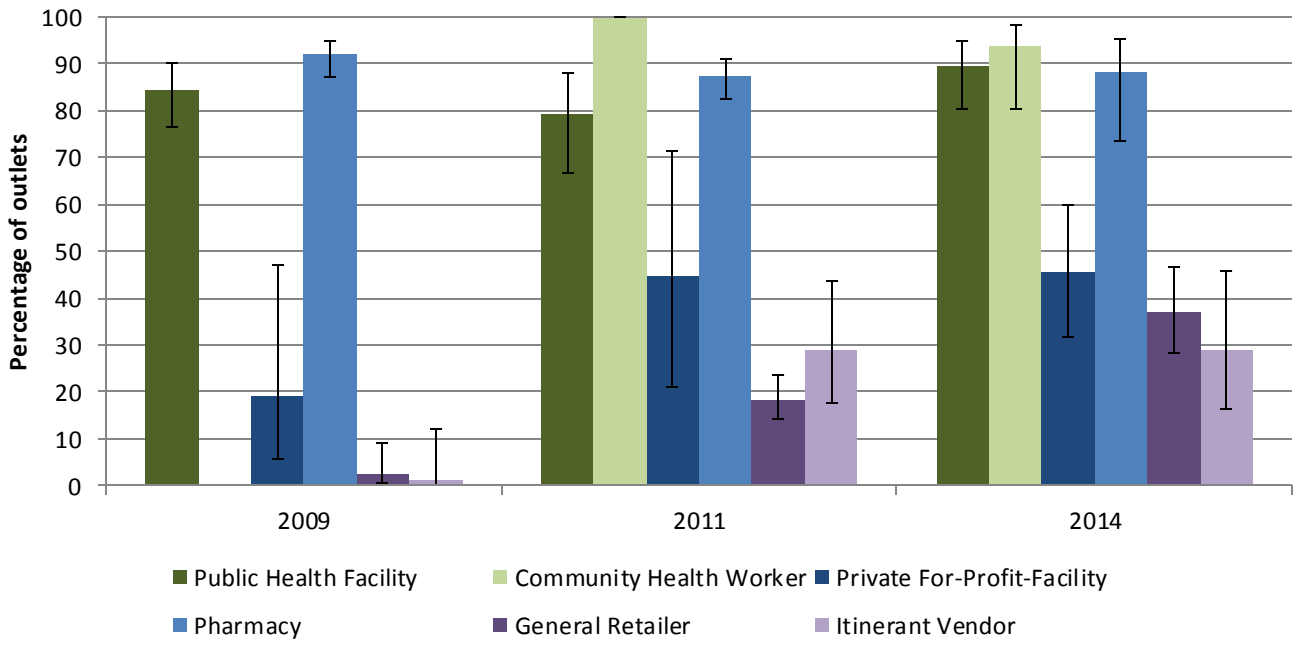
Among all outlets with at least one antimalarial in stock



ACT availability was similar among antimalarial-stocking outlets in urban versus rural areas across outlet type.

Figure 8. Percentage of antimalarial-stocking outlets with quality-assured ACT in stock on the day of the survey, 2009-2014

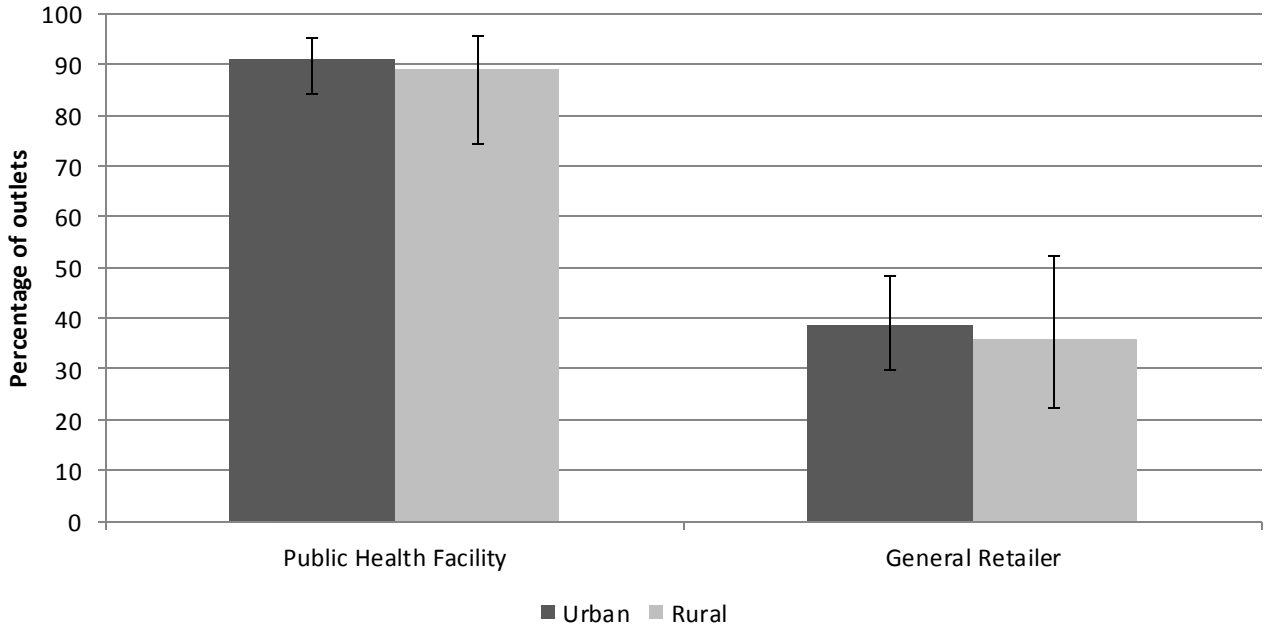
Among all outlets with at least one antimalarial in stock, across survey round



Availability of quality-assured ACT among antimalarial-stocking public health facilities has remained high over time (2009, 84%; 2011, 79%; 2014, 90%) and approximately 90% of pharmacies were stocking ACTs during each survey round (2009, 92%; 2011, 87%; 2014, 88%). The majority of antimalarial-stocking community health workers had ACTs in stock in 2011 (100%) and 2014 (94%). In 2009, very few general retailers and itinerant vendors were stocking QA ACT. QA ACT availability increased among general retailers (2011, 18%; 2014, 37%); and itinerant vendors (2011, 29%; 2014, 29%).

Figure 9. Percentage of antimalarial-stocking outlets with quality-assured ACT in stock on the day of the survey, 2014, urban/rural

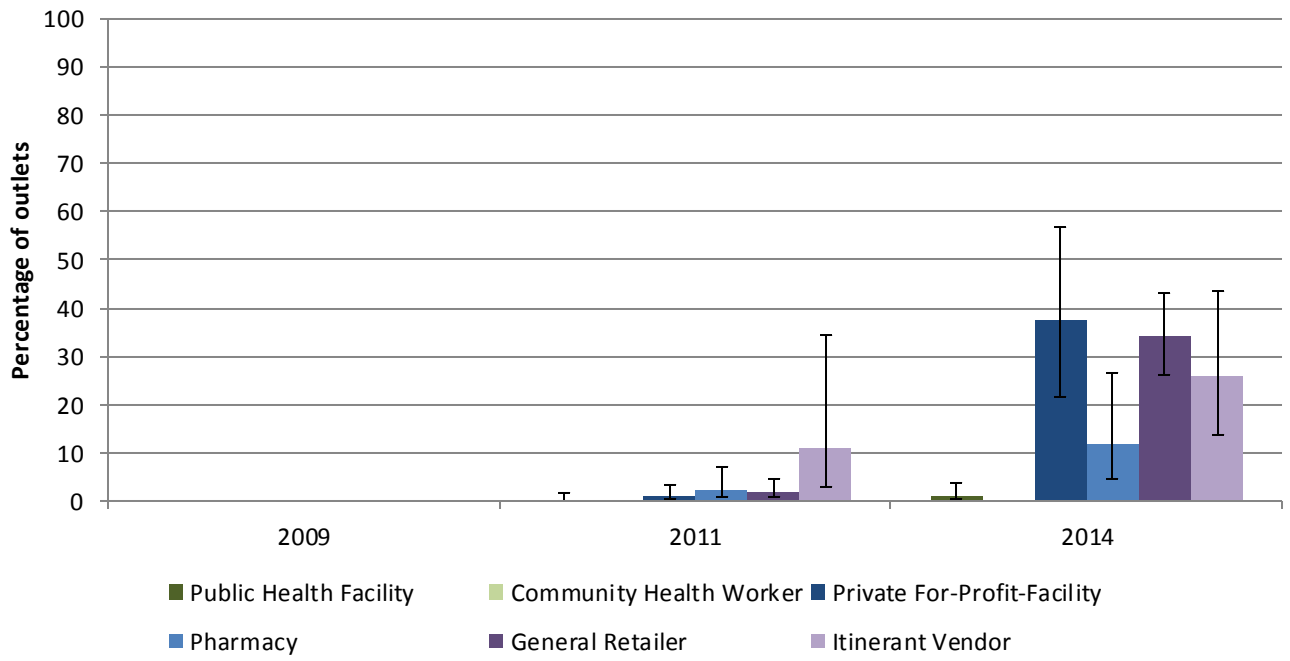
Among all outlets with at least one antimalarial in stock



QA ACT availability was similar among antimalarial-stocking outlets in urban versus rural areas across outlet type.

Figure 10. Percentage of antimalarial-stocking outlets with quality-assured ACT marked with the 'green leaf' logo in stock on the day of the survey, 2009-2014

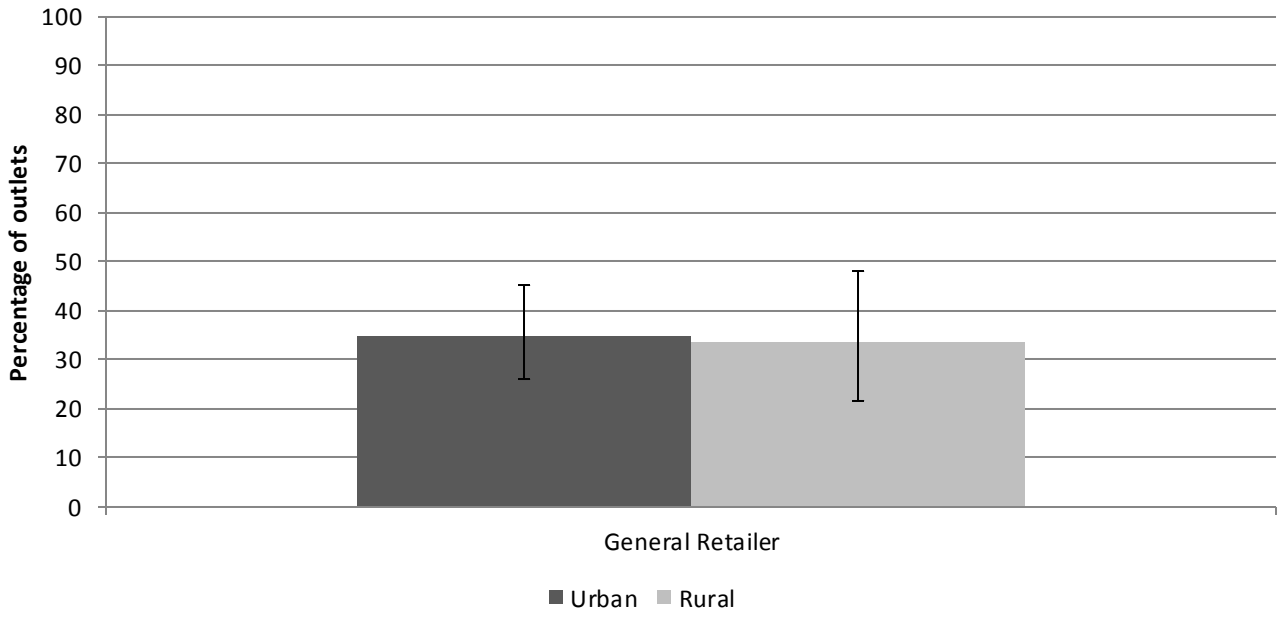
Among all outlets with at least one antimalarial in stock , across survey round



The 'green leaf' logo indicates that a quality-assured ACT was subsidized through the Global Fund co-payment mechanism. Benin was not part of the initial pilot of this mechanism under the Affordable Medicines Facility, malaria (AMFm) pilot from 2010-2011, and has not yet accessed the co-payment mechanism under the Global Fund new funding model. However, other countries in the region were part of the AMFm including Ghana and Nigeria. In 2011, QA ACTs with the 'green leaf' logo were found among 11% of itinerant vendors and 1-2% of other private sector outlet types. In 2014, approximately one-third of antimalarial-stocking private-for-profit facilities (37%), drug stores (30%), general retailers (34%), and itinerant vendors (26%) were stocking QA ACT with the 'green leaf' logo.

Figure 11. Percentage of antimalarial-stocking outlets with quality-assured ACT marked with the 'green leaf' in stock on the day of the survey, 2014, urban/rural

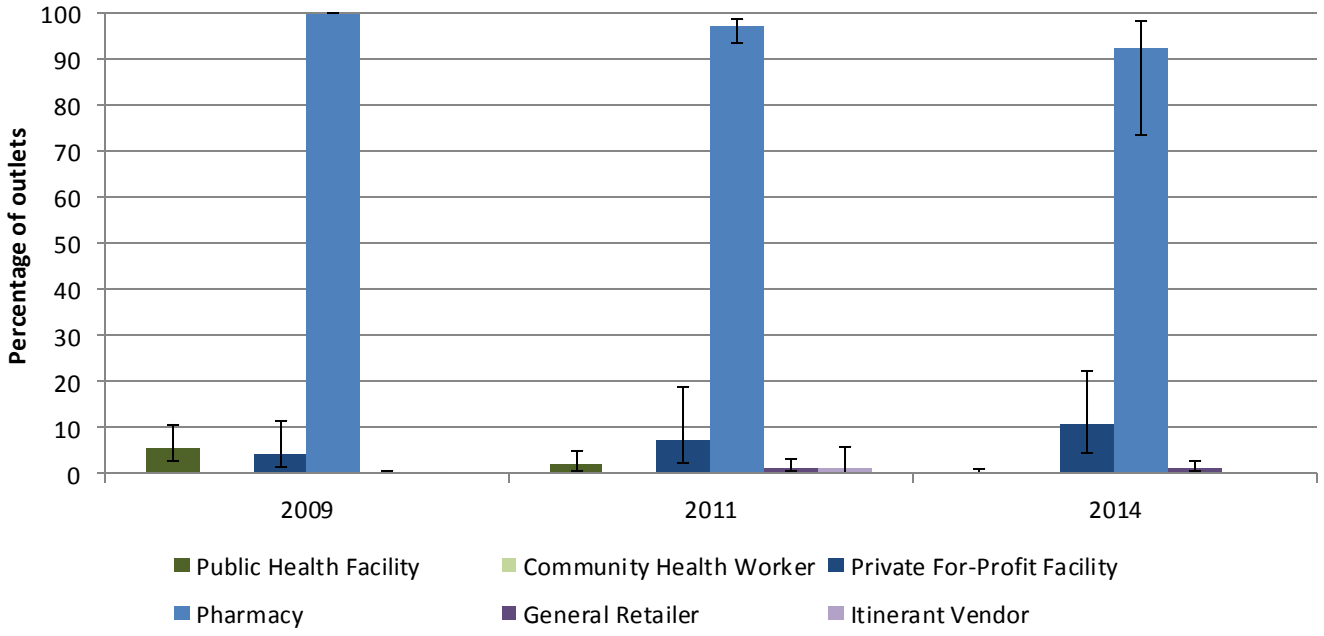
Among all outlets with at least one antimalarial in stock



QA ACT with the 'green leaf' logo availability was similar among antimalarial-stocking general retailers in urban versus rural areas.

Figure 12. Percentage of antimalarial-stocking outlets with non-quality-assured ACT in stock on the day of the survey, 2009-2014

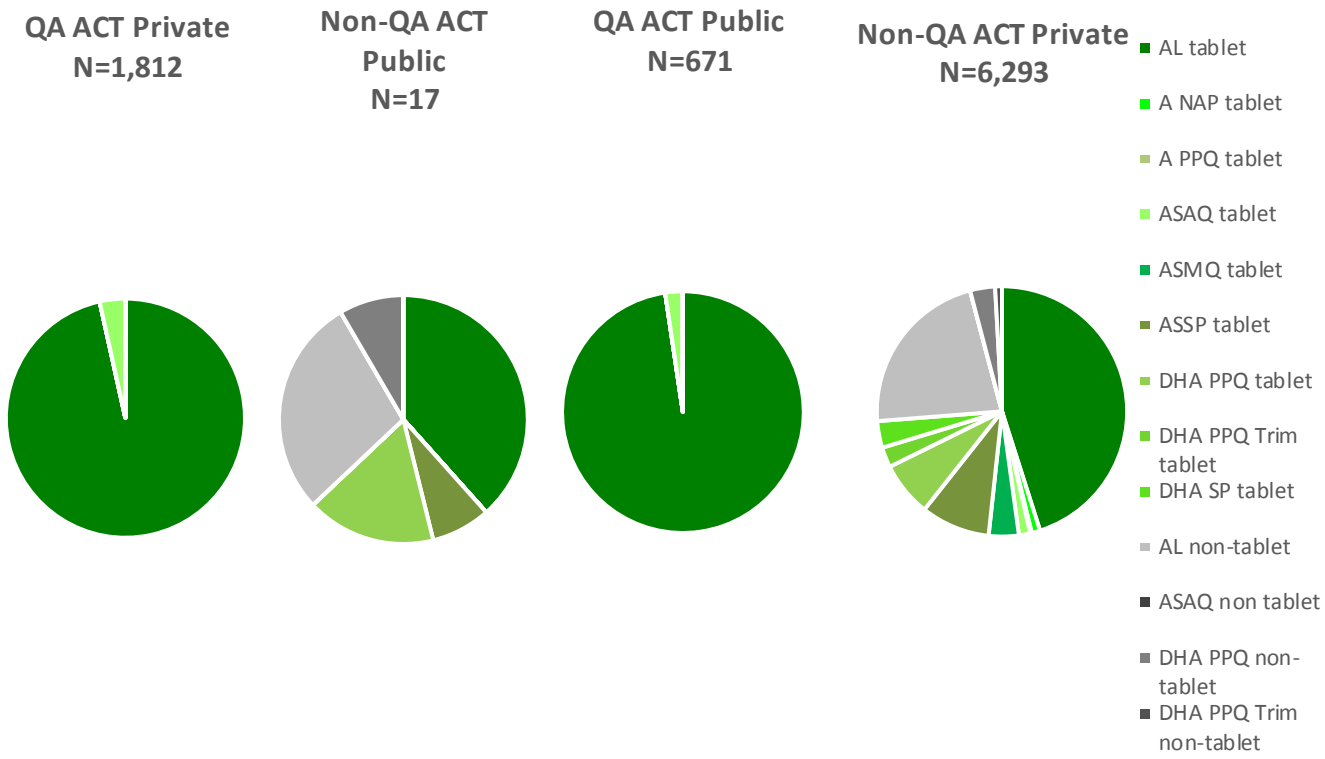
Among all outlets with at least one antimalarial in stock, across survey round



The majority of antimalarial-stocking pharmacies had non-quality-assured ACT in stock across survey rounds (2009, 100%; 2011, 97%; 2014, 93%). Non- QA ACT was available among half of antimalarial-stocking drug stores in 2014. Non-QA ACT availability was very low among all other outlet types.

Figure 13. Types of quality-assured ACT and non-quality-assured ACT found among public and private sector outlets, 2014

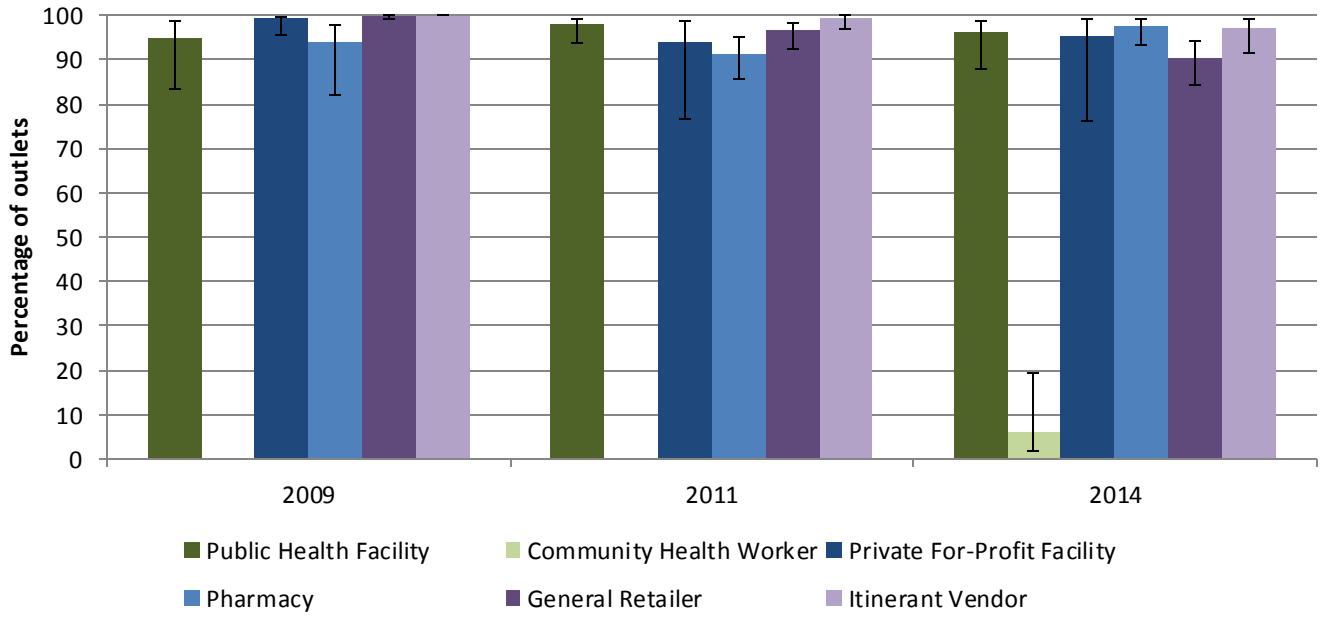
Among all AM medicines audited, across sector



Nearly all quality-assured ACT products audited in the public and private sectors were Al tablets (public, 98%; private, 97%). Only 17 non-quality-assured ACTs were audited in the public sector and these were primarily AL tablets and suspensions. Several thousand non-QA ACTs were audited in the private sector. Nearly half of these were non-QA AL tablets (45%) and nearly one-quarter were AL suspensions (22%).

Figure 14. Percentage of antimalarial-stocking outlets with non-artemisinin therapy in stock on the day of the survey, 2009-2014

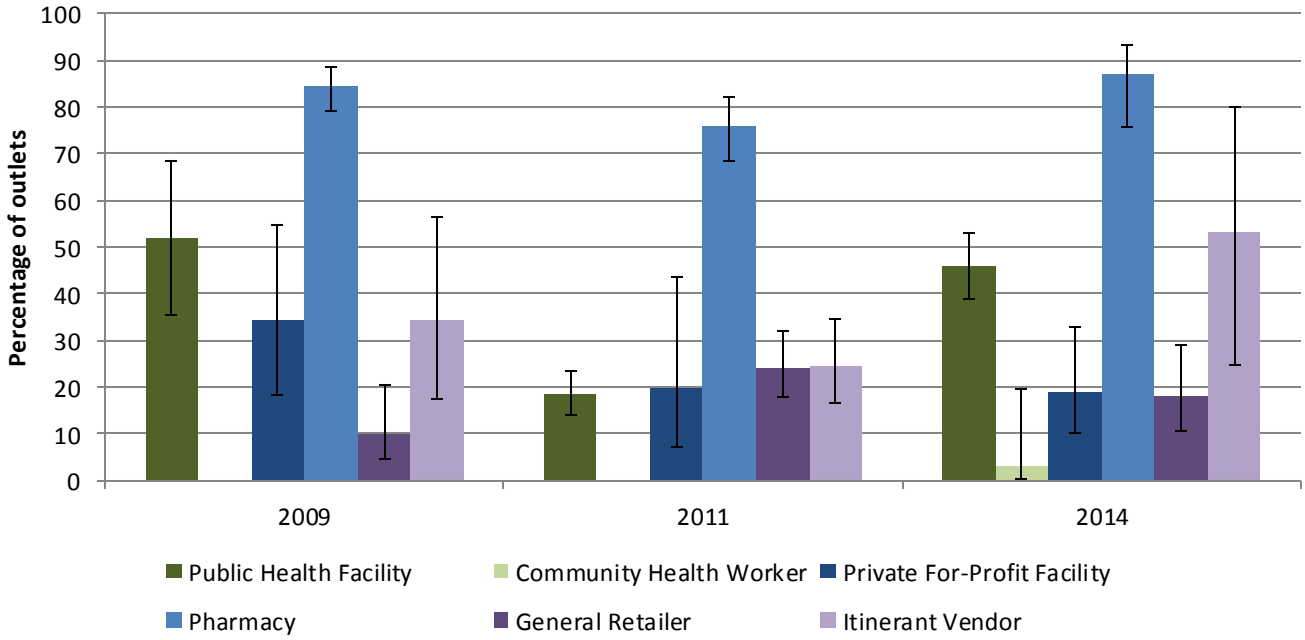
Among all outlets with at least one antimalarial in stock, across survey round



The availability of non-artemisinin therapies remained high over time among all outlet types (>90%) with the exception of community health workers (6% in 2014).

Figure 15. Percentage of antimalarial-stocking outlets with SP in stock on the day of the survey, 2009-2014

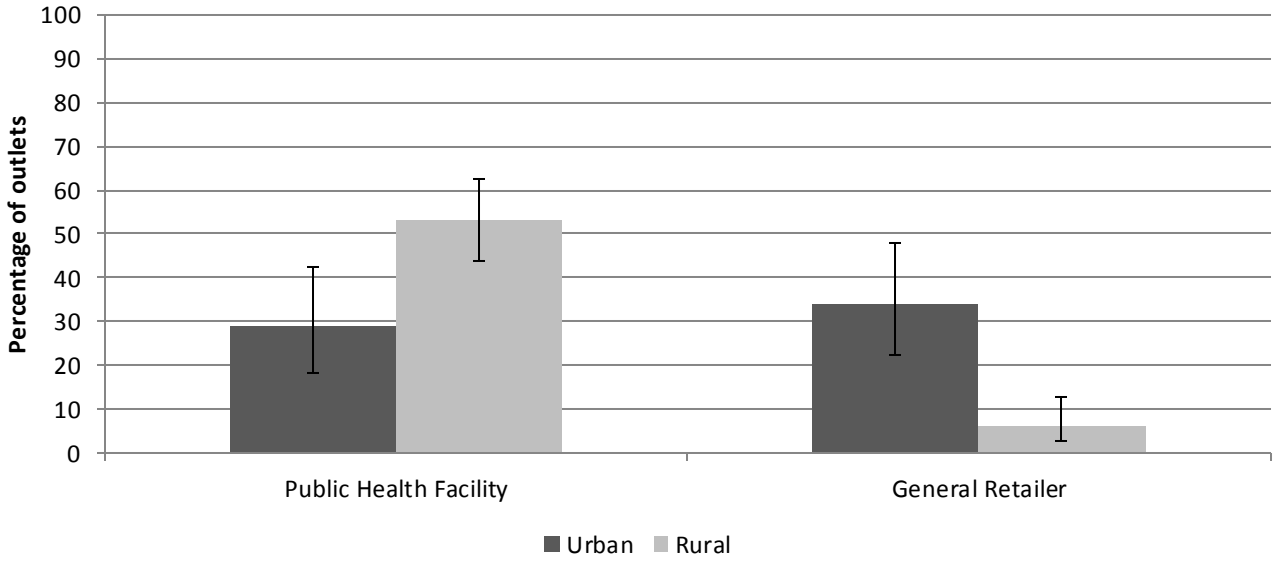
Among all outlets with at least one antimalarial in stock, across survey round



SP is used for intermittent preventive treatment of malaria in pregnancy and should be dispensed during antenatal clinic visits. SP availability among antimalarial-stocking public health facilities declined between 2009 (52%) and 2011 (18%), and fewer than half of public health facilities were stocking SP in 2014 (46%). Availability of SP in 2014 among antimalarial-stocking outlets was relatively higher among certain private sector outlet types including pharmacies (87%), drug stores (56%) and itinerant vendors (53%), and approximately one in five general retailers were stocking SP (18%).

Figure 16. Percentage of antimalarial-stocking outlets with SP in stock on the day of the survey, 2014, urban/rural

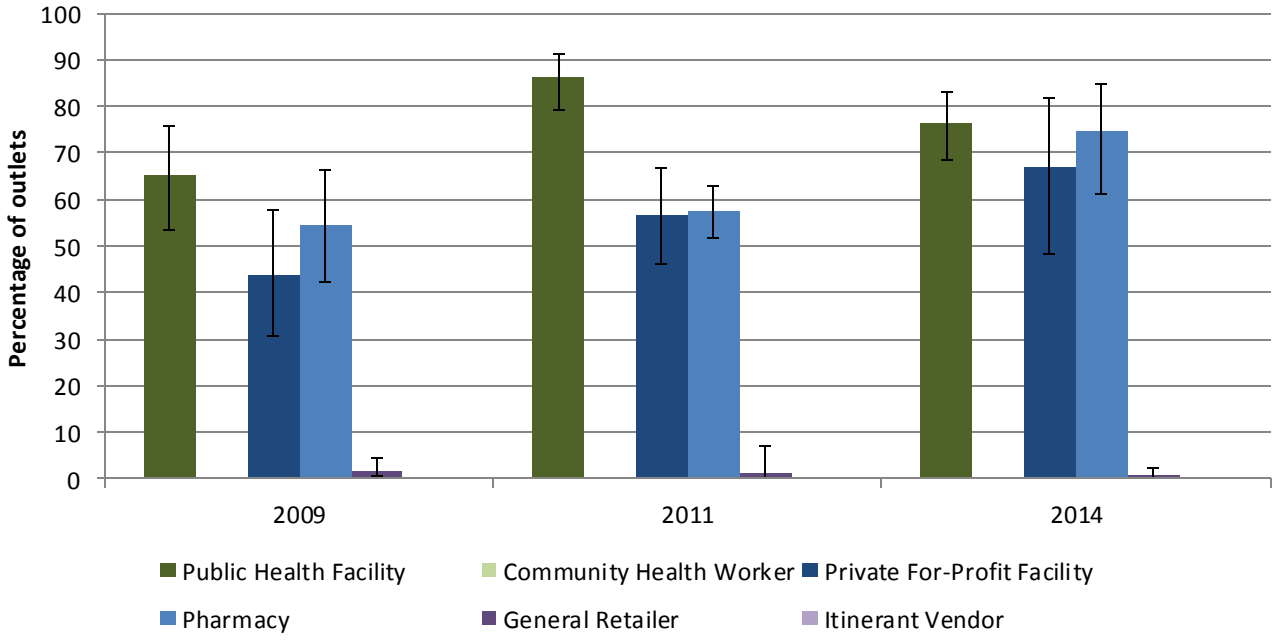
Among all outlets with at least one antimalarial in stock



Availability of SP among antimalarial-stocking public health facilities was higher in rural (53%) versus urban areas (29%). However among general retailers, SP was more commonly available in urban (34%) verses rural areas (6%).

Figure 17. Percentage of antimalarial-stocking outlets with any severe malaria treatment in stock on the day of the survey, 2009-2014

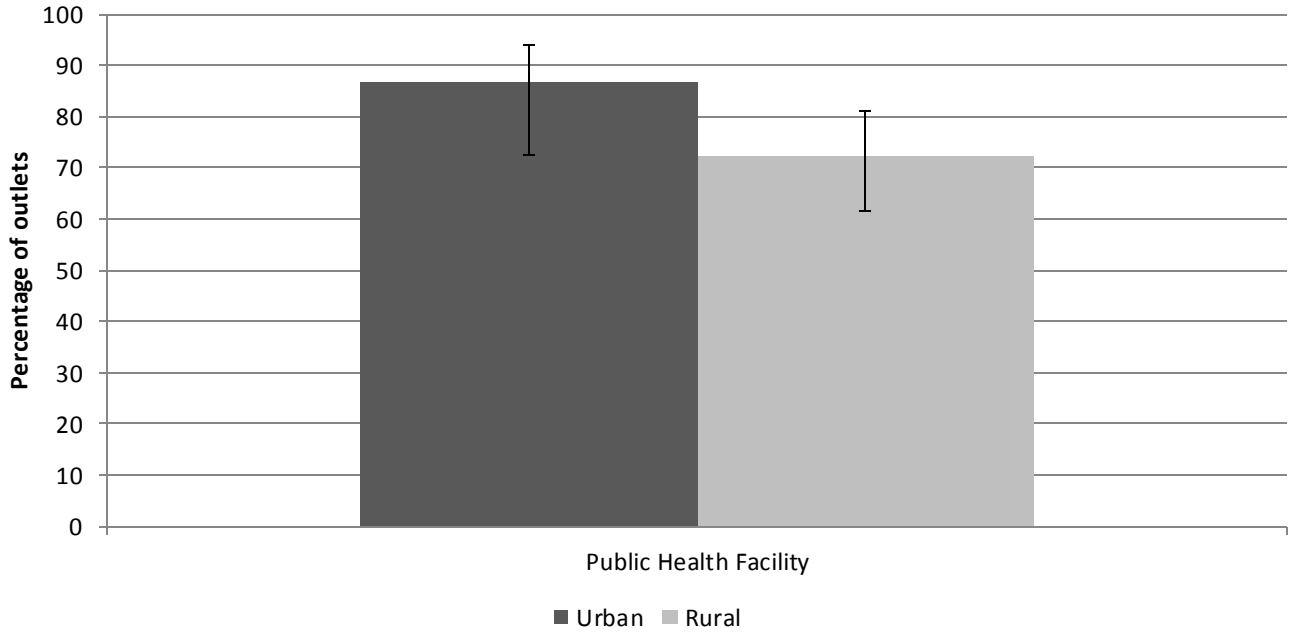
Among all outlets with at least one antimalarial in stock, across survey round



Treatments for severe malaria include artesunate IV/IM, quinine IV/IM, artemether IV/IM, artemotil IV/IM, and artesunate suppositories. Severe malaria treatment availability among antimalarial-stocking public health facilities has remained higher than 65% during each survey round and was 77% in 2014. Data trends suggest increased availability among private for-profit facilities to 67% in 2014, and pharmacies to 75% in 2014.

Figure 18. Percentage of antimalarial-stocking outlets with any severe malaria treatment in stock on the day of the survey, 2014, urban/rural

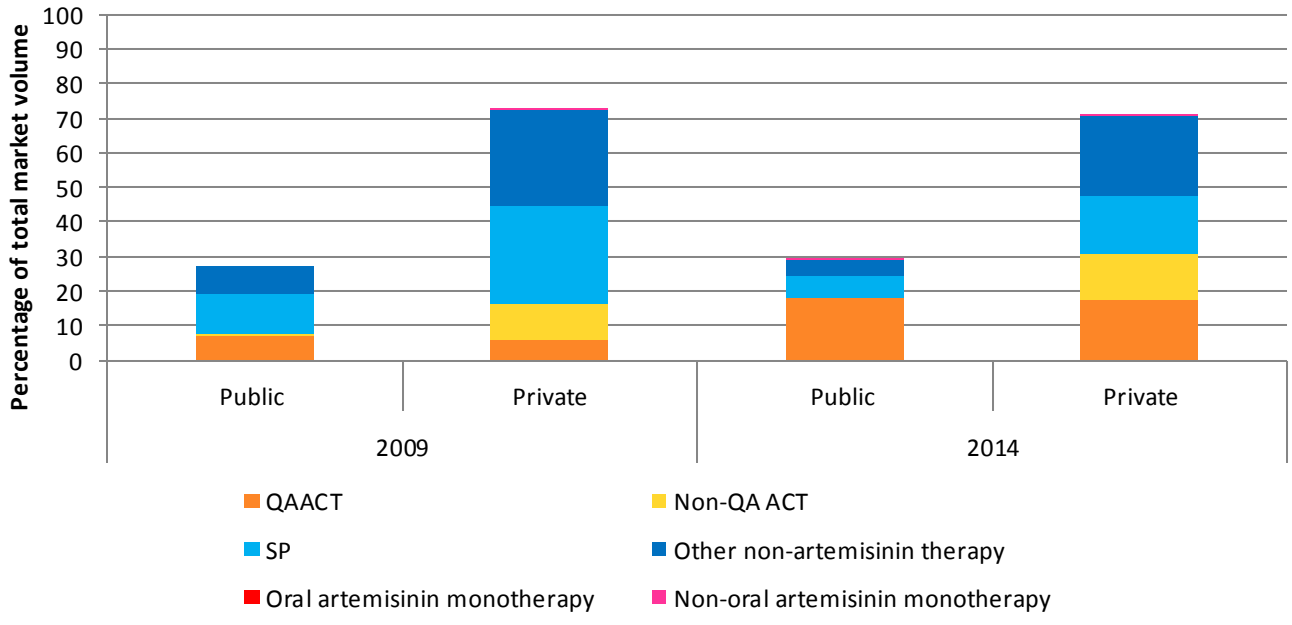
Among all outlets with at least one antimalarial in stock



Data trends suggestion higher availability of severe malaria treatment among urban (87%) versus rural (72%) public health facilities.

Figure 19. Antimalarial market share, 2009-2014

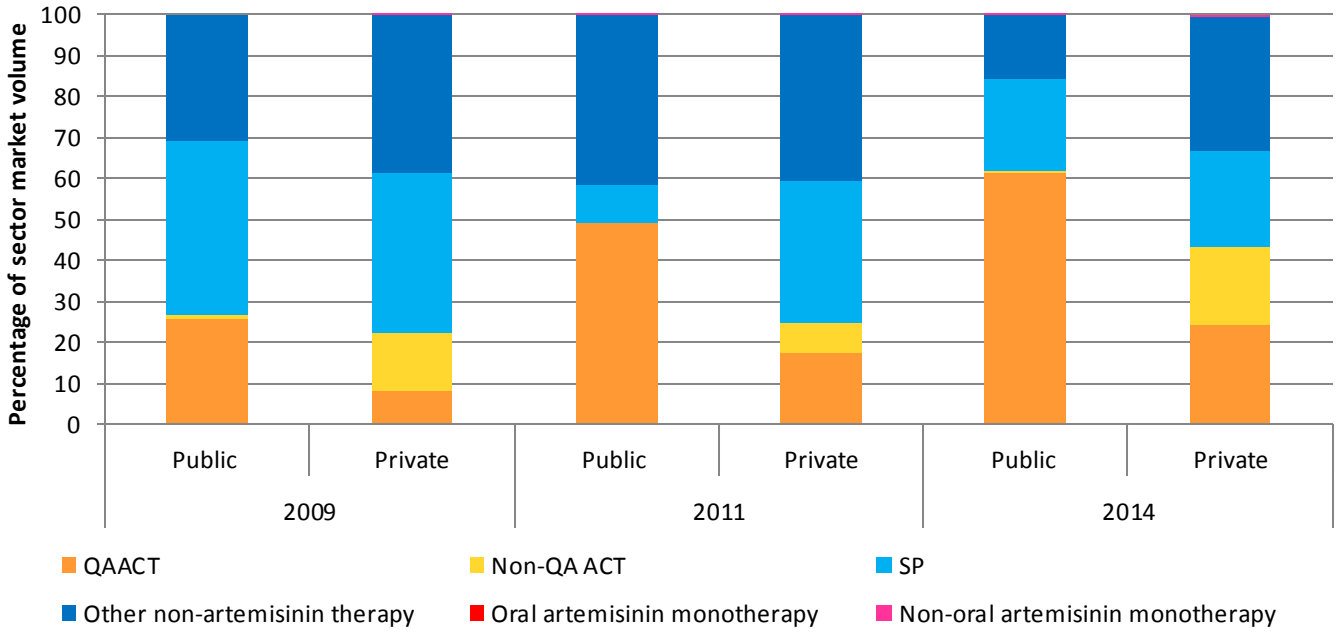
Relative market volume (sale/distribution) of antimalarial AETDs, by sector and antimalarial class, across survey round



The antimalarial market share for the private sector has remained similar between 2009 (73%) and 2014 (71%). QA ACT market share has increased from 13% in 2009 to 35% in 2014. SP and other non-artemisinin therapies accounted for 76% of all antimalarials distributed in 2009, and non-artemisinin market share decreased to 51% in 2014.

Figure 20. Antimalarial market share within sector, 2009-2014

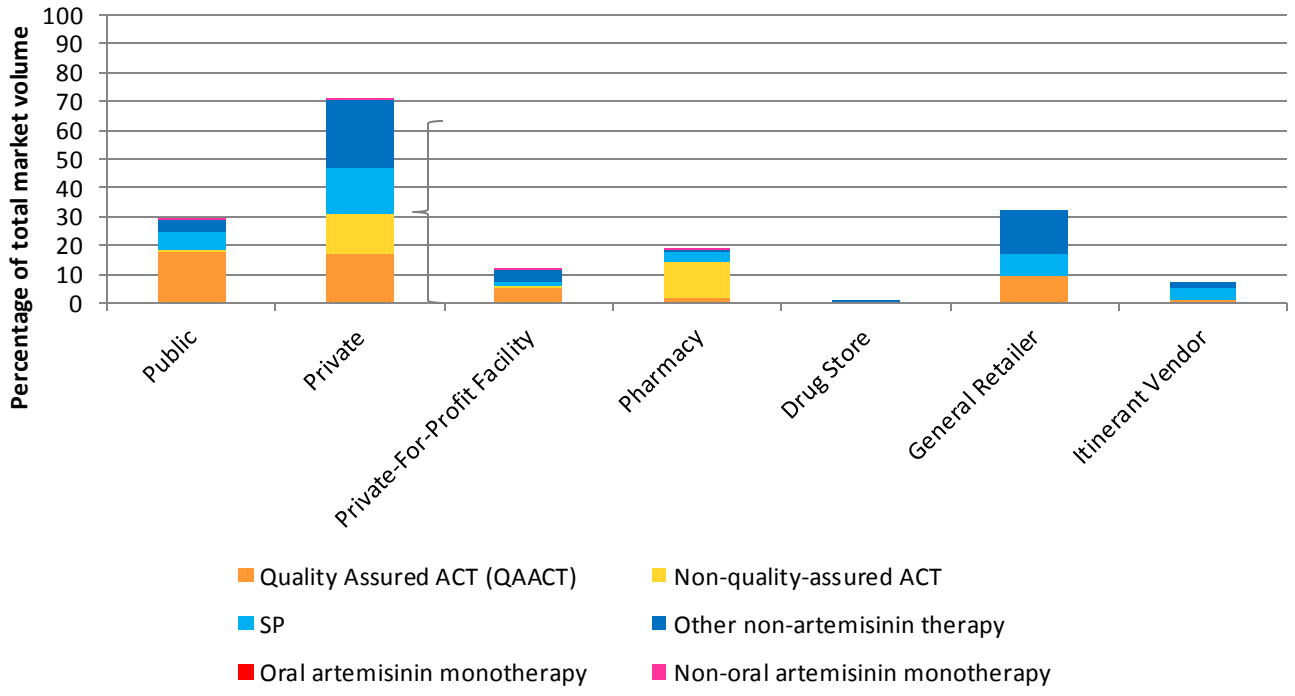
Relative market volume (sale/distribution) of antimalarial AETDs, within sector, by antimalarial class, across survey round



Relative distribution of QA ACT has increased over time in the public sector from 26% in 2009, 49% in 2011, and 61% in 2014. In 2014, 15% of all antimalarials distributed by the public sector were non-artemisinin therapy, quinine, and SP accounted for 22% of all public sector distribution. QA ACT market share has increased in the private sector from 8% in 2009 to 18% in 2011 and 24 % in 2014. Market share for non-quality-assured ACTs has increased in the private sector and in 2014, 19% of antimalarials distributed were non-QA ACT. Non-artemisinin therapies accounted for more than half (56%) of all antimalarials distributed by the private sector in 2014, including SP (23%) as well as other non-artemisinin therapies (33%) including quinine and chloroquine.

Figure 21. Antimalarial market share, 2014

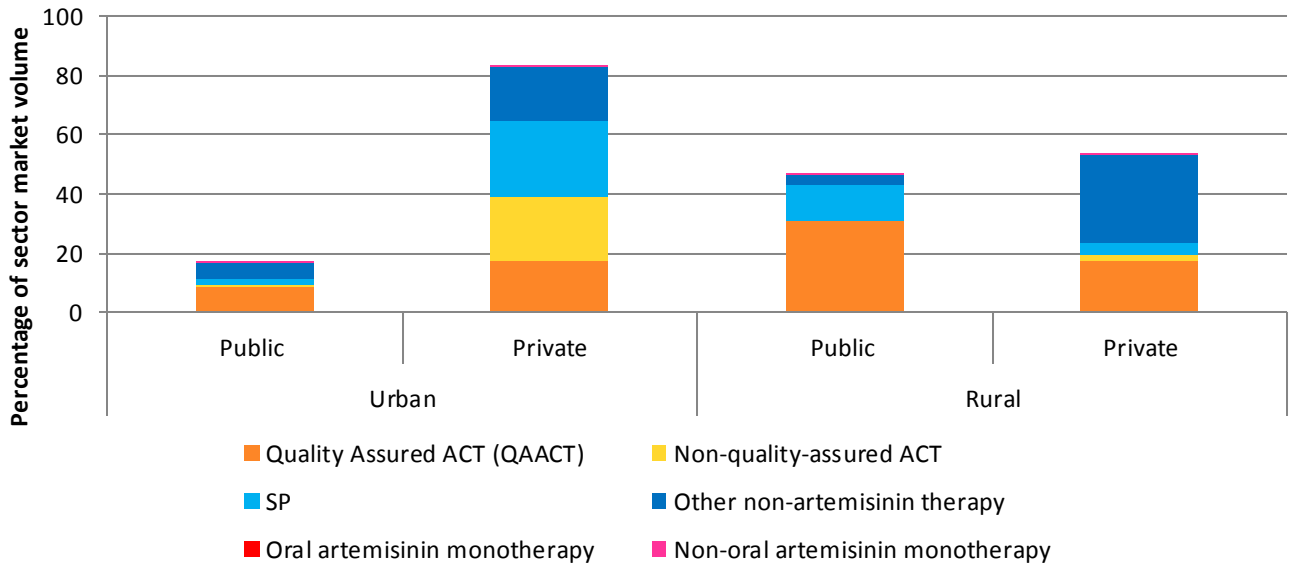
Relative market volume (sale/distribution) of antimalarial AETDs, by outlet type and antimalarial class



Private sector market share in 2014 (71%) is comprised of relative market share for private-for-profit health facilities (12%), pharmacies (19%), general retailers (32%) and itinerant vendors (8%). Drug stores accounted for less than 1% of the total antimalarial market share in 2014. The non-QA ACT distributed by the private sector is distributed primarily by pharmacies. SP and other non-artemisinin therapies distributed by the private sector are distributed primarily by general retailers as well as itinerant vendors. QA ACT distributed by the private sector is distributed primarily by general retailers and private for-profit facilities.

Figure 22. Antimalarial market share, 2014, urban/rural

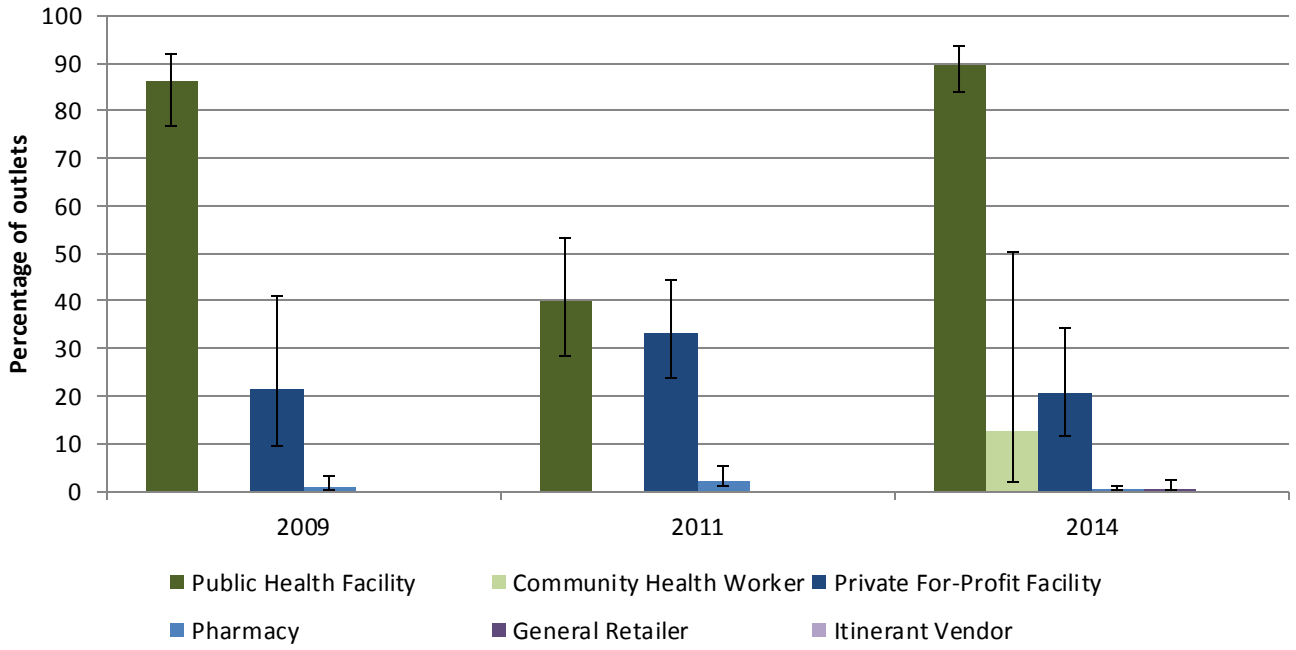
Relative market volume (sale/distribution) of antimalarial AETDs, by sector and antimalarial class



2014 private sector market share was 83% in urban areas as compared with 53% in rural areas. QA ACT market share was higher in rural areas (48%) as compared with urban areas (26%). Non-QA ACT distributed in Benin in 2014 was distributed primarily in urban areas and accounted for nearly one-quarter (22%) of all ACTs distributed in urban areas as compared with 2% in rural areas. Distribution of non-artemisinin therapy was common in urban and rural areas. In urban areas, SP was distributed primarily by the private sector and accounted for 28% of the total market share while other non-artemisinin therapies accounted for 23% of the total market share. In rural areas, SP was distributed primarily by public health facilities and accounted for 16% of the total market share and other non-artemisinin therapies accounted for 34% of all antimalarials distributed.

Figure 23. Percentage of antimalarial-stocking outlets with malaria blood testing available, 2009-2014

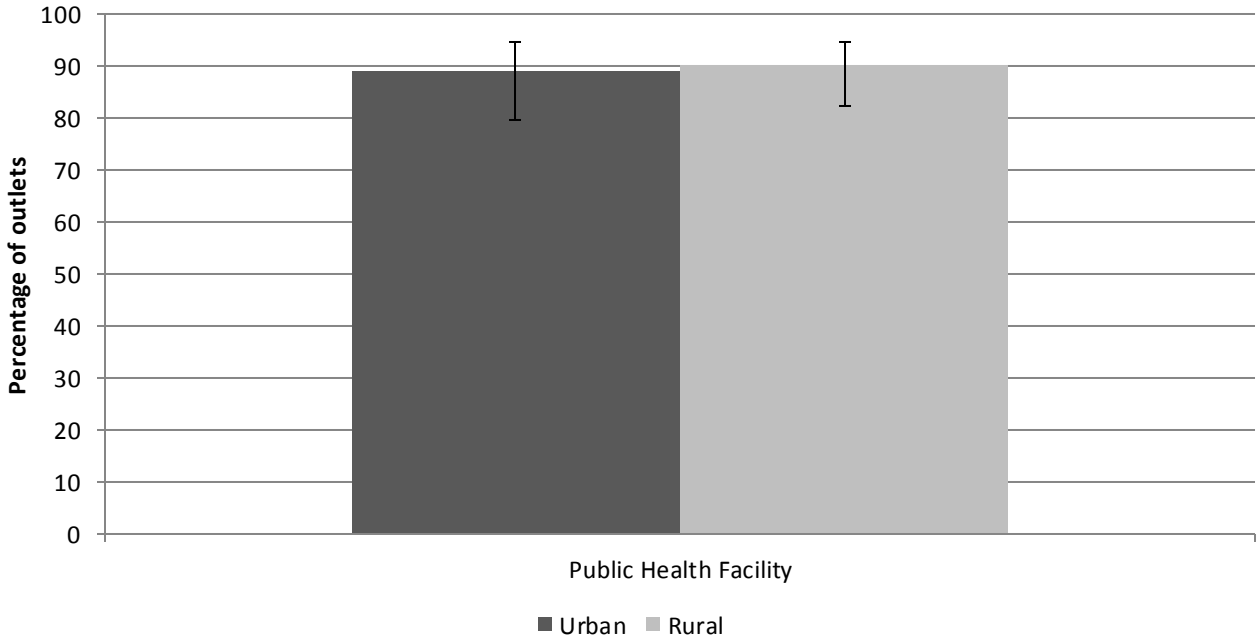
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months, across survey round



90% of antimalarial-stocking public health facilities has malaria blood testing (microscopy or mRDT) available in 2014. Availability has remained much lower among all other outlet types.

Figure 24. Percentage of antimalarial-stocking outlets with malaria blood testing available, 2014, urban/rural

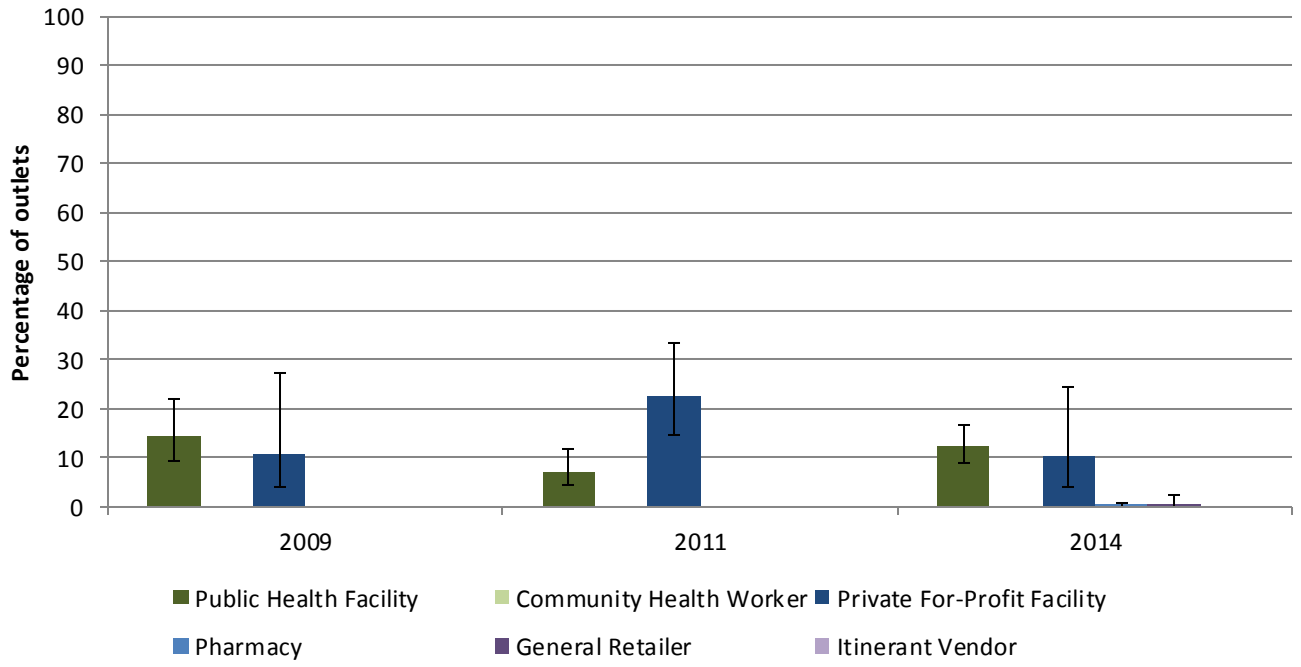
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months



Availability of malaria blood testing (microscopy or mRDT) was similar among public health facilities in urban versus rural areas.

Figure 25. Percentage of antimalarial-stocking outlets with malaria microscopy available, 2009-2014

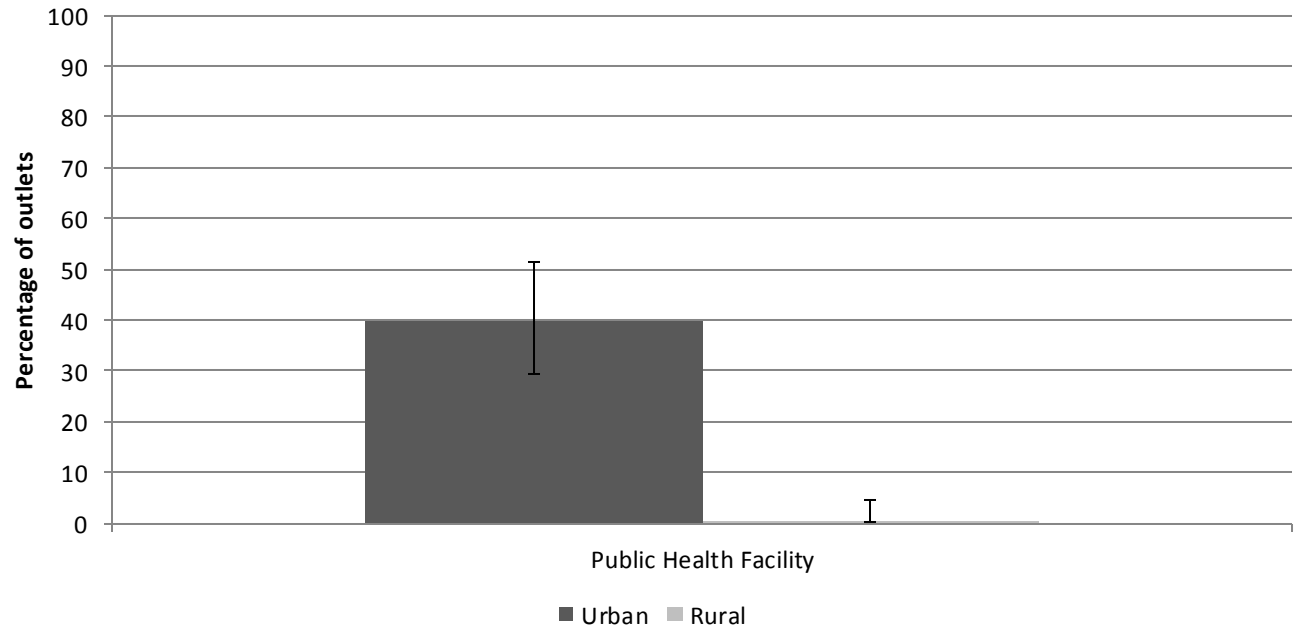
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months, across survey round



Availability of malaria microscopy among antimalarial-stocking outlets has remained low in Benin over time and in 2014, approximately one in 10 public health facilities (12%) and private for-profit facilities (10%) had malaria microscopy available.

Figure 26. Percentage of antimalarial-stocking outlets with malaria microscopy available, 2014, urban/rural

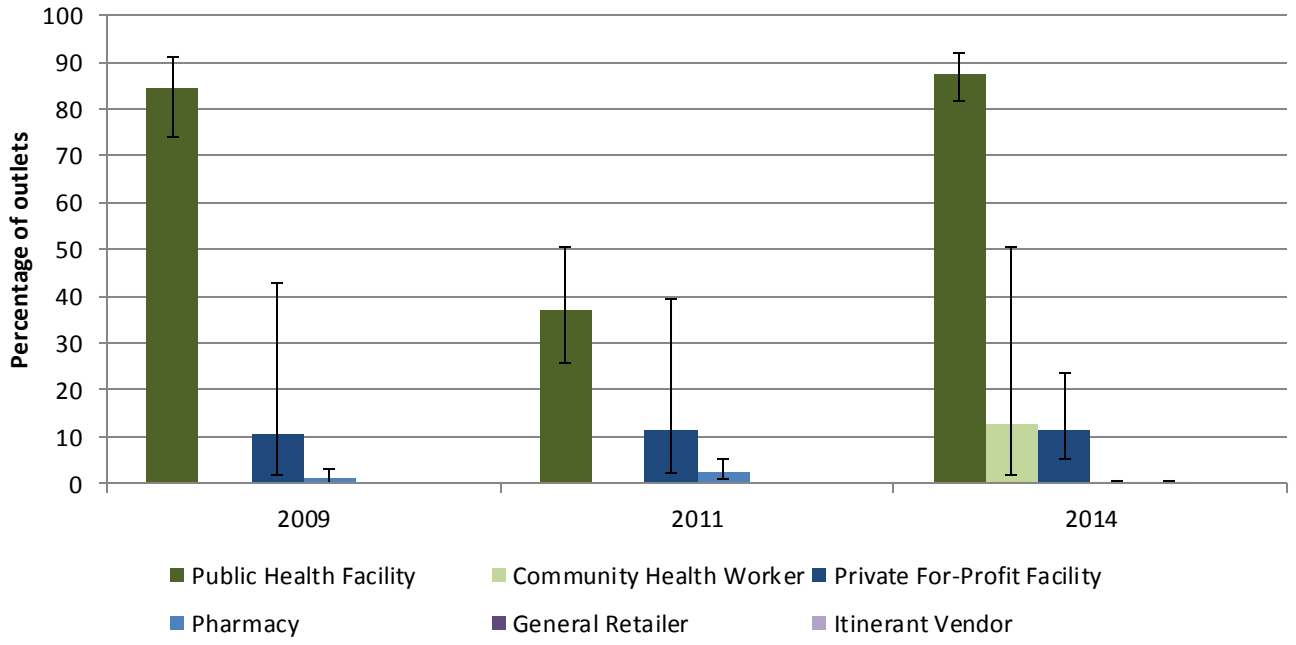
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months



Malaria microscopy was available among 40% of urban public health facilities as compared with 1% of rural facilities.

Figure 27. Percentage of antimalarial-stocking outlets with malaria RDTs, 2009-2014

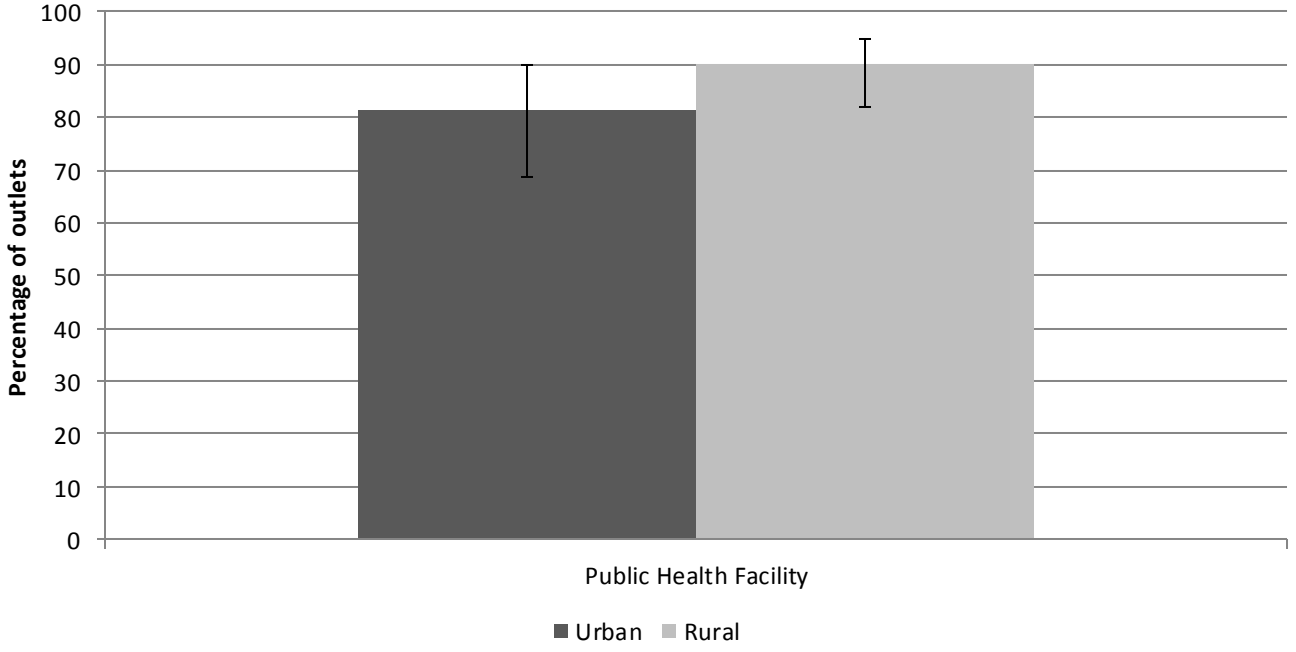
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months, across survey round



Malaria rapid diagnostic tests were available among 87% of antimalarial-stocking public health facilities in 2014 as compared with 37% in 2011. mRDTs were generally not available among other outlet types with the exception of low availability (12%) among private for-profit facilities. 2014 results show initial roll out of mRDTs among antimalarial-stocking community health workers (13%).

Figure 28. Percentage of antimalarial-stocking outlets with malaria RDTs, 2014, urban/rural

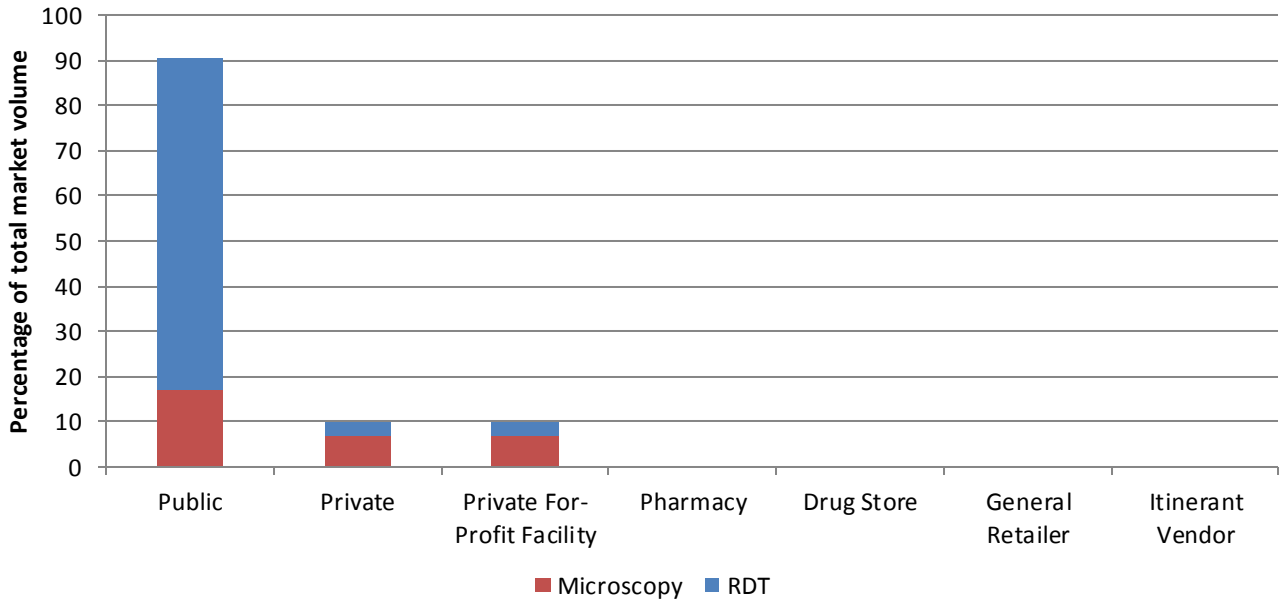
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months, across urban and rural zones



Data trends suggest higher mRDT availability among public health facilities in rural (90%) versus urban areas (82%).

Figure 29. Malaria blood testing market share, 2014

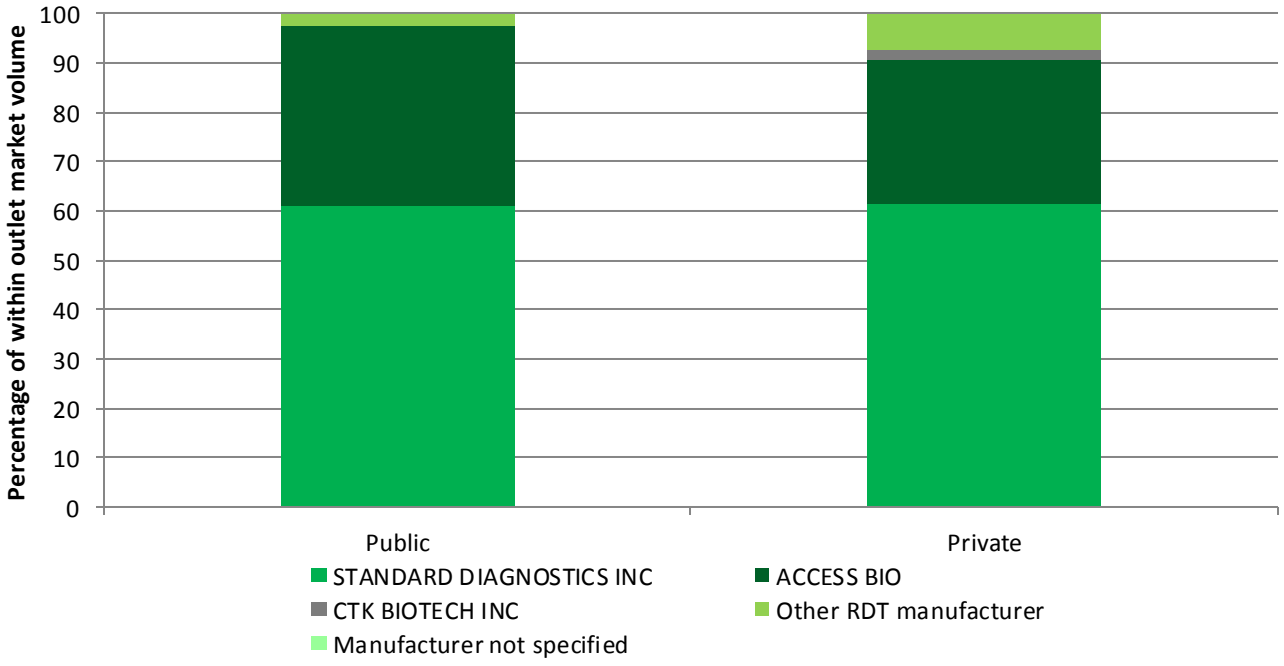
Relative market volume (sale/distribution) of malaria blood testing using RDTs and microscopy, by outlet type and type of test



Ninety percent of all malaria tests were performed in the public sector. The majority of malaria testing in Benin was conducted using mRDTs (77%). Within the private sector, malaria blood testing was only performed by private for-profit facilities (10% of the total market share), including testing by microscopy (7%) and mRDTs (3%).

Figure 30. Malaria RDT market share (by manufacturer) across sector, 2014 market share,

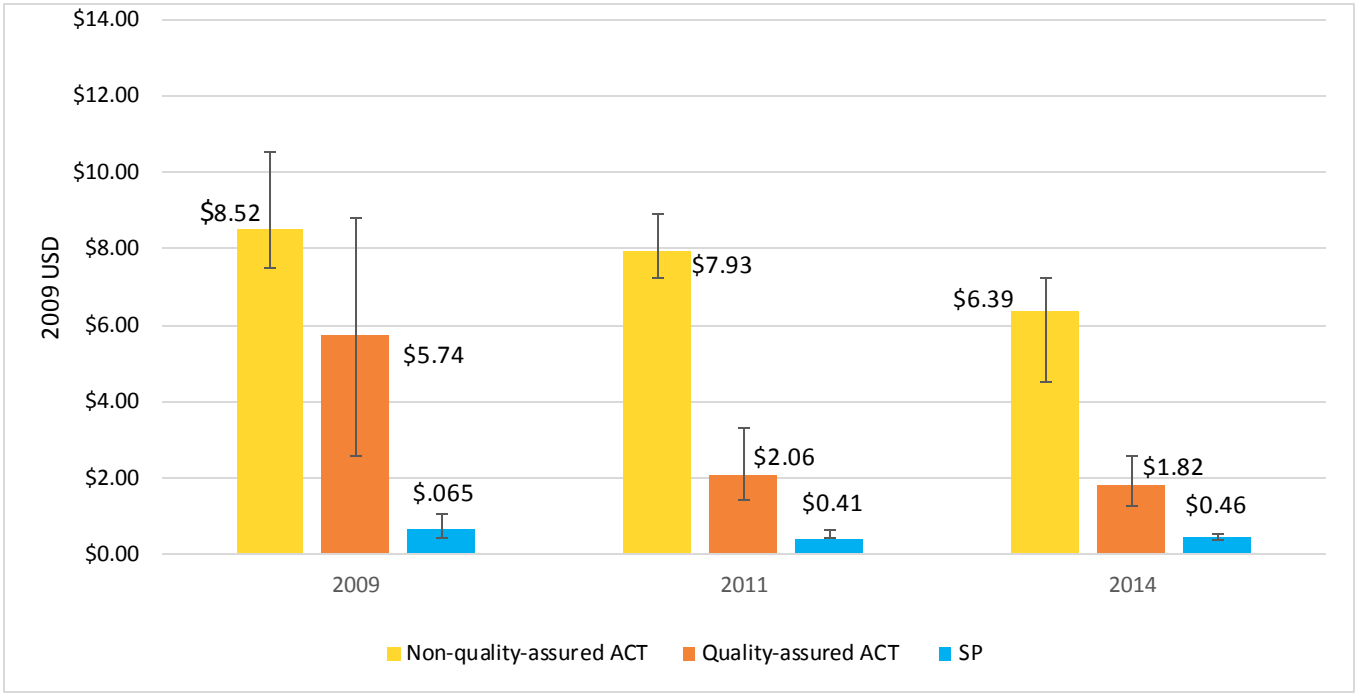
Relative market volume (sale/distribution) of malaria RDTs by manufacturer, within the public sector and private sector outlet types,



In both public and private sectors, 61% of all mRDT tests performed were test kits manufactured by Standard Diagnostics Inc. Access Bio test kits accounted for about one-third of tests performed in the public (36%) and private sector (29%).

Figure 31. Private sector median price of antimalarial adult equivalent treatment dosages (AETD), 2009-2014

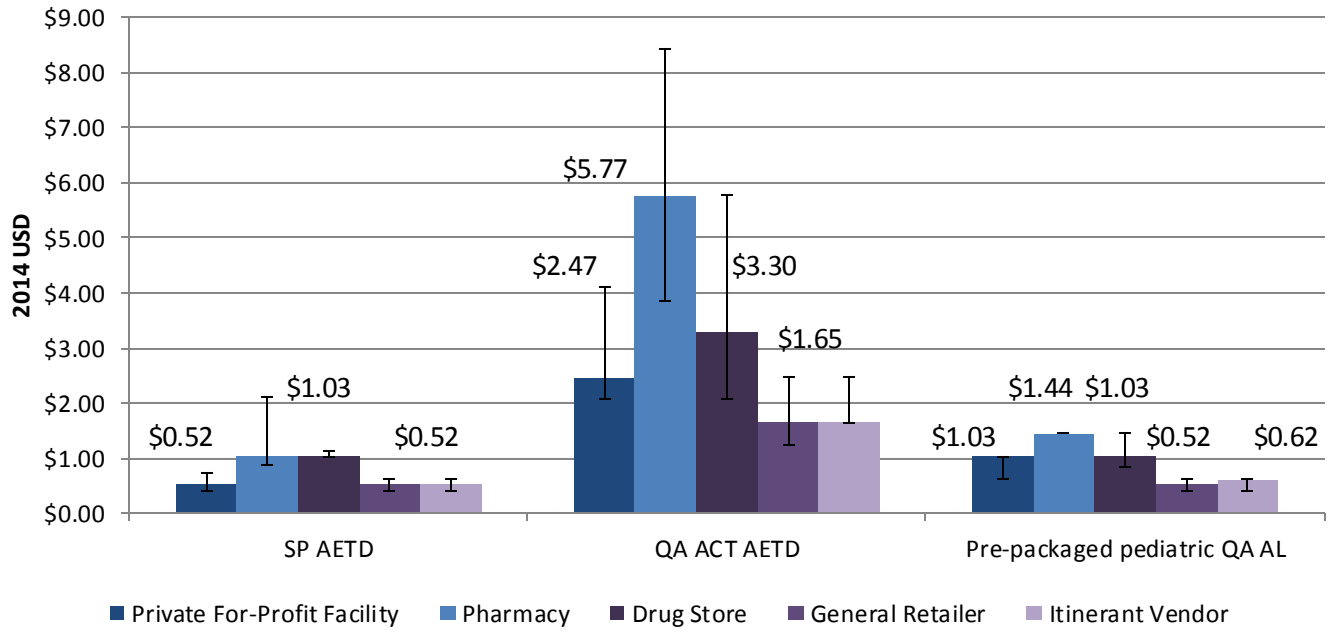
Among all SP and quality-assured ACT (tablet formulation only) available in the private sector, in 2009 US dollars to account for inflation, across survey round



The median private sector price for one adult equivalent treatment dose (AETD) of QA ACT decreased between 2009 and 2014, however the price of QA ACT remained 4 times more expensive than SP. The price of non-QA ACT has declined over time but remained nearly 4 times more expensive than QA ACT in 2014.

Figure 32. Private sector median price of SP and quality-assured ACT adult equivalent treatment dosages (AETD) and pre-packaged pediatric quality-assured AL, 2014

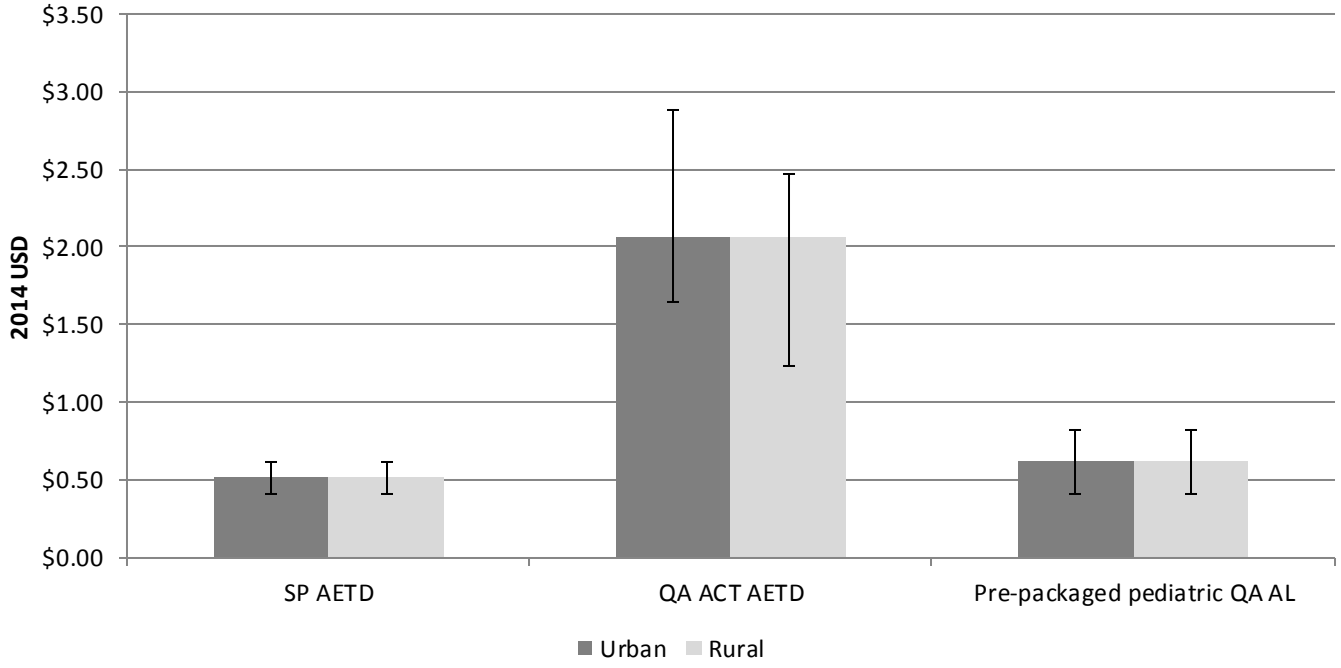
Among all SP, QA ACT, and pre-packaged pediatric (treatment for a 2 year old child) QA AL (tablet formulation only) available in the private sector, in 2014 US Dollars



Antimalarial medicines tend to be more expensive in pharmacies and drug stores and less expensive among general retailers and itinerant vendors. The median price of one QA ACT AETD in 2014 was 3.5 times more expensive in pharmacies as compared with general retailers and itinerant vendors. SP was 2 times more expensive in pharmacies and drug stores as compared with general retailers and itinerant vendors.

Figure 33. Private sector median price of SP and quality-assured ACT adult equivalent treatment dosages (AETD) and pre-packaged pediatric quality-assured AL, 2014, urban/rural

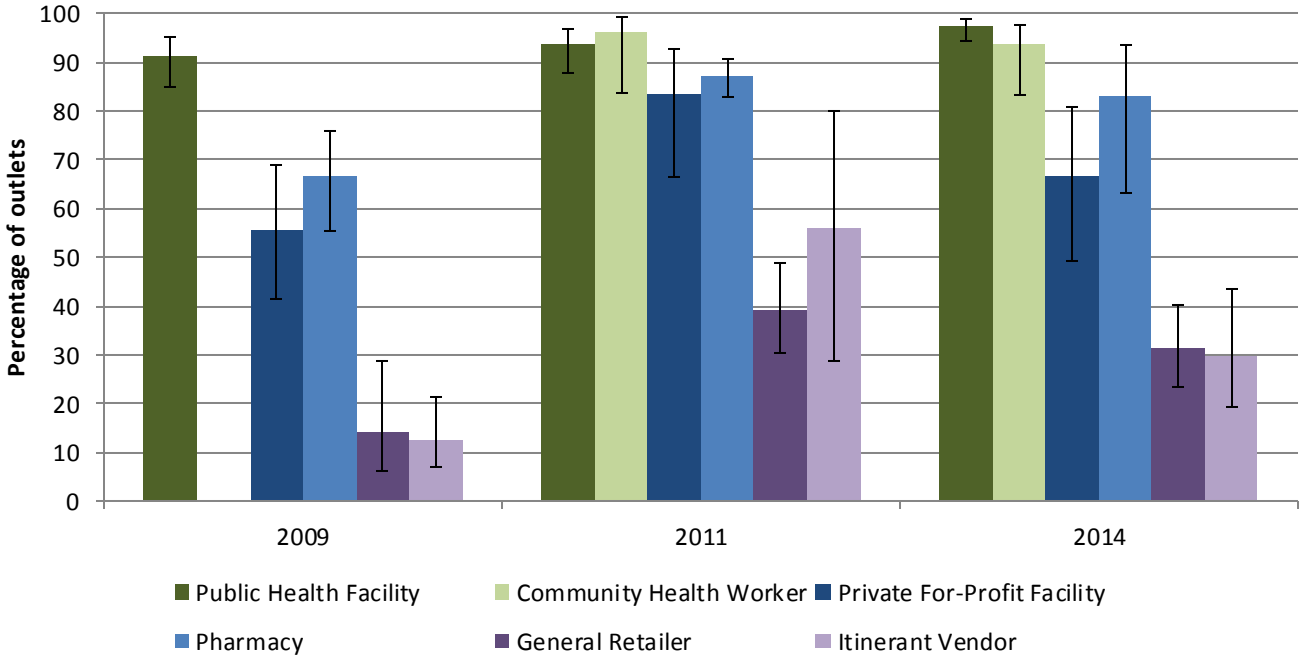
Among all SP, QA ACT, and pre-packaged pediatric (treatment for a 2 year old child) QA AL (tablet formulation only) available in the private sector, in 2014 US Dollars



The median private sector price of antimalarial medicines in urban versus rural areas was similar for SP and QA ACT.

Figure 34. Percentage of providers who state the first-line treatment for uncomplicated malaria, 2009-2014

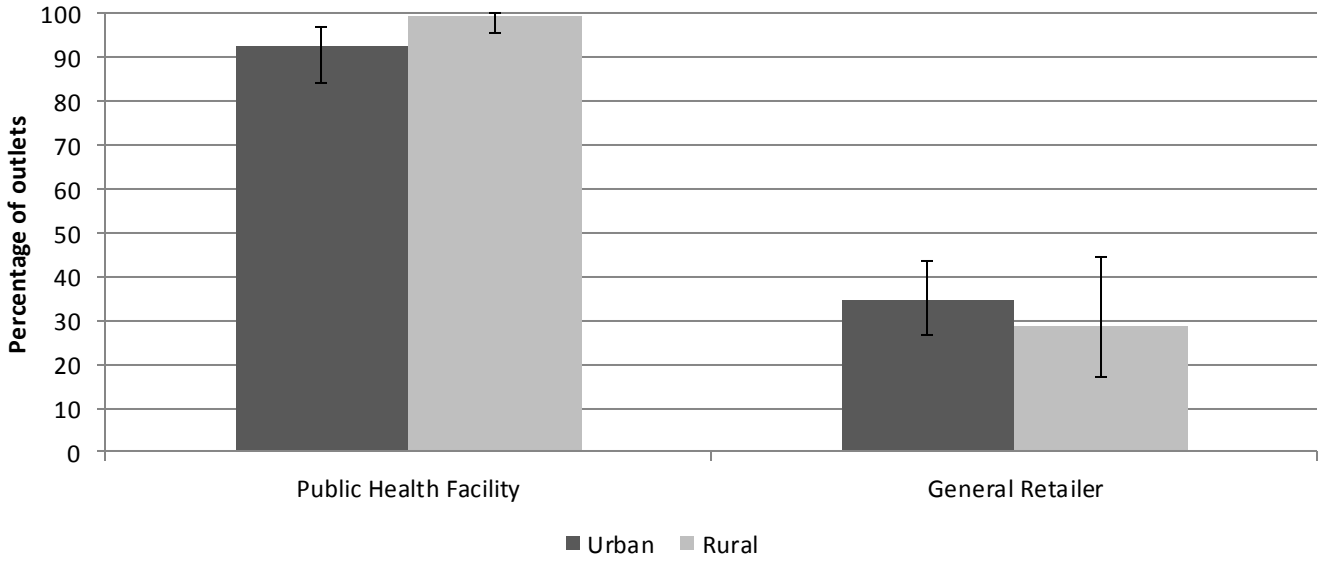
Among providers in outlets with at least one antimalarial in stock on the day of the survey or within the past three months, across survey round



More than 90% of providers in public health facilities and community health workers correctly stated the first-line treatment for uncomplicated malaria (AL) across survey rounds. Correct knowledge among providers in pharmacies increased to over 80% in 2011 (87%) and 2014 (83%). In 2014, about one-third of general retailers (31%) and itinerant vendors (30%) correctly stated the first-line treatment.

Figure 35. Percentage of providers who correctly state the first-line treatment for uncomplicated malaria, 2014, urban/rural

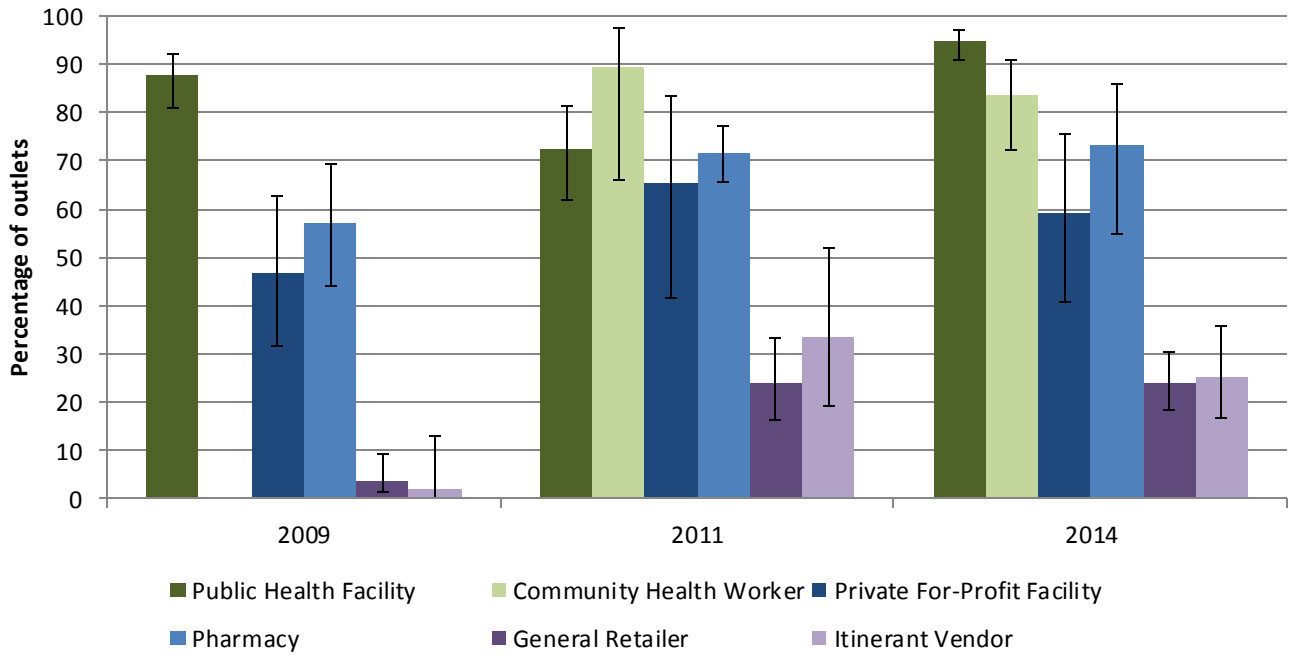
Among providers in outlets with at least one antimalarial in stock on the day of the survey or within the past three months



Data trends suggest higher correct knowledge of the first-line treatment for uncomplicated malaria among providers in rural (99%) versus urban (93%) public health facilities, and urban (35%) versus rural (29%) general retail outlets.

Figure 36. Percentage of providers who correctly state the first-line dosing regimen for uncomplicated malaria for a two-year old child, 2009-2014

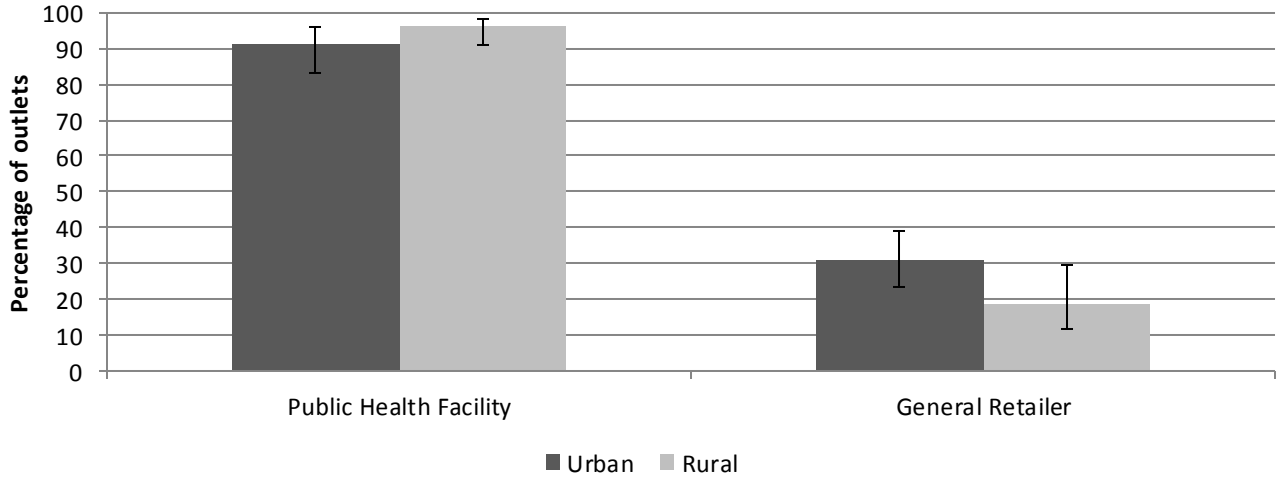
Among providers in outlets with at least one antimalarial in stock on the day of the survey or within the past three months, across survey round



In 2014, the majority of providers in public health facilities (95%) and community health workers (84%) correctly stated the dosing regimen for a 2-year old to treat uncomplicated malaria with the first-line treatment (AL). Correct knowledge was also high among providers in pharmacies (73%) and relatively low among general retailers (24%) and itinerant vendors (25%).

Figure 37. Percentage of providers who correctly state the first-line dosing regimen for uncomplicated malaria for a two-year old child, 2014, urban/rural

Among providers in outlets with at least one antimalarial in stock on the day of the survey or within the past three months



Data trends suggest higher correct knowledge of the dosing regimen for a 2-year old child using the first-line treatment for uncomplicated malaria among providers among urban (31%) versus rural (19%) general retail outlets. Knowledge was similar in urban and rural areas among providers in public health facilities.

Results Section A: Core Indicators

Table A1: Availability of antimalarials, among all screened outlets, by outlet type

	Public Health Facility	Community Health Worker	Private Not For-Profit Health Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retail	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	N=229	N=78	N=45	N=352	N=167	N=184	N=20	N=3,178	N=431	N=3,980	N=4,332
Any antimalarial at the time of survey visit	97.2 (94.4, 98.6)	53.2 (30.9, 74.3)	88.2 (78.1, 94.0)	64.3 (45.4, 79.6)	86.4 (72.3, 93.9)	90.7 (73.2, 97.2)	96.7 (83.8, 99.4)	33.4 (25.8, 41.9)	68.3 (58.3, 76.8)	39.6 (32.6, 47.1)	42.5 (35.6, 49.7)
Any ACT	87.4 (77.6, 93.3)	50.0 (28.9, 71.1)	60.9 (34.5, 82.2)	58.3 (40.4, 74.2)	44.6 (29.6, 60.8)	84.0 (66.9, 93.1)	67.9 (37.3, 88.2)	12.7 (8.4, 18.8)	19.7 (12.0, 30.8)	15.6 (10.7, 22.3)	20.6 (15.0, 27.6)
Artemether Lumefantrine (AL) Ψ	86.9 (77.3, 92.8)	50.0 (28.9, 71.1)	59.7 (33.5, 81.4)	58.1 (40.3, 74.0)	44.1 (29.0, 60.3)	84.0 (66.9, 93.1)	57.4 (27.1, 83.0)	12.7 (8.4, 18.8)	19.7 (12.0, 30.8)	15.5 (10.6, 22.2)	20.5 (14.9, 27.5)
Artesunate Sulfadoxine Pyrimethamine (ASSP)	0.3 (0.1, 1.2)	0.0 -	0.0 -	0.1 (0.0, 0.3)	0.8 (0.4, 2.0)	75.5 (51.9, 89.8)	18.8 (7.1, 41.1)	0.0 -	0.0 -	0.6 (0.3, 1.0)	0.5 (0.3, 0.9)
Artesunate Amodiaquine (ASAQ)	6.5 (3.2, 12.8)	0.0 -	2.4 (0.4, 12.1)	1.5 (0.7, 3.2)	0.6 (0.1, 3.1)	59.3 (45.6, 71.7)	0.0 -	0.1 (0.0, 0.1)	0.0 -	0.4 (0.3, 0.8)	0.6 (0.3, 0.9)
DHA PPQ	0.0 (0.0, 0.1)	0.0 -	1.0 (0.2, 4.0)	0.1 (0.0, 0.3)	3.5 (1.1, 10.4)	74.3 (50.8, 89.0)	37.7 (20.9, 58.0)	0.0 (0.0, 0.1)	0.0 -	0.8 (0.5, 1.3)	0.7 (0.4, 1.2)
Quality Assured ACT (QA ACT)	87.2 (77.5, 93.1)	50.0 (28.9, 71.1)	58.7 (31.9, 81.2)	58.1 (40.3, 74.1)	39.3 (26.2, 54.2)	79.9 (64.7, 89.6)	49.0 (22.7, 75.9)	12.4 (8.2, 18.3)	19.7 (12.0, 30.8)	15.0 (10.2, 21.4)	20.0 (14.5, 26.8)
QA AL	86.7 (77.1, 92.6)	50.0 (28.9, 71.1)	57.6 (30.8, 80.5)	57.9 (40.2, 73.9)	38.7 (25.6, 53.7)	77.6 (62.4, 87.9)	49.0 (22.7, 75.9)	12.4 (8.2, 18.3)	19.7 (12.0, 30.8)	14.9 (10.2, 21.3)	19.9 (14.5, 26.8)
QA ACT with the 'green leaf' logo	1.2 (0.4, 3.8)	0.0 -	29.0 (9.0, 62.9)	2.0 (0.7, 5.8)	32.5 (17.9, 51.4)	10.6 (4.1, 24.7)	28.9 (11.0, 57.2)	11.4 (7.5, 16.8)	17.7 (10.0, 29.5)	13.1 (8.7, 19.1)	11.8 (8.1, 16.8)
QA ACT without the 'green leaf' logo	86.0 (76.4, 92.1)	50.0 (28.9, 71.1)	29.7 (9.8, 62.1)	56.1 (39.5, 71.5)	6.9 (2.7, 16.1)	69.3 (48.4, 84.4)	20.1 (7.9, 42.3)	1.0 (0.5, 1.9)	2.0 (1.2, 3.4)	1.9 (1.2, 3.0)	8.2 (5.2, 12.6)
QA ACT – child (<5 years)	74.6 (65.2, 82.2)	41.8 (24.0, 62.0)	35.0 (12.6, 66.7)	48.1 (33.7, 62.8)	23.1 (13.7, 36.3)	66.9 (54.1, 77.5)	29.8 (13.9, 52.9)	11.4 (7.4, 17.2)	16.4 (9.3, 27.4)	12.9 (8.6, 18.9)	17.0 (12.0, 23.4)
QA ACT - adult	64.5 (54.3, 73.6)	3.8 (1.3, 10.9)	35.5 (12.7, 67.6)	18.1 (13.4, 24.1)	26.2 (14.3, 43.0)	79.0 (64.3, 88.7)	25.6 (11.7, 47.1)	3.4 (2.0, 5.7)	6.4 (3.2, 12.4)	5.4 (3.3, 8.6)	6.9 (4.8, 9.8)
Non-quality-assured ACT (non-QA ACT)	0.3 (0.1, 1.1)	0.0 -	4.3 (1.5, 11.7)	0.3 (0.1, 0.9)	9.2 (3.9, 20.2)	84.0 (66.9, 93.1)	47.9 (28.0, 68.4)	0.4 (0.1, 1.1)	0.0 -	1.5 (0.9, 2.4)	1.4 (0.8, 2.2)

Table A1: Availability of antimalarials, among all screened outlets, by outlet type

	Public Health Facility	Community Health Worker	Private Not For-Profit Health Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retail	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	N=229	N=78	N=45	N=352	N=167	N=184	N=20	N=3,178	N=431	N=3,980	N=4,332
Nationally Registered ACT	8.5 (4.3, 16.4)	0.2 (0.0, 1.4)	5.1 (1.7, 14.2)	2.2 (1.1, 4.4)	2.2 (1.0, 4.8)	77.3 (52.5, 91.3)	42.0 (21.2, 66.2)	0.2 (0.1, 0.3)	0.3 (0.1, 1.0)	0.9 (0.6, 1.4)	1.1 (0.7, 1.6)
Any non-artemisinin therapy	93.6 (86.0, 97.2)	3.3 (0.9, 11.2)	84.0 (72.0, 91.5)	26.6 (17.4, 38.3)	82.3 (67.0, 91.4)	88.3 (72.8, 95.6)	84.9 (61.2, 95.2)	30.2 (23.7, 37.5)	66.4 (55.7, 75.7)	36.5 (30.1, 43.4)	35.3 (29.6, 41.5)
Sulfadoxine-Pyrimethamine	44.7 (37.6, 51.9)	1.7 (0.2, 11.7)	53.7 (29.9, 75.9)	13.6 (8.3, 21.4)	16.6 (8.4, 30.0)	78.8 (64.3, 88.5)	53.7 (39.0, 67.8)	6.1 (4.1, 9.0)	36.5 (18.0, 60.1)	9.7 (6.4, 14.5)	10.2 (7.0, 14.5)
Oral Quinine	82.3 (72.5, 89.1)	1.5 (0.3, 8.7)	75.5 (57.9, 87.4)	22.5 (15.1, 32.0)	59.5 (41.8, 75.0)	66.2 (52.6, 77.6)	77.8 (54.7, 91.0)	11.5 (7.7, 16.9)	44.6 (33.8, 56.0)	17.3 (11.5, 25.3)	17.9 (12.4, 25.2)
Quinine IV/IM	67.0 (57.4, 75.4)	0.0 -	58.0 (30.3, 81.4)	17.2 (11.0, 25.9)	54.7 (41.0, 67.7)	41.1 (26.4, 57.7)	6.4 (1.1, 28.9)	0.3 (0.1, 0.8)	0.0 -	3.5 (2.2, 5.3)	5.1 (3.8, 6.8)
Chloroquine	0.6 (0.1, 3.1)	0.0 _	2.6 (0.9, 7.0)	0.3 (0.1, 0.8)	7.7 (2.7, 20.1)	12.8 (2.6, 44.8)	3.1 (0.5, 18.1)	22.0 (15.5, 30.2)	23.0 (16.6, 30.9)	21.2 (15.3, 28.6)	18.7 (14.0, 24.6)
Other non-artemisinin therapy	0.0 -	0.0 -	1.9 (0.5, 7.8)	0.1 (0.0, 0.6)	6.4 (1.7, 20.9)	56.9 (39.4, 72.9)	36.0 (20.7, 54.8)	0.7 (0.4, 1.3)	1.8 (0.8, 4.1)	1.6 (1.0, 2.5)	1.4 (0.9, 2.2)
Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-oral artemisinin monotherapy	24.4 (17.2, 33.4)	0.0 -	3.5 (1.2, 9.5)	5.2 (2.9, 9.2)	15.7 (9.3, 25.4)	55.4 (38.1, 71.5)	19.8 (7.0, 44.9)	0.0 (0.0, 0.1)	0.0 -	1.3 (0.7, 2.2)	1.7 (1.1, 2.7)
Injectable artemether	24.4 (17.2, 33.4)	0.0 -	3.5 (1.2, 9.5)	5.2 (2.9, 9.2)	13.1 (7.5, 21.9)	52.6 (36.3, 68.3)	19.8 (7.0, 44.9)	0.0 (0.0, 0.1)	0.0 -	1.1 (0.7, 1.8)	1.6 (1.0, 2.4)
Injectable artesunate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Injectable artemotil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Any treatment for severe malaria	74.5 (66.6, 81.0)	0.0 -	59.2 (31.2, 82.3)	18.8 (12.0, 28.2)	58.0 (44.4, 70.5)	67.8 (52.8, 79.9)	26.2 (10.4, 52.0)	0.3 (0.1, 0.8)	0.0 -	3.9 (2.6, 5.8)	5.6 (4.2, 7.5)

* The denominator includes 185 outlets that met screening criteria for a full interview but did not complete the interview (were not interviewed or completed a partial interview).

Ψ At the time of the 2014 Benin ACTwatch outlet survey, artemether lumefantrine was the first-line treatment for uncomplicated malaria.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A2: Availability of antimalarials, among outlets stocking at least one antimalarial, by outlet type

	Public Health Facility	Community Health Worker	Private Not For-Profit Health Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	N=222	N=42	N=37	N= 301	N= 132	N= 177	N= 19	N= 889	N= 288	N= 1,505	N=1,806
Any ACT	90.0 (80.6, 95.1)	93.9 (80.4, 98.3)	69.0 (41.0, 87.7)	90.6 (82.1, 95.3)	51.7 (35.7, 67.3)	92.6 (73.5, 98.3)	70.2 (36.9, 90.5)	38.1 (29.4, 47.7)	28.9 (16.4, 45.7)	39.4 (30.6, 49.0)	48.4 (39.9, 57.1)
Artemether Lumefantrine (AL) Ψ	89.4 (80.3, 94.6)	93.9 (80.4, 98.3)	67.7 (39.9, 86.9)	90.4 (81.6, 95.2)	51.0 (35.1, 66.7)	92.6 (73.5, 98.3)	59.4 (27.0, 85.2)	38.1 (29.3, 47.6)	28.9 (16.4, 45.7)	39.2 (30.4, 48.8)	48.2 (39.7, 56.9)
Artesunate Sulfadoxine Pyrimethamine (ASSP)	0.3 (0.1, 1.2)	0.0 -	0.0 -	0.1 (0.0, 0.4)	1.0 (0.4, 2.4)	83.2 (53.8, 95.5)	19.5 (7.2, 42.9)	0.0 -	0.0 -	1.4 (0.9, 2.4)	1.2 (0.7, 2.0)
Artesunate Amodiaquine (ASAQ)	6.7 (3.3, 13.3)	0.0 -	2.7 (0.5, 13.8)	2.3 (1.0, 5.3)	0.7 (0.1, 3.7)	65.4 (51.3, 77.2)	0.0 -	0.2 (0.1, 0.4)	0.0 -	1.1 (0.6, 1.9)	1.3 (0.8, 2.1)
DHA PPQ	0.0 (0.0, 0.1)	0.0 -	1.1 (0.3, 4.6)	0.1 (0.0, 0.5)	4.0 (1.4, 11.4)	82.0 (53.2, 94.8)	38.9 (21.2, 60.3)	0.1 (0.0, 0.2)	0.0 -	2.0 (1.3, 3.2)	1.7 (1.1, 2.6)
Quality Assured ACT (QA ACT)	89.7 (80.5, 94.8)	93.9 (80.4, 98.3)	66.6 (37.9, 86.7)	90.4 (81.7, 95.1)	45.5 (31.7, 60.1)	88.1 (73.6, 95.2)	50.7 (22.7, 78.2)	37.1 (28.4, 46.7)	28.9 (16.4, 45.7)	37.8 (29.2, 47.1)	47.0 (38.5, 55.7)
QA AL	89.2 (80.2, 94.4)	93.9 (80.4, 98.3)	65.2 (36.6, 85.9)	90.1 (81.2, 95.0)	44.9 (31.0, 59.5)	85.6 (71.2, 93.5)	50.7 (22.7, 78.2)	37.1 (28.4, 46.7)	28.9 (16.4, 45.7)	37.6 (29.2, 47.0)	46.9 (38.4, 55.5)
QA ACT with the 'green leaf' logo	1.2 (0.4, 3.9)	0.0 -	32.9 (10.3, 67.8)	3.1 (1.1, 8.1)	37.6 (21.5, 57.0)	11.7 (4.6, 26.7)	29.9 (11.3, 58.8)	34.1 (26.3, 43.0)	26.0 (13.8, 43.5)	33.0 (25.0, 42.2)	27.8 (20.9, 35.8)
QA ACT without the 'green leaf' logo	88.5 (79.4, 93.8)	93.9 (80.4, 98.3)	33.7 (11.1, 67.4)	87.3 (79.3, 92.5)	7.9 (3.1, 18.8)	76.4 (52.3, 90.5)	20.8 (8.0, 44.2)	3.0 (1.7, 5.2)	2.9 (1.7, 5.1)	4.7 (3.1, 7.1)	19.3 (13.2, 27.2)
QA ACT – child (<5 years)	76.8 (67.6, 84.0)	78.5 (72.6, 83.4)	39.7 (14.2, 72.3)	74.8 (69.5, 79.4)	26.7 (16.8, 39.8)	73.7 (62.1, 82.8)	30.9 (14.0, 55.0)	34.2 (25.7, 43.9)	24.0 (13.0, 40.2)	32.5 (24.5, 41.5)	39.9 (31.9, 48.4)
QA ACT - adult	66.4 (56.1, 75.3)	7.2 (2.2, 21.1)	40.3 (14.4, 73.1)	28.2 (19.5, 39.0)	30.4 (17.3, 47.7)	87.1 (73.4, 94.3)	26.4 (11.8, 49.1)	10.1 (6.6, 15.3)	9.3 (4.2, 19.4)	13.6 (9.4, 19.2)	16.2 (12.2, 21.1)
Non-quality-assured ACT (non-QA ACT)	0.3 (0.1, 1.2)	0.0 -	4.9 (1.6, 13.6)	0.5 (0.2, 1.4)	10.6 (4.7, 22.5)	92.6 (73.5, 98.3)	49.5 (28.3, 70.9)	1.2 (0.5, 3.0)	0.0 -	3.8 (2.5, 5.7)	3.2 (2.1, 4.9)
Nationally Registered ACT	8.8 (4.4, 16.9)	0.5 (0.1, 2.7)	5.8 (1.9, 16.2)	3.5 (1.7, 7.1)	2.6 (1.1, 5.9)	85.2 (53.0, 96.7)	43.5 (21.3, 68.6)	0.5 (0.2, 1.0)	0.5 (0.1, 1.6)	2.3 (1.4, 3.6)	2.5 (1.6, 3.7)
Any non-artemisinin therapy	96.3 (88.2, 98.9)	6.1 (1.7, 19.6)	95.3 (83.2, 98.8)	41.3 (26.1, 58.4)	95.3 (76.0, 99.2)	97.4 (93.2, 99.1)	87.8 (61.7, 97.0)	90.5 (84.2, 94.4)	97.2 (91.8, 99.1)	92.0 (86.4, 95.5)	83.1 (74.1, 89.4)
Sulfadoxine-Pyrimethamine	45.9 (38.9, 53.2)	3.2 (0.5, 19.4)	60.9 (35.8, 81.3)	21.2 (13.3, 32.0)	19.2 (10.3, 32.9)	87.0 (75.6, 93.5)	55.6 (39.8, 70.3)	18.1 (10.7, 29.0)	53.4 (24.8, 79.9)	24.5 (14.5, 38.2)	23.9 (15.0, 35.9)
Oral Quinine	84.6 (74.4, 91.3)	2.9 (0.5, 16.2)	85.6 (69.2, 94.0)	34.9 (22.1, 50.3)	68.9 (51.3, 82.3)	73.0 (59.9, 83.1)	80.5 (56.4, 92.9)	34.5 (22.0, 49.5)	65.3 (53.3, 75.7)	43.7 (29.6, 59.0)	42.2 (29.3, 56.3)
Quinine IV/IM	68.9 (58.8, 77.5)	0.0 -	65.7 (31.9, 88.7)	26.7 (16.4, 40.3)	63.3 (46.6, 77.4)	45.3 (29.7, 62.0)	6.6 (1.2, 29.8)	0.9 (0.4, 2.3)	0.0 -	8.7 (6.0, 12.5)	11.9 (9.1, 15.4)

Table A2: Availability of antimalarials, among outlets stocking at least one antimalarial, by outlet type

	Public Health Facility	Community Health Worker	Private Not For-Profit Health Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	N=222	N=42	N=37	N= 301	N= 132	N= 177	N= 19	N= 889	N= 288	N= 1,505	N=1,806
Chloroquine	0.6 (0.1, 3.2)	0.0 _	2.9 (1.0, 8.3)	0.4 (0.2, 1.2)	8.9 (3.3, 22.1)	14.1 (2.9, 47.7)	3.2 (0.5, 18.6)	65.8 (53.5, 76.3)	33.6 (23.2, 46.0)	53.4 (41.1, 65.3)	44.1 (35.5, 53.0)
Other non-artemisinin therapy	0.0 -	0.0 -	2.2 (0.5, 9.0)	0.2 (0.0, 1.0)	7.4 (2.1, 22.8)	62.8 (43.4, 78.8)	37.2 (21.6, 56.0)	2.1 (1.1, 4.1)	2.7 (1.2, 5.8)	3.9 (2.6, 6.0)	3.3 (2.1, 5.1)
Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-oral artemisinin monotherapy	25.1 (17.6, 34.5)	0.0 -	4.0 (1.4, 11.0)	8.1 (4.1, 15.2)	18.2 (10.3, 30.0)	61.1 (42.0, 77.3)	20.5 (7.1, 46.7)	0.0 (0.0, 0.2)	0.0 -	3.2 (2.0, 4.9)	4.1 (2.8, 5.8)
Injectable artemether	25.1 (17.6, 34.5)	0.0 -	4.0 (1.4, 11.0)	8.1 (4.1, 15.2)	15.1 (8.0, 26.7)	58.0 (40.1, 74.1)	20.5 (7.1, 46.7)	0.0 (0.0, 0.2)	0.0 -	2.8 (1.9, 4.1)	3.7 (2.6, 5.3)
Injectable artesunate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Any treatment for severe malaria	76.6 (68.5, 83.1)	0.0 -	67.1 (32.5, 89.6)	29.2 (18.0, 43.7)	67.2 (48.3, 81.7)	74.8 (61.2, 84.9)	27.1 (10.6, 54.0)	0.9 (0.4, 2.3)	0.0 -	9.8 (7.0, 13.5)	13.2 (10.3, 16.8)

*Antimalarial-stocking outlets have at least one antimalarial in stock on the day of the survey, verified by presence of at least one antimalarial recorded in the antimalarial audit sheet. There were 41 antimalarial stocking outlets with partially completed interviews. The denominator includes only completed interviews.

Ψ At the time of the 2014 Benin ACTwatch outlet survey, artemether lumefantrine was the first-line treatment for uncomplicated malaria.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A3: Antimalarial market composition

Outlet type, among outlets with at least 1 antimalarial in stock on the day of the survey:*	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
N=1,501 outlets	6.1 (4.1, 9.0)	10.6 (5.4, 19.6)	1.4 (0.7, 2.8)	18.1 (11.6, 27.2)	9.5 (5.5, 15.8)	1.4 (0.6, 3.5)	0.9 (0.2, 3.8)	58.6 (51.3, 65.5)	11.4 (5.9, 20.9)	81.9 (72.8, 88.4)

* Excluding booster sample outlets. Outlets with at least one antimalarial in stock on the day of the survey, verified by presence of at least one antimalarial recorded in the antimalarial audit sheet.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A4a: Price of tablet formulation antimalarials, by outlet type

Median price of a tablet AETD*:	Private For-Profit Facility Median [IQR] (N of Antimalarials)	Pharmacy Median [IQR] (N of Antimalarials)	Drug Store Median [IQR] (N of Antimalarials)	General Retailer Median [IQR] (N of Antimalarials)	Itinerant Vendor Median [IQR] (N of Antimalarials)	**ALL Private** Median [IQR] (N of Antimalarials)
Any ACT	$2.47 [2.06-4.12] (100)	$6.74 [5.13-8.42] (5,632)	$7.23 [3.74-7.84] (50)	$1.65 [1.24-2.47] (568)	$1.65 [1.65-2.47] (116)	$2.47 [1.65-5.88] (6,466)
Artemether Lumefantrine (AL) Ψ	$2.47 [2.06-4.12] (91)	$5.49 [4.81-7.23] (3,579)	$5.05 [2.89-7.59] (36)	$1.65 [1.24-2.47] (563)	$1.65 [1.65-2.47] (116)	$2.47 [1.65-4.77] (4,385)
Artesunate sulfadoxine pyrimethamine (ASSP)	$7.84 [7.23-14.43] (4)	$7.23 [7.23-9.63] (560)	$7.24 [7.24-7.84] (6)	- -	- -	$7.23 [7.23-9.63] (570)
DHA PPQ	$8.04 [7.22-9.12] (3)	$9.15 [8.19-9.61] (417)	$8.25 [8.02-9.15] (7)	$8.25 [8.25-8.25] (2)	- -	$9.14 [8.19-9.61] (429)
ASAQ	$2.06 [2.06-2.06] (2)	$5.57 [3.13-8.02] (379)	- -	$1.65 [1.44-2.06] (3)	- -	$5.57 [3.13-8.02] (384)
Quality assured ACT (QA ACT)	$2.47 [2.06-4.12] (61)	$5.77 [3.86-8.42] (1,050)	$3.30 [2.06-5.77] (19)	$1.65 [1.24-2.47] (556)	$1.65 [1.65-2.47] (116)	$2.06 [1.44-2.89] (1,802)
QA ACT with 'green leaf' logo	$2.47 [2.06-4.12] (41)	$1.44 [1.44-2.06] (11)	$2.06 [2.06-2.89] (9)	$1.65 [1.24-2.47] (472)	$1.65 [1.65-2.47] (91)	$1.86 [1.44-2.47] (624)
QA ACT without the 'green leaf' logo	$2.06 [1.65-4.12] (20)	$6.02 [3.92-8.42] (1,039)	$5.77 [5.77-8.42] (10)	$1.65 [1.24-2.47] (84)	$1.65 [1.44-2.47] (25)	$3.61 [1.65-6.27] (1,178)
QA AL	$2.47 [2.06-4.12] (59)	$5.77 [3.87-8.42] (768)	$3.30 [2.06-5.77] (19)	$1.65 [1.24-2.47] (553)	$1.65 [1.65-2.47] (116)	$2.06 [1.44-2.47] (1,515)
Non-quality-assured ACT (non-QA ACT)	$6.68 [4.12-8.25] (39)	$7.23 [5.13-8.19] (4,582)	$7.59 [7.23-8.25] (31)	$2.47 [1.24-2.47] (12)	- -	$7.23 [5.12-8.19] (4,664)
Sulfadoxine-Pyrimethamine	$0.52 [0.41-0.62] (30)	$1.03 [0.79-1.08] (420)	$1.03 [1.03-1.13] (19)	$0.52 [0.41-0.62] (548)	$0.52 [0.41-0.62] (346)	$0.52 [0.41-0.62] (1,363)
Quinine	$4.33 [3.46-5.20] (154)	$11.25 [5.50-24.56] (395)	$5.20 [4.33-7.79] (22)	$4.33 [3.46-5.20] (675)	$4.33 [3.46-5.20] (294)	$4.33 [3.46-5.20] (1,540)
Chloroquine	$0.50 [0.50-1.03] (4)	$0.50 [0.37-0.52] (3)	$0.50 (1)	$0.52 [0.50-0.64] (550)	$0.52 [0.50-0.64] (91)	$0.52 [0.50-0.64] (649)

* AETD - adult equivalent treatment dose - is or the number of milligrams required to treat a 60kg adult (see Annex 11). Information provided by the respondent about price for a specific amount of antimalarial drug (e.g. price per tablet or price per specific package size) was converted to the price per AETD.

Ψ At the time of the 2014 Benin ACTwatch outlet survey, artemether lumefantrine was the first-line treatment for uncomplicated malaria.

Figures in this table are derived using audited products with price information. The numbers of antimalarials captured in audit sheets with missing price information are as follows:

19 any ACT tablets, 14 artemether lumefantrine tablets, 0 artesunate sulfadoxine pyrimethamine tablets, 12 QA ACT tablets; 8 QA ACT with 'green leaf' logo; 4 QA ACT without the 'green leaf' logo; 11 QA ACT AL tablets, 7 non-QA ACT tablets, 2 sulfadoxine pyrimethamine tablets, 11 quinine tablets; 2 DHA PPQ; 2 ASAQ; 3 amodiaquine

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A4b: Price of pre-packaged antimalarials, by outlet type

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
Median price of one pre-packaged therapy:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Adult QA AL	$2.06 [1.24-2.47] (28)	$6.38 [3.86-6.75] (546)	$4.54 [1.65-8.42] (10)	$1.65 [1.44-1.65] (140)	$1.65 [1.44-1.65] (37)	$1.65 [1.44-3.61] (761)
Pediatric QA AL *	$1.03 [0.62-1.03] (15)	$1.44 [1.44-1.44] (155)	$1.03 [0.82-1.44] (6)	$0.52 [0.41-0.62] (212)	$0.62 [0.41-0.62] (31)	$0.62 [0.41-0.82] (419)

* Pediatric QA AL is the pre-packaged regimen appropriate for a 2-year old child.
Figures in this table are derived using audited products with price information. The numbers of antimalarials captured in audit sheets with missing price information are as follows:
4 adult QA AL, 1 child QA AL

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A5: Availability of malaria blood testing among antimalarial-stocking outlets*, by outlet type

	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking**	N=220	N=58	N=39	N=317	N=139	N=175	N=18	N=962	N=306	N=1,600	N=1,917
Any malaria blood testing	89.7 (84.1, 93.5)	12.5 (2.0, 50.5)	69.3 (46.0, 85.7)	35.1 (18.1, 56.9)	20.7 (11.5, 34.3)	0.2 (0.0, 1.1)	0.0 -	0.6 (0.1, 2.4)	0.0 -	2.7 (1.6, 4.5)	9.1 (5.7, 14.1)
	N=218	N=58	N=39	N=315	N=139	N=174	N=18	N=957	N=304	N=1,592	N=1,916
Microscopic blood tests	12.2 (8.8, 16.8)	0.0 -	37.2 (14.3, 67.9)	5.6 (3.0, 10.0)	10.5 (4.0, 24.6)	0.1 (0.0, 0.6)	0.0 -	0.5 (0.1, 2.6)	0.0 -	1.5 (0.7, 3.0)	2.3 (1.4, 3.8)
	N=221	N=60	N=39	N=320	N=139	N=175	N=18	N=960	N=306	N=1,598	N=1,918
Rapid diagnostic tests (RDTs)	87.5 (81.5, 91.7)	12.5 (2.0, 50.5)	32.0 (9.5, 67.9)	32.0 (15.7, 54.2)	11.6 (5.2, 23.8)	0.1 (0.0, 0.5)	0.0 -	0.2 (0.1, 0.5)	0.0 -	1.4 (0.6, 3.2)	7.4 (4.3, 12.5)

* Blood testing availability is reported among outlets that either had antimalarials in stock on the day of the survey or reportedly stocked antimalarials in the previous 3 months.
*** Results in this table are derived using responses captured among outlets with blood testing information. There were 22 antimalarial-stocking outlet with missing information about both availability of microscopy and availability of RDTs. There were 35 antimalarial-stocking outlets, which had partial information about blood testing availability.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A6: Malaria blood testing market composition

Outlet type, among outlets with malaria blood testing available on the day of the survey:*	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
	%	%	%	%	%	%	%	%	%	%
N=149 outlets	49.3	20.4	8.7	78.4	18.2	0.2	0	3.3	0	21.6
	(30.2, 68.6)	(4.2, 59.8)	(3.5, 20.1)	(61.6, 89.1)	(8.3, 35.4)	(0.0, 1.0)	-	(0.7, 13.2)	-	(10.9, 38.4)

* Excluding booster sample outlets. Outlets with malaria blood testing available on the day of the survey, verified by presence of at least one RDT recorded in the RDT audit sheet and/or reported availability of malaria microscopy.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A7: Price of malaria blood testing, by outlet type

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
Total median price to consumers:*	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Microscopic blood tests						
Adult	$3.09	-	-	$6.19	-	$3.09
	[2.47-4.12] (54)	-	-	(1)	-	[2.47-4.74] (55)
Child under age five	$3.09	-	-	$6.19	-	$3.09
	[2.47-4.12] (55)	-	-	(1)	-	[2.47-4.74] (56)
Rapid diagnostic tests (RDTs) (outlet)						
Adult	$0.00	-	-	$0.00	-	$0.00
	[0.00-3.09] (15)	-	-	[0.00-6.19] (2)		[0.00-3.09] (17)
Child under five	$0.00	-	-	$0.00	-	$0.00
	[0.00-3.09] (15)	-	-	[0.00-6.19] (2)	-	[0.00-3.09] (17)

* Total price to the consumer including consultation and/or service fees.
Microscopic blood testing price information was not available for all outlets. There were 5 outlets with missing or "don't know" responses.
RDT price information was not available (missing or "don't know" response) for: 2 adult RDTs and 2 child RDTs in median price to consumers and 18 adult RDTs and 18 child RDTs in median price excluding fees.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A8: Antimalarial market share

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold / distributed:*	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**TOTAL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**	**ANTI-MALARIAL TOTAL*** **
	%	%	%	%	%	%	%	%	%	%	%
Any ACT	**14.8**	2.5	0.8	**18.1**	**5.9**	**14.3**	**0.1**	**9.2**	**1.2**	**30.7**	**48.9**
Artemether Lumefantrine (AL) Ψ	14.8	2.5	0.7	18.0	5.7	9.8	0.1	9.2	1.2	25.9	44.0
Artesunate Sulfadoxine Pyrimethamine (ASSP)	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	1.4	1.4
DHA PPQ	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	1.5	1.6
ASAQ	0.0	0.0	0.0	0.1	0.1	0.6	0.0	0.0	0.0	0.7	0.7
Quality Assured ACT (QA ACT)	14.7	2.5	0.7	17.9	4.9	2.2	0.1	9.1	1.2	17.5	35.4
QA ACT with the 'green leaf' logo	0.3	0.0	0.5	0.8	4.1	0.0	0.0	8.4	0.8	13.3	14.2
QA ACT without the 'green leaf' logo	14.4	2.5	0.2	17.1	0.8	2.2	0.0	0.7	0.4	4.2	21.3
Non-quality-assured ACT	0.1	0.0	0.1	0.2	1.0	12.1	0.1	0.1	0.0	13.2	13.4
Nationally Registered ACT	0.1	0.0	0.0	0.1	0.1	5.2	0.1	0.1	0.0	5.5	5.6
Any non-artemisinin therapy	**8.3**	1.3	1.5	**11.0**	**5.5**	**4.2**	**0.3**	**23.2**	**6.5**	**39.7**	**50.8**
Sulfadoxine-Pyrimethamine	4.5	1.3	0.8	6.5	1.2	3.5	0.2	7.5	4.1	16.5	23.0
Oral Quinine	3.6	0.0	0.6	4.3	3.3	0.5	0.1	2.8	0.8	7.5	11.8
Quinine IV/IM	0.2	0.0	0.0	0.2	0.4	0.0	0.0	0.2	0.0	0.6	0.8
Chloroquine	0.0	0.0	0.0	0.0	0.6	0.0	0.0	12.5	1.6	14.7	14.7
Oral artemisinin monotherapy	**0.0**	0.0	0.0	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Non-oral artemisinin monotherapy	**0.1**	0.0	0.0	**0.1**	**0.1**	**0.2**	**0.0**	**0.0**	**0.0**	**0.3**	**0.4**
Injectable artesunate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Injectable artemether	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.2
Any treatment for severe malaria	0.3	0.0	0.0	0.3	0.4	0.2	0.0	0.2	0.0	0.8	1.2
OUTLET TYPE TOTAL**	**23.2**	3.8	2.3	**29.2**	**11.5**	**18.8**	**0.4**	**32.4**	**7.7**	**70.8**	**100**

* A total of 19756.59 AETDs were reportedly sold or distributed in the previous seven days. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

*** Row sum – market share for the specified antimalarial medicine.

**** Column sum – market share for the specified outlet type.

Categories 1 through 4 sum to 100% in the far-right column – antimalarial total column.

A total of 7,357 antimalarials were audited. Of these 835 audited antimalarials were not included in market share calculations due to incomplete or inconsistent information.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A9: Antimalarial market share across outlet type

AETDs sold or distributed in the previous week by antimalarial type as a percentage of all AETDs sold / distributed within each outlet type:*	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**TOTAL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**
	%	%	%	%	%	%	%	%	%	%
1. Any ACT	**64.0**	66.3	34.2	**62.0**	**51.3**	**76.4**	**34.6**	**28.4**	**15.2**	**43.4**
Artemether Lumefantrine (AL) Ψ	63.7	66.3	32.5	61.6	49.8	52.2	20.0	28.3	15.2	36.7
Artesunate Sulfadoxine Pyrimethamine (ASSP)	0.1	0.0	0.0	0.1	0.1	7.2	4.5	0.0	0.0	2.0
DHA PPQ	0.0	0.0	0.9	0.1	0.4	7.6	10.1	0.1	0.0	2.2
ASAQ	0.2	0.0	0.8	0.2	1.0	3.0	0.0	0.0	0.0	1.0
Quality Assured ACT (QA ACT)	63.5	66.3	31.1	61.3	42.8	11.7	15.0	28.2	15.2	24.7
QA ACT with the 'green leaf' logo	1.5	0.0	21.4	2.9	35.6	0.0	9.4	25.9	10.3	18.8
QA ACT without the 'green leaf' logo	62.0	66.3	9.7	58.5	7.2	11.7	5.6	2.3	4.9	5.9
Non-quality-assured ACT	0.5	0.0	3.1	0.7	8.5	64.7	19.6	0.2	0.0	18.7
Nationally Registered ACT	0.3	0.2	2.1	0.4	0.8	27.6	19.6	0.3	0.4	7.7
2. Any non-artemisinin therapy	**35.7**	33.7	65.7	**37.7**	**48.0**	**22.6**	**65.4**	**71.5**	**84.8**	**56.1**
Sulfadoxine-Pyrimethamine	19.2	33.2	35.1	22.3	10.6	18.7	40.4	23.0	53.1	23.3
Oral Quinine	15.5	0.5	28.1	14.5	28.8	2.8	22.9	8.6	10.9	10.7
Quinine IV/IM	0.9	0.0	1.6	0.8	3.1	0.1	0.0	0.6	0.0	0.8
Chloroquine	0.0	0.0	0.8	0.1	5.1	0.0	0.0	38.5	20.6	20.7
3. Oral artemisinin monotherapy	**0.0**	0.0	0.0	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
4. Non-oral artemisinin monotherapy	**0.3**	0.0	0.1	**0.3**	**0.7**	**1.0**	**0.0**	**0.1**	**0.0**	**0.4**
Injectable artesunate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Injectable artemether	0.3	0.0	0.1	0.3	0.6	0.3	0.0	0.0	0.0	0.2
5. Any treatment for severe malaria	1.2	0.0	1.6	1.1	3.7	1.0	0.0	0.7	0.0	1.2
OUTLET TYPE TOTAL****	**100**	100.0	100.0	**100**	**100**	**100**	**100**	**100**	**100.0**	**100**

* 19756.59 AETDs reportedly sold or distributed in the previous seven days: 2343.69 public health facilities ; 122.57 community health workers520.13 private not for-profit facilities; 1048.46 private for-profit facilities; 7043.56 pharmacies; 84.51 drug stores; 6468.81 general retailers; 2124.85 itinerant vendors. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

Ψ At the time of the 2014 Benin ACTwatch outlet survey, artesunate amodiaquine was Benin's first line treatment for uncomplicated malaria.

Categories 1 through 4 sum to 100% within each column.

A total of 7,357 antimalarials were audited. Of these, 835 audited antimalarials were not included in market share calculations due to due to incomplete or inconsistent information, including the following number of antimalarials by outlet type: 21 public health facilities; 13 private not for-profit facilities; 65 private for-profit facilities; 535 pharmacies; 8 drug stores; 170 general retailers; 17 itinerant vendors.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A10: Malaria blood testing market share

Number of malaria blood tests provided in the previous week by outlet type and blood test type as a percentage of all blood tests provided:*	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**TOTAL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**	**BLOOD TEST TOTAL*** **
	%	%	%	%	%	%	%	%	%	%	%
1. Malaria microscopy	16.0	0.0	0.8	16.8	6.7	0.0	0.0	0.0	0.0	6.7	23.4
2. RDT	70.8	1.8	1.0	73.5	3.0	0.0	0.0	0.0	0.0	3.0	76.6
OUTLET TYPE TOTAL****	86.8	1.8	1.8	90.3	9.7	0.0	0.0	0.0	0.0	9.7	100.0

* A total of 4,067 malaria microscopy tests and 1,722 RDTs were reportedly administered in the previous seven days.
*** Row sum – market share for the specified type of blood testing medicine.
**** Column sum – market share for the specified outlet type.
Categories 1 and 2 sum to 100% in the far-right column – malaria blood testing total column.
A total of 166 malaria blood tests were audited. Of these, 20 malaria microscopy tests and 7 RDTs were not included in market share calculations due to incomplete or inconsistent information.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A11: Malaria blood testing market share, across outlet type

Number of malaria blood tests provided in the previous week by blood test type as a percentage of all blood tests provided within each outlet type:*	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**TOTAL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**	**BLOOD TEST TOTAL*** **
	%	%	%	%	%	%	%	%	%	%	%
Total blood testing market	100.0	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	100.0	100.0
1. Malaria microscopy	18.4	0.0	45.1	18.6	68.6	0.0	0.0	0.0	0.0	68.6	23.4
2. RDT	81.6	100.0	54.9	81.4	31.4	0.0	0.0	0.0	0.0	31.4	76.6
Malaria RDT market Ψ											
STANDARD DIAGNOSTICS INC	62.9	2.6	30.7	61.0	61.4	0.0	0.0	0.0	0.0	61.4	61.0
ACCESS BIO	34.4	97.4	67.8	36.4	29.0	0.0	0.0	0.0	0.0	29.0	36.1
CTK BIOTECH INC	0.0	0.0	1.5	0.0	2.4	0.0	0.0	0.0	0.0	2.4	0.1
Other	2.7	0.0	0.0	2.6	7.1	0.0	0.0	0.0	0.0	7.1	2.8
Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* 5,789 malaria blood tests reportedly administered in the previous seven days: 2,843 public health facilities; 35 community health workers; 177 private not for-profit facilities; 2,734 private for-profit facilities; 0 pharmacies; 0 drug stores; 0 general retailers; 0 itinerant vendors.
*** Categories 1 through 2 sum to 100% in within each column.
Ψ The manufacturer information was captured for all RDTs audited.
A total of 166 malaria blood tests were audited. Of these, 20 malaria microscopy tests and 7 RDTs were not included in market share calculations due to incomplete or inconsistent information.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A12: Provider case management knowledge and practices, by outlet type

	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
Proportion of providers who:	% (95% CI)			% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)
Would refer a 2 year old child with symptoms of severe malaria to a health facility	-	N=62	-	N=62	-	N=174	N=19	N=963	N=303	N=1,459	N=1,521
Yes, would refer to health facility	NA	100.0 -	- -	100.0 -	NA	91.8 (81.9, 96.5)	93.6 (77.8, 98.4)	93.5 (88.4, 96.4)	89.7 (84.5, 93.3)	92.9 (88.4, 95.7)	94.1 (90.1, 96.5)
Would recommend that a client with a negative malaria blood test take an antimalarial	N=181	N=15	N=15	N=211	N=34	N=9	N=0	N=6	N=2	N=51	N=262
Yes – sometimes	8.2 (4.7, 14.0)	0.0 -	50.6 (16.1, 84.5)	9.1 (3.3, 22.3)	7.8 (2.2, 24.5)	0.0 -	- -	0.0 -	0.0 -	5.9 (1.9, 16.5)	8.1 (3.6, 17.3)
Yes – always	14.0 (8.7, 21.7)	18.0 (6.3, 41.7)	11.8 (2.8, 38.0)	15.2 (8.9, 24.8)	44.9 (18.9, 73.9)	19.3 (15.2, 24.2)	- -	0.0 -	0.0 -	34.0 (14.6, 60.9)	20.8 (11.3, 35.1)
Circumstances cited for recommending antimalarial treatment to a client who tested negative for malaria:*	N=38	N=2	N=7	N=47	N=18	N=2	N=0	N=0	N=0	N=20	N=67
Patient has signs and symptoms of malaria.	96.0 (76.4, 99.4)	100.0 -	94.9 (70.9, 99.3)	96.3 (84.9, 99.2)	78.9 (44.8, 94.5)	100.0 -	- -	- -	- -	79.0 (44.9, 94.5)	88.7 (70.2, 96.3)
Provider doesn't trust the test results.	12.2 (5.2, 25.9)	100.0 -	8.0 (1.6, 32.2)	24.6 (7.3, 57.4)	29.5 (11.9, 56.6)	18.4 (1.9, 72.9)	- -	- -	- -	29.5 (11.9, 56.5)	26.8 (9.6, 55.7)
When the patient asks for antimalarial treatment.	18.6 (8.1, 37.3)	0.0 -	4.4 (0.6, 27.0)	12.1 (5.6, 24.0)	4.5 (1.2, 16.3)	0.0 -	- -	- -	- -	4.5 (1.1, 16.2)	8.7 (4.0, 18.0)
Other (all other reasons)	29.1 (17.1, 45.0)	0.0 -	12.2 (1.5, 55.8)	20.3 (11.6, 33.0)	2.8 (0.5, 15.5)	18.4 (1.9, 72.9)	- -	- -	- -	2.9 (0.5, 15.8)	12.6 (6.4, 23.4)

Provider questions were administered to one staff member working in each outlet eligible for a full interview (current/recent antimalarial-stocking outlets or outlets providing malaria blood testing).
* 1 provider was missing information on circumstances for recommending antimalarials to clients who tested negative for malaria.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table A13: Provider antimalarial treatment knowledge and practices, by outlet type

	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers who:	N=223	N=60	N= 39	N=322	N=141	N=177	N=19	N=974	N= 306	N=1,617	N=1,939
Correctly state the national first-line treatment[Ψ] for uncomplicated malaria	97.4 (94.2, 98.8)	93.7 (83.2, 97.8)	89.0 (72.8, 96.1)	94.3 (87.3, 97.5)	66.8 (49.2, 80.7)	83.1 (63.1, 93.4)	59.9 (42.0, 75.5)	31.3 (23.6, 40.2)	29.9 (19.2, 43.5)	35.9 (30.2, 42.1)	47.4 (40.7, 54.2)
Correctly state the first-line dosing regimen for:											
An adult	93.0 (88.4, 95.8)	49.9 (43.2, 56.6)	84.1 (66.1, 93.4)	62.7 (55.4, 69.4)	56.4 (38.7, 72.6)	59.6 (44.5, 73.1)	56.7 (36.8, 74.6)	22.7 (17.2, 29.4)	20.9 (13.6, 30.8)	26.9 (22.7, 31.6)	34.0 (29.5, 38.7)
A two-year old child	94.6 (90.9, 96.9)	83.6 (72.1, 91.0)	83.4 (67.2, 92.5)	86.3 (77.9, 91.8)	59.4 (41.0, 75.5)	73.2 (54.9, 86.0)	52.1 (34.8, 68.9)	24.0 (18.5, 30.5)	25.2 (16.9, 35.8)	28.9 (24.8, 33.4)	40.2 (34.8, 45.8)
Report an ACT as the most effective antimalarial medicine for:											
Adults	89.4 (83.7, 93.3)	76.9 (56.1, 89.7)	70.6 (47.7, 86.4)	79.6 (64.4, 89.3)	58.6 (41.8, 73.6)	86.6 (79.1, 91.7)	65.6 (35.6, 86.8)	26.7 (20.3, 34.2)	17.1 (11.0, 25.7)	30.0 (24.3, 36.5)	39.8 (33.1, 46.9)
Children	93.8 (89.9, 96.2)	93.6 (86.9, 97.0)	75.4 (53.0, 89.3)	92.4 (87.7, 95.5)	70.7 (57.9, 80.8)	86.1 (69.9, 94.3)	55.1 (32.0, 76.2)	34.5 (26.3, 43.7)	19.1 (12.6, 27.9)	37.3 (29.8, 45.5)	48.2 (39.1, 57.3)
Report an ACT as the antimalarial he/she most commonly recommends for:											
Adults	88.9 (83.5, 92.7)	59.8 (50.7, 68.3)	60.8 (31.1, 84.2)	67.1 (59.2, 74.1)	56.5 (42.8, 69.3)	82.8 (63.1, 93.1)	43.0 (26.0, 61.8)	25.3 (19.0, 32.9)	17.5 (10.0, 28.7)	28.6 (22.5, 35.5)	36.1 (30.2, 42.4)
Children	92.7 (88.3, 95.5)	95.6 (90.0, 98.2)	74.0 (54.6, 87.1)	93.5 (90.2, 95.7)	78.8 (71.1, 85.0)	88.1 (70.5, 95.8)	43.4 (24.6, 64.3)	35.8 (26.9, 45.8)	25.4 (14.3, 41.0)	39.9 (31.5, 48.9)	50.4 (41.4, 59.4)

[Ψ] At the time of the 2014 Benin ACTwatch outlet survey, artemether lumefantrine was Benin's first line treatment for uncomplicated malaria.

Numbers of providers (N) in this table are the total number of providers eligible for table indicators. There were 9 providers with missing information on the national first-line treatment, the first-line dosing regimen for adults and children; 10 and 11 with missing information on the most effective antimalarial medicine for adults and children, respectively; and 9 and 13 with missing information on the most often recommended antimalarial for adults and children, respectively.

Source: ACTwatch Outlet Survey, Benin, 2014.

Results Section B: Core Indicators across Urban/Rural Location

Table B1: Availability of antimalarials, among all screened outlets, by outlet type, across urban/rural location

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public****	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Urban N=93 Rural N=138	Urban N=16 Rural N=62	Urban N=43 Rural N=2	Urban N=152 Rural N=200	Urban N=142 Rural N=25	Urban N=156 Rural N=28	Urban N=8 Rural N=12	Urban N=2,892 Rural N=286	Urban N=417 Rural N=14	Urban N=3,615 Rural N=365	Urban N=3,797 Rural N=565
Any antimalarial at the time of survey visit											
Urban	94.8 (87.4, 97.9)	58.8 (35.1, 79.0)	81.6 (71.4, 88.7)	82.9 (75.7, 88.4)	75.6 (68.6, 81.4)	89.5 (66.1, 97.4)	93.2 (67.8, 98.9)	29.5 (21.0, 39.6)	69.8 (60.5, 77.8)	36.7 (30.2, 43.8)	38.2 (31.3, 45.7)
Rural	98.3 (94.0, 99.5)	53.0 (29.1, 75.6)	100.0 -	61.5 (39.8, 79.4)	91.5 (66.6, 98.3)	95.0 (87.0, 98.2)	100.0 -	37.1 (25.7, 50.1)	63.7 (32.3, 86.5)	42.6 (30.5, 55.6)	46.1 (35.2, 57.4)
Any ACT											
Urban	87.2 (78.3, 92.7)	58.8 (35.1, 79.0)	39.0 (21.6, 59.7)	66.7 (52.4, 78.5)	27.8 (17.7, 40.8)	81.1 (60.2, 92.4)	49.6 (14.8, 84.8)	11.5 (6.7, 19.1)	19.3 (10.3, 33.3)	13.8 (8.3, 22.1)	15.5 (9.2, 24.9)
Rural	87.6 (71.8, 95.1)	49.6 (27.0, 72.4)	100.0 -	57.0 (36.1, 75.7)	52.6 (31.7, 72.6)	95.0 (87.0, 98.2)	85.5 (47.0, 97.5)	13.9 (7.5, 24.4)	20.9 (9.8, 39.2)	17.5 (10.1, 28.5)	24.9 (17.6, 34.0)
Artemether Lumefantrine (AL)											
Urban	86.9 (78.0, 92.5)	58.8 (35.1, 79.0)	37.1 (20.7, 57.2)	66.0 (51.7, 77.9)	26.0 (16.4, 38.7)	81.1 (60.2, 92.4)	49.6 (14.8, 84.8)	11.5 (6.6, 19.1)	19.3 (10.3, 33.3)	13.7 (8.2, 22.0)	15.4 (9.2, 24.8)
Rural	86.9 (71.6, 94.6)	49.6 (27.0, 72.4)	100.0 -	56.9 (36.1, 75.6)	52.6 (31.7, 72.6)	95.0 (87.0, 98.2)	64.8 (19.5, 93.3)	13.9 (7.5, 24.4)	20.9 (9.8, 39.2)	17.4 (10.0, 28.4)	24.8 (17.5, 34.0)
Artesunate Sulfadoxine Pyrimethamine (ASSP)											
Urban	0.8 (0.2, 4.0)	0.0 -	0.0 -	0.4 (0.1, 1.7)	2.6 (1.5, 4.6)	71.1 (43.2, 88.8)	36.6 (10.6, 73.7)	0.0 -	0.0 -	0.9 (0.5, 1.6)	0.9 (0.5, 1.6)
Rural	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	92.5 (80.9, 97.3)	1.7 (0.2, 14.5)	0.0 -	0.0 -	0.2 (0.0, 1.2)	0.2 (0.0, 0.9)
Artesunate Amodiaquine (ASAQ)											
Urban	8.8 (3.6, 19.6)	0.0 -	3.7 (0.7, 18.5)	5.3 (2.3, 11.7)	1.8 (0.3, 9.4)	54.6 (38.7, 69.6)	0.0 -	0.1 (0.0, 0.3)	0.0 -	0.7 (0.4, 1.2)	0.8 (0.5, 1.5)
Rural	5.5 (1.8, 15.7)	0.0 -	0.0 -	0.9 (0.3, 3.0)	0.0 -	77.5 (49.0, 92.5)	0.0 -	0.0 -	0.0 -	0.2 (0.0, 0.9)	0.3 (0.1, 0.9)

	Table B1: Availability of antimalarials, among all screened outlets, by outlet type, across urban/rural location										
	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public****	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Urban N=93 Rural N=138	Urban N=16 Rural N=62	Urban N=43 Rural N=2	Urban N=152 Rural N=200	Urban N=142 Rural N=25	Urban N=156 Rural N=28	Urban N=8 Rural N=12	Urban N=2,892 Rural N=286	Urban N=417 Rural N=14	Urban N=3,615 Rural N=365	Urban N=3,797 Rural N=565
DHAPPQ											
Urban	0.1 (0.0, 0.4)	0.0 -	1.5 (0.4, 5.2)	0.5 (0.1, 2.3)	2.6 (1.2, 5.8)	72.1 (43.6, 89.6)	24.0 (5.5, 63.0)	0.1 (0.0, 0.1)	0.0 -	0.9 (0.5, 1.6)	0.9 (0.5, 1.5)
Rural	0.0 -	0.0 -	0.0 -	0.0 -	3.9 (0.8, 16.0)	83.0 (53.9, 95.3)	50.8 (35.1, 66.3)	0.0 -	0.0 -	0.7 (0.2, 1.8)	0.6 (0.2, 1.5)
Quality Assured ACT (QA ACT)											
Urban	86.3 (77.6, 92.0)	58.8 (35.1, 79.0)	35.6 (18.8, 57.0)	65.3 (50.7, 77.5)	19.5 (12.3, 29.5)	76.6 (58.1, 88.6)	32.4 (9.6, 68.5)	11.4 (6.5, 19.1)	19.3 (10.3, 33.3)	13.3 (7.9, 21.6)	15.0 (8.8, 24.4)
Rural	87.6 (71.8, 95.1)	49.6 (27.0, 72.4)	100.0 -	57.0 (36.1, 75.7)	48.7 (30.9, 66.9)	92.5 (80.9, 97.3)	64.8 (19.5, 93.3)	13.3 (7.1, 23.5)	20.9 (9.8, 39.2)	16.6 (9.6, 27.1)	24.2 (17.1, 33.0)
QA AL											
Urban	86.1 (77.4, 91.8)	58.8 (35.1, 79.0)	33.8 (17.5, 55.0)	64.6 (50.1, 76.9)	17.7 (11.2, 26.9)	76.3 (58.0, 88.2)	32.4 (9.6, 68.5)	11.4 (6.5, 19.1)	19.3 (10.3, 33.3)	13.3 (7.9, 21.5)	15.0 (8.8, 24.3)
Rural	86.9 (71.6, 94.6)	49.6 (27.0, 72.4)	100.0 -	56.9 (36.1, 75.6)	48.7 (30.9, 66.9)	83.0 (53.9, 95.3)	64.8 (19.5, 93.3)	13.3 (7.1, 23.5)	20.9 (9.8, 39.2)	16.6 (9.6, 27.1)	24.2 (17.1, 33.0)
QA ACT with the 'green leaf' logo											
Urban	0.6 (0.2, 2.1)	0.0 -	16.0 (8.5, 28.2)	5.0 (2.5, 9.9)	12.3 (7.0, 20.8)	11.4 (3.7, 30.3)	22.0 (5.0, 60.0)	10.3 (5.7, 18.0)	16.7 (8.3, 30.6)	11.2 (6.3, 19.1)	11.0 (6.3, 18.4)
Rural	1.5 (0.3, 6.0)	0.0 -	52.3 (5.5, 95.4)	1.5 (0.3, 7.6)	42.0 (21.8, 65.4)	7.5 (2.7, 19.1)	35.5 (9.0, 75.5)	12.4 (7.0, 21.2)	20.9 (9.8, 39.2)	15.0 (8.8, 24.5)	12.5 (7.5, 20.1)
QA ACT without the 'green leaf' logo											
Urban	85.7 (76.5, 91.7)	58.8 (35.1, 79.0)	19.6 (9.4, 36.4)	60.3 (44.7, 74.0)	7.2 (4.1, 12.3)	65.2 (40.2, 84.0)	10.5 (2.5, 34.9)	1.1 (0.8, 1.5)	2.7 (1.7, 4.3)	2.2 (1.6, 2.9)	4.1 (2.4, 6.7)
Rural	86.1 (71.1, 94.0)	49.6 (27.0, 72.4)	47.7 (4.6, 94.5)	55.5 (36.0, 73.5)	6.7 (1.6, 23.9)	85.0 (63.9, 94.8)	29.4 (8.3, 65.7)	0.9 (0.2, 3.7)	0.0 -	1.6 (0.5, 4.5)	11.7 (6.8, 19.4)
QA ACT - child (<5 years)											
Urban	70.6 (55.9, 82.0)	58.8 (35.1, 79.0)	27.9 (11.1, 54.6)	55.4 (40.4, 69.4)	10.9 (6.4, 17.9)	64.1 (48.9, 77.0)	19.8 (4.7, 55.5)	9.7 (5.4, 17.0)	14.9 (7.8, 26.8)	11.0 (6.3, 18.4)	12.4 (7.1, 20.9)
Rural	76.4 (63.0, 86.0)	41.1 (22.2, 63.0)	47.7 (4.6, 94.5)	47.0 (30.3, 64.3)	28.9 (17.3, 44.1)	77.5 (49.0, 92.5)	39.5 (15.2, 70.4)	13.0 (7.0, 22.9)	20.9 (9.8, 39.2)	14.8 (8.4, 24.7)	20.8 (14.1, 29.7)

	Table B1: Availability of antimalarials, among all screened outlets, by outlet type, across urban/rural location										
	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public****	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Urban N=93 Rural N=138	Urban N=16 Rural N=62	Urban N=43 Rural N=2	Urban N=152 Rural N=200	Urban N=142 Rural N=25	Urban N=156 Rural N=28	Urban N=8 Rural N=12	Urban N=2,892 Rural N=286	Urban N=417 Rural N=14	Urban N=3,615 Rural N=365	Urban N=3,797 Rural N=565
QA ACT - adults											
Urban	66.8 (54.1, 77.4)	0.0 -	26.1 (10.8, 50.9)	40.1 (29.0, 52.2)	15.1 (10.0, 22.2)	76.1 (58.0, 88.1)	19.4 (5.4, 50.7)	4.0 (2.3, 7.0)	8.5 (3.8, 18.1)	5.7 (3.3, 9.7)	6.8 (3.9, 11.6)
Rural	63.5 (49.3, 75.8)	4.0 (1.3, 11.8)	52.3 (5.5, 95.4)	14.9 (10.7, 20.3)	31.5 (14.6, 55.3)	90.0 (75.0, 96.4)	31.5 (11.3, 62.4)	2.8 (0.9, 8.0)	0.0 -	5.1 (2.1, 11.7)	6.9 (4.1, 11.5)
Non-quality-assured ACT (non-QA ACT)											
Urban	0.9 (0.2, 3.9)	0.0 -	6.7 (2.7, 15.8)	2.4 (0.9, 6.1)	12.2 (6.6, 21.4)	81.1 (60.2, 92.4)	36.6 (10.6, 73.7)	0.2 (0.1, 0.4)	0.0 -	1.5 (0.9, 2.4)	1.5 (1.0, 2.4)
Rural	0.0 -	0.0 -	0.0 -	0.0 -	7.8 (1.6, 29.8)	95.0 (87.0, 98.2)	58.7 (41.9, 73.7)	0.6 (0.1, 2.3)	0.0 -	1.5 (0.6, 3.7)	1.2 (0.5, 3.1)
Non-quality-assured AL (non-QA AL)											
Urban	0.8 (0.2, 4.0)	0.0 -	6.7 (2.7, 15.8)	2.4 (0.9, 6.0)	12.2 (6.6, 21.4)	73.4 (43.8, 90.7)	27.6 (7.1, 65.5)	0.1 (0.1, 0.3)	0.0 -	1.3 (0.8, 2.1)	1.4 (0.9, 2.1)
Rural	0.0 -	0.0 -	0.0 -	0.0 -	7.8 (1.6, 29.8)	95.0 (87.0, 98.2)	20.6 (6.0, 51.2)	0.6 (0.1, 2.3)	0.0 -	1.4 (0.5, 3.6)	1.1 (0.4, 3.0)
Nationally Registered ACT											
Urban	4.8 (1.7, 13.1)	6.2 (1.2, 27.1)	8.0 (2.8, 20.8)	6.1 (2.7, 12.8)	6.9 (4.8, 9.8)	73.4 (43.8, 90.7)	36.6 (10.6, 73.7)	0.3 (0.2, 0.5)	0.4 (0.1, 1.4)	1.4 (0.9, 2.2)	1.5 (1.0, 2.5)
Rural	10.2 (4.3, 22.5)	0.0 -	0.0 -	1.7 (0.7, 4.0)	0.0 -	92.5 (80.9, 97.3)	47.3 (19.1, 77.3)	0.0 -	0.0 -	0.4 (0.1, 1.2)	0.6 (0.3, 1.4)
Any non-artemisinin therapy											
Urban	94.0 (86.5, 97.4)	0.0 -	75.1 (62.8, 84.4)	67.7 (56.0, 77.5)	75.0 (68.2, 80.8)	86.6 (66.4, 95.5)	76.0 (37.0, 94.5)	27.4 (20.4, 35.9)	67.3 (56.7, 76.5)	34.6 (29.5, 40.2)	35.7 (30.4, 41.5)
Rural	93.5 (80.7, 98.0)	3.4 (0.9, 12.3)	100.0 -	20.4 (12.5, 31.6)	85.7 (60.4, 95.9)	95.0 (87.0, 98.2)	93.4 (59.1, 99.3)	32.8 (22.8, 44.7)	63.7 (32.3, 86.5)	38.3 (26.8, 51.4)	35.0 (25.3, 46.0)
Sulfadoxine-Pyrimethamine											
Urban	27.3 (17.2, 40.4)	0.0 -	27.8 (17.7, 40.8)	21.4 (15.2, 29.3)	14.7 (10.1, 20.8)	78.9 (60.6, 90.1)	41.2 (23.7, 61.3)	10.0 (8.4, 11.9)	48.6 (32.9, 64.6)	15.6 (12.7, 19.1)	15.8 (12.9, 19.2)
Rural	52.4 (42.8, 61.8)	1.8 (0.2, 13.2)	100.0 -	12.4 (6.9, 21.5)	17.5 (6.6, 38.9)	78.5 (51.2, 92.7)	65.7 (42.0, 83.5)	2.2 (0.9, 5.7)	0.0 -	3.7 (1.7, 8.0)	5.3 (3.2, 8.6)

	Table B1: Availability of antimalarials, among all screened outlets, by outlet type, across urban/rural location										
	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public****	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Urban N=93 Rural N=138	Urban N=16 Rural N=62	Urban N=43 Rural N=2	Urban N=152 Rural N=200	Urban N=142 Rural N=25	Urban N=156 Rural N=28	Urban N=8 Rural N=12	Urban N=2,892 Rural N=286	Urban N=417 Rural N=14	Urban N=3,615 Rural N=365	Urban N=3,797 Rural N=565
Oral Quinine											
Urban	85.6 (73.3, 92.8)	0.0 -	61.8 (50.6, 71.8)	59.7 (49.4, 69.2)	55.7 (45.3, 65.5)	66.2 (50.1, 79.2)	76.0 (37.0, 94.5)	13.0 (10.9, 15.5)	43.3 (34.1, 52.8)	18.9 (16.0, 22.2)	20.2 (17.3, 23.5)
Rural	80.8 (66.5, 89.9)	1.6 (0.2, 9.7)	100.0 -	16.9 (10.7, 25.7)	61.3 (35.4, 82.1)	66.5 (36.2, 87.4)	79.5 (48.9, 94.0)	10.0 (4.1, 22.5)	48.8 (19.4, 79.1)	15.7 (6.2, 34.7)	16.0 (7.4, 31.1)
Quinine IV/IM											
Urban	73.2 (57.1, 84.9)	0.0 -	61.1 (40.9, 78.1)	53.5 (43.7, 63.1)	66.0 (61.4, 70.3)	41.0 (22.7, 62.2)	13.0 (1.9, 53.0)	0.3 (0.1, 0.9)	0.0 -	3.0 (2.2, 4.0)	4.6 (3.2, 6.6)
Rural	64.2 (51.6, 75.2)	0.0 -	52.3 (5.5, 95.4)	11.7 (6.9, 19.3)	49.4 (29.5, 69.5)	41.5 (31.9, 51.8)	0.0 -	0.3 (0.0, 2.0)	0.0 -	4.0 (1.9, 8.0)	5.4 (3.4, 8.5)
Other non-artemisinin therapy											
Urban	0.0 -	0.0 -	3.0 (0.8, 10.2)	0.9 (0.2, 4.3)	3.5 (1.0, 11.5)	52.2 (32.6, 71.0)	43.8 (23.0, 67.0)	1.1 (0.6, 2.1)	2.4 (1.3, 4.4)	2.0 (1.3, 3.1)	1.9 (1.3, 2.9)
Rural	0.0 -	0.0 -	0.0 -	0.0 -	7.8 (1.6, 29.8)	75.5 (50.3, 90.4)	28.5 (10.4, 58.0)	0.3 (0.0, 2.2)	0.0 -	1.1 (0.4, 3.4)	0.9 (0.3, 2.8)
Oral artemisinin monotherapy											
Urban	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Rural	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Non-oral artemisinin monotherapy											
Urban	19.1 (10.1, 33.2)	0.0 -	5.5 (2.4, 12.1)	10.9 (5.8, 19.6)	17.1 (12.7, 22.5)	55.8 (34.0, 75.5)	24.0 (5.5, 63.0)	0.0 (0.0, 0.2)	0.0 -	1.2 (0.8, 1.9)	1.5 (1.0, 2.4)
Rural	26.7 (17.3, 38.8)	0.0 -	0.0 -	4.3 (2.1, 9.0)	15.1 (6.5, 31.3)	54.0 (37.2, 69.9)	15.9 (3.0, 53.7)	0.0 -	0.0 -	1.3 (0.5, 3.6)	1.9 (0.9, 3.8)
Injectable artemether											
Urban	19.1 (10.1, 33.2)	0.0 -	5.5 (2.4, 12.1)	10.9 (5.8, 19.6)	17.1 (12.7, 22.5)	52.9 (32.4, 72.4)	24.0 (5.5, 63.0)	0.0 (0.0, 0.2)	0.0 -	1.2 (0.8, 1.8)	1.5 (1.0, 2.3)
Rural	26.7 (17.3, 38.8)	0.0 -	0.0 -	4.3 (2.1, 9.0)	11.2 (4.4, 25.6)	51.5 (36.8, 65.9)	15.9 (3.0, 53.7)	0.0 -	0.0 -	1.0 (0.4, 2.6)	1.6 (0.8, 3.3)

	Table B1: Availability of antimalarials, among all screened outlets, by outlet type, across urban/rural location										
	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public****	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Urban N=93 Rural N=138	Urban N=16 Rural N=62	Urban N=43 Rural N=2	Urban N=152 Rural N=200	Urban N=142 Rural N=25	Urban N=156 Rural N=28	Urban N=8 Rural N=12	Urban N=2,892 Rural N=286	Urban N=417 Rural N=14	Urban N=3,615 Rural N=365	Urban N=3,797 Rural N=565
Injectable artesunate											
Urban	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Rural	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Any treatment for severe malaria											
Urban	82.2 (69.0, 90.5)	0.0 -	63.0 (42.7, 79.6)	58.4 (48.2, 67.9)	67.6 (62.7, 72.2)	71.4 (51.8, 85.3)	37.0 (10.5, 74.7)	0.3 (0.1, 0.9)	0.0 -	3.4 (2.4, 4.8)	5.2 (3.5, 7.6)
Rural	71.1 (60.5, 79.7)	0.0 -	52.3 (5.5, 95.4)	12.9 (7.5, 21.1)	53.5 (33.6, 72.3)	54.0 (37.2, 69.9)	15.9 (3.0, 53.7)	0.3 (0.0, 2.0)	0.0 -	4.3 (2.2, 8.4)	5.9 (3.8, 9.2)
	* The denominator includes 185 outlets that met screening criteria for a full interview but did not complete the interview (were not interviewed or completed a partial interview).										
	** The denominator includes 78 community health workers and 45 private not-for-profit outlets. Urban: 59 outlets. Rural: 64 outlets.										
	Source: ACTwatch Outlet Survey, Benin, 2014.										

	Table B2: Availability of antimalarials, among all outlets stocking at least one antimalarial, by outlet type, across urban/r ural location										
	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Urban N=96 Rural N=138	Urban N=16 Rural N=62	Urban N=45 Rural N=2	Urban N=157 Rural N=202	Urban N=149 Rural N=28	Urban N=157 Rural N=28	Urban N= 8 Rural N=12	Urban N=2,909 Rural N=288	Urban N=417 Rural N=14	Urban N=3,640 Rural N=370	Urban N=3,797 Rural N=572
Any antimalarial at the time of survey visit											
Urban	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -
Rural	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -	100.0 -
Any ACT											
Urban	92.0 (84.9, 95.9)	100.0 -	47.8 (26.6, 69.7)	80.4 (63.1, 90.8)	36.8 (24.1, 51.6)	90.6 (67.8, 97.8)	53.2 (13.8, 89.0)	39.0 (30.5, 48.1)	27.7 (13.3, 48.9)	37.5 (26.4, 50.2)	40.6 (28.5, 53.9)
Rural	89.1 (74.4, 95.8)	93.6 (78.5, 98.3)	100.0 -	92.7 (82.4, 97.2)	57.5 (35.3, 77.0)	100.0 -	85.5 (47.0, 97.5)	37.4 (23.5, 53.8)	32.8 (22.1, 45.7)	41.1 (28.1, 55.5)	54.0 (43.7, 64.0)
Artemether Lumefantrine (AL)											
Urban	91.7 (84.5, 95.7)	100.0 -	45.5 (25.6, 66.9)	79.6 (62.4, 90.1)	34.4 (22.2, 49.1)	90.6 (67.8, 97.8)	53.2 (13.8, 89.0)	38.9 (30.4, 48.1)	27.7 (13.3, 48.9)	37.3 (26.2, 49.9)	40.3 (28.3, 53.6)
Rural	88.5 (74.3, 95.3)	93.6 (78.5, 98.3)	100.0 -	92.5 (81.9, 97.1)	57.5 (35.3, 77.0)	100.0 -	64.8 (19.5, 93.3)	37.4 (23.5, 53.8)	32.8 (22.1, 45.7)	40.9 (27.9, 55.3)	53.8 (43.6, 63.7)
Artesunate Sulfadoxine Pyrimethamine (ASSP)											
Urban	0.9 (0.2, 4.2)	0.0 -	0.0 -	0.5 (0.1, 2.1)	3.5 (2.0, 6.1)	79.4 (44.7, 94.8)	39.3 (10.3, 78.4)	0.0 -	0.0 -	2.5 (1.5, 4.0)	2.3 (1.4, 3.7)
Rural	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	97.4 (92.7, 99.1)	1.7 (0.2, 14.5)	0.0 -	0.0 -	0.6 (0.1, 2.8)	0.4 (0.1, 2.0)
Artesunate Amodiaquine (ASAQ)											
Urban	9.2 (3.9, 20.5)	0.0 -	4.6 (0.8, 22.2)	6.4 (2.8, 14.3)	2.4 (0.4, 12.1)	61.0 (44.4, 75.4)	0.0 -	0.4 (0.2, 1.0)	0.0 -	1.9 (1.1, 3.1)	2.2 (1.3, 3.6)

	Table B2: Availability of antimalarials, among all outlets stocking at least one antimalarial, by outlet type, across urban/r ural location										
	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Urban N=96 Rural N=138	Urban N=16 Rural N=62	Urban N=45 Rural N=2	Urban N=157 Rural N=202	Urban N=149 Rural N=28	Urban N=157 Rural N=28	Urban N= 8 Rural N=12	Urban N=2,909 Rural N=288	Urban N=417 Rural N=14	Urban N=3,640 Rural N=370	Urban N=3,797 Rural N=572
Rural	5.6 (1.8, 16.1)	0.0 -	0.0 -	1.5 (0.4, 5.5)	0.0 -	81.6 (55.3, 94.1)	0.0 -	0.0 -	0.0 -	0.5 (0.1, 2.1)	0.7 (0.2, 2.0)
DHAPPQ											
Urban	0.1 (0.0, 0.4)	0.0 -	1.8 (0.5, 6.2)	0.6 (0.1, 2.8)	3.5 (1.6, 7.5)	80.5 (44.6, 95.5)	25.7 (5.5, 67.5)	0.2 (0.1, 0.5)	0.0 -	2.5 (1.5, 4.0)	2.4 (1.5, 3.7)
Rural	0.0 -	0.0 -	0.0 -	0.0 -	4.2 (1.0, 16.7)	87.3 (47.9, 98.1)	50.8 (35.1, 66.3)	0.0 -	0.0 -	1.6 (0.6, 3.9)	1.2 (0.5, 3.0)
Quality Assured ACT (QA ACT)											
Urban	91.1 (84.2, 95.2)	100.0 -	43.6 (23.1, 66.6)	78.7 (61.2, 89.7)	25.8 (16.9, 37.3)	85.6 (67.9, 94.3)	34.8 (9.3, 73.6)	38.7 (30.0, 48.2)	27.7 (13.3, 48.9)	36.3 (25.3, 49.0)	39.3 (27.3, 52.8)
Rural	89.1 (74.4, 95.8)	93.6 (78.5, 98.3)	100.0 -	92.7 (82.4, 97.2)	53.2 (34.0, 71.6)	97.4 (92.7, 99.1)	64.8 (19.5, 93.3)	35.9 (22.2, 52.3)	32.8 (22.1, 45.7)	39.0 (26.6, 53.1)	52.5 (42.3, 62.4)
QA ACT AL											
Urban	90.9 (84.0, 95.0)	100.0 -	41.4 (21.7, 64.3)	77.9 (60.4, 89.1)	23.4 (15.3, 34.2)	85.2 (67.8, 94.0)	34.8 (9.3, 73.6)	38.7 (30.0, 48.2)	27.7 (13.3, 48.9)	36.1 (25.2, 48.7)	39.1 (27.2, 52.5)
Rural	88.5 (74.3, 95.3)	93.6 (78.5, 98.3)	100.0 -	92.5 (81.9, 97.1)	53.2 (34.0, 71.6)	87.3 (47.9, 98.1)	64.8 (19.5, 93.3)	35.9 (22.2, 52.3)	32.8 (22.1, 45.7)	39.0 (26.5, 53.0)	52.4 (42.3, 62.3)
QA ACT with the 'green leaf' logo											
Urban	0.7 (0.2, 2.3)	0.0 -	19.6 (10.6, 33.4)	6.1 (3.0, 12.0)	16.3 (9.4, 26.6)	12.7 (4.2, 32.8)	23.6 (5.2, 63.3)	34.9 (26.0, 45.1)	23.9 (10.7, 45.0)	30.4 (20.2, 43.1)	28.7 (19.6, 39.9)
Rural	1.5 (0.4, 6.1)	0.0 -	52.3 (5.5, 95.4)	2.5 (0.5, 10.6)	45.9 (23.8, 69.8)	7.9 (2.7, 21.0)	35.5 (9.0, 75.5)	33.5 (21.5, 48.2)	32.8 (22.1, 45.7)	35.3 (24.0, 48.5)	27.1 (17.3, 39.7)
QA ACT without the 'green leaf' logo											
Urban	90.5 (83.3, 94.7)	100.0 -	24.0 (11.6, 43.2)	72.7 (54.1, 85.7)	9.5 (5.6, 15.6)	72.9 (43.4, 90.4)	11.2 (2.3, 40.1)	3.7 (2.8, 5.1)	3.8 (2.3, 6.2)	5.9 (4.6, 7.4)	10.6 (7.2, 15.3)
Rural	87.6 (73.6, 94.7)	93.6 (78.5, 98.3)	47.7 (4.6, 94.5)	90.2 (81.6, 95.1)	7.3 (1.7, 26.0)	89.5 (72.6, 96.5)	29.4 (8.3, 65.7)	2.4 (0.7, 8.0)	0.0 -	3.7 (1.5, 9.1)	25.4 (15.6, 38.5)
QA ACT - child (<5 years)											

Table B2: Availability of antimalarials, among all outlets stocking at least one antimalarial, by outlet type, across urban/r ural location

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Urban N=96 Rural N=138	Urban N=16 Rural N=62	Urban N=45 Rural N=2	Urban N=157 Rural N=202	Urban N=149 Rural N=28	Urban N=157 Rural N=28	Urban N= 8 Rural N=12	Urban N=2,909 Rural N=288	Urban N=417 Rural N=14	Urban N=3,640 Rural N=370	Urban N=3,797 Rural N=572
Urban	74.5 (59.3, 85.4)	100.0 -	34.2 (13.6, 63.2)	66.8 (48.6, 81.0)	14.4 (8.7, 22.8)	71.6 (57.5, 82.5)	21.3 (4.6, 60.4)	33.0 (24.6, 42.7)	21.4 (10.2, 39.5)	29.8 (20.2, 41.7)	32.5 (21.9, 45.2)
Rural	77.7 (65.0, 86.8)	77.5 (70.9, 83.0)	47.7 (4.6, 94.5)	76.4 (70.9, 81.1)	31.6 (19.5, 46.8)	81.6 (55.3, 94.1)	39.5 (15.2, 70.4)	35.1 (21.8, 51.4)	32.8 (22.1, 45.7)	34.7 (23.2, 48.4)	45.2 (35.1, 55.6)
QA ACT - adults											
Urban	70.5 (58.6, 80.1)	0.0 -	32.0 (13.0, 59.7)	48.3 (36.0, 60.8)	20.0 (13.9, 28.0)	85.0 (67.8, 93.9)	20.8 (5.2, 55.9)	13.6 (9.4, 19.4)	12.2 (4.9, 27.1)	15.5 (10.1, 23.0)	17.8 (11.8, 26.0)
Rural	64.7 (50.3, 76.7)	7.5 (2.2, 22.9)	52.3 (5.5, 95.4)	24.2 (15.4, 35.8)	34.4 (16.5, 58.3)	94.7 (85.7, 98.2)	31.5 (11.3, 62.4)	7.4 (2.9, 17.9)	0.0 -	11.9 (5.9, 22.7)	15.0 (9.7, 22.4)
Non-quality-assured ACT (non-QA ACT)											
Urban	1.0 (0.2, 4.1)	0.0 -	8.2 (3.3, 19.0)	2.9 (1.1, 7.3)	16.1 (8.9, 27.5)	90.6 (67.8, 97.8)	39.3 (10.3, 78.4)	0.7 (0.3, 1.6)	0.0 -	4.1 (2.7, 6.0)	4.0 (2.7, 5.8)
Rural	0.0 -	0.0 -	0.0 -	0.0 -	8.5 (1.9, 31.0)	100.0 -	58.7 (41.9, 73.7)	1.6 (0.4, 5.5)	0.0 -	3.6 (1.7, 7.5)	2.7 (1.2, 6.0)
Non-quality-assured ACT AL (non-QA ACT AL)											
Urban	0.9 (0.2, 4.2)	0.0 -	8.2 (3.3, 19.0)	2.9 (1.1, 7.2)	16.1 (8.9, 27.5)	81.9 (43.7, 96.4)	29.6 (7.0, 70.2)	0.4 (0.2, 1.2)	0.0 -	3.6 (2.4, 5.4)	3.6 (2.4, 5.3)
Rural	0.0 -	0.0 -	0.0 -	0.0 -	8.5 (1.9, 31.0)	100.0 -	20.6 (6.0, 51.2)	1.6 (0.4, 5.5)	0.0 -	3.3 (1.4, 7.3)	2.5 (1.0, 5.9)
Nationally Registered ACT											
Urban	5.1 (1.7, 13.8)	10.6 (1.8, 42.9)	9.8 (3.5, 24.6)	7.3 (3.4, 15.1)	9.1 (6.6, 12.4)	81.9 (43.7, 96.4)	39.3 (10.3, 78.4)	1.0 (0.5, 2.0)	0.6 (0.2, 2.1)	3.8 (2.5, 5.6)	4.0 (2.7, 5.9)
Rural	10.4 (4.3, 22.8)	0.0 -	0.0 -	2.7 (1.0, 7.0)	0.0 -	97.4 (92.7, 99.1)	47.3 (19.1, 77.3)	0.0 -	0.0 -	1.0 (0.3, 2.9)	1.4 (0.6, 3.1)
Any non-artemisinin therapy											

Table B2: Availability of antimalarials, among all outlets stocking at least one antimalarial, by outlet type, across urban/r ural location

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Urban N=96 Rural N=138	Urban N=16 Rural N=62	Urban N=45 Rural N=2	Urban N=157 Rural N=202	Urban N=149 Rural N=28	Urban N=157 Rural N=28	Urban N= 8 Rural N=12	Urban N=2,909 Rural N=288	Urban N=417 Rural N=14	Urban N=3,640 Rural N=370	Urban N=3,797 Rural N=572
Urban	99.2 (96.4, 99.8)	0.0 -	92.0 (73.1, 98.0)	81.6 (66.7, 90.8)	99.3 (97.6, 99.8)	96.8 (91.4, 98.8)	81.6 (36.0, 97.2)	93.1 (87.8, 96.2)	96.4 (88.3, 99.0)	94.3 (88.8, 97.2)	93.4 (87.6, 96.6)
Rural	95.1 (82.5, 98.8)	6.4 (1.7, 21.5)	100.0 -	33.2 (19.0, 51.3)	93.7 (65.3, 99.1)	100.0 -	93.4 (59.1, 99.3)	88.4 (77.2, 94.5)	100.0 -	90.1 (79.7, 95.4)	75.8 (62.6, 85.4)
Sulfadoxine Pyrimethamine											
Urban	28.8 (18.1, 42.5)	0.0 -	34.1 (21.9, 48.8)	25.8 (18.5, 34.8)	19.4 (14.1, 26.2)	88.2 (75.8, 94.6)	44.2 (24.3, 66.2)	34.0 (22.3, 48.0)	69.6 (51.4, 83.2)	42.5 (28.6, 57.8)	41.4 (27.9, 56.3)
Rural	53.3 (43.9, 62.4)	3.4 (0.4, 21.7)	100.0 -	20.2 (11.2, 33.7)	19.1 (7.6, 40.2)	82.6 (43.7, 96.7)	65.7 (42.0, 83.5)	6.0 (2.7, 13.0)	0.0 -	8.7 (4.5, 16.1)	11.6 (7.5, 17.3)
Oral Quinine											
Urban	90.3 (76.2, 96.5)	0.0 -	75.7 (61.8, 85.7)	72.0 (59.7, 81.7)	73.7 (60.1, 83.8)	73.9 (59.0, 84.8)	81.6 (36.0, 97.2)	44.3 (29.4, 60.2)	61.9 (52.5, 70.5)	51.4 (38.0, 64.7)	52.9 (40.4, 65.0)
Rural	82.2 (67.5, 91.1)	3.0 (0.4, 18.1)	100.0 -	27.5 (15.6, 43.7)	67.0 (41.5, 85.3)	70.0 (32.9, 91.7)	79.5 (48.9, 94.0)	27.0 (11.5, 51.1)	76.6 (40.9, 94.0)	37.0 (16.1, 64.3)	34.6 (17.1, 57.6)
Quinine IV/IM											
Urban	77.3 (59.8, 88.6)	0.0 -	74.9 (51.1, 89.5)	64.5 (52.8, 74.8)	87.3 (82.0, 91.2)	45.8 (26.0, 67.0)	14.0 (2.1, 55.7)	1.1 (0.4, 2.8)	0.0 -	8.1 (6.2, 10.6)	12.1 (9.3, 15.7)
Rural	65.4 (52.2, 76.6)	0.0 -	52.3 (5.5, 95.4)	19.1 (10.4, 32.3)	54.0 (33.3, 73.4)	43.7 (33.0, 55.0)	0.0 -	0.7 (0.1, 4.5)	0.0 -	9.3 (4.9, 17.0)	11.8 (7.6, 17.8)
Other non-artemisinin therapy											
Urban	0.0 -	0.0 -	3.7 (1.0, 12.1)	1.1 (0.2, 5.2)	4.6 (1.4, 14.8)	58.2 (36.3, 77.3)	47.0 (26.0, 69.1)	3.7 (2.0, 6.9)	3.5 (2.1, 5.8)	5.4 (3.6, 8.0)	5.1 (3.5, 7.3)
Rural	0.0 -	0.0 -	0.0 -	0.0 -	8.5 (1.9, 31.0)	79.5 (51.5, 93.4)	28.5 (10.4, 58.0)	0.8 (0.1, 6.0)	0.0 -	2.7 (1.0, 7.0)	2.0 (0.7, 5.6)
Oral artemisinin monotherapy											
Urban	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Rural	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -

Table B2: Availability of antimalarials, among all outlets stocking at least one antimalarial, by outlet type, across urban/r ural location

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Urban N=96 Rural N=138	Urban N=16 Rural N=62	Urban N=45 Rural N=2	Urban N=157 Rural N=202	Urban N=149 Rural N=28	Urban N=157 Rural N=28	Urban N= 8 Rural N=12	Urban N=2,909 Rural N=288	Urban N=417 Rural N=14	Urban N=3,640 Rural N=370	Urban N=3,797 Rural N=572
Non-oral artemisinin monotherapy											
Urban	20.2 (10.7, 34.8)	0.0 -	6.7 (3.0, 14.4)	13.1 (7.1, 23.0)	22.6 (17.7, 28.4)	62.3 (37.5, 82.0)	25.7 (5.5, 67.5)	0.1 (0.0, 0.6)	0.0 -	3.3 (2.3, 4.9)	4.0 (2.8, 5.8)
Rural	27.2 (17.5, 39.7)	0.0 -	0.0 -	7.1 (2.9, 16.1)	16.5 (6.8, 34.8)	56.8 (36.5, 75.0)	15.9 (3.0, 53.7)	0.0 -	0.0 -	3.1 (1.3, 6.8)	4.1 (2.2, 7.2)
Injectable Artemether											
Urban	20.2 (10.7, 34.8)	0.0 -	6.7 (3.0, 14.4)	13.1 (7.1, 23.0)	22.6 (17.7, 28.4)	59.9 (36.2, 79.8)	25.7 (5.5, 67.5)	0.1 (0.0, 0.6)	0.0 -	3.3 (2.2, 4.8)	4.0 (2.8, 5.8)
Rural	27.2 (17.5, 39.7)	0.0 -	0.0 -	7.1 (2.9, 16.1)	12.2 (4.5, 29.3)	54.2 (36.4, 71.0)	15.9 (3.0, 53.7)	0.0 -	0.0 -	2.4 (1.1, 5.0)	3.5 (2.0, 6.3)
Injectable Artesunate											
Urban	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Rural	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Any treatment for severe malaria											
Urban	86.7 (72.5, 94.2)	0.0 -	77.2 (53.1, 91.0)	70.4 (58.7, 79.9)	89.5 (85.3, 92.6)	79.7 (62.3, 90.3)	39.7 (10.2, 79.2)	1.1 (0.4, 2.8)	0.0 -	9.3 (6.9, 12.3)	13.6 (10.3, 17.8)
Rural	72.3 (61.5, 81.0)	0.0 -	52.3 (5.5, 95.4)	20.9 (11.4, 35.2)	58.4 (35.6, 78.1)	56.8 (36.5, 75.0)	15.9 (3.0, 53.7)	0.7 (0.1, 4.5)	0.0 -	10.2 (5.7, 17.7)	12.9 (8.6, 19.0)

* Antimalarial-stocking outlets have at least one antimalarial in stock on the day of the survey, verified by presence of at least one antimalarial recorded in the antimalarial audit sheet. The denominator includes urban and rural outlets that met screening criteria and completed full interviews. 41 outlets that met screening criteria for a full i nterview but did not complete the interview (were not interviewed or completed a partial interview).

Source: ACTwatch Outlet Survey, Benin, 2014.

Table B3: Antimalarial market composition, across urban/rural location

Outlet type, among outlets with at least 1 antimalarial in stock on the day of the survey:*	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public / Not For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Urban, N= 1,304	3.1 (1.8, 5.2)	1.1 (0.3, 3.6)	2.1 (1.3, 3.4)	6.3 (3.7, 10.5)	6.5 (4.8, 8.9)	3.5 (1.7, 6.8)	0.2 (0.1, 1.1)	62.1 (49.7, 73.1)	21.4 (13.0, 33.3)	93.7 (89.5, 96.3)
Rural, N= 197	8.2 (4.8, 13.8)	17.1 (8.0, 32.9)	1.0 (0.2, 4.8)	26.3 (14.9, 42.3)	11.5 (5.1, 24.1)	- -	1.4 (0.3, 7.7)	56.2 (44.9, 66.9)	4.5 (0.7, 24.0)	73.7 (57.7, 85.1)

* Excluding booster sample outlets. Outlets with at least one antimalarial in stock on the day of the survey, verified by presence of at least one antimalarial recorded in the antimalarial audit sheet.

Source: ACTwatch Outlet Survey, Benin, 2014.

	Table B4a: Price of tablet formulation antimalarials, by outlet type, across urban/rural location					
	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
Median price of a tablet AETD*:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Any ACT						
Urban	$4.12 [2.06-5.77] (77)	$6.74 [5.13-8.42] (4,718)	$7.24 [4.77-7.84] (18)	$1.65 [1.44-2.47] (512)	$1.65 [1.65-2.47] (112)	$4.09 [1.65-7.23] (5,437)
Rural	$2.47 [2.06-4.12] (23)	$6.74 [5.05-8.19] (914)	$5.77 [2.89-7.95] (32)	$1.65 [1.24-2.47] (56)	$1.65 [1.44-2.06] (4)	$2.47 [1.65-4.58] (1,029)
Artemether Lumefantrine (AL)						
Urban	$3.09 [2.06-5.15] (68)	$5.49 [4.82-7.23] (3,007)	$5.77 [3.30-7.71] (12)	$1.65 [1.44-2.47] (507)	$1.65 [1.65-2.47] (112)	$2.47 [1.65-5.30] (3,706)
Rural	$2.47 [2.06-4.12] (23)	$5.48 [4.81-7.23] (572)	$4.54 [2.47-7.23] (24)	$1.65 [1.24-2.47] (56)	$1.65 [1.44-2.06] (4)	$2.47 [1.44-4.12] (679)
Artesunate Sulfadoxine Pyrimethamine (ASSP)						
Urban	$7.84 [7.23-14.43] (4)	$7.23 [7.23-9.63] (465)	$7.24 [7.24-7.84] (4)	- -	- -	$7.24 [7.23-9.63] (473)
Rural	- -	$7.23 [7.23-9.63] (95)	$9.93 [5.18-14.69] (2)	- -	- -	$7.23 [7.23-9.63] (97)
DHAPPQ						
Urban	$8.04 [7.22-9.12] (3)	$9.15 [8.19-9.61] (356)	$9.15 [9.14-9.15] (2)	$8.25 [8.25-8.25] (2)	- -	$9.15 [8.19-9.61] (363)
Rural	- -	$9.15 [8.19-9.61] (61)	$8.02 [7.82-8.25] (5)	- -	- -	$9.14 [8.19-9.61] (66)
ASAQ						
Urban	$2.06 [2.06-2.06] (2)	$5.57 [3.13-8.02] (308)	- -	$1.65 [1.44-2.06] (3)	- -	$5.54 [2.39-8.02] (313)
Rural	- -	$5.61 [3.13-9.65] (71)	- -	- -	- -	$5.61 [3.13-9.65] (71)
Quality Assured ACT (QA ACT)						

	Table B4a: Price of tablet formulation antimalarials, by outlet type, across urban/rural location					
	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
Median price of a tablet AETD*:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Urban	$2.06 [1.65-2.89] (40)	$6.02 [3.86-8.42] (876)	$3.30 [2.06-6.39] (7)	$1.65 [1.44-2.47] (502)	$1.65 [1.65-2.47] (112)	$2.06 [1.65-2.89] (1,537)
Rural	$2.47 [2.06-4.12] (21)	$5.77 [3.86-8.42] (174)	$2.89 [2.06-5.77] (12)	$1.65 [1.24-2.47] (54)	$1.65 [1.44-2.06] (4)	$2.06 [1.24-2.47] (265)
Quality Assured ACT (QA ACT) with logo						
Urban	$2.06 [1.65-2.89] (24)	$1.44 [1.44-2.06] (8)	$2.06 [2.06-3.30] (3)	$1.65 [1.44-2.47] (424)	$1.65 [1.65-2.47] (87)	$1.65 [1.48-2.47] (546)
Rural	$2.47 [2.06-4.12] (17)	$3.61 [3.61-6.74] (3)	$2.06 [1.65-2.89] (6)	$1.65 [1.24-2.47] (48)	$1.65 [1.44-2.06] (4)	$2.06 [1.24-2.47] (78)
Quality Assured ACT (QA ACT) without logo						
Urban	$2.06 [1.65-4.95] (16)	$6.02 [4.82-8.42] (868)	$7.41 [5.77-8.42] (4)	$1.65 [1.37-2.47] (78)	$1.65 [1.44-2.47] (25)	$3.71 [2.06-6.39] (991)
Rural	$2.06 [1.65-4.12] (4)	$5.77 [3.86-8.42] (171)	$5.77 [5.77-6.60] (6)	$1.65 [1.24-2.47] (6)	- -	$3.13 [1.65-5.61] (187)
QA ACT AL						
Urban	$2.06 [1.65-3.09] (38)	$5.77 [3.86-8.42] (649)	$3.30 [2.06-6.39] (7)	$1.65 [1.44-2.47] (499)	$1.65 [1.65-2.47] (112)	$2.06 [1.65-2.68] (1,305)
Rural	$2.47 [2.06-4.12] (21)	$6.02 [4.98-7.23] (119)	$2.89 [2.06-5.77] (12)	$1.65 [1.24-2.47] (54)	$1.65 [1.44-2.06] (4)	$2.06 [1.24-2.47] (210)
Non-quality assured ACT (non-QA ACT)						
Urban	$6.68	$7.23	$7.59	$5.15	-	$7.23

Table B4a: Price of tablet formulation antimalarials, by outlet type, across urban/rural location

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
Median price of a tablet AETD*:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
	[4.74-7.42] (37)	[5.15-8.20] (3,842)	[7.24-9.14] (11)	[3.30-8.25] (10)	-	[5.13-8.19] (3,900)
Rural	$4.95 [1.65-8.25] (2)	$7.23 [5.12-7.95] (740)	$7.46 [7.23-8.19] (20)	$1.24 [1.24-2.47] (2)	- -	$6.74 [4.81-8.19] (764)
Sulfadoxine-Pyrimethamine						
Urban	$0.62 [0.41-1.03] (25)	$1.01 [0.79-1.03] (355)	$1.03 [1.03-1.24] (7)	$0.52 [0.41-0.62] (539)	$0.52 [0.41-0.62] (346)	$0.52 [0.41-0.62] (1,272)
Rural	$0.52 [0.41-0.52] (5)	$1.03 [0.89-2.11] (65)	$1.03 [0.62-1.13] (12)	$0.52 [0.41-0.62] (9)	- -	$0.52 [0.41-0.62] (91)
Quinine						
Urban	$4.33 [3.90-6.50] (130)	$11.25 [5.50-24.56] (326)	$7.79 [5.20-17.17] (10)	$4.33 [3.46-5.20] (631)	$4.33 [4.33-5.20] (284)	$4.33 [3.46-5.20] (1,381)
Rural	$4.33 [3.46-5.20] (24)	$11.25 [5.76-25.50] (69)	$4.55 [3.46-6.50] (12)	$4.33 [3.90-5.20] (44)	$4.33 [2.60-5.20] (10)	$4.33 [3.46-5.20] (159)

* AETD - adult equivalent treatment dose - is or the number of milligrams required to treat a 60kg adult (see Annex 11). Information provided by the respondent about price for a specific amount of antimalarial drug (e.g. price per tablet or price per specific package size) was converted to the price per AETD.

Figures in this table are derived using audited products with price information. The numbers of antimalarials captured in audit sheets with missing price information are as follows:

19 any ACT tablets, 14 artemether lumefantrine tablets, 0 artesunate sulfadoxine pyrimethamine tablets, 12 QA ACT tablets; 8 QA ACT with 'green leaf' logo; 4 QA ACT without the 'green leaf' logo; 11 QA ACT AL tablets, 7 non-QA ACT tablets, 2 sulfadoxine pyrimethamine tablets, 11 quinine tablets; 2 DHA PPQ; 2 ASAQ; 3 amodiaquine

Source: ACTwatch Outlet Survey, Benin, 2014.

Table B4b: Price of pre-packaged antimalarials, by outlet type, across urban/rural location

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
Median price of one pre-packaged therapy:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Adult QA AL						
Urban	$1.65 [1.55-2.06] (20)	$6.02 [3.86-8.41] (459)	$6.39 [2.06-8.42] (4)	$1.65 [1.24-1.65] (132)	$1.65 [1.44-1.65] (37)	$1.65 [1.44-3.86] (652)
Rural	$2.06 [1.24-2.47] (8)	$6.38 [3.86-6.74] (87)	$4.54 [1.65-5.77] (6)	$1.65 [1.44-2.47] (8)	- -	$2.06 [1.44-2.47] (109)
Pediatric QA AL*						
Urban	$0.72 [0.52-1.24] (11)	$1.44 [1.44-1.44] (133)	$0.82 [0.82-1.44] (2)	$0.62 [0.41-0.72] (188)	$0.62 [0.62-0.82] (28)	$0.62 [0.41-0.82] (362)
Rural	$1.03 [1.03-1.03] (4)	$1.44 [1.44-1.44] (22)	$1.44 [1.03-1.44] (4)	$0.52 [0.41-0.62] (24)	$0.41 [0.41-0.62] (3)	$0.62 [0.41-0.82] (57)

*QA AL is the pre-packaged regimen appropriate for a two-year old child.

Figures in this table are derived using audited products with price information. The numbers of antimalarials captured in audit sheets with missing price information are as follows: adult QA AL, 1 child QA AL

Source: ACTwatch Outlet Survey, Benin, 2014.

Table B5: Availability of malaria blood testing among antimalarial-stocking outlets*, by outlet type, across urban/rural location

	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking**	Urban N= 87 Rural N= 133	Urban N=14 Rural N=44	Urban N=37 Rural N=2	Urban N= 138 Rural N= 179	Urban N= 116 Rural N= 23	Urban N= 149 Rural N= 26	Urban N= 7 Rural N= 11	Urban N= 833 Rural N= 129	Urban N=296 Rural N=10	Urban N= 1,401 Rural N= 199	Urban N= 1,539 Rural N= 378
Any malaria blood testing											
Urban	89.0 (79.4, 94.5)	32.9 (10.2, 67.9)	49.4 (34.6, 64.3)	65.7 (52.7, 76.7)	40.9 (30.0, 52.8)	0.3 (0.1, 1.5)	0.0 -	0.4 (0.1, 1.0)	0.0 -	3.2 (2.1, 4.9)	7.7 (5.5, 10.8)
Rural	90.0 (82.1, 94.6)	11.6 (1.3, 56.2)	100.0 -	29.9 (12.4, 56.3)	11.9 (3.7, 31.9)	0.0 -	0.0 -	0.7 (0.1, 5.3)	0.0 -	2.3 (0.8, 6.3)	10.0 (4.9, 19.4)
	Urban N= 86 Rural N=132	Urban N=14 Rural N=44	Urban N=37 Rural N=2	Urban N=137 Rural N=178	Urban N=116 Rural N= 23	Urban N=148 Rural N=26	Urban N=7 Rural N=11	Urban N= 828 Rural N=129	Urban N=294 Rural N=10	Urban N=1,393 Rural N=199	Urban N=1,530 Rural N=377
Microscopic blood tests											
Urban	39.8 (29.2, 51.4)	0.0 -	27.5 (17.7, 40.1)	27.5 (20.1, 36.5)	34.6 (23.0, 48.4)	0.2 (0.0, 0.7)	0.0 -	0.1 (0.0, 0.5)	0.0 -	2.6 (1.5, 4.4)	4.4 (3.1, 6.1)
Rural	0.6 (0.1, 4.5)	0.0 -	52.3 (5.5, 95.4)	1.8 (0.3, 9.9)	0.0 -	0.0 -	0.0 -	0.7 (0.1, 5.3)	0.0 -	0.6 (0.1, 4.3)	0.9 (0.2, 3.7)
	Urban N= 87 Rural N= 134	Urban N=14 Rural N=46	Urban N=37 Rural N=2	Urban N=138 Rural N= 182	Urban N=116 Rural N= 23	Urban N= 149 Rural N=26	Urban N=7 Rural N= 11	Urban N=832 Rural N= 128	Urban N=296 Rural N=10	Urban N=1,400 Rural N= 198	Urban N= 1,538 Rural N= 380
Rapid diagnostic tests (RDTs)											
Urban	81.5 (68.6, 89.9)	32.9 (10.2, 67.9)	21.9 (6.0, 55.1)	53.9 (38.3, 68.7)	10.8 (6.7, 16.9)	0.1 (0.0, 0.7)	0.0 -	0.4 (0.1, 1.0)	0.0 -	1.0 (0.7, 1.6)	4.8 (2.7, 8.2)
Rural	90.0 (82.1, 94.6)	11.6 (1.3, 56.2)	47.7 (4.6, 94.5)	28.3 (11.1, 55.4)	11.9 (3.7, 31.9)	0.0 -	0.0 -	0.0 -	0.0 -	1.7 (0.4, 6.2)	9.2 (4.3, 18.4)

* Blood testing availability is reported among outlets that either had antimalarials in stock on the day of the survey or reportedly stocked antimalarials in the previous 3 months.

*** Results in this table are derived using responses captured among outlets with blood testing information. There were 22 antimalarial-stocking outlets with missing information about both availability of microscopy and availability of RDTs. 35 antimalarial-stocking outlets had partial information about blood testing availability and are included in the denominator of the indicator "any blood testing available."

Source: ACTwatch Outlet Survey, Benin, 2014.

Table B7: Price of malaria blood testing, by outlet type, across urban/rural location

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
Total median price to consumers:*	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Microscopic blood tests						
Adult						
Urban	$3.09 [2.47-4.12] (54)	- -	- -	$6.19 (1)	- -	$3.09 [2.47-4.74] (55)
Rural	- -	- -	- -	- -	- -	- -
Child under age five						
Urban	$3.09 [2.47-4.12] (55)	- -	- -	$6.19 (1)	$3.09 [2.47-4.74] (56)	$3.09 [2.47-4.74] (56)
Rural	- -	- -	- -	- -	- -	- -
Rapid diagnostic tests (RDTs)						
Adult						
Urban	$1.55 [0.62-2.06] (12)	- -	- -	$0.00 [0.00-6.19] (2)	$1.03 [0.00-2.06] (14)	$1.03 [0.00-2.06] (14)
Rural	$0.00 [0.00-3.09] (3)	- -	- -	- -	$0.00 [0.00-3.09] (3)	$0.00 [0.00-3.09] (3)
Child under five						
Urban	$1.55 [0.62-2.06] (12)	- -	- -	$0.00 [0.00-6.19] (2)	$1.03 [0.00-2.06] (14)	$1.03 [0.00-2.06] (14)
Rural	$0.00 [0.00-3.09] (3)	- -	- -	- -	$0.00 [0.00-3.09] (3)	$0.00 [0.00-3.09] (3)

* Total price to the consumer including consultation and/or service fees.

Microscopic blood testing price information was not available for all outlets. There were 5 outlets with missing or "don't know" responses.

RDT price information was not available (missing or "don't know" response) for: 2 adult RDTs and 2 child RDTs in median price to consumers and 18 adult RDTs and 18 child RDTs in median price excluding fees.

Source: ACTwatch Outlet Survey, Benin, 2014.

	Table B8a: Antimalarial market share, urban										
AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold/ distributed:*	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**TOTAL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**	**ANTI-MALARIAL TOTAL*** **
	%	%	%	%	%	%	%	%	%	%	%
1. Any ACT	8.5	0.2	0.5	9.2	1.8	24.6	0.1	10.8	1.6	39.0	48.2
Artemether Lumefantrine (AL) Ψ	8.4	0.2	0.4	9.0	1.5	16.8	0.1	10.7	1.6	30.8	39.8
Artesunate Sulfadoxine Pyrimethamine (ASSP)	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	2.4	2.4
DHAPPQ	0.0	0.0	0.0	0.0	0.1	2.5	0.0	0.0	0.0	2.6	2.6
Quality Assured ACT (QA ACT)	8.3	0.2	0.4	8.9	1.3	3.8	0.0	10.7	1.6	17.5	26.3
QA ACT with the 'green leaf' logo	0.6	0.0	0.3	0.8	0.6	0.0	0.0	9.6	1.0	11.2	12.0
QA ACT without the 'green leaf' logo	7.7	0.2	0.1	8.0	0.7	3.8	0.0	1.1	0.7	6.3	14.3
QA AL	8.2	0.2	0.3	8.8	1.1	3.1	0.0	10.7	1.6	16.6	25.4
Non-quality-assured ACT	0.2	0.0	0.1	0.3	0.5	20.8	0.1	0.0	0.0	21.5	21.8
Nationally Registered ACT	0.1	0.0	0.1	0.2	0.1	8.9	0.1	0.2	0.1	9.3	9.5
2. Any non-artemisinin therapy	5.8	0.0	1.6	7.4	1.7	7.3	0.4	24.6	10.0	43.9	51.3
Sulfadoxine-Pyrimethamine	2.0	0.0	0.4	2.4	0.7	6.0	0.3	11.4	7.0	25.5	27.9
Oral Quinine	3.7	0.0	1.1	4.7	0.7	0.9	0.1	2.4	1.1	5.2	10.0
Quinine IV/IM	0.2	0.0	0.1	0.3	0.2	0.0	0.0	0.3	0.0	0.5	0.8
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Non-oral artemisinin monotherapy	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.5	0.5
Injectable artesunate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Injectable artemether	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2
5. Any treatment for severe malaria	0.2	0.0	0.1	0.3	0.3	0.3	0.0	0.4	0.0	1.0	1.3
OUTLET TYPE TOTAL****	14.4	0.2	2.1	16.7	3.6	32.2	0.5	35.4	11.6	83.3	100.0

	Table B8a: Antimalarial market share, urban										
AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold/ distributed:*	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**TOTAL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**	**ANTI-MALARIAL TOTAL*** **
	%	%	%	%	%	%	%	%	%	%	%
	* A total of 18,490.40 AETDs were reportedly sold or distributed in the previous seven days. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category. *** Row sum – market share for the specified antimalarial medicine. **** Column sum – market share for the specified outlet type. Categories 1 through 4 sum to 100% in the far-right column – antimalarial total column. A total of 6,924 antimalarials were audited. Of these, 821 audited antimalarials were not included in market share calculations due to incomplete or inconsistent information.										
	Source: ACTwatch Outlet Survey, Benin, 2014.										

Table B8b: Antimalarial market share, rural

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold/ distributed:*	Public Health Facility	Community Health Worker	Private Not For-Profit Health Facility	**TOTAL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**	**ANTI-MALARIAL TOTAL*** **
	%	%	%	%	%	%	%	%	%	%	%
1. Any ACT	23.6	5.8	1.2	30.6	11.6	0.0	0.2	7.0	0.5	19.3	49.9
Artemether Lumefantrine (AL) Ψ	23.6	5.8	1.2	30.6	11.6	0.0	0.1	7.0	0.5	19.2	49.8
Artesunate Sulfadoxine Pyrimethamine (ASSP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DHAPPQ	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
Quality Assured ACT (QA ACT)	23.6	5.8	1.2	30.6	10.0	0.0	0.1	6.9	0.5	17.5	48.1
QA ACT with the 'green leaf' logo	0.0	0.0	0.8	0.8	9.0	0.0	0.1	6.7	0.5	16.3	17.1
QA ACT without the 'green leaf' logo	23.6	5.8	0.4	29.8	1.0	0.0	0.0	0.2	0.0	1.2	31.0
QA AL	23.6	5.8	1.2	30.6	10.0	0.0	0.1	6.9	0.5	17.5	48.1
Non-quality-assured ACT	0.0	0.0	0.0	0.0	1.6	0.0	0.1	0.1	0.0	1.8	1.8
Nationally Registered ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
2. Any non-artemisinin therapy	11.6	3.1	1.3	16.0	10.9	0.0	0.1	21.2	1.8	33.9	50.0
Sulfadoxine-Pyrimethamine	7.9	3.0	1.3	12.3	1.9	0.0	0.0	2.0	0.0	3.9	16.2
Oral Quinine	3.5	0.0	0.0	3.6	6.9	0.0	0.1	3.3	0.5	10.7	14.3
Quinine IV/IM	0.2	0.0	0.0	0.2	0.6	0.0	0.0	0.0	0.0	0.6	0.8
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Non-oral artemisinin monotherapy	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.2
Injectable artesunate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Injectable artemether	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
5. Any treatment for severe malaria	0.3	0.0	0.0	0.3	0.6	0.0	0.0	0.0	0.0	0.7	1.0
OUTLET TYPE TOTAL**	35.4	8.9	2.5	46.8	22.5	0.0	0.3	28.1	2.3	53.2	100.0

*A total of 1,267.20 AETDs were reportedly sold or distributed in the previous seven days. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

***Row sum – market share for the specified antimalarial medicine.

**** Column sum – market share for the specified outlet type.

Categories 1 through 4 sum to 100% in the far-right column – antimalarial total column.

A total of 433 antimalarials were audited. Of these, 14 audited antimalarials were not included in market share calculations due to incomplete or inconsistent information. Source: ACTwatch Outlet Survey, Benin, 2014.

Table B9a: Antimalarial market share across outlets, urban

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold/ distributed:*	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**TOTAL Public/Not For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**
	%	%	%	%	%	%	%	%	%	%
1. Any ACT	59.1	100.0	23.2	55.1	50.5	76.4	26.4	30.5	14.0	46.8
Artemether Lumefantrine (AL) Ψ	58.3	100.0	20.0	54.0	42.7	52.2	14.8	30.3	14.0	37.0
Artesunate Sulfadoxine Pyrimethamine (ASSP)	0.3	0.0	0.0	0.3	0.7	7.2	6.2	0.0	0.0	2.9
DHAPPQ	0.0	0.0	1.7	0.2	1.8	7.6	5.3	0.1	0.0	3.1
Quality Assured ACT (QA ACT)	57.6	100.0	17.4	53.1	36.1	11.7	7.8	30.3	14.0	21.0
QA ACT with the 'green leaf' logo	4.1	0.0	12.1	5.1	15.7	0.0	0.0	27.2	8.4	13.4
QA ACT without the 'green leaf' logo	53.5	100.0	5.3	48.0	20.3	11.7	7.8	3.2	5.6	7.6
QA AL	57.2	100.0	15.9	52.5	30.8	9.7	7.8	30.3	14.0	20.0
Non-quality-assured ACT	1.4	0.0	5.8	2.0	14.4	64.7	18.6	0.1	0.0	25.8
Nationally Registered ACT	0.7	5.9	3.9	1.2	4.1	27.6	18.6	0.5	0.4	11.2
2. Any non-artemisinin therapy	40.6	0.0	76.7	44.6	46.9	22.6	73.6	69.4	86.0	52.7
Sulfadoxine-Pyrimethamine	13.8	0.0	20.5	14.4	19.5	18.7	56.2	32.2	60.7	30.5
Oral Quinine	25.5	0.0	51.6	28.4	20.5	2.8	17.4	6.8	9.6	6.3
Quinine IV/IM	1.4	0.0	2.9	1.5	5.4	0.1	0.0	0.9	0.0	0.6
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Non-oral artemisinin monotherapy	0.3	0.0	0.1	0.3	2.6	1.0	0.0	0.1	0.0	0.5
Injectable artesunate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Injectable artemether	0.3	0.0	0.1	0.3	2.5	0.3	0.0	0.0	0.0	0.2
5. Any treatment for severe malaria	1.7	0.0	3.0	1.8	7.9	1.0	0.0	1.0	0.0	1.1
OUTLET TYPE TOTAL****	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* 18489.40 AETDs reportedly sold or distributed in the previous seven days: 1933.08 public health facilities; 22.5 community health workers; 487.81 private not for-profit facilities ; 747.68 private for-profit facilities; 7043.56 pharmacies; 80.01 drug stores; 6078.71 general retailers; 2096.03 itinerant vendors. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

Categories 1 through 4 sum to 100% within each column.

A total of 6,924 antimalarials were audited. Of these, 815 audited antimalarials were not included in market share calculations due to incomplete or inconsistent information, including the following number of antimalarials by outlet type: 21 public health facilities; 13 private not-for profit facilities; 62 private for-profit facilities; 535 pharmacies; 7 drug stores; 160 general retailers; 17 itinerant vendors.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table B9b: Antimalarial market share across outlets, rural

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold/ distributed:*	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**TOTAL Public/ Not For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**
	%	%	%	%	%	%	%	%	%	%
1. Any ACT	66.8	65.3	47.0	65.5	51.5	0.0	55.6	24.8	23.6	36.2
Artemether Lumefantrine (AL) Ψ	66.8	65.3	47.0	65.5	51.4	0.0	33.3	24.8	23.6	36.0
Artesunate Sulfadoxine Pyrimethamine (ASSP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DHAPPQ	0.0	0.0	0.0	0.0	0.1	0.0	22.2	0.0	0.0	0.2
Quality Assured ACT (QA ACT)	66.8	65.3	47.0	65.5	44.2	0.0	33.3	24.6	23.6	32.9
QA ACT with the 'green leaf' logo	0.0	0.0	32.3	1.7	39.9	0.0	33.3	23.8	23.6	30.7
QA AL	66.8	65.3	47.0	65.5	44.2	0.0	33.3	24.6	23.6	32.9
Non-quality-assured ACT	0.0	0.0	0.0	0.0	7.3	0.0	22.2	0.2	0.0	3.3
Nationally Registered ACT	0.0	0.0	0.0	0.0	0.0	0.0	22.2	0.0	0.0	0.1
2. Any non-artemisinin therapy	32.9	34.7	53.0	34.3	48.2	0.0	44.4	75.2	76.4	63.7
Sulfadoxine-Pyrimethamine	22.4	34.2	52.0	26.2	8.6	0.0	0.0	7.0	0.0	7.3
Oral Quinine	9.9	0.5	1.0	7.6	30.6	0.0	37.0	11.6	19.6	20.1
Quinine IV/IM	0.6	0.0	0.0	0.5	2.5	0.0	0.0	0.1	0.0	1.1
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Non-oral artemisinin monotherapy	0.3	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.1
Injectable artesunate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Injectable artemether	0.3	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.1
5. Any treatment for severe malaria	0.9	0.0	0.0	0.7	2.8	0.0	0.0	0.1	0.0	1.3
OUTLET TYPE TOTAL****	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0

* 1267.20 AETDs reportedly sold or distributed in the previous seven days: 410.62 public health facilities; 100.07 community health workers; 32.32 private not for-profit facilities; 300.78 private for-profit facilities; 0 pharmacies; 4.50 drug stores; 390.10 general retailers; 28.82 itinerant vendors. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

Categories 1 through 4 sum to 100% within each column.

A total of 433 antimalarials were audited. Of these, 14 audited antimalarials were not included in market share calculations due to due to incomplete or inconsistent information, including the following number of antimalarials by outlet type: 3 private for-profit facilities; 1 drug store; 10 general retailers.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table B12: Provider case management knowledge and practices, by outlet type, across urban/rural location

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public/Not For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
Proportion of providers who:	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Would refer a 2 year old child with symptoms of severe malaria to a health facility	-	Urban N=14 Rural N=48	-	Urban N=14 Rural N=48	-	Urban N=148 Rural N=26	Urban N=7 Rural N=12	Urban N=837 Rural N=126	Urban N= 293 Rural N=10	Urban N=1,285 Rural N=174	Urban N=1,299 Rural N=222
Yes, would refer to health facility											
Urban	NA	100.0 -	- -	100.0 -	NA	91.7 (77.7, 97.3)	100.0 -	93.7 (90.2, 96.1)	89.6 (82.6, 94.0)	92.8 (88.3, 95.6)	92.9 (88.4, 95.7)
Rural	NA	100.0 -	- -	100.0 -	NA	92.1 (79.0, 97.3)	87.8 (59.8, 97.2)	93.3 (82.6, 97.6)	90.0 (83.6, 94.1)	93.0 (83.2, 97.3)	94.9 (87.0, 98.1)
Would recommend that a client with a negative malaria blood test take an antimalarial	Urban N=64 Rural N=117	Urban N=5 Rural N=10	Urban N=14 Rural N=1	Urban N=83 Rural N=128	Urban N=27 Rural N=7	Urban N=9 Rural N=0	Urban N=0 Rural N=0	Urban N=4 Rural N=2	Urban N=2 Rural N=0	Urban N=42 Rural N=9	Urban N=125 Rural N=137
Yes – sometimes											
Urban	2.6 (0.5, 12.1)	0.0 -	18.1 (5.9, 43.9)	5.8 (2.1, 14.9)	32.3 (19.7, 48.2)	0.0 -	- -	0.0 -	0.0 -	23.7 (13.6, 38.1)	11.4 (5.0, 24.1)
Rural	10.1 (5.3, 18.2)	0.0 -	100.0 -	10.0 (2.9, 29.7)	0.0 -	- -	- -	0.0 -	- -	0.0 -	7.1 (2.2, 20.4)
Yes – always											
Urban	19.7 (8.9, 38.1)	0.0 -	19.6 (6.4, 46.3)	16.5 (9.2, 27.7)	14.0 (7.0, 26.3)	19.3 (15.2, 24.2)	- -	0.0 -	0.0 -	11.1 (5.9, 20.0)	14.8 (9.1, 23.0)
Rural	12.1 (6.5, 21.6)	20.1 (6.1, 49.3)	0.0 -	14.8 (7.2, 28.1)	54.7 (15.6, 88.7)	- -	- -	0.0 -	- -	41.5 (14.5, 74.9)	22.6 (10.6, 41.9)
Circumstances cited for recommending antimalarial treatment to a client who tested negative for malaria:*	Urban N=10 Rural N=28	Urban N=0 Rural N=2	Urban N=6 Rural N=1	Urban N=16 Rural N=31	Urban N=14 Rural N=4	Urban N=2 Rural N=0	Urban N=0 Rural N=0	Urban N=0 Rural N=0	Urban N=0 Rural N=0	Urban N=16 Rural N=4	Urban N=32 Rural N=35
Patient has signs and symptoms of malaria.											
Urban	100.0 -	- -	86.1 (53.6, 97.1)	94.6 (75.4, 99.0)	92.2 (72.0, 98.2)	100.0 -	- -	- -	- -	92.4 (72.7, 98.2)	93.7 (72.7, 98.8)
Rural	94.6 (68.3, 99.3)	100.0 -	100.0 -	96.9 (77.0, 99.7)	75.3 (35.6, 94.4)	- -	- -	- -	- -	75.3 (35.6, 94.4)	87.2 (62.7, 96.5)

Table B12: Provider case management knowledge and practices, by outlet type, across urban/rural location

Proportion of providers who:	Public Health Facility % (95% CI)	Community Health Worker % (95% CI)	Private Not For-Profit Facility % (95% CI)	**ALL Public/Not For-Profit** % (95% CI)	Private For-Profit Facility % (95% CI)	Pharmacy % (95% CI)	Drug Store % (95% CI)	General Retailer % (95% CI)	Itinerant Vendor % (95% CI)	**ALL Private** % (95% CI)	**ALL Outlets** % (95% CI)
Provider doesn't trust the test results.											
Urban	-	-	22.0	8.6	47.5	18.4	-	-	-	46.8	24.5
	-	-	(7.8, 48.4)	(2.6, 24.6)	(26.2, 69.7)	(1.9, 72.9)	-	-	-	(25.7, 69.1)	(10.5, 47.4)
Rural	16.2	100.0	-	29.6	24.7	-	-	-	-	24.7	27.4
	(6.8, 34.0)	-	-	(7.5, 68.7)	(5.6, 64.4)	-	-	-	-	(5.6, 64.4)	(6.9, 66.0)
When the patient asks for antimalarial treatment.											
Urban	13.7	-	12.2	13.1	21.4	-	-	-	-	20.9	16.3
	(2.1, 53.8)	-	(2.1, 46.9)	(3.5, 38.7)	(12.4, 34.4)	-	-	-	-	(12.0, 34.0)	(6.8, 34.5)
Rural	20.2	-	-	11.8	-	-	-	-	-	-	6.5
	(7.5, 44.1)	-	-	(4.4, 27.7)	-	-	-	-	-	-	(2.1, 18.1)
Other (all other reasons)											
Urban	29.1	-	33.5	30.8	13.3	18.4	-	-	-	13.4	23.6
	(7.8, 66.6)	-	(5.4, 81.6)	(10.6, 62.5)	(2.9, 43.7)	(1.9, 72.9)	-	-	-	(3.0, 43.9)	(7.9, 52.7)
Rural	29.1	-	-	16.9	-	-	-	-	-	-	9.3
	(15.6, 47.7)	-	-	(8.8, 30.2)	-	-	-	-	-	-	(4.2, 19.5)

Provider questions were administered to one staff member working in each outlet eligible for a full interview (current/recent antimalarial-stocking outlets or outlets providing malaria blood testing).
* 1 provider in the rural strata were missing information on circumstances for recommending antimalarials to clients who tested negative for malaria.

Source: ACTwatch Outlet Survey, Benin, 2014.

Table B13: Provider antimalarial treatment knowledge and practices, by outlet type, across urban/rural location

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public/Not-For-Profit***	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers who:	Urban N=89 Rural N=134	Urban N=14 Rural N=46	Urban N=37 Rural N=2	Urban N=140 Rural N=182	Urban N=117 Rural N=24	Urban N=151 Rural N=26	Urban N=7 Rural N=12	Urban N=845 Rural N=129	Urban N=296 Rural N=10	Urban N=1,416 Rural N=201	Urban N=1,556 Rural N=383
Correctly state the national first-line treatment[Ψ] for uncomplicated malaria											
Urban	92.7 (84.0, 96.9)	100.0 -	81.9 (64.8, 91.8)	91.3 (83.8, 95.5)	81.3 (73.1, 87.5)	78.8 (54.6, 91.9)	62.6 (37.9, 82.1)	34.6 (26.7, 43.4)	29.9 (16.6, 47.8)	38.0 (29.3, 47.5)	41.8 (32.8, 51.4)
Rural	99.4 (95.4, 99.9)	93.4 (81.9, 97.8)	100.0 -	94.8 (84.9, 98.3)	60.7 (38.1, 79.4)	97.4 (92.7, 99.1)	57.4 (30.5, 80.5)	28.9 (17.1, 44.5)	29.9 (17.0, 47.1)	34.2 (25.9, 43.5)	51.1 (42.1, 60.1)
Correctly state the first-line dosing regimen for an adult											
Urban	86.3 (75.6, 92.8)	70.0 (44.3, 87.3)	73.8 (58.1, 85.1)	79.3 (72.7, 84.6)	56.4 (42.6, 69.3)	55.0 (37.9, 71.0)	62.6 (37.9, 82.1)	29.1 (21.8, 37.6)	24.3 (13.5, 39.9)	30.7 (23.0, 39.8)	34.2 (26.1, 43.4)
Rural	95.9 (90.9, 98.2)	48.9 (41.7, 56.2)	100.0 -	59.8 (52.3, 66.9)	56.4 (31.4, 78.5)	74.7 (52.2, 88.9)	51.3 (21.5, 80.2)	18.0 (10.6, 28.8)	10.0 (5.9, 16.4)	23.7 (18.6, 29.6)	33.8 (28.5, 39.5)
Correctly state the first-line dosing regimen for a child											
Urban	91.5 (83.2, 95.9)	90.4 (65.8, 97.9)	72.7 (59.3, 83.0)	86.0 (79.1, 90.9)	66.4 (51.1, 78.9)	66.0 (45.8, 81.7)	53.0 (30.9, 74.0)	30.7 (23.5, 39.1)	26.9 (15.3, 42.8)	33.3 (26.0, 41.5)	37.1 (29.4, 45.5)
Rural	96.0 (90.9, 98.3)	83.3 (70.6, 91.2)	100.0 -	86.3 (75.7, 92.8)	56.4 (31.4, 78.5)	97.4 (92.7, 99.1)	51.2 (25.2, 76.6)	18.9 (11.5, 29.5)	19.9 (11.6, 32.1)	25.1 (19.9, 31.2)	42.3 (35.0, 49.8)
Report an ACT as the most effective antimalarial medicine for an adult											
Urban	79.3 (65.7, 88.4)	93.1 (67.8, 98.9)	51.6 (39.5, 63.6)	74.6 (64.4, 82.7)	63.3 (51.4, 73.7)	85.8 (76.1, 92.0)	78.7 (39.6, 95.4)	29.2 (20.7, 39.3)	19.4 (10.6, 32.8)	30.9 (21.6, 42.1)	34.1 (24.2, 45.5)
Rural	93.9 (87.9, 97.0)	76.2 (53.5, 89.9)	100.0 -	80.4 (60.9, 91.5)	56.6 (33.4, 77.2)	89.5 (72.6, 96.5)	53.8 (17.7, 86.4)	24.8 (15.8, 36.7)	10.0 (5.9, 16.4)	29.2 (22.0, 37.6)	43.7 (35.4, 52.3)

Table B13: Provider antimalarial treatment knowledge and practices, by outlet type, across urban/rural location

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public/Not-For-Profit***	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Report an ACT as the most effective antimalarial medicine for a child											
Urban	91.1 (83.2, 95.5)	100.0 -	59.5 (42.9, 74.1)	84.3 (72.7, 91.5)	67.1 (57.2, 75.6)	83.5 (62.4, 93.9)	53.0 (30.9, 74.0)	36.6 (26.2, 48.4)	21.9 (12.5, 35.7)	36.6 (25.6, 49.2)	40.0 (28.5, 52.7)
Rural	94.9 (89.6, 97.6)	93.3 (85.9, 96.9)	100.0 -	93.8 (87.9, 96.9)	72.2 (52.4, 86.0)	94.7 (85.7, 98.2)	57.0 (19.0, 88.2)	32.9 (20.9, 47.6)	10.0 (5.9, 16.4)	37.9 (27.6, 49.4)	53.7 (41.6, 65.4)
Report an ACT as the antimalarial he/she most commonly recommends for adults											
Urban	79.0 (69.2, 86.4)	69.1 (37.1, 89.4)	69.3 (55.6, 80.2)	74.2 (65.4, 81.4)	59.6 (52.3, 66.6)	78.4 (54.6, 91.6)	55.3 (32.9, 75.8)	27.6 (20.0, 36.7)	19.8 (9.5, 36.8)	29.4 (21.0, 39.4)	32.6 (23.9, 42.7)
Rural	93.2 (85.4, 97.0)	59.4 (49.6, 68.5)	47.7 (4.6, 94.5)	65.8 (56.6, 74.0)	55.2 (35.9, 73.2)	97.4 (92.7, 99.1)	32.0 (12.6, 60.6)	23.6 (14.4, 36.3)	10.0 (5.9, 16.4)	27.9 (19.1, 38.8)	38.4 (30.8, 46.7)
Report an ACT as the antimalarial he/she most commonly recommends for children											
Urban	89.4 (83.0, 93.6)	95.1 (72.7, 99.3)	57.2 (49.1, 65.0)	81.7 (72.2, 88.5)	66.7 (57.7, 74.6)	85.4 (62.8, 95.3)	45.7 (24.6, 68.5)	36.4 (25.5, 49.0)	27.1 (12.2, 49.8)	37.6 (25.8, 51.0)	40.7 (28.6, 54.1)
Rural	94.1 (87.1, 97.4)	95.7 (89.3, 98.3)	100.0 -	95.5 (91.4, 97.7)	84.0 (72.4, 91.3)	97.4 (92.7, 99.1)	41.3 (14.5, 74.4)	35.3 (22.0, 51.2)	19.9 (11.6, 32.1)	41.9 (30.3, 54.4)	56.9 (45.4, 67.8)

Numbers of providers (N) in this table are the total number of providers eligible for table indicators.

Source: ACTwatch Outlet Survey, Benin, 2014.

Results Section C: Core Indicators across Survey Round: 2009, 2011, 2014

Table C1: Availability of antimalarials, among all screened outlets, by outlet type, across survey round

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	2009 N=182 2011 N=199 2014 N=229	2009 N=0 2011 N=51 2014 N=78	2009 N=47 2011 N=80 2014 N=45	2009 N=229 2011 N=330 2014 N=352	2009 N=118 2011 N=152 2014 N=167	2009 N=118 2011 N=230 2014 N=184	2009 N=0 2011 N=0 2014 N=20	2009 N=1,124 2011 N=2,051 2014 N=3,178	2009 N=81 2011 N=128 2014 N=431	2009 N=1,441 2011 N=2,561 2014 N=3,980	2009 N=1,670 2011 N=2,891 2014 N=4,332
Any antimalarial at the time of survey visit											
2009	95.4 (87.8, 98.4)	- -	91.2 (67.5, 98.1)	94.0 (86.7, 97.4)	84.2 (70.2, 92.3)	96.7 (92.0, 98.7)	- -	33.1 (24.7, 42.7)	42.7 (19.9, 69.2)	36.3 (27.1, 46.6)	39.0 (30.1, 48.7)
2011	93.7 (80.1, 98.2)	83.7 (62.4, 94.1)	86.2 (70.0, 94.4)	86.5 (72.6, 94.0)	82.1 (67.9, 90.8)	100.0 -	- -	30.6 (24.6, 37.3)	57.0 (34.0, 77.3)	34.1 (28.6, 40.0)	40.0 (33.1, 47.3)
2014	97.2 (94.4, 98.6)	53.2 (30.9, 74.3)	88.2 (78.1, 94.0)	64.3 (45.4, 79.6)	86.4 (72.3, 93.9)	90.7 (73.2, 97.2)	96.7 (83.8, 99.4)	33.4 (25.8, 41.9)	68.3 (58.3, 76.8)	39.6 (32.6, 47.1)	42.5 (35.6, 49.7)
Any ACT											
2009	81.8 (71.6, 88.8)	- -	38.2 (12.8, 72.3)	67.1 (51.8, 79.5)	18.4 (7.3, 39.4)	96.7 (92.0, 98.7)	- -	0.9 (0.2, 3.2)	0.5 (0.1, 4.6)	2.3 (1.0, 5.1)	5.4 (3.8, 7.5)
2011	74.4 (62.3, 83.7)	83.7 (62.4, 94.1)	53.2 (28.6, 76.3)	78.0 (64.0, 87.6)	39.9 (24.1, 58.2)	97.8 (94.6, 99.1)	- -	5.7 (4.1, 7.9)	16.4 (7.7, 31.7)	8.2 (6.0, 10.9)	16.0 (11.8, 21.4)
2014	87.4 (77.6, 93.3)	50.0 (28.9, 71.1)	60.9 (34.5, 82.2)	58.3 (40.4, 74.2)	44.6 (29.6, 60.8)	84.0 (66.9, 93.1)	67.9 (37.3, 88.2)	12.7 (8.4, 18.8)	19.7 (12.0, 30.8)	15.6 (10.7, 22.3)	20.6 (15.0, 27.6)
Artemether Lumefantrine (AL)											
2009	81.3 (70.9, 88.6)	- -	26.5 (4.9, 71.6)	62.9 (45.8, 77.2)	16.0 (5.3, 39.2)	95.9 (89.9, 98.4)	- -	0.9 (0.2, 3.2)	0.5 (0.1, 4.6)	2.2 (1.0, 4.9)	5.0 (3.5, 7.1)
2011	69.4 (54.0, 81.4)	100.0 -	51.0 (26.1, 75.4)	86.2 (76.0, 92.4)	46.5 (23.2, 71.4)	96.4 (90.7, 98.7)	- -	18.5 (14.1, 23.9)	28.8 (17.5, 43.6)	23.7 (18.0, 30.5)	38.9 (31.8, 46.5)
2014	86.9 (77.3, 92.8)	50.0 (28.9, 71.1)	59.7 (33.5, 81.4)	58.1 (40.3, 74.0)	44.1 (29.0, 60.3)	84.0 (66.9, 93.1)	57.4 (27.1, 83.0)	12.7 (8.4, 18.8)	19.7 (12.0, 30.8)	15.5 (10.6, 22.2)	20.5 (14.9, 27.5)
Artesunate Amodiaquine (ASAQ)											
2009	13.9 (6.3, 27.7)	- -	0.0 -	9.2 (3.9, 20.1)	0.8 (0.2, 2.5)	71.4 (64.3, 77.6)	- -	0.0 -	0.0 -	0.6 (0.2, 1.5)	1.0 (0.5, 1.7)
2011	46.1 (32.1, 60.8)	0.0 -	0.0 -	12.6 (7.2, 21.4)	0.7 (0.1, 4.1)	70.0 (63.8, 75.4)	- -	0.0 -	0.0 -	1.9 (1.0, 3.5)	4.5 (3.2, 6.2)

Table C1: Availability of antimalarials, among all screened outlets, by outlet type, across survey round

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
2014	6.5 (3.2, 12.8)	0.0 -	2.4 (0.4, 12.1)	1.5 (0.7, 3.2)	0.6 (0.1, 3.1)	59.3 (45.6, 71.7)	0.0 -	0.1 (0.0, 0.1)	0.0 -	0.4 (0.3, 0.8)	0.6 (0.3, 0.9)
Quality Assured ACT (QA ACT)											
2009	80.5 (69.8, 88.0)	- -	26.5 (4.9, 71.6)	62.4 (44.9, 77.1)	15.9 (5.3, 39.2)	89.0 (83.7, 92.7)	- -	0.9 (0.2, 3.2)	0.5 (0.1, 4.6)	2.1 (0.9, 4.9)	5.0 (3.5, 7.0)
2011	74.4 (62.2, 83.6)	83.7 (62.4, 94.1)	42.8 (20.9, 67.9)	76.8 (62.8, 86.6)	36.8 (19.9, 57.7)	87.4 (82.3, 91.2)	- -	5.6 (4.1, 7.8)	16.4 (7.7, 31.7)	7.9 (5.8, 10.7)	15.7 (11.4, 21.2)
2014	87.2 (77.5, 93.1)	50.0 (28.9, 71.1)	58.7 (31.9, 81.2)	58.1 (40.3, 74.1)	39.3 (26.2, 54.2)	79.9 (64.7, 89.6)	49.0 (22.7, 75.9)	12.4 (8.2, 18.3)	19.7 (12.0, 30.8)	15.0 (10.2, 21.4)	20.0 (14.5, 26.8)
QA ACT with the "green leaf" logo											
2009	0.0 -	- -	0.0 -	0.0 -	0.0 -	0.0 -	- -	0.0 -	0.0 -	0.0 -	0.0 -
2011	0.3 (0.1, 1.8)	0.0 -	8.2 (3.6, 17.6)	1.0 (0.3, 3.4)	1.2 (0.4, 3.2)	2.2 (0.7, 7.1)	- -	2.0 (0.8, 4.5)	10.9 (2.8, 34.3)	2.4 (1.3, 4.6)	2.1 (1.0, 4.2)
2014	1.2 (0.4, 3.8)	0.0 -	29.0 (9.0, 62.9)	2.0 (0.7, 5.8)	32.5 (17.9, 51.4)	10.6 (4.1, 24.7)	28.9 (11.0, 57.2)	11.4 (7.5, 16.8)	17.7 (10.0, 29.5)	13.1 (8.7, 19.1)	11.8 (8.1, 16.8)
Non-quality-assured ACT											
2009	5.2 (2.7, 10.0)	- -	38.2 (12.8, 72.3)	16.3 (6.5, 35.5)	3.8 (1.5, 9.1)	96.7 (92.0, 98.7)	- -	0.0 (0.0, 0.3)	0.0 -	0.9 (0.4, 2.3)	1.6 (0.8, 3.3)
2011	1.9 (0.7, 4.8)	0.0 -	10.4 (1.9, 41.3)	1.6 (0.4, 5.8)	6.0 (2.0, 16.7)	97.3 (93.7, 98.9)	- -	0.4 (0.1, 1.1)	0.7 (0.1, 3.3)	1.4 (0.9, 2.2)	1.5 (1.0, 2.2)
2014	0.3 (0.1, 1.1)	0.0 -	4.3 (1.5, 11.7)	0.3 (0.1, 0.9)	9.2 (3.9, 20.2)	84.0 (66.9, 93.1)	47.9 (28.0, 68.4)	0.4 (0.1, 1.1)	0.0 -	1.5 (0.9, 2.4)	1.4 (0.8, 2.2)
Any non-artemisinin therapy											
2009	90.8 (82.2, 95.5)	- -	91.2 (67.5, 98.1)	90.9 (82.3, 95.6)	83.6 (68.9, 92.1)	90.7 (79.3, 96.2)	- -	33.0 (24.7, 42.6)	42.7 (19.9, 69.2)	36.2 (27.0, 46.5)	38.8 (29.9, 48.4)

Table C1: Availability of antimalarials, among all screened outlets, by outlet type, across survey round

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
2011	91.9 (80.0, 97.0)	0.0 -	81.6 (64.4, 91.5)	32.4 (18.6, 50.0)	77.1 (65.9, 85.5)	91.4 (85.5, 95.1)	- -	29.5 (23.6, 36.2)	56.7 (33.7, 77.1)	32.8 (27.4, 38.8)	32.8 (27.6, 38.4)
2014	93.6 (86.0, 97.2)	3.3 (0.9, 11.2)	84.0 (72.0, 91.5)	26.6 (17.4, 38.3)	82.3 (67.0, 91.4)	88.3 (72.8, 95.6)	84.9 (61.2, 95.2)	30.2 (23.7, 37.5)	66.4 (55.7, 75.7)	36.5 (30.1, 43.4)	35.3 (29.6, 41.5)
Sulfadoxine-Pyrimethamine											
2009	49.7 (32.9, 66.5)	- -	45.0 (19.3, 73.8)	48.1 (31.5, 65.1)	28.9 (14.3, 49.9)	81.6 (75.6, 86.4)	- -	3.3 (1.6, 7.0)	14.7 (6.2, 31.0)	5.7 (2.9, 10.8)	7.7 (4.7, 12.2)
2011	17.3 (13.2, 22.3)	0.0 -	20.8 (9.3, 40.0)	6.7 (3.5, 12.5)	16.2 (5.6, 38.7)	75.9 (68.4, 82.1)	- -	7.4 (5.2, 10.4)	13.9 (6.9, 26.2)	8.6 (6.6, 11.1)	8.4 (6.4, 10.8)
2014	44.7 (37.6, 51.9)	1.7 (0.2, 11.7)	53.7 (29.9, 75.9)	13.6 (8.3, 21.4)	16.6 (8.4, 30.0)	78.8 (64.3, 88.5)	53.7 (39.0, 67.8)	6.1 (4.1, 9.0)	36.5 (18.0, 60.1)	9.7 (6.4, 14.5)	10.2 (7.0, 14.5)
Oral Quinine											
2009	75.0 (65.6, 82.6)	- -	78.1 (54.1, 91.5)	76.1 (68.4, 82.4)	45.9 (24.5, 69.0)	36.3 (23.3, 51.6)	- -	4.7 (2.1, 10.4)	11.5 (2.0, 44.7)	7.1 (3.2, 15.1)	10.4 (6.1, 16.9)
2011	95.3 (90.1, 97.9)	0.0 -	88.2 (72.0, 95.6)	35.9 (21.1, 54.0)	77.3 (56.9, 89.7)	51.1 (42.6, 59.6)	- -	29.2 (19.1, 41.8)	33.9 (8.5, 73.9)	34.4 (22.7, 48.4)	34.8 (24.8, 46.3)
2014	82.3 (72.5, 89.1)	1.5 (0.3, 8.7)	75.5 (57.9, 87.4)	22.5 (15.1, 32.0)	59.5 (41.8, 75.0)	66.2 (52.6, 77.6)	77.8 (54.7, 91.0)	11.5 (7.7, 16.9)	44.6 (33.8, 56.0)	17.3 (11.5, 25.3)	17.9 (12.4, 25.2)
Oral artemisinin monotherapy											
2009	1.1 (0.3, 4.4)	- -	8.4 (1.2, 40.7)	3.6 (0.8, 14.7)	0.0 -	35.5 (26.9, 45.2)	- -	0.0 -	0.0 -	0.3 (0.1, 0.7)	0.4 (0.2, 0.9)
2011	0.0 -	0.0 -	0.0 -	0.0 -	0.2 (0.0, 1.2)	3.2 (1.2, 8.3)	- -	0.0 -	0.0 -	0.0 (0.0, 0.1)	0.0 (0.0, 0.1)
2014	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -

Table C1: Availability of antimalarials, among all screened outlets, by outlet type, across survey round

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Non-oral artemisinin monotherapy									0.0		
2009	4.3 (1.8, 10.2)	- -	26.0 (4.6, 71.9)	11.6 (3.2, 34.5)	1.5 (0.5, 4.7)	61.9 (54.5, 68.8)	- -	0.0 -	- 0.0	0.5 (0.2, 1.3)	1.0 (0.5, 2.3)
2011	16.8 (9.6, 27.7)	0.0 -	1.8 (0.4, 7.5)	4.5 (2.1, 9.3)	15.9 (7.2, 31.3)	63.2 (57.1, 68.8)	- -	0.2 (0.0, 1.2)	0.0 -	1.3 (0.7, 2.5)	1.7 (1.0, 2.7)
2014	24.4 (17.2, 33.4)	0.0 -	3.5 (1.2, 9.5)	5.2 (2.9, 9.2)	15.7 (9.3, 25.4)	55.4 (38.1, 71.5)	19.8 (7.0, 44.9)	0.0 (0.0, 0.1)	0.0 -	1.3 (0.7, 2.2)	1.7 (1.1, 2.7)
Any treatment for severe malaria											
2009	62.2 (50.7, 72.6)	- -	61.4 (33.6, 83.3)	62.0 (51.0, 71.8)	36.9 (23.8, 52.2)	52.7 (41.7, 63.5)	- -	0.5 (0.2, 1.6)	0.0 -	2.4 (1.3, 4.4)	5.2 (3.5, 7.7)
2011	86.5 (79.4, 91.4)	0.0 -	78.5 (55.6, 91.4)	32.4 (19.2, 49.3)	56.8 (46.0, 66.9)	57.4 (51.6, 63.0)	- -	1.3 (0.2, 6.9)	0.0 -	7.8 (5.0, 11.9)	13.8 (10.7, 17.6)
2014	74.5 (66.6, 81.0)	0.0 -	59.2 (31.2, 82.3)	18.8 (12.0, 28.2)	58.0 (44.4, 70.5)	67.8 (52.8, 79.9)	26.2 (10.4, 52.0)	0.3 (0.1, 0.8)	0.0 -	3.9 (2.6, 5.8)	5.6 (4.2, 7.5)

* The denominator includes outlets that met screening criteria for a full interview but did not complete the interview (were not interviewed or completed a partial interview).

Source: ACTwatch Outlet Survey, Benin, 2009, 2011, 2014.

Table C2: Availability of antimalarials, among outlets stocking at least one antimalarial, by outlet type, across survey roun d

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	2009 N=173 2011 N=189 2014 N=222	2009 N=0 2011 N=42 2014 N=42	2009 N=39 2011 N=62 2014 N=37	2009 N=212 2011 N=293 2014 N=301	2009 N=94 2011 N=127 2014 N=132	2009 N=114 2011 N=223 2014 N=177	2009 N=0 2011 N=0 2014 N=19	2009 N=372 2011 N=537 2014 N=889	2009 N=52 2011 N=57 2014 N=288	2009 N=632 2011 N=944 2014 N=1,505	2009 N=844 2011 N=1,237 2014 N=1,806
Any ACT											
2009	85.7 (78.3, 90.9)	- -	41.9 (14.3, 75.7)	71.4 (55.6, 83.3)	21.9 (7.8, 48.0)	100.0 -	- -	2.7 (0.8, 8.9)	1.3 (0.1, 11.9)	6.4 (3.1, 12.8)	13.7 (9.9, 18.7)
2011	79.5 (66.9, 88.1)	100.0 -	61.7 (34.8, 82.9)	90.1 (80.6, 95.2)	48.7 (25.7, 72.4)	97.8 (94.6, 99.1)	- -	18.6 (14.2, 24.0)	28.8 (17.5, 43.6)	24.0 (18.2, 30.9)	40.1 (33.2, 47.5)
2014	90.0 (80.6, 95.1)	93.9 (80.4, 98.3)	69.0 (41.0, 87.7)	90.6 (82.1, 95.3)	51.7 (35.7, 67.3)	92.6 (73.5, 98.3)	70.2 (36.9, 90.5)	38.1 (29.4, 47.7)	28.9 (16.4, 45.7)	39.4 (30.6, 49.0)	48.4 (39.9, 57.1)
Artemether Lumefantrine (AL)											
2009	85.2 (77.6, 90.5)	- -	29.1 (5.4, 74.6)	66.9 (48.8, 81.1)	19.0 (5.9, 47.0)	99.2 (92.2, 99.9)	- -	2.6 (0.7, 9.0)	1.3 (0.1, 11.9)	6.0 (2.8, 12.4)	12.9 (9.2, 17.8)
2011	69.4 (54.0, 81.4)	100.0 -	51.0 (26.1, 75.4)	86.2 (76.0, 92.4)	46.5 (23.2, 71.4)	96.4 (90.7, 98.7)	- -	18.5 (14.1, 23.9)	28.8 (17.5, 43.6)	23.7 (18.0, 30.5)	38.9 (31.8, 46.5)
2014	89.4 (80.3, 94.6)	93.9 (80.4, 98.3)	67.7 (39.9, 86.9)	90.4 (81.6, 95.2)	51.0 (35.1, 66.7)	92.6 (73.5, 98.3)	59.4 (27.0, 85.2)	38.1 (29.3, 47.6)	28.9 (16.4, 45.7)	39.2 (30.4, 48.8)	48.2 (39.7, 56.9)
Artesunate Amodiaquine (ASAQ)											
2009	14.5 (6.7, 28.6)	- -	0.0 -	9.8 (4.2, 21.3)	0.9 (0.3, 3.2)	73.9 (67.0, 79.8)	- -	0.0 -	0.0 -	1.6 (0.6, 4.0)	2.5 (1.3, 4.7)
2011	46.1 (32.1, 60.8)	0.0 -	0.0 -	12.6 (7.2, 21.4)	0.7 (0.1, 4.1)	70.0 (63.8, 75.4)	- -	0.0 -	0.0 -	1.9 (1.0, 3.5)	4.5 (3.2, 6.2)
2014	6.7 (3.3, 13.3)	0.0 -	2.7 (0.5, 13.8)	2.3 (1.0, 5.3)	0.7 (0.1, 3.7)	65.4 (51.3, 77.2)	0.0 -	0.2 (0.1, 0.4)	0.0 -	1.1 (0.6, 1.9)	1.3 (0.8, 2.1)
Quality Assured ACT (QA ACT)											
2009	84.4 (76.4, 90.0)	- -	29.1 (5.4, 74.6)	66.4 (47.8, 80.9)	18.9 (5.8, 47.0)	92.0 (87.4, 95.1)	- -	2.6 (0.7, 9.0)	1.3 (0.1, 11.9)	5.9 (2.7, 12.3)	12.7 (9.0, 17.6)
2011	79.4 (66.8, 88.1)	100.0 -	49.6 (24.8, 74.6)	88.8 (78.5, 94.5)	44.9 (21.0, 71.3)	87.4 (82.3, 91.2)	- -	18.4 (14.0, 23.8)	28.8 (17.5, 43.6)	23.2 (17.5, 30.0)	39.2 (31.9, 47.1)
2014	89.7	93.9	66.6	90.4	45.5	88.1	50.7	37.1	28.9	37.8	47.0

Table C2: Availability of antimalarials, among outlets stocking at least one antimalarial, by outlet type, across survey roun d

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
	(80.5, 94.8)	(80.4, 98.3)	(37.9, 86.7)	(81.7, 95.1)	(31.7, 60.1)	(73.6, 95.2)	(22.7, 78.2)	(28.4, 46.7)	(16.4, 45.7)	(29.2, 47.1)	(38.5, 55.7)
QA ACT with the "green leaf" logo											
2009	0.0 -	- -	0.0 -	0.0 -	0.0 -	0.0 -	- -	0.0 -	0.0 -	0.0 -	0.0 -
2011	0.3 (0.1, 1.8)	0.0 -	8.2 (3.6, 17.6)	1.0 (0.3, 3.4)	1.2 (0.4, 3.2)	2.2 (0.7, 7.1)	- -	2.0 (0.8, 4.5)	10.9 (2.8, 34.3)	2.4 (1.3, 4.6)	2.1 (1.0, 4.2)
2014	1.2 (0.4, 3.9)	0.0 -	32.9 (10.3, 67.8)	3.1 (1.1, 8.1)	37.6 (21.5, 57.0)	11.7 (4.6, 26.7)	29.9 (11.3, 58.8)	34.1 (26.3, 43.0)	26.0 (13.8, 43.5)	33.0 (25.0, 42.2)	27.8 (20.9, 35.8)
Non-quality-assured ACT											
2009	5.5 (2.8, 10.5)	- -	41.9 (14.3, 75.7)	17.4 (6.9, 37.4)	4.5 (1.6, 11.7)	100.0 -	- -	0.1 (0.0, 0.8)	0.0 -	2.5 (1.0, 6.2)	4.2 (2.2, 7.9)
2011	2.0 (0.8, 5.0)	0.0 -	12.0 (2.2, 45.4)	1.9 (0.5, 6.6)	7.3 (2.6, 18.9)	97.3 (93.7, 98.9)	- -	1.2 (0.4, 3.2)	1.2 (0.2, 5.7)	4.2 (2.5, 6.9)	3.7 (2.2, 5.9)
2014	0.3 (0.1, 1.2)	0.0 -	4.9 (1.6, 13.6)	0.5 (0.2, 1.4)	10.6 (4.7, 22.5)	92.6 (73.5, 98.3)	49.5 (28.3, 70.9)	1.2 (0.5, 3.0)	0.0 -	3.8 (2.5, 5.7)	3.2 (2.1, 4.9)
Any non-artemisinin therapy											
2009	95.2 (83.5, 98.7)	- -	100.0 -	96.7 (87.7, 99.2)	99.3 (95.8, 99.9)	93.8 (82.0, 98.1)	- -	99.9 (99.2, 100.0)	100.0 -	99.7 (99.3, 99.9)	99.4 (98.4, 99.8)
2011	98.1 (94.0, 99.4)	0.0 -	94.6 (72.4, 99.1)	37.4 (21.7, 56.2)	94.0 (76.5, 98.7)	91.4 (85.5, 95.1)	- -	96.6 (92.3, 98.5)	99.6 (96.8, 99.9)	96.4 (93.1, 98.2)	82.0 (69.4, 90.1)
2014	96.3 (88.2, 98.9)	6.1 (1.7, 19.6)	95.3 (83.2, 98.8)	41.3 (26.1, 58.4)	95.3 (76.0, 99.2)	97.4 (93.2, 99.1)	87.8 (61.7, 97.0)	90.5 (84.2, 94.4)	97.2 (91.8, 99.1)	92.0 (86.4, 95.5)	83.1 (74.1, 89.4)
Sulfadoxine-Pyrimethamine											
2009	52.1 (35.3, 68.4)	- -	49.4 (20.5, 78.7)	51.2 (34.0, 68.1)	34.3 (18.4, 54.8)	84.4 (79.0, 88.6)	- -	10.1 (4.7, 20.5)	34.4 (17.4, 56.6)	15.7 (8.6, 27.0)	19.7 (12.4, 29.9)
2011	18.4 (14.2, 23.5)	0.0 -	24.1 (9.7, 48.3)	7.7 (4.0, 14.3)	19.8 (7.3, 43.7)	75.9 (68.4, 82.1)	- -	24.3 (17.8, 32.1)	24.5 (16.5, 34.7)	25.2 (19.8, 31.4)	20.9 (15.5, 27.6)

Table C2: Availability of antimalarials, among outlets stocking at least one antimalarial, by outlet type, across survey roun d

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
2014	45.9 (38.9, 53.2)	3.2 (0.5, 19.4)	60.9 (35.8, 81.3)	21.2 (13.3, 32.0)	19.2 (10.3, 32.9)	87.0 (75.6, 93.5)	55.6 (39.8, 70.3)	18.1 (10.7, 29.0)	53.4 (24.8, 79.9)	24.5 (14.5, 38.2)	23.9 (15.0, 35.9)
Oral Quinine											
2009	78.7 (67.8, 86.6)	- -	85.6 (60.5, 95.8)	80.9 (73.0, 86.9)	54.6 (25.5, 80.8)	37.5 (23.8, 53.6)	- -	14.3 (6.2, 29.6)	26.8 (3.7, 77.9)	19.6 (8.9, 37.9)	26.5 (15.9, 40.9)
2011	95.3 (90.1, 97.9)	0.0 -	88.2 (72.0, 95.6)	35.9 (21.1, 54.0)	77.3 (56.9, 89.7)	51.1 (42.6, 59.6)	- -	29.2 (19.1, 41.8)	33.9 (8.5, 73.9)	34.4 (22.7, 48.4)	34.8 (24.8, 46.3)
2014	84.6 (74.4, 91.3)	2.9 (0.5, 16.2)	85.6 (69.2, 94.0)	34.9 (22.1, 50.3)	68.9 (51.3, 82.3)	73.0 (59.9, 83.1)	80.5 (56.4, 92.9)	34.5 (22.0, 49.5)	65.3 (53.3, 75.7)	43.7 (29.6, 59.0)	42.2 (29.3, 56.3)
Oral artemisinin monotherapy											
2009	1.2 (0.3, 4.6)	- -	9.2 (1.3, 43.1)	3.8 (0.8, 15.4)	0.0 -	36.8 (27.7, 46.9)	- -	0.0 -	0.0 -	0.7 (0.3, 1.8)	1.1 (0.5, 2.4)
2011	0.0 -	0.0 -	0.0 -	0.0 -	0.3 (0.0, 1.5)	3.2 (1.2, 8.3)	- -	0.0 -	0.0 -	0.1 (0.0, 0.2)	0.1 (0.0, 0.2)
2014	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Non-oral artemisinin monotherapy											
2009	4.5 (1.9, 10.5)	- -	28.5 (5.1, 74.8)	12.3 (3.4, 36.2)	1.7 (0.5, 5.7)	64.0 (55.9, 71.5)	- -	0.0 -	0.0 -	1.5 (0.6, 3.4)	2.7 (1.3, 5.4)
2011	17.9 (10.6, 28.8)	0.0 -	2.1 (0.5, 8.6)	5.1 (2.4, 10.7)	19.4 (7.9, 40.1)	63.2 (57.1, 68.8)	- -	0.6 (0.1, 3.6)	0.0 -	3.8 (2.0, 7.0)	4.1 (2.6, 6.6)
2014	25.1 (17.6, 34.5)	0.0 -	4.0 (1.4, 11.0)	8.1 (4.1, 15.2)	18.2 (10.3, 30.0)	61.1 (42.0, 77.3)	20.5 (7.1, 46.7)	0.0 (0.0, 0.2)	0.0 -	3.2 (2.0, 4.9)	4.1 (2.8, 5.8)
Any treatment for severe malaria											
2009	65.2 (53.2, 75.6)	- -	67.3 (38.6, 87.1)	65.9 (54.7, 75.5)	43.8 (30.9, 57.6)	54.6 (42.4, 66.2)	- -	1.5 (0.5, 4.5)	0.0 -	6.6 (3.9, 11.0)	13.3 (9.1, 19.0)
2011	86.5 (79.4, 91.4)	0.0 -	78.5 (55.6, 91.4)	32.4 (19.2, 49.3)	56.8 (46.0, 66.9)	57.4 (51.6, 63.0)	- -	1.3 (0.2, 6.9)	0.0 -	7.8 (5.0, 11.9)	13.8 (10.7, 17.6)

	Table C2: Availability of antimalarials, among outlets stocking at least one antimalarial, by outlet type, across survey roun d										
	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
2014	76.6 (68.5, 83.1)	0.0 -	67.1 (32.5, 89.6)	29.2 (18.0, 43.7)	67.2 (48.3, 81.7)	74.8 (61.2, 84.9)	27.1 (10.6, 54.0)	0.9 (0.4, 2.3)	0.0 -	9.8 (7.0, 13.5)	13.2 (10.3, 16.8)
	* The denominator includes outlets that met screening criteria for a full interview but did not complete the interview (were not interviewed or completed a partial interview).										
	Source: ACTwatch Outlet Survey, Benin, 2010, 2011, 2014.										

	Table C3: Antimalarial market composition, across survey round									
Outlet type, among outlets with at least 1 antimalarial in stock on the day of the survey:*	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
	%	**%**	**%**	**%**	**%**	**%**	%	**%**	**%**	**%**
2009, N=626 outlets	1.5 (0.9, 2.6)	- -	4.0 (1.9, 8.2)	5.5 (3.2, 9.3)	9.4 (5.5, 15.5)	0.6 (0.2, 1.6)	24.5 (19.7, 30.1)	53.2 (41.7, 64.3)	6.8 (2.3, 18.9)	94.5 (90.7, 96.8)
2011, N=890 outlets	1.2 (0.8, 1.9)	16.2 (7.6, 31.1)	2.9 (1.4, 6.1)	20.3 (11.3, 33.6)	7.5 (4.1, 13.4)	0.3 (0.1, 0.8)	- -	67.2 (58.1, 75.1)	4.7 (2.4, 9.3)	79.7 (66.4, 88.7)
2014, N=1,501 outlets	6.1 (4.2, 8.8)	10.6 (5.6, 19.0)	1.4 (0.7, 2.9)	18.1 (12.0, 26.4)	9.5 (5.5, 15.8)	1.4 (0.8, 2.5)	0.9 (0.2, 3.7)	58.6 (51.4, 65.5)	11.4 (6.4, 19.5)	81.9 (73.6, 88.0)
	* Excluding booster sample outlets. Outlets with at least one antimalarial in stock on the day of the survey, verified by presence of at least one antimalarial recorded in the antimalarial audit sheet.									
	Source: ACTwatch Outlet Survey, Benin, 2010, 2011, 2014.									

	Table C4: Price of tablet formulation antimalarials in 2009 USD, by outlet type, across survey round					
	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
Median price of a tablet AETD*:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Any ACT						
2009	$2.59 [1.94-5.18] (28)	$8.62 [7.31-10.73] (1,443)	- -	$3.02 [1.73-3.02] (11)	$3.24 (1)	$8.27 [5.87-10.51] (1,483)
2011	$1.23 [1.23-3.29] (89)	$8.11 [7.21-9.19] (3,268)	- -	$2.06 [1.44-2.47] (186)	$2.26 [2.06-3.29] (29)	$5.47 [2.06-8.17] (3,572)
2014	$2.19 [1.82-3.64] (100)	$5.96 [4.54-7.44] (5,632)	$6.39 [3.31-6.93] (50)	$1.46 [1.09-2.19] (568)	$1.46 [1.46-2.19] (116)	$2.19 [1.46-5.19] (6,466)
Quality-assured ACT (QA ACT)						
2009	$2.59 [1.94-2.59] (16)	$8.82 [5.77-16.80] (327)	- -	$3.02 [1.73-3.02] (9)	$3.24 (1)	$5.74 [2.59-8.82] (353)
2011	$1.23 [1.23-2.47] (67)	$8.40 [8.00-11.44] (575)	- -	$2.06 [1.44-2.47] (183)	$2.26 [2.06-3.29] (29)	$2.06 [1.44-3.29] (854)
2014	$2.19 [1.82-3.64] (61)	$5.10 [3.41-7.44] (1,050)	$2.92 [1.82-5.10] (19)	$1.46 [1.09-2.19] (556)	$1.46 [1.46-2.19] (116)	$1.82 [1.28-2.55] (1,802)
Non-quality assured ACT						
2009	$6.48 [5.29-8.27] (12)	$8.52 [7.57-10.51] (1,116)	- -	$8.04 [6.91-9.18] (2)	- -	$8.52 [7.50-10.51] (1,130)
2011	$7.21 [5.41-8.10] (22)	$7.93 [7.21-8.89] (2,693)	- -	$4.94 [3.50-4.94] (3)	- -	$7.93 [7.21-8.89] (2,718)
2014	$5.90 [3.64-7.29] (39)	$6.39 [4.54-7.24] (4,582)	$6.71 [6.39-7.29] (31)	$2.19 [1.09-2.19] (12)	- -	$6.39 [4.53-7.24] (4,664)
Sulfadoxine-Pyrimethamine						
2009	$0.43 [0.43-2.14] (34)	$1.04 [0.94-1.19] (284)	- -	$0.43 [0.43-0.65] (108)	$1.08 [0.54-1.94] (36)	$0.65 [0.43-1.08] (462)
2011	$0.62 [0.41-0.82] (52)	$1.01 [0.96-2.11] (341)	- -	$0.41 [0.31-0.51] (190)	$0.51 [0.41-0.62] (17)	$0.41 [0.41-0.62] (600)
2014	$0.46 [0.36-0.55] (30)	$0.91 [0.70-0.96] (420)	$0.91 [0.91-1.00] (19)	$0.46 [0.36-0.55] (548)	$0.46 [0.36-0.55] (346)	$0.46 [0.36-0.55] (1,363)
Pre-packaged adult QA AL						

Table C4: Price of tablet formulation antimalarials in 2009 USD, by outlet type, across survey round

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**
Median price of a tablet AETD*:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
2009	$5.40 [5.18-5.61] (6)	$8.82 [5.74-8.82] (138)	- -	$1.73 [1.73-1.73] (3)	$3.24 (1)	$5.74 [5.42-8.82] (148)
2011	$2.47 [2.06-3.09] (26)	$8.40 [3.60-8.40] (282)	- -	$1.65 [1.23-2.06] (62)	$2.06 [2.06-2.26] (11)	$2.06 [1.44-3.09] (381)
2014	$1.82 [1.09-2.19] (28)	$5.64 [3.41-5.97] (546)	$4.01 [1.46-7.44] (10)	$1.46 [1.28-1.46] (140)	$1.46 [1.28-1.46] (37)	$1.46 [1.28-3.19] (761)
Pre-packaged Pediatric QA AL						
2009	$2.59 [2.59-2.59] (2)	$8.47 [8.38-8.82] (5)	- -	$3.02 [3.02-3.02] (2)	- -	$3.02 [2.59-3.02] (9)
2011	$1.23 [1.23-1.23] (14)	$9.63 [4.94-9.67] (31)	- -	$2.47 [1.23-2.88] (59)	$4.94 [2.88-4.94] (11)	$2.06 [1.23-2.88] (115)
2014	$3.64 [2.19-3.64] (15)	$5.10 [5.10-5.10] (155)	$3.64 [2.92-5.10] (6)	$1.82 [1.46-2.19] (212)	$2.19 [1.46-2.19] (31)	$2.19 [1.46-2.92] (419)

* AETD - adult equivalent treatment dose - is or the number of milligrams required to treat a 60kg adult (see Annex 11). Information provided by the respondent about price for a specific amount of antimalarial drug (e.g. price per tablet or price per specific package size) was converted to the price per AETD.
Figures in this table are derived using audited products with price information.

Source: ACTwatch Outlet Survey, Benin, 2010, 2011, 2014.

Table C5: Availability of malaria blood testing among antimalarial-stocking outlets*, by outlet type, across survey round

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	**Itinerant Vendor**	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking**	2009 N=175 2011 N=191 2014 N=220	2009 N=0 2011 N=49 2014 N=58	2009 N=42 2011 N=66 2014 N=39	2009 N=217 2011 N=306 2014 N=317	2009 N=97 2011 N=134 2014 N=139	2009 N=113 2011 N=223 2014 N=175	2009 N=0 2011 N=0 2014 N=18	2010 N=522 2011 N=674 2014 N=962	2009 N=59 2011 N=63 2014 N=306	2009 N=791 2011 N=1,094 2014 N=1,600	2009 N=1,008 2011 N=1,400 2014 N=1,917
Any malaria blood testing											
2009	86.1 (76.7, 92.1)	- -	51.8 (18.7, 83.3)	74.8 (58.4, 86.3)	21.3 (9.5, 41.0)	1.0 (0.3, 3.3)	- -	0.0 -	0.0 -	1.6 (0.6, 4.2)	7.7 (4.9, 12.1)
2011	40.1 (28.5, 53.1)	0.0 -	36.7 (18.1, 60.3)	13.2 (8.3, 20.2)	33.3 (23.7, 44.6)	2.3 (1.0, 5.2)	- -	0.0 -	0.0 -	3.0 (1.4, 6.0)	5.3 (3.5, 8.0)
2014	89.7 (84.1, 93.5)	12.5 (2.0, 50.5)	69.3 (46.0, 85.7)	35.1 (18.1, 56.9)	20.7 (11.5, 34.3)	0.2 (0.0, 1.1)	0.0 -	0.6 (0.1, 2.4)	0.0 -	2.7 (1.6, 4.5)	9.1 (5.7, 14.1)
	2009 N=175 2011 N=191 2014 N=218	2009 N=0 2011 N=49 2014 N=58	2009 N=42 2011 N=66 2014 N=39	2009 N=217 2011 N=306 2014 N=315	2009 N=97 2011 N=134 2014 N=139	2009 N=113 2011 N=221 2014 N=174	2009 N=0 2011 N=0 2014 N=0	2009 N=521 2011 N=669 2014 N=957	2009 N=59 2011 N=63 2014 N=304	2009 N=790 2011 N=1,087 2014 N=1,592	2009 N=1,007 2011 N=1,393 2014 N=1,907
Microscopic blood tests											
2009	14.5 (9.3, 21.8)	- -	32.0 (7.3, 73.8)	20.2 (9.1, 39.0)	10.9 (3.8, 27.2)	0.0 -	- -	0.0 -	0.0 -	0.8 (0.3, 2.4)	2.4 (1.4, 4.3)
2011	7.2 (4.4, 11.7)	0.0 -	12.6 (4.9, 28.7)	3.1 (1.5, 6.4)	22.5 (14.4, 33.4)	0.0 -	- -	0.0 -	0.0 -	1.9 (0.8, 4.5)	2.2 (1.1, 4.3)
2014	12.2 (8.8, 16.8)	0.0 -	37.2 (14.3, 67.9)	5.6 (3.0, 10.0)	10.5 (4.0, 24.6)	0.1 (0.0, 0.6)	0.0 -	0.5 (0.1, 2.6)	0.0 -	1.5 (0.7, 3.0)	2.3 (1.4, 3.8)
	2009 N=175 2011 N=186 2014 N=221	2009 N=0 2011 N=49 2014 N=60	2009 N=42 2011 N=64 2014 N=39	2009 N=217 2011 N=299 2014 N=320	2009 N=97 2011 N=129 2014 N=139	2009 N=112 2011 N=219 2014 N=175	2009 N=0 2011 N=0 2014 N=18	2009 N=520 2011 N=667 2014 N=960	2009 N=59 2011 N=63 2014 N=306	2009 N=788 2011 N=1,078 2014 N=1,598	2009 N=1,005 2011 N=1,377 2014 N=1,918
Rapid diagnostic tests (RDTs)											
2009	84.4 (73.9, 91.2)	- -	45.4 (13.0, 82.2)	71.6 (53.1, 84.9)	10.7 (1.9, 42.8)	1.0 (0.3, 3.3)	- -	0.0 -	0.0 -	0.8 (0.1, 4.7)	6.8 (3.9, 11.4)
2011	37.2 (25.7, 50.4)	0.0 -	21.8 (5.5, 57.2)	11.2 (7.3, 16.7)	11.4 (2.5, 39.5)	2.3 (1.0, 5.1)	- -	0.0 -	0.0 -	1.0 (0.2, 4.3)	3.4 (1.9, 5.8)
2014	87.5 (81.5, 91.7)	12.5 (2.0, 50.5)	32.0 (9.5, 67.9)	32.0 (15.7, 54.2)	11.6 (5.2, 23.8)	0.1 (0.0, 0.5)	0.0 -	0.2 (0.1, 0.5)	0.0 -	1.4 (0.6, 3.2)	7.4 (4.3, 12.5)

* Blood testing availability is reported among outlets that either had antimalarials in stock on the day of the survey or reportedly stocked antimalarials in the previous 3 months.

** Results in this table are derived using responses captured among outlets with blood testing information. Source: ACTwatch Outlet Survey, Benin, 2010, 2011, 2014.

Table C7: Price of malaria blood testing in 2009 USD, by outlet type, across survey round

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	**Itinerant Vendor**	**ALL Private**
Total median price to consumers:*	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Microscopic blood tests						
2009	$3.24 [2.16-3.24] (20)	- -	- -	- -	- -	$3.24 [2.16-3.24] (20)
Adult						
2011	$4.11 [2.67-4.11] (27)	- -	- -	- -	- -	$4.11 [2.67-4.11] (27)
2014	$2.73 [2.19-3.64] (54)	- -	- -	$5.47 (1)	- -	$2.73 [2.19-4.19] (55)
Child under age five						
2011	$4.11 [2.67-4.11] (28)	- -	- -	- -	- -	$4.11 [2.67-4.11] (28)
2014	$2.73 [2.19-3.64] (55)	- -	- -	$5.47 (1)	- -	$2.73 [2.19-4.19] (56)
Rapid diagnostic tests (RDTs)						
2009	$2.70 [2.16-3.24] (2)	- -	- -	- -	- -	$2.70 [2.16-3.24] (2)
Adult						
2011	$2.47 [0.00-3.09] (11)	$2.96 [2.06-2.98] (5)	- -	- -	- -	$2.47 [0.00-3.09] (16)
2014	$0.00 [0.00-2.73] (15)	- -	- -	$0.00 [0.00-5.47] (2)	- -	$0.00 [0.00-2.73] (17)
Child under five						
2011	$1.65 [0.00-1.65] (10)	$2.52 [1.03-3.03] (4)	- -	- -	- -	$1.65 [0.00-1.65] (14)
2014	$0.00 [0.00-2.73] (15)	- -	- -	$0.00 [0.00-5.47] (2)	- -	$0.00 [0.00-2.73] (17)

* Total price to the consumer including consultation and/or service fees.

Source: ACTwatch Outlet Survey, Benin, 2010, 2011, 2014.

Table C8: Antimalarial market share, across survey round

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold/ distributed:	Public Health Facility	Community Health Worker	Private-Not-For-Profit Health Facility	**TOTAL Public/Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**	**ANTI-MALARIAL TOTAL***
	%	%	%	%	%	%	%	%	%	%	%
2009											
1. Any ACT	6.5	0.0	0.8	7.3	0.5	15.1	0.0	0.5	0.0	16.1	23.4
Quality Assured ACT (QA ACT)	6.4	0.0	0.6	7.1	0.4	4.9	0.0	0.5	0.0	5.8	12.9
Non-quality-assured ACT	0.0	0.0	0.2	0.2	0.1	10.2	0.0	0.0	0.0	10.3	10.5
2. Any non-artemisinin therapy	15.9	0.0	4.2	20.1	4.4	21.4	0.0	26.6	3.8	56.3	76.4
Sulfadoxine-Pyrimethamine	10.2	0.0	1.4	11.6	1.7	20.7	0.0	4.8	1.2	28.5	40.1
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1
4. Non-oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1
5. Any treatment for severe malaria	0.2	0.0	0.1	0.3	0.5	0.1	0.0	0.0	0.0	0.6	0.8
OUTLET TYPE TOTAL* **	22.4	0.0	5.0	27.4	5.0	36.7	0.0	27.1	3.8	72.6	100.0
2014											
1. Any ACT	14.8	2.5	0.8	18.1	5.9	14.3	0.1	9.2	1.2	30.7	48.9
Quality Assured ACT (QA ACT)	14.7	2.5	0.7	17.9	4.9	2.2	0.1	9.1	1.2	17.5	35.4
Non-quality-assured ACT	0.1	0.0	0.1	0.2	1.0	12.1	0.1	0.1	0.0	13.2	13.4
2. Any non-artemisinin therapy	8.3	1.3	1.5	11.0	5.5	4.2	0.3	23.2	6.5	39.7	50.8
Sulfadoxine-Pyrimethamine	4.5	1.3	0.8	6.5	1.2	3.5	0.2	7.5	4.1	16.5	23.0
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Non-oral artemisinin monotherapy	0.1	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.3	0.4
5. Any treatment for severe malaria	0.3	0.0	0.0	0.3	0.4	0.2	0.0	0.2	0.0	0.8	1.2
OUTLET TYPE TOTAL* **	23.2	3.8	2.3	29.2	11.5	18.8	0.4	32.4	7.7	70.8	100.0

* Row sum – market share for the specified antimalarial medicine.

*** Column sum (within each survey round) – market share for the specified outlet type.

Categories 1 through 4 sum to 100% in the far-right column – antimalarial total column (within in survey round).

Source: ACTwatch Outlet Survey, Benin, 2010, 2011, 2014.

Table C9: Antimalarial market share, across outlet type, across survey round

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold/ distributed:	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**TOTAL Public/Not For-Profit***	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**
	%	%	%	%	%	%	%	%	%	%
2009										
1. Any ACT	**29.0**	**0.0**	**16.3**	**26.7**	**11.1**	**41.1**	**0.0**	**1.7**	**0.2**	**22.2**
Quality Assured ACT (QA ACT)	28.8	0.0	12.8	25.9	8.2	13.4	0.0	1.7	0.2	8.0
Non-quality-assured ACT	0.2	0.0	3.5	0.8	2.9	27.7	0.0	0.0	0.0	14.2
2. Any non-artemisinin therapy	**71.0**	**0.0**	**83.5**	**73.3**	**88.9**	**58.4**	**0.0**	**98.3**	**99.8**	**77.5**
Sulfadoxine-Pyrimethamine	45.4	0.0	28.7	42.3	34.3	56.4	0.0	17.9	32.1	39.2
3. Oral artemisinin monotherapy	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.1**
4. Non-oral artemisinin monotherapy	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.1**
5. Any treatment for severe malaria	**0.8**	**0.0**	**2.0**	**1.0**	**9.2**	**0.2**	**0.0**	**0.1**	**0.0**	**0.8**
2011										
1. Any ACT	**43.2**	**100.0**	**43.4**	**49.3**	**30.2**	**73.5**	**0.0**	**11.7**	**33.1**	**25.0**
Quality Assured ACT (QA ACT)	43.2	100.0	41.7	49.1	28.1	21.1	0.0	11.6	33.1	17.5
Non-quality-assured ACT	0.0	0.0	1.7	0.2	2.1	52.4	0.0	0.2	0.0	7.5
2. Any non-artemisinin therapy	**56.7**	**0.0**	**56.5**	**50.7**	**69.7**	**25.5**	**0.0**	**88.3**	**66.9**	**74.8**
Sulfadoxine-Pyrimethamine	9.3	0.0	17.4	9.2	46.1	21.8	0.0	34.0	21.2	34.2
3. Oral artemisinin monotherapy	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
4. Non-oral artemisinin monotherapy	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**1.0**	**0.0**	**0.0**	**0.0**	**0.1**
5. Any treatment for severe malaria	**1.2**	**0.0**	**5.5**	**1.6**	**1.9**	**0.2**	**0.0**	**0.1**	**0.0**	**0.5**
2014										
1. Any ACT	**64.0**	**66.3**	**34.2**	**62.0**	**51.3**	**76.4**	**34.6**	**28.4**	**15.2**	**43.4**
Quality Assured ACT (QA ACT)	63.5	66.3	31.1	61.3	42.8	11.7	15.0	28.2	15.2	24.7
Non-quality-assured ACT	0.5	0.0	3.1	0.7	8.5	64.7	19.6	0.2	0.0	18.7
2. Any non-artemisinin therapy	**35.7**	**33.7**	**65.7**	**37.7**	**48.0**	**22.6**	**65.4**	**71.5**	**84.8**	**56.1**
Sulfadoxine-Pyrimethamine	19.2	33.2	35.1	22.3	10.6	18.7	40.4	23.0	53.1	23.3
3. Oral artemisinin monotherapy	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
4. Non-oral artemisinin monotherapy	**0.3**	**0.0**	**0.1**	**0.3**	**0.7**	**1.0**	**0.0**	**0.1**	**0.0**	**0.4**
5. Any treatment for severe malaria	**1.2**	**0.0**	**1.6**	**1.1**	**3.7**	**1.0**	**0.0**	**0.7**	**0.0**	**1.2**

Categories 1 through 4 sum to 100% within each column (within each survey round).
Source: ACTwatch Outlet Survey, Benin, 2010, 2011, 2014.

Table C12: Provider antimalarial treatment knowledge and practices, by outlet type, across survey round

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public/Not For-Profit***	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers who:	2009 N=175 2011 N=193 2014 N=223	2009 N=0 2011 N=49 2014 N=60	2009 N=42 2011 N=66 2014 N=39	2009 N=217 2011 N=308 2014 N=322	2009 N=100 2011 N=135 2014 N=141	2009 N=116 2011 N=223 2014 N=177	2009 N=0 2011 N=0 2014 N=19	2009 N=538 2011 N=683 2014 N=974	2009 N=62 2011 N=63 2014 N=306	2009 N=816 2011 N=1,104 2014 N=1,617	2009 N=1,033 2011 N=1,412 2014 N=1,939
Correctly state the national first-line treatment for uncomplicated malaria											
2009	91.4 (84.8, 95.3)	- -	30.5 (7.7, 69.7)	72.8 (53.8, 85.9)	55.4 (41.3, 68.8)	66.6 (55.6, 76.1)	- -	14.1 (6.3, 28.7)	12.6 (7.1, 21.4)	18.0 (10.3, 29.7)	22.8 (15.0, 33.2)
2011	93.8 (88.0, 96.9)	96.2 (83.8, 99.2)	71.6 (34.5, 92.3)	93.1 (84.3, 97.1)	83.6 (66.6, 92.9)	87.4 (82.8, 90.9)	- -	39.2 (30.3, 48.8)	55.8 (28.7, 79.9)	44.8 (36.6, 53.3)	55.8 (45.8, 65.4)
2014	97.4 (94.2, 98.8)	93.7 (83.2, 97.8)	89.0 (72.8, 96.1)	94.3 (87.3, 97.5)	66.8 (49.2, 80.7)	83.1 (63.1, 93.4)	59.9 (42.0, 75.5)	31.3 (23.6, 40.2)	29.9 (19.2, 43.5)	35.9 (30.2, 42.1)	47.4 (40.7, 54.2)
Correctly state the first-line dosing regimen for:											
An adult											
2009	88.3 (81.5, 92.9)	- -	29.1 (7.0, 69.0)	70.2 (51.6, 83.9)	46.7 (32.2, 61.8)	61.8 (48.9, 73.2)	- -	4.5 (1.6, 11.9)	2.1 (0.3, 13.0)	8.5 (4.5, 15.3)	13.9 (8.9, 21.0)
2011	88.0 (77.1, 94.1)	54.8 (35.2, 73.0)	53.3 (23.3, 81.1)	63.1 (47.8, 76.1)	77.2 (54.9, 90.4)	82.4 (78.4, 85.7)	- -	22.9 (18.5, 27.9)	42.0 (25.1, 60.9)	29.7 (23.4, 36.9)	37.3 (30.8, 44.3)
2014	93.0 (88.4, 95.8)	49.9 (43.2, 56.6)	84.1 (66.1, 93.4)	62.7 (55.4, 69.4)	56.4 (38.7, 72.6)	59.6 (44.5, 73.1)	56.7 (36.8, 74.6)	22.7 (17.2, 29.4)	20.9 (13.6, 30.8)	26.9 (22.7, 31.6)	34.0 (29.5, 38.7)
A two-year old child											
2009	87.7 (81.0, 92.2)	- -	28.4 (6.7, 68.8)	69.5 (51.0, 83.3)	46.9 (31.7, 62.6)	57.3 (44.1, 69.6)	- -	3.6 (1.3, 9.3)	2.1 (0.3, 13.0)	7.6 (4.0, 14.0)	13.0 (8.4, 19.6)
2011	72.6 (62.0, 81.2)	89.6 (65.9, 97.4)	42.8 (20.6, 68.4)	80.6 (63.2, 90.9)	65.4 (41.4, 83.5)	71.8 (65.7, 77.2)	- -	23.8 (16.5, 33.1)	33.7 (19.4, 51.8)	28.8 (21.3, 37.7)	40.6 (29.9, 52.3)
2014	94.6 (90.9, 96.9)	83.6 (72.1, 91.0)	83.4 (67.2, 92.5)	86.3 (77.9, 91.8)	59.4 (41.0, 75.5)	73.2 (54.9, 86.0)	52.1 (34.8, 68.9)	24.0 (18.5, 30.5)	25.2 (16.9, 35.8)	28.9 (24.8, 33.4)	40.2 (34.8, 45.8)

Table C12: Provider antimalarial treatment knowledge and practices, by outlet type, across survey round

	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public/Not For-Profit***	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers who:	2009 N=175 2011 N=193 2014 N=223	2009 N=0 2011 N=49 2014 N=60	2009 N=42 2011 N=66 2014 N=39	2009 N=217 2011 N=308 2014 N=322	2009 N=100 2011 N=135 2014 N=141	2009 N=116 2011 N=223 2014 N=177	2009 N=0 2011 N=0 2014 N=19	2009 N=538 2011 N=683 2014 N=974	2009 N=62 2011 N=63 2014 N=306	2009 N=816 2011 N=1,104 2014 N=1,617	2009 N=1,033 2011 N=1,412 2014 N=1,939
Report an ACT as the most effective antimalarial medicine											
2009	68.5 (58.0, 77.4)	- -	27.6 (4.7, 74.5)	55.1 (37.7, 71.4)	38.8 (14.7, 69.9)	62.7 (57.4, 67.7)	- -	4.2 (1.2, 13.4)	1.0 (0.1, 9.5)	7.6 (3.4, 16.0)	11.9 (7.1, 19.2)
For adults											
2011	90.4 (85.5, 93.8)	81.0 (58.4, 92.8)	56.2 (31.2, 78.4)	80.9 (65.9, 90.2)	67.7 (43.8, 85.0)	83.8 (78.6, 87.9)	- -	17.3 (12.8, 23.0)	39.8 (23.1, 59.3)	24.1 (18.3, 31.1)	37.0 (28.9, 46.0)
2014	89.4 (83.7, 93.3)	76.9 (56.1, 89.7)	70.6 (47.7, 86.4)	79.6 (64.4, 89.3)	58.6 (41.8, 73.6)	86.6 (79.1, 91.7)	65.6 (35.6, 86.8)	26.7 (20.3, 34.2)	17.1 (11.0, 25.7)	30.0 (24.3, 36.5)	39.8 (33.1, 46.9)
For children											
2011	89.2 (85.5, 92.0)	100.0 -	54.4 (30.4, 76.5)	92.6 (85.6, 96.3)	63.6 (49.2, 75.9)	81.1 (74.5, 86.3)	- -	26.8 (19.5, 35.7)	38.0 (21.6, 57.6)	31.6 (24.0, 40.3)	45.5 (35.0, 56.5)
2014	93.8 (89.9, 96.2)	93.6 (86.9, 97.0)	75.4 (53.0, 89.3)	92.4 (87.7, 95.5)	70.7 (57.9, 80.8)	86.1 (69.9, 94.3)	55.1 (32.0, 76.2)	34.5 (26.3, 43.7)	19.1 (12.6, 27.9)	37.3 (29.8, 45.5)	48.2 (39.1, 57.3)

Numbers of providers (N) in this table are the total number of providers eligible for table indicators.

Source: ACTwatch Outlet Survey, Benin, 2009, 2011, 2014.

Annex 1: ACTwatch Background

ACTwatch is a multi-country research project implemented by PSI (www.psi.org). Standardized tools and approaches are employed to provide comparable data across countries and over time. Project countries include: Benin, Cambodia, the Democratic Republic of Congo, Kenya, Laos, Madagascar, Myanmar, Nigeria, Tanzania (currently mainland only, previous work in Zanzibar), Thailand, Uganda, Vietnam, and Zambia. The project was launched in 2008 with funding from the Bill and Melinda Gates Foundation (BMGF), and is currently funded through 2016 by the BMGF, UNITAID, and DFID.

ACTwatch is designed to provide timely, relevant, and high quality antimalarial market evidence.[2] The goal of providing this market evidence is to inform and monitor national and global policy, strategy, and funding decisions for improving malaria case management. ACTwatch is monitoring antimalarial markets in the context of policy shifts and investments in the scale-up of first-line ACT and blood testing using RDTs. This has included adaptation of project methods for the evaluation of the Affordable Medicines Facility-malaria (AMFm) pilot.[3] The project implements a set of research tools designed to:

1) **Provide a picture of the total market for malaria case management**, including: all providers carrying antimalarials and RDTs and providing case management services; the relative antimalarial market share for each provider type; the antimalarial supply chain; and price markups within the supply chain for antimalarials and RDTs.

2) **Monitor the readiness of market components for appropriate malaria case management**, including: availability of antimalarials and malaria blood testing; consumer price of antimalarial treatment and malaria blood testing; and provider qualifications, training and knowledge.

3) **Monitor the performance of market components for appropriate malaria case management**, including: the relative market share for quality-assured ACT relative to other antimalarial medicines; the demand for appropriate malaria case management captured through consumer knowledge, attitudes, and fever treatment seeking behavior; and the quality of provider service delivery measured against national policies, guidelines and minimum standards.

ACTwatch research tools for malaria market monitoring include:

1. Outlet surveys

Outlet surveys entail collecting quantitative data from all outlets and providers with the potential to sell or distribute antimalarials and/or provide malaria blood testing. These include health facilities, community health workers, pharmacies, drug stores, retail outlets, market stalls, and mobile providers. A screening process identifies outlets that provide antimalarials and/or malaria blood testing. Among these eligible outlets, service providers are interviewed and all antimalarials and RDTs are audited. The audit collects information about each antimalarial and RDT in stock (e.g. brand name, drug active ingredients and strengths, manufacturer, etc.) and retailer reports on consumer price and sale/distribution volumes for each product. A representative sample of outlets is identified within target study domains such that findings from the outlet survey provide estimates of antimalarial and RDT availability, price, and relative market share across the entire market as well as within key market segments.[4]

[2] Shewchuk T, O'Connell KA, Goodman C, Hanson K, Chapman S, Chavasse D. 2011. The ACTwatch project: methods to describe anti-malarial markets in seven countries. *Malaria Journal, 10*: 325.
[3] AMFm Independent Evaluation Team. 2012. *Independent evaluation of Phase 1 of the Affordable Medicines Facility – malaria (AMFm), multi-country independent evaluation report: final report.* Calverton, MD and London: ICF International and London School of Hygiene and Tropical Medicine.
[4] O'Connell KA, Poyer S, Solomon T, et al. 2013. Methods for implementing a medicine outlet survey: lessons from the anti-malarial market. *Malaria Journal, 12*: 52.

From 2008 through 2014, ACTwatch conducted 35 national outlet surveys across the 10 project countries.[5] Reports are available at www.actwatch.info, and peer-reviewed publications have appeared in *Malaria Journal* and *The Lancet.*[6,7]

2. Supply chain studies

Supply chain studies employ quantitative and qualitative research methods to effectively map the antimalarial supply chain in a given country. The supply chain is mapped from the antimalarial outlets (service delivery points) identified during an outlet survey to national importers and distributors with identification of all mid-level distributers in between. Retail prices are documented along the supply chain to facilitate calculation of commodity mark-ups. From 2008 through 2012, ACTwatch conducted 8 national supply chain studies. Reports are available at www.actwatch.info, and a peer-reviewed publication has appeared in *PLoS One*.[8]

3. Population-based surveys

Population-based surveys are conducted among consumers to document fever treatment-seeking behavior. A representative sample of the target population (caregivers of children and/or adults according to burden and risk) is identified, and a screening tool is used to identify individuals who have recently experienced fever. The surveys investigate the extent to which health care was sought, as well as common sources of care received. Respondent reports of malaria blood testing and antimalarials acquired are documented and summarized. The survey includes measures of demographic and other individual, household/family, and community characteristics that can be used to develop consumer profiles as well as monitor equity in access to malaria case management. From 2008 through 2012, ACTwatch conducted 14 household surveys focused on fever treatment-seeking behavior. Reports are available at www.actwatch.info, and a peer-reviewed publication has appeared in *Malaria Journal.*[9]

4. Fever case management quality of care

Fever case management quality of care is monitored using a set of research tools designed to measure aspects of the interaction between providers and clients. In 2015-2016, ACTwatch will launch fever case management quality of care studies in a subset of project countries. The tool or set of tools that is most appropriate and feasible in a given context is employed. These include:

- Exit interviews conducted with target consumers immediately after receiving fever case management services from target providers. A structured interview documents client reports about key aspects of service delivery including malaria blood testing, test results, medicines recommended/prescribed and obtained, counseling, and costs of services and commodities received. Exit interviews are also used to measure client recall and comprehension of provider counseling including instructions for completing prescribed drug regimens, as well as client satisfaction with services provided. Exit interviews may include measures of demographic characteristics to monitor equity in access to services and commodities.

- Structured observation documents aspects of the provider-client interaction using a checklist. A trained observer completes the checklist designed to document provider compliance with standard practice and procedures as well as aspects of client demand for specific products or services. The observer remains silent during the consultation.

[5] Surveys in the DRC (2) and Myanmar (3) were sub-national.
[6] O'Connell K, Gatakaa H, Poyer S, et al. 2011. Got ACTs? Availability, price, market share and provider knowledge of anti-malarial medicines in public and private sector outlets in six malaria-endemic countries. *Malaria Journal*, 10: 326.
[7] Tougher S, the ACTwatch Group, Ye Y, et al. 2013. Effect of the Affordable Medicines Facility-malaria (AMFm) on the availability, price, and market share of quality-assured artemisinin-based combination therapies in seven countries: a before-and-after analysis of outlet survey data. *Lancet, 380*: 1916-26.
[8] Palafox B, Patouillard E, Tougher S, et al. 2014. Understanding private sector antimalarial distribution chains: a cross-sectional mixed methods study in six malaria-endemic countries. *PLoS One, 9*(4).
[9] Littrell M, Gatakaa H, Evance I, et al. (2011). Monitoring fever treatment behavior and equitable access to effective medicines in the context of initiatives to improve ACT access: baseline results and implications for programming in six African countries. *Malaria Journal, 10*: 327.

ACTwatch in Benin

ACTwatch baseline surveys were conducted in Benin in 2008-09 including an outlet survey (2008), a household survey (2009), and a supply chain study (2009). Follow-up outlet surveys were conducted in 2011 and 2014. A follow-up household survey was conducted in 2011. All reports are available at www.actwatch.info.

Annex 2: Benin Background

Benin is located in the West Africa sub-region and is bordered by Niger and Burkino Faso to the north, Nigeria to the east and Togo to the west.[10] Benin is characterized by two distinct climates. In the south, it is humid and has an alternating dry season from November to March and mid-July to mid-September. The rainy season is from April to mid-July and from mid-September to October. The north is characterized by a tropical climate with a dry season from November to April and a rainy season from June to September. The terrain is mostly flat, rising from coastal plains in the south to a hilly landscape in the north. The hot, dry and dusty harmattan wind from the Sahara Desert blows across the country during the dry season.[10]

In 2014, the population was estimated to be 10.2 million and growing at a rate of 2.8%.[11] Children under 15 years of age accounted for approximately 44% of the population. Cotonou and Porto-Novo are the major urban areas and approximately 44% of the population was estimated to reside in an urban area in 2014.[11] The 2014 Human Development Index ranked Benin 165th out of 187 countries, a rank associated with Low Human Development.[12] Life expectancy at birth is among the lowest in the world, estimated at 59.8 years for men and 62.5 years for women.[11]

Administratively, Benin is divided into 12 departments, 77 communes, and 546 arrondisements.[13,14] Arrondisements are the third-level administrative units and are further sub-divided into villages (more commonly called quartiers in urban areas).[13, 13]

Healthcare system

Benin's national healthcare system complements its administrative structure. Each administrative department is paired, resulting in a total of six health departments.[14] Two to three communes with a population ranging between approximately 84,000 – 492,000 are grouped to create a health zone. The health system has three distinct levels: central, intermediate, and peripheral and includes:[14]

- Central: One National Referral Hospital (*Centre National Hospitalier Universitaire);*
- Intermediate: Six Departmental Health Directorates with six corresponding Departmental Referral Hospitals (*Centres Hospitaliers Departementaux);*
- Peripheral: 34 health zones comprised of Zonal Hospitals (*Hopitaux de Zone)*, Commune Health Centers (*Centre de Sante de la Commune)*, accredited private health facilities, Community Health Centers (*Centres de Sante d'Arrondissement)*, and village health units including Community Health Workers

There are approximately 12,500 community health workers (CHWs) in Benin. National policy requires these CHWs to have, at minimum, a primary education, and to live in the community they serve. According to a 2013 survey, about 5,000 CHWs treat children with confirmed malaria, but only 1500 had been formally trained to treat this and other childhood diseases.

[10] Benin Government. "Geographie du Benin", http://www.gouv.bj/tout-sur-le-benin/geographie. Accessed on July 7, 2015
[11] CIA, The World Factbook 2015, https://www.cia.gov/library/publications/the-world-factbook/geos/bn.html. Accessed on July 6, 2015.
[12] United Nations Development Program, Human Development Report 2014. http://hdr.undp.org/sites/default/files/hdr14-report-en-1.pdf. Accessed on November 17, 2015.
[13] Benin Government. "Les communes du Bénin.", http://www.gouv.bj/les-communes-du-benin. Accessed on July 7, 2015.
[14] President's Malaria Intiative. Country operational plan FY 2015, http://www.pmi.gov/docs/default-source/default-document-library/malaria-operational-plans/fy-15/fy-2015-benin-malaria-operational-plan.pdf?sfvrsn=3. Accessed on November 17, 2015.

In the public sector, the main supplier of medications, Central d'achat des Médicaments Essentiels (CAME) is the only authorized supplier of ACTs in Benin.[15] CAME ships inventory to distribution depots in the health zones, which then ship the inventory to health facilities where it will reach patients.[15]

Several issues in managing supply of antimalarial medications exist.[15] 1) There are frequent stock outs; 2) Antimalarial medications nearing expiration are not used first and therefore facilities have many expired products; 3) Drug use data is not accurate or always available 4) Sometimes diagnostic tests are available but there is no treatment to provide to patients.[15]

The private sector

Approximately 25% of health care providers are employed in the private sector and provide services to more than half of the country's population.[14] The private sector, which includes traditional practitioners, licensed pharmacists, and informal drug vendors, is growing rapidly but is largely unlicensed. It has been difficult to get the private sector to comply with current malaria treatment policies, largely due to reimbursement issues for free services.[14]

Malaria risk and burden

Malaria is endemic in Benin and transmission is influenced by vector species, geography, climate, and hydrography.[14] The primary malaria vector is *Anopheles gambiae* and secondary vectors and geographically distinct regions and climate patterns result in year-round transmission.[14,16] The first month of the malaria transmission season is around April in the south, May in the central region, and June for most of the north. In 2013, 100% of the population lived in high-transmission areas.[16] The majority of malaria cases are caused by the *P. falciparum* parasite.[16]

In 2011, the Ministry of Health national health statistics report found malaria to be the leading cause of death among children under five years of age and the leading cause of morbidity among adults. Pregnant women are another particularly vulnerable group.[14] In 2012, The World Health Organization estimated 800 malaria hospital admissions and 23 malaria deaths per 100,000 people, regardless of age.[16]

Malaria case management guidelines

The national strategy objectives for Benin targets the provision of microscopy or RDT diagnosis to public health units, selected private health clinics and trained community health workers.[14] The government also implemented a free malaria treatment policy in government health facilities, in the formal private sector (both profit and not for profit) and appropriately trained community health workers.[14]

Diagnosis

The National Malarial Strategic Plan (2011-2015) recommends free universal diagnostic testing using microscopy or RDT for all suspected cases of malaria at every level of care.[14] Diagnosis requires confirmation by microscopy or RDT prior to treatment with an ACT. Access to RDTs continues to be a challenge throughout the health system, especially

[15] Torres Rueda S, Tougher S, Palafox B, Patouillard E, Goodman C, Hanson K, Tassiba ME, O'Connell K and the ACTwatch Group. A Qualitative Assessment of the Private Sector Antimalarial Distribution Chain in Benin, 2009. Nairobi: ACTwatch project, Population Services International

[16] World Malaria Report, Benin Country Profile, 2014, http://www.who.int/malaria/publications/world_malaria_report_2013/wmr2013_country_profiles.pdf. Accessed on November 17, 2015.

at the peripheral level. In addition to increasing awareness among health care providers of the policies, priority strategies for increasing diagnostic testing include training more community health workers in the use of RDTs, increasing the proportion of health facilities with an adequate stock of RDTs, and building laboratory capacity.[14]

Treatment

In 2004, Benin adopted artemether-lumefantrine (AL) as the first-line treatment for uncomplicated malaria.[14] In cases of intolerance to AL, where AL is not available, or in children less than 6 months of age, artesunate-amodiaquine (ASAQ) is recommended.[14] The second-line treatment is quinine (QN).[16] For the treatment of uncomplicated malaria in pregnancy, oral quinine is recommended during the first trimester, while ACTs are recommended beginning with the second trimester through the term of the pregnancy.[17] Severe malaria in pregnant women should be treated with quinine regardless of the term of pregnancy. In other cases of severe malaria, parenteral artesunate is the first choice treatment option; if aretesunate is not available, parenteral quinine is recommended.[16] Once the patient is stabilized, it is recommended that treatment continue orally. According to national policy, supervised administration of sulfadoxine pyrimethamine (SP) between the 16th and 36th week of gestation is used for intermittent preventative treatment in pregnancy (IPTp).[17] Oral artemisinin monotherapies have been banned in Benin since 2008.[18]

Financing and major initiatives to improve malaria case management

Malaria control activities and financing in Benin come from several sources, including the Benin Ministry of Health, the Global Fund, the World Bank, USAID/PMI, and the WHO/UNICEF, and are coordinated by the National Malaria Control Program.[16] A major MoH priority launched at the end of 2011 was the Free Malaria Care Initiative.[19] With this initiative, malaria case management is free to children under 5 years of age and pregnant women. The implementation of this policy has been successful in public clinics and some hospitals. It has been more challenging to implement in the private sector as private providers rely on revenue generated from malaria treatment. In 2012, the World Bank awarded a $10 million supplemental grant to the Government of Benin to ramp up activities related to malaria control.[19]

According to the 2014 WHO World Malaria Report, PMI and the Global Fund have been major donors of malaria financing in recent years.[16] In fiscal year 2014, PMI funding was approximately 16.1 million USD, resulting in a cumulative funding total of 121.8 million USD since 2007. Through fiscal year 2014, PMI funds have been used to procure nearly 740,000 insecticide-treated nets for routine services, 1.7 million RDTs, and 1.5 million ACT treatments, as well as train health workers in treatment with ACTs, malaria diagnosis and IPTp.[14]

Currently, there are two active malaria grants from the Global Fund, both scheduled to end in late 2015. A grant launched in November 2004 committed $66.8 million to support malaria control activities in the Mono and Couffo regions. The grant activities focus on promoting the use of insecticide-treated bed nets through women's groups and health facilities, and by increasing access to early diagnosis and treatment with ACTs. In addition, the program aims to increase awareness about malaria prevention and treatment.[20] The second active Global Fund grant was initiated in July 2008 and committed a sum of $21 million. This program is supporting community level malaria care for children under 5 years of age in 14 health zones.[21]

[17] National Treatment Guidelines "DIRECTIVES NATIONALES DE PRISE EN CHARGE DES CAS DE PALUDISME", 2011, http://www.remed.org/Directives_de_PEC_des_cas.pdf. Accessed November 17, 2015.
[18] World Health Organisation, Malaria World Report, 2009, http://www.who.int/malaria/publications/country-profiles/2009/mal2009_ben_en.pdf. Accessed November 17, 2015.
[19] The World Bank, Health Sector in Benin: Additional Financing to Improve Access to and the Quality of Malaria Treatment for the Most Vulnerable, 2012, http://www.worldbank.org/en/news/press-release/2012/03/15/health-sector-in-benin-additional-financing-to-improve-access-to-and-the-quality-of-malaria-treatment-for-the-most-vulnerable. Accessed November 17, 2015.
[20] The Global Fund, http://portfolio.theglobalfund.org/en/Grant/Index/BEN-304-G04-M. Accessed on July 9, 2015.
[21] The Global Fund, http://portfolio.theglobalfund.org/en/Grant/Index/BEN-708-G07-M . Accessed on July 9, 2015.

Annex 3: Outlet Survey Methods

Design and Study Population

ACTwatch implements repeat cross-sectional outlet surveys in project countries. The study population is defined as all outlets with the potential to sell or distribute antimalarial medicines and/or provide malaria blood testing. In Benin, this includes the following outlet types:

Public health facilities	Health facilities operated by the government including hospitals, health centers and village health units. A fee for service is generally charged.
Community health workers	Trained volunteers operating in rural areas providing malaria blood testing using RDTs and provide medicines including ACTs. Treatment is provided free of charge.
Private not for-profit health facilities	NGO /faith-based hospitals or clinics operated by trained health professionals and registered with the Ministry of Health. A fee for service is generally charged.
Private for-profit health facilities	Private hospitals, clinics, and diagnostic laboratories operated by trained health professionals and registered with the Ministry of Health. Medical consultations, diagnosis and treatment are provided at cost.
Pharmacies	Pharmacies are licensed and regulated by the Director of Pharmacies to sell prescription medicines at a commercial rate. They are managed by pharmacists and qualified health professionals and are typically located in urban areas.
Drug stores (Depôts pharmaceutiques)	Drug stores located primarily in rural areas that do not have access to pharmacies. They are tied to pharmacies from which they receive drug supplies.
General retailers	Grocery stores, shops, minimarkets, kiosks and market stalls selling fast-moving consumer products.
Itinerant vendors	Mobile providers typically working within urban markets. They are not registered with any national regulatory authority.

Stratification

The Benin 2014 outlet survey is stratified to provide estimates for urban and rural domains. Urban and rural designations for administrative units were obtained from the 2002 Benin Population and Housing Census.

Eligibility Criteria

All outlets with the potential to sell or distribute antimalarials were included in the census screening. Outlets were eligible for a provider interview and malaria product audit if they met at least one of three study criteria: 1) one or more antimalarials reportedly in stock the day of the survey; 2) one or more antimalarials reportedly in stock within the three months preceding the survey; and/or 3) provides malaria blood testing (microscopy or RDT). Outlets that do not serve the general public (e.g. military facilities) were excluded from the study.

Sample Size

The outlet survey was powered to detect a 20 percentage point increase between 2011 and 2014 within each research domain (and nationally) in the indicator, *the proportion of outlets that have quality-assured ACT in stock among all*

outlets with antimalarials in stock at the time of the survey. The required sample size for each research domain (urban and rural strata) was calculated in three steps: 1) determine the required number of antimalarial-stocking outlets; 2) determine the number of outlets to be enumerated to arrive at this number of antimalarial-stocking outlets; and 3) determine the number of clusters for the census to arrive at this number of outlets.

Required number of private sector antimalarial-stocking outlets

The number of antimalarial-stocking outlets required to detect a change over time in availability of ACT between survey rounds is given by:

$$n = deff\left[Z_a\sqrt{2P(1-P)} + Z_{1-b}\sqrt{P_1(1-P_1)+P_2(1-P_2)}\right]^2 \over (P_2 - P_1)^2$$

Where:

- n= desired sample size
- P_1= the proportion of antimalarial-stocking outlets with quality-assured ACT in stock in 2011
- P_2= the expected proportion of antimalarial-stocking outlets with quality-assured ACT in stock in 2014.
- P= $(P_1+P_2)/2$
- $Z_{\alpha/2=}$ the standard normal deviate value for a α type I error (two-sided)
- $Z_{1-\beta}$= the standard normal deviate value for a β type II error
- Deff= design effect anticipated due to the cluster survey design. Design effects observed from the 2011 survey were used for sample size calculations.

Required number of antimalarial-stocking outlets

The estimated total number of outlets enumerated needed for the QA ACT availability indicator was determined by the following formula for each urban/rural strata separately:

$$N = n / P_{am}$$

Where P_{am} is the proportion of outlets having antimalarial stocks at the time of the survey among all outlets enumerated. In this equation, the assumptions are as follows: N = desired sample size of all outlets for monitoring availability indicators, and n is the number of outlets with antimalarial stocks at the time of the survey. P_{am} is the proportion of outlets with antimalarials in stock at the time of the survey among all outlets enumerated estimated from 2011 survey data for each domain (see below).

Required number of clusters (arrondissement)

The primary sampling approach entails sampling a set of administrative units (geographic clusters) with a corresponding population of approximately 10,000 to 15,000 inhabitants. The appropriate administrative unit in Benin corresponding to this desired population size is arrondissement. The desired number of clusters was selected with probability of cluster selection proportionate to size (PPS). A census of all outlets with the potential to sell or distribute antimalarials was conducted in sampled arrondissement.

The average number of outlets screened per cluster from the 2011 outlet survey was used to estimate the number of clusters required in 2014 to achieve the desired sample size. Applying these averages to the required number of outlets for the study, the number of clusters required in each domain was: 14 urban and 9 rural.

Sampling

A representative sample of arrondissement was selected in each research domain. From a list of all arrondissement in each domain, the required number of arrondissement was selected with probability proportional to size (PPS). Selection of arrondissement with PPS was completed based on the 2002 Population and Housing Census. A sampling

frame with population sizes was used for selecting the sample because accurate estimates on the total number of outlets per geographic/administrative unit that may be eligible for a medicine outlet survey do not exist. A list of selected arrondissement is provided in Annex 4.

A one-stage cluster sampling approach was taken for all outlet types. In addition to the census of selected arrondissement, a booster sample was employed for pharmacies, drug stores and public health facilities to reach the desired sample size for these key market segments. The booster strategy consisted of extending the boundaries for the census from sampled arrondissement to the commune level.

Data Collection

Interviewers, supervisors, and quality controllers received training that included an orientation to the study, questionnaire, classroom training on completing antimalarial and RDT audits, and a field exercise. Following training, data collection was implemented from July 11-31, 2014.

For all interviews, a structured questionnaire was administered using paper questionnaires (see Annex 6). A series of screening questions were administered at all outlets to determine eligibility for the survey. Outlets where antimalarial medicines were reportedly sold and/or malaria blood testing was reportedly provided were invited to participate in the survey. Following informed consent procedures, an audit of all available antimalarial medicines and RDTs was conducted. Antimalarial audit information included formulation, package size, brand name, active ingredients and strengths, manufacturer, Benin of manufacture, reported sale/distribution in the week preceding the survey, retail price, and wholesale price. RDT audit information included brand name, manufacturer, country of manufacture, reported sale/distribution in the week preceding the survey, retail price, and wholesale price. Detailed descriptions of antimalarials and RDTs audited are provided in Annex 7 and Annex 8. In addition to the product audit, a series of questions was administered to the senior-most provider regarding malaria case management knowledge and practices as well as provider training and qualifications. Geo-coordinates were recorded for each outlet using a handheld Global Positioning System (GPS) unit.

Up to three visits were made to all outlets to complete the screening process, audit, and provider interview as needed (e.g. where outlets were closed or providers were not available).

Data Entry, Processing, and Analysis

Data was collected using paper questionnaires. All data cleaning and analysis was completed using Stata 13.1 (©StataCorp, College Station, TX). Sampling weights were applied to account for variations in probability of selection (see Annex 9) and standard error estimation accounted for clustering at the ward and district levels. Indicator definitions are provided in Annex 10.

Protection of Human Subjects

The 2014 outlet survey protocol received ethical approval from the Benin National Research Ethics Committee (Comite National d'Ethique Pour La Recherche En Sante). The PSI Research Ethics Board reviewed the study protocol and granted ethical approval as well. Provider interviews and product audits were completed only after administration of a standard informed consent form and provider consented to participate in the study. Providers had the option to end the interview at any point during the study. Standard measures were employed to maintain provider confidentiality and anonymity.

Annex 4: Sampled Arrondissement

Table X1: Sampled arrondissement			
DÉPARTEMENT	COMMUNE	ARRONDISSEMENT	URBAN/RURAL
Littoral	Cotonou	2ème Arrondissement	Urban
Littoral	Cotonou	5ème Arrondissement	Urban
Littoral	Cotonou	9ème Arrondissement	Urban
Littoral	Cotonou	12ème Arrondissement	Urban
Atacora	Kerou	Kerou	Urban
Borgou	Bembereke	Bembereke	Urban
Borgou	Parakou	2ème Arrondissement	Urban
Donga	Djougou	Djougou III	Urban
Atlantique	Abomey-Calavi	Abomey-Calavi	Urban
Couffo	Dogbo	Tota	Urban
Oueme	Adjara	Adjarra II	Urban
Oueme	Porto Novo	4ème Arrondissement	Urban
Plateau	Adja-Ouere	Adja-Ouere	Urban
Zou	Bohicon	Bohicon II	Urban
Atacora	Materi	Nodi	Rural
Borgou	Sinende	Sikki	Rural
Atlantique	So-Ava	Ganvie I	Rural
Couffo	Toviklin	Adjido	Rural
Oueme	Dangbo	Kessounou	Rural
Zou	Za-Kpota	Allahe	Rural
Alibori	Gogounou	Gounarou	Rural
Collines	Save	Kaboua	Rural
Mono	Come	Akodeha	Rural

Annex 5: Detailed Sample Description

	Table X2: Detailed sample description								
	Public Health Facility	Community Health Workers	Private Not For-Profit Facilities	Private For-Profit Facilities	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Outlets**
Number of outlets screened (Figure 1 Box B)									
Urban									
Census	40	16	43	142	59	3	2892	417	3612
Booster	53	0	0	0	97	5	0	0	155
Rural									
Census	17	62	2	25	0	3	286	14	409
Booster	119	0	0	0	28	9	0	0	156
Number of outlets eligible and interviewed (Figure 1 Box D)									
Urban									
Census	37	14	37	122	56	2	845	296	1409
Booster	53	0	0	0	95	5	0	0	153
Rural									
Census	16	48	2	24	0	3	129	10	232
Booster	119	0	0	0	26	9	0	0	154
Number of outlets eligible but not interviewed (interview non-participation)									
Urban									
Census	0	0	1	6	2	0	73	25	107
Booster	0	0	0	0	1	0	0	0	1
Rural									
Census	0	0	0	1	0	0	1	1	3
Booster	0	0	0	0	2	0	0	0	2
Number of interviewed outlets with at least one antimalarial in stock on the day of the survey (Figure 1, Box D1)									
Urban									
Census	36	10	35	109	56	2	778	279	1305
Booster	52	0	0	0	95	5	0	0	152
Rural									
Census	16	32	2	23	0	3	112	9	197
Booster	118	0	0	0	26	9	0	0	153

	Table X2: Detailed sample description								
	Public Health Facility	Community Health Workers	Private Not For-Profit Facilities	Private For-Profit Facilities	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**ALL Outlets**
Number of interviewed outlets with at least one antimalarial in stock on the day of the survey or at least one antimalarial reportedly in stock in the previous 3 months (Figure 1 sum of Box 1 and Box 2)									
Urban									
Census	36	14	37	117	56	2	845	296	1403
Booster	53	0	0	0	95	5	0	0	153
Rural									
Census	16	46	2	24	0	3	129	10	230
Booster	118	0	0	0	26	9	0	0	153
Number of interviewed outlets that provide malaria blood testing, but do not stock antimalarial medicines (Figure 1 Box D3)									
Urban									
Census	1	0	0	5	0	0	0	0	6
Booster	0	0	0	0	0	0	0	0	0
Rural									
Census	0	2	0	0	0	0	0	0	2
Booster	1	0	0	0	0	0	0	0	1
Proportion of eligible and interviewed antimalarial-stocking outlets with at least one provider with a health-related qualification*									
Urban									
Census	100.00	60.00	97.14	99.08	96.36	50.00	3.61	2.87	21.04
Booster	98.08	-	-	-	100.00	100.00	-	-	99.33
Rural									
Census	100.00	90.63	100.00	100.00	-	100.00	8.93	0.00	41.84
Booster	100.00	-	-	-	100.00	88.89	-	-	99.35
	* Health-related qualifications include: medical doctor, pharmacist, nurse, midwife, laboratory technician, pharmacy technician, community health assistant, and community health worker								
	Source: ACTwatch Outlet Survey, Benin, 2014.								

Annex 6: Questionnaire

ACTwatch Outlet Survev **BENIN 2014**

Section I: Census Information

Interviewer completes this section for <u>all</u> outlets.

Outlet ID Interviewer-Department- Commune-Arrondissement -Outlet ID [___|___]-[___|___]-[___|___|___]-[___|___|___|___]-[___|___|___]	
C1. Today's date (dd/mm/yyyy)	[___|___]-[___|___]-[_2_|_0_|_1_|_4_]
C2. Interviewer's name	C2a. Interviewer's code
C3. Department	C3a. Department code
C4. Commune	C4a. Commune code
C5. Arrondissement	C5a. Arrondissement code
C6. Name of outlet ***If no name, record "no name" or owner's name***	C6a. Outlet code

C7. Type of Outlet

01	National University Hospital	10	Private, for-profit clinic	17	Supermarket/grocery store
02	Regional Departmental Hospital	11	Private, for-profit laboratory	18	Shop in a market
03	Health zone hospital	12	Missionary hospital	19	Shop outside a market
04	Commune health centre	13	NGO health centre	20	Stall inside a market
05	Arrondissement health centre	14	Private, non-profit laboratory	21	Stall outside a market
06	Dispensary	15	Pharmacy (official, registered)	22	Hawker
07	Maternity/antenatal clinic	16	Pharmaceutical depot/wholesaler (sells retail)		
08	Village health unit			96	Other ***(specify)***
09	Community health worker			[_____]	

[___|___]

C8. Is this area part of the booster sample?	1 = Yes	0 = No	[___]
C8a. Is this outlet on the list of PSI outlets?	1 = Yes	0 = No	[___]

Hello, my name is _____, I work on behalf of Population Services International. We are conducting a study on the availability of antimalarial medicines and diagnostic testing services. The results will be used to improve the availability of appropriate antimalarial treatment in Benin. I would like to ask you a few questions to see if you could be part of the survey.

Section 2: Screening & Eligibility

X1. Do you have any oral rehydration salts, also known as ORS? ***Verify with prompt card.*** 1 = Yes 0 = No	[___]
X2. Do you have any zinc tablets for treatment of diarrhea in children in stock today? ***Verify with prompt card.*** 1 = Yes 0 = No	[___]
S1. Do you have any medicines in stock today? 1 = Yes ***Go to S3*** 0 = No	[___]
S2. Are there any medicines that are out of stock today, but that you stocked in the **<u>past 3 months?</u>** 1 = Yes ***Go to S4*** 0 = No ***Go to S5*** 8 = Don't know ***Go to S5***	[___]
S3. Do you have any antimalarial medicines in stock today? 1 = Yes ***Provide information sheet & gain consent. Record start time in C9. Proceed to Section 3: Antimalarial Audit.*** 0 = No **Verify with prompt card.** ***Go to S4***	[___]
S4. Are there any antimalarial medicines that are out of stock today, but that you stocked in the **<u>past 3 months?</u>** 1 = Yes ***Provide information sheet & gain consent. Record start time in C9. Proceed to A16.*** 0 = No ***Verify with prompt card. Go to S5*** 8 = Don't know ***Verify with prompt card. Go to S5***	[___]

S5. Are you offering any diagnostic services or selling any diagnostic tests here today? 1 = Yes ***Go to S6*** 0 = No ***Verify with prompt card.*** ***Record details in C9 then complete Sec 7:ORS & Zinc and Sec X: Ending Interview***	[___]
S6. Are any of these services or tests for suspected malaria? 1 = Yes ***Provide information sheet & gain consent. Record start time in C9.*** **Go *to Section 4:Diagnostic Audit*** 0 = No ***Verify with prompt card.*** ***Record details in C9 then complete Sec 7:ORS & Zinc and Sec X: Ending Interview***	[___]

Before proceeding to the full interview ensure you have given the respondent a study information sheet, explained the study and obtained informed consent.

C9. Result of Visit(s)

Date (dd/mm/yy)	**Visit 1**	**Visit 2**	**Visit 3**
	[___|___]-[___|___]-[_1_|_4_]	[___|___]-[___|___]-[_1_|_4_]	[___|___]-[___|___]-[_1_|_4_]
Time started ***(use 24hr clock)***	[___|___]:[___|___]	[___|___]:[___|___]	[___|___]:[___|___]
Time completed ***(use 24hr clock)***	[___|___]:[___|___]	[___|___]:[___|___]	[___|___]:[___|___]
Result	[___|___]	[___|___]	[___|___]

01 = Outlet eligible & survey completed ***go to E1***
02 = Outlet ineligible: does not meet any screening criteria ***go to E1***
03 = Interview interrupted ***go to C11***
04 = Respondent not available / Time not convenient ***go to C11***
05 = Outlet not open at the time ***go to C11***
06 = Outlet closed permanently ***go to E1***
96 = Other ***(specify):***[_____]
97 = Refused ***go to C10***

C10. If the provider refused, why? 1 = Client load ***Ask respondent for a time they would prefer to be interviewed and note in C11*** 2 = Thinks it's an inspection / nervous about license ***go to E1*** 3 = Not interested ***go to E1*** 6 = Other ***(specify):*** [_____] 7 = Refuses to give reason ***go to E1***	[___]
C11. ***Use this space to record call back details. If it is not possible to complete the interview at another time, go to E1.***	

Section X: Ending the interview

E1. Name of interviewee: 5 = Not applicable, no respondent; 7 = Refused	[___]
E2. Physical address or location identifiers of outlet (not PO box) ***(Give detailed description that will help supervisor to find the outlet)***	E3. Telephone number 9999999995 = Not applicable: no respondent or has no telephone 9999999997 = Refused [___|___|___|___|___|___|___|___|___|___]
E4.Latitude: [**S**]-[___|___|___]-[___|___|___|___|___]	E5.Longitude: [**E**]-[___|___|___]-[___|___|___|___|___]
E7. **Additional observations by interviewer (if any)**	

THANK THE PROVIDER AND END INTERVIEW

Section II: Antimalarial Audit

A0. Read to the provider:
Can you please show us the full range of antimalarials that you currently have in stock? Do you currently have any of the following?

Prompt entire list using antimalarial prompt card; No response to be recorded.

- Artemether lumefantrine, such as *Artefan, Coartem, Co-Artesiane, Confantrine, Lonart, Lufanter, Lumartem, Lemether*
- Artesunate amodiaquine, such as *Amonat, Apoxin, Arsuamoon, Arsucam, Artediam, Camoquin Plus, Coarsucam, Falcimon, Larimal, Macsunate Plus, Malmed, Winthrop*
- Other artemisinin combination therapies, such as *Arco, Artecure, Arte-Plus, Artequin, Artedar, AsunateDenk, Co-Arinate, Darte-Q, Duo-cotecxin, Malacur, P-Alaxin, Artecom, Alaxin Plus*
- Artemether monotherapies, such as *Artesiane, Artenam, Malather*
- Artesunate monotherapies, such as *Plasmotrim, Arinate*
- SP, such as *Combimal, SP, Fansidar, Maloxine, Falcidox, Fansidar, Malafan, Maladox, Suprim, Metakelfin*
- Quinine
- Amodiaquine, such as *Amoquin, Malaridose, Exoquin, Malarkite, Malarid, Zendiq, Malaritab, Camoquin*
- Chloroquine, such as *Letaquine, Quinnox*
- Syrups or suspensions, such as *Co-Artesiane, Malacur, Lufanter, Halfan, Prosol*
- Injectables, such as *Quinine injectable, Artesiane, Quinine Resorcine, Malather*
- Drops, such as *quinine drops*

If the outlet has no antimalarials in stock cross-check screening results then proceed to question A16.

Proceed to the antimalarial audit. Different antimalarial audit sheets will be used to record the antimalarial information based on the dosage form of the medicine.

Separate the antimalarials into two piles:

- ***The first pile should contain all the antimalarials in the form of tablets, suppositories, or granules. Use the Tablets, Suppositories & Granules Drug Audit Sheet to record these.***

- ***The second pile should contain all the antimalarials in any form other than tablets, suppositories or granules. Use the Non-Tablet Drug Audit Sheet to record these.***

If additional audit sheets are used, add these sheets after the ones provided and staple the questionnaire again. All pages should be in order before you move onto the next outlet.

Number <u>each drug</u> by assigning a Product Number (starting from 1 for TSG drugs and again from 1 for NT drugs). Number <u>each audit sheet used</u> in the spaces provided at the bottom of the page.

ADDITIONAL NOTES ON THE SUB-OUTLET CODE

In all outlets, complete the <u>Sub-Outlet Code</u> (as well as the Product Number) for each drug audited. These codes are listed below.

SUB-OUTLET CODES	
X	ALL outlets that have only ONE dispensing/distribution point for medicines/diagnostics
A	Pharmacy in a health facility
B	*Health facility:* General outpatient department / dispensary (if used by all patients)
C	*Health facility:* Adult outpatient department / adult dispensary / adult clinic
D	*Health facility:* Child outpatient department / child dispensary / child clinic
E	*Health facility:* Antenatal / maternity clinic
G	*Health facility:* ART/HIV/AIDS clinic
L	Laboratory ***(for RDT audit)*** – for labs in health facilities or independent labs
Z	Other ***(specify the type in the space for audit comments –TSG 13 or NT 13)***

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TABLET, SUPPOSITORY & GRANULE DRUG AUDIT SHEET (TSG) OUTLET ID: [___|___]-[___|___]-[___|___|___]-[___|___|___|___]-[___|___|___]

Sub-outlet code [_____] _____ Product number [__|__]	[__|__] [__|__] [__|__] [__|__]	1. Generic name	2. Strength [__|__|__].[__]mg [__|__|__].[__]mg [__|__|__].[__]mg	2a. Is this base strength? [__] 1 = Yes [__] 0 = No 8 = Don't know [__] *If no, specify salt:* [_____]	3. Dosage form 1 = Tablet 2 = Suppository 3 = Granule [___]	4. Brand name *(Include weight and age information)*

5. Manufacturer	6. Country of manufacture [__|__|__]	7. Package size There are a total of [___|___|___|___] tablets/ suppositories/ granule packs in each: 1 = Package 2 = Pot/tin [___]	8. Is product a fixed-dose combination (FDC) 1 = Yes 0 = No 8 = Don't know [___]	9. Does product have the AMFm logo? 1 = Yes 0 = No 8 = Don't know [___]	10. Amount sold/distributed in the last 7 days to individual consumers (*Record # of packages / tins described in* Q7 *OR record the total # of tablets / suppositories / granule packs sold*) This outlet sold [___|___|___|___] **packages/ tins** in the last 7 days **OR** This outlet sold [___|___|___|___] **tablets/ suppositories or granule packs** in the last 7 days ***Not applicable = 9995; Refused = 9997; Don't know = 9998***	11. Stocked out at any point in the past **3 months**? 1 = Yes 0 = No 8 = Don't know [___]

12. Retail selling price	13. Wholesale purchase price	14. Why do you stock this medicine [SHOW PRODUCT]? *Do not read list*. *Circle ALL responses given*		15. Comments
[___|___] **tablets, suppositories or granule packs** cost an individual customer [___|___|___|___|___] FCFA	For the outlet's most recent wholesale purchase [___|___|___|___] **tablets, suppositories or granule packs** cost [___|___|___|___|___|___] FCFA	Profitable	A	
		Recommended by the government	B	
		Low price	C	
		Customer demand or preference	D	
		Positive brand reputation	E	
		Often prescribed by doctors	F	
		Most effective for treating malaria	G	
		Don't know	X	
		Other	Z	
		specify [_____]		
Free = 00000 ***Refused = 99997*** ***Don't know = 99998***	***Free = 000000*** ***Refused = 999997*** ***Don't know = 999998***			

TABLET, SUPPOSITORY & GRANULE DRUG AUDIT SHEET (TSG) OUTLET ID: [___|___]-[___|___]-[___|___|___]-[___|___|___|___]-[___|___|___]

Sub-outlet code [____] _____ Product number [__|__]	[__|__] [__|__] [__|__] [__|__]	1. Generic name	2. Strength [__|__|__].[__]mg [__|__|__].[__]mg [__|__|__].[__]mg	2a. Is this base strength? [__] 1 = Yes [__] 0 = No 8 = Don't know [__] *If no, specify salt:* [_____]	3. Dosage form 1 = Tablet 2 = Suppository 3 = Granule [__]	4. Brand name *(Include weight and age information)*

5. Manufacturer	6. Country of manufacture [__|__|__]	7. Package size There are a total of [___|___|___|___] tablets/ suppositories/ granule packs in each: 1 = Package 2 = Pot/tin [___]	8. Is product a fixed-dose combination (FDC) 1 = Yes 0 = No 8 = Don't know [___]	9. Does product have the AMFm logo? 1 = Yes 0 = No 8 = Don't know [___]	10. Amount sold/distributed in the last 7 days to individual consumers (*Record # of packages / tins described in* Q7 *OR record the total # of tablets / suppositories / granule packs sold*) This outlet sold [___|___|___|___] **packages/ tins** in the last 7 days **OR** This outlet sold [___|___|___|___] **tablets/ suppositories or granule packs** in the last 7 days ***Not applicable = 9995; Refused = 9997; Don't know = 9998***	11. Stocked out at any point in the past **3 months**? 1 = Yes 0 = No 8 = Don't know [___]

12. Retail selling price	13. Wholesale purchase price	14. Why do you stock this medicine [SHOW PRODUCT]? ***Do not read list***. ***Circle ALL responses given***	15. Comments
[___|___] **tablets, suppositories or granule packs** cost an individual customer [___|___|___|___|___] FCFA	For the outlet's most recent wholesale purchase [___|___|___|___] **tablets, suppositories or granule packs** cost [___|___|___|___|___|___] FCFA	Profitable A Recommended by the government B Low price C Customer demand or preference D Positive brand reputation E Often prescribed by doctors F Most effective for treating malaria G Don't know X Other Z ***specify*** [_____]	
Free = 00000 ***Refused = 99997*** ***Don't know = 99998***	***Free = 000000*** ***Refused = 999997*** ***Don't know = 999998***		

Tablet Audit Sheet [__|__] of [__|__]

TABLET, SUPPOSITORY & GRANULE DRUG AUDIT SHEET (TSG) OUTLET ID: [___|___]-[___|___]-[___|___|___]-[___|___|___|___]-[___|___|___]

Sub-outlet code [_____] _____ Product number [__|__]	[__|__] [__|__] [__|__] [__|__]	1. Generic name	2. Strength [__|__|__].[__]mg [__|__|__].[__]mg [__|__|__].[__]mg	2a. Is this base strength? [__] 1 = Yes [__] 0 = No 8 = Don't know [__] *If no, specify salt:* [_____]	3. Dosage form 1 = Tablet 2 = Suppository 3 = Granule [__]	4. Brand name *(Include weight and age information)*

5. Manufacturer	6. Country of manufacture [__|__|__]	7. Package size There are a total of [___|___|___|___] tablets/ suppositories/ granule packs in each: 1 = Package 2 = Pot/tin [___]	8. Is product a fixed-dose combination (FDC) 1 = Yes 0 = No 8 = Don't know [___]	9. Does product have the AMFm logo? 1 = Yes 0 = No 8 = Don't know [___]	10. Amount sold/distributed in the last 7 days to individual consumers (*Record # of packages / tins described in* Q7 *OR record the total # of tablets / suppositories / granule packs sold*) This outlet sold [___|___|___|___] **packages/ tins** in the last 7 days **OR** This outlet sold [___|___|___|___] **tablets/ suppositories or granule packs** in the last 7 days ***Not applicable = 9995; Refused = 9997; Don't know = 9998***	11. Stocked out at any point in the past **3 months**? 1 = Yes 0 = No 8 = Don't know [___]

12. Retail selling price	13. Wholesale purchase price	14. Why do you stock this medicine [SHOW PRODUCT]? ***Do not read list***. ***Circle ALL responses given***		15. Comments
[___|___] **tablets, suppositories or granule packs** cost an individual customer [___|___|___|___|___] FCFA	For the outlet's most recent wholesale purchase [___|___|___|___] **tablets, suppositories or granule packs** cost [___|___|___|___|___|___] FCFA	Profitable	A	
		Recommended by the government	B	
		Low price	C	
		Customer demand or preference	D	
		Positive brand reputation	E	
		Often prescribed by doctors	F	
		Most effective for treating malaria	G	
		Don't know	X	
		Other	Z	
		specify [_____]		
Free = 00000 ***Refused = 99997*** ***Don't know = 99998***	***Free = 000000*** ***Refused = 999997*** ***Don't know = 999998***			

NON-TABLET DRUG AUDIT SHEET (NT): SYRUP, SUSPENSION, INJECTIONS & OTHERS

OUTLET ID: [___|___]-[___|___]-[___|___|___]-[___|___|___|___]-[___|___|___]

Sub-outlet code [_____]

Product number [__|__]

[__|__]
[__|__]
[__|__]

1. Generic name

[__|__]

2. Strength

[__|__|__|__].[__]mg/[__|__|__].[__]mL

[__|__|__|__].[__]mg/[__|__|__].[__]mL

[__|__|__|__].[__]mg/[__|__|__].[__]mL

(***Note: no mL recorded for powder injection***)

2a. Is this base strength?

[__]
1 = Yes
0 = No
8 = Don't know
[__]

If no, specify salt:

[_____]

3. Dosage form

1 = Syrup
2 = Suspension
3 = Liquid inj.
4 = Powder inj.
5 = Drops
6 = Other ***(specify)*** [_____]

[___]

4. Brand name
(Include weight and age information)

5. Manufacturer

6. Country of manufacture

[__|__|__]

7. Package size

There are a total of

[___|___|___|___].[__] mL (or mg for powder injections) in each:
1 = Bottle
2 = Ampoule/vial

[___]

9. Does this product have the AMFm logo?

1 = Yes
0 = No
8 = Don't know

[___]

10. Amount sold/ distributed in the last 7 days to individual consumers

This outlet sold

[___|___|___|___] **bottles, ampoules or vials** in the last 7 days

Refused = 9997;
Don't know = 9998

11. Stocked out at any point in the past 3 months?

1 = Yes
0 = No
8 = Don't know

[___]

12. Retail selling price

[___|___|___]
bottles ampoules or vials cost an individual customer

[___|___|___|___|___]FCFA

Free = 00000
Refused = 99997
Don't know = 99998

13. Wholesale purchase price

For the outlet's most recent wholesale purchase:

[___|___|___|___]
bottles, ampoules or vials cost

[___|___|___|___|___|___] FCFA

Free = 000000
Refused = 999997
Don't know = 999998

14. Why do you stock this medicine [SHOW PRODUCT]?

Do not read list.
Circle ALL responses given

Profitable	A
Recommended by the government	B
Low price	C
Customer demand or preference	D
Positive brand reputation	E
Often prescribed by doctors	F
Most effective for treating malaria	G
Don't know	X
Other	Z

specify

[_____]

15. Comments

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NON-TABLET DRUG AUDIT SHEET (NT): SYRUP, SUSPENSION, INJECTIONS & OTHERS

OUTLET ID: [___|___]-[___|___]-[___|___|___]-[___|___|___|___]-[___|___|___]

Sub-outlet code [_____] _____ Product number [__|__]	[__|__] [__|__] [__|__] [__|__]	1. Generic name	2. Strength [__|__|__|__].[__]mg/[__|__|__].[__]mL [__|__|__|__].[__]mg/[__|__|__].[__]mL [__|__|__|__].[__]mg/[__|__|__].[__]mL (*Note: no mL recorded for powder injection*)	2a. Is this base strength? [__] 1 = Yes 0 = No 8 = Don't know [__] *If no, specify salt:* [_____]	3. Dosage form 1 = Syrup 2 = Suspension 3 = Liquid inj. 4 = Powder inj. 5 = Drops 6 = Other *(specify)* [_____] [__]

4. Brand name *(Include weight and age information)*	5. Manufacturer	6. Country of manufacture [__|__|__]	7. Package size There are a total of [___|___|___|___].[__] mL (or mg for powder injections) in each: 1 = Bottle 2 = Ampoule/vial [___]	9. Does this product have the AMFm logo? 1 = Yes 0 = No 8 = Don't know [___]	10. Amount sold/ distributed in the last 7 days to individual consumers This outlet sold [___|___|___|___] **bottles, ampoules or vials** in the last 7 days *Refused = 9997; Don't know = 9998*	11. Stocked out at any point in the past 3 months? 1 = Yes 0 = No 8 = Don't know [___]

12. Retail selling price [___|___|___] **bottles ampoules or vials** cost an individual customer [___|___|___|___|___]FCFA *Free = 00000 Refused = 99997 Don't know = 99998*	13. Wholesale purchase price For the outlet's most recent wholesale purchase: [___|___|___|___] **bottles, ampoules or vials** cost [___|___|___|___|___|___] FCFA *Free = 000000 Refused = 999997 Don't know = 999998*	14. Why do you stock this medicine [SHOW PRODUCT]? *Do not read list*. *Circle ALL responses given*	15. Comments

Profitable	A
Recommended by the government	B
Low price	C
Customer demand or preference	D
Positive brand reputation	E
Often prescribed by doctors	F
Most effective for treating malaria	G
Don't know	X
Other	Z

specify [_____]

Antimalarials recently in stock

A16. Are there any antimalarial medicines that are out of stock <u>today</u>, but that you stocked in the past **<u>3 months?</u>** 1 = Yes ***go to A17*** 0 = No ***go to Section 3: Diagnostic Audit*** 8 = Don't know ***go to Section 3: Diagnostic Audit***	[___]
A17. Do you know the names of the treatments that are out of stock? ***Will accept generic or brand names. Record one medicine per line.*** 1 = Yes, ***specify*** [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] 0 = No	[___]

Interviewer: Go to Section 3: Diagnostic Audit

Section III: Diagnostic Audit

This section is about availability of malaria blood testing. Completing the questions may require speaking with more than 1 staff member at the outlet. If the respondent does not know the answer to a question in this section, ask to speak with another staff member who can provide the information.

D1. Does this outlet/facility have disposable gloves available today for staff to use when seeing customers/patients? 1 = Yes 0 = No 8 = Don't know	[___]
D2. Does this outlet/facility have a sharps container, also called a sharps disposal box or safety box, available today for staff to use? 1 = Yes 0 = No 8 = Don't know	[___]
D3. Is malaria microscopic testing available here today? 1 = Yes 0 = No ***go to D7***	[___]
D4. How many people were tested for **malaria** at this facility/outlet **using microscopy** within the past 7 days? 9998 = Don't know	[___|___|___|___]
D5. What is the total cost for a microscopic test for malaria for an adult: [___|___|___|___|___] TZS ***Free = 00000; NA =99995; Refused = 99997; Don't know=99998***	
D6. What is the total cost for a microscopic test for malaria for a child under five: [___|___|___|___|___] TZS ***Free = 00000; NA = 99995; Refused = 99997; Don't know=99998***	
D7. Malaria rapid diagnostic tests, also called RDTs, are small, individually wrapped blood tests that are able to quickly diagnose whether a person has malaria. ***Show RDT images in prompt card*** Are malaria RDTs available here today? 1 = Yes ***go to D8*** 0 = No ***go to D9*** Don't know ***ask to speak with a respondent who has this information***	[___]
D8. Please show us the full range of RDTs that you currently have in stock. Do you currently have any of the following? ***Read entire list; No response to be recorded.*** • *SD Bioline, Wondfo One Step, Nova Test* • *First Response, ParaCheck* • *SD Bioline, Wondfo One Step, Nova Test* • *First Response, ParaCheck*	

Proceed to the RDT audit.

If additional audit sheets are used, add these sheets after the ones provided and staple the questionnaire again. All pages should be in order before you move onto the next outlet.

Number each RDT by assigning a Product Number.
Number each audit sheet used in the spaces provided at the bottom of the page.

In health facilities complete the Sub-outlet Code as well as the Product Number for each RDT audited.
Sub-outlet codes are listed on page 3.

RAPID DIAGNOSTIC TEST AUDIT SHEET (RDT) OUTLET ID: [___|___]-[___|___]-[___|___|___]-[___|___|___|___]-[___|___|___]

Sub-outlet code [_____] Product number [__|__]	1. Brand name	2. Antigen test *(circle ALL that apply)* Not indicated **Z** HRP2 **A** pLDH **B** Aldolase **C**	3. Parasite species *(circle ALL that apply)* Not indicated **Z** Pf **A** Pv **B** Po **C** pm **D** pan **E** vom/Pvom **F** other **G** Specify **[_____]**	4. Manufacturer	5. Country of Manufacture ***Not indicated = 998***	6. Lot Number

7. Number of tests sold/ distributed /used in the last 7 days to individual consumers *(Record total # of tests)* This outlet sold or distributed [___|___|___] **tests** in the last 7 days ***Refused = 997 ; Don't know=998***	8. Has this test been stocked out at any point in the past 3 months? 1 = Yes 0 = No 8 = Don't know [___]	9a. Do you or other staff use this brand of RDT to test clients here at this facility/outlet? 1 = Yes 0 = No ***go to 10a*** 8 = Don't know ***go to 10a*** [___] **9b. If yes, what is the total cost for an adult to have a test conducted with this RDT, including RDT cost and service fee?** **[___|___|___|___] FCFA** **9c. If yes, what is the total cost for a child under the age of five to have a test conducted with this RDT, including RDT cost and service fee?** **[___|___|___|___] FCFA**	10a. Does this facility/outlet provide this brand of RDT for clients to take away for testing somewhere else? 1 = Yes 0 = No ***go to 11*** 8 = Don't know ***go to 11*** [___] **10b. If yes, what is cost of this RDT for an adult?** **[___|___|___|___] FCFA** **10c. If yes, what is the cost of this RDT for a child under the age of five?** **[___|___|___|___] FCFA**	11. Wholesale purchase price For the outlet's most recent wholesale purchase: [___|___|___|___] **tests** cost **[___|___|___|___|___] FCFA** ***Free = 00000*** ***NA = 99995*** ***Refused = 99997*** ***Don't know=99998***	12. Comments

Free = 0000; NA = 9995; Refused = 9997; Don't know=9998

RDT Audit Sheet [___|___] of [___|___]

RAPID DIAGNOSTIC TEST AUDIT SHEET (RDT) OUTLET ID: [___|___]-[___|___]-[___|___|___]-[___|___|___|___]-[___|___|___]

Sub-outlet code [_____] Product number [__|__]	1. Brand name	2. Antigen test *(circle ALL that apply)* Not indicated **Z** HRP2 **A** pLDH **B** Aldolase **C**	3. Parasite species *(circle ALL that apply)* Not indicated **Z** Pf **A** Pv **B** Po **C** pm **D** pan **E** vom/Pvom **F** other **G** Specify **[_____]**	4. Manufacturer	5. Country of Manufacture ***Not indicated = 998***	6. Lot Number

7. Number of tests sold/ distributed /used in the last 7 days to individual consumers *(Record total # of tests)* This outlet sold or distributed [___|___|___] **tests** in the last 7 days ***Refused = 997 ; Don't know=998***	8. Has this test been stocked out at any point in the past 3 months? 1 = Yes 0 = No 8 = Don't know [___]	9a. Do you or other staff use this brand of RDT to test clients here at this facility/outlet? 1 = Yes 0 = No ***go to 10a*** 8 = Don't know ***go to 10a*** [___] **9b. If yes, what is the total cost for an adult to have a test conducted with this RDT, including RDT cost and service fee?** **[___|___|___|___] FCFA** **9c. If yes, what is the total cost for a child under the age of five to have a test conducted with this RDT, including RDT cost and service fee?** **[___|___|___|___] FCFA**	10a. Does this facility/outlet provide this brand of RDT for clients to take away for testing somewhere else? 1 = Yes 0 = No ***go to 11*** 8 = Don't know ***go to 11*** [___] **10b. If yes, what is cost of this RDT for an adult?** **[___|___|___|___] FCFA** **10c. If yes, what is the cost of this RDT for a child under the age of five?** **[___|___|___|___] FCFA**	11. Wholesale purchase price For the outlet's most recent wholesale purchase: [___|___|___|___] **tests** cost **[___|___|___|___|___] FCFA** ***Free = 00000*** ***NA = 99995*** ***Refused = 99997*** ***Don't know=99998***	12. Comments

Free = 0000; NA = 9995; Refused = 9997; Don't know=9998

RDT Audit Sheet [___|___] of [___|___]

RDT stock outs

D9. Are there any malaria RDTs that are out of stock today, but that you stocked in the past **3 months**? 1 = Yes 0 = No ***go to D11*** 8 = Don't know ***go to D11***	[___]
D10. Do you know the brand names of the malaria RDTs that are out of stock? ***Record one brand per line.*** 1 = Yes, ***specify*** [_____] [_____] [_____] 0 = No	[___]
D11. Does this facility/outlet **provide medicines or prescription** for medicines? 1 = Yes ***go to Section 4: Provider Module*** 0 = No ***Confirm response in S3 and S4 is not equal to 1 and outlet type recorded in C7 is 21 or 22 ("lab only"). Go to Section X: Ending the interview***	[___]

Section IV: Provider Module

This section is for the senior-most staff member who is responsible for providing treatment, prescriptions or medicines to clients/patients.

P1. Do your responsibilities at this outlet/facility include: providing prescriptions, treatment, or medicines to clients? 1 = Yes No ***ask to speak with the senior-most person at the outlet with 1 or more of these responsibilities***	|___]
P2. For how many years have you worked in this outlet/facility? **If less than 1 year, enter 01**	[___|___]
P3. What age are you today? ***Write age in years*** *Don't know=997 ; Refuse=998*	[___|___|___]
P4. ***Don't read:*** Is respondent male or female? 1 = Male 2 = Female	[___|___]
P5. What is the highest level of education you completed? 1 = No formal education 2 = Some primary school 3 = Completed primary school 4 = Some secondary school 5 = Completed secondary school 6 = Some university/college 7 = Completed a university/college degree or diploma	[___]
P6. Have you received any training in the last 12 months that included a component on malaria diagnosis, including malaria rapid diagnostic tests or microscopy? ***Include pre-service training and stand-alone workshops.*** 1 = Yes 0 = No 8 = Don't know	[___]
P7. Have you received any training in the last 12 months on the national treatment guidelines for malaria? ***Include pre-service training and stand-alone workshops.*** 1 = Yes 0 = No 8 = Don't know	[___]
P8. Do you have any of the following **health qualifications**? ***Read list***. ***Record 1 for yes, 0 for no***	
I. Pharmacist	[___]
II. Medical doctor	[___]
III. Male nurse	[___]
IV. Female nurse	[___]
V. Laboratory technician / Lab assistant	[___]
VI. Pharmacy technician / Pharmacy assistant	[___]
VII. Medical assistant	[___]
VIII. Counsellor (e.g. HIV, TB, family planning, etc.)	[___]
IX. Community health worker	[___]

P9. **Not** including yourself, do any other people working in this outlet or facility have the following **health qualifications**? ***Read list***. ***Record 1 for yes, 0 for no, 8 for don't know***	
I. Pharmacist	[___]
II. Medical doctor	[___]
III. Male nurse	[___]
IV. Female nurse	[___]
V. Laboratory technician / Lab assistant	[___]
VI. Pharmacy technician / Pharmacy assistant	[___]
VII. Medical assistant	[___]
VIII. Counsellor (e.g. HIV, TB, family planning, etc.)	[___]
IX. Community health worker	[___]

Interviewer: For the following four questions record the antimalarial brand name or generic name, and dosage form, in the spaces provided.
Ask the provider to show you the medicine if it is in stock to verify the name and dosage form.

P10. In your opinion, for treating uncomplicated malaria in adults, what is the most effective antimalarial medicine?

Generic or brand name	**Dosage form**		
	01 = Tablet	04 = Syrup	95 = No preference
	02 = Suppository	05 = Suspension	96 = Other ***(specify)***
	03 = Granule	06 = Liquid inj.	98 = Don't know
		07 = Powder inj.	
[_____]		[___|___]	
Don't know = 98	***If Other, specify*** [_____]		

P11. In your opinion, for treating uncomplicated malaria in children under five, what is the most effective antimalarial medicine?

Generic or brand name	**Dosage form**		
	01 = Tablet	04 = Syrup	95 = No preference
	02 = Suppository	05 = Suspension	96 = Other ***(specify)***
	03 = Granule	06 = Liquid inj.	98 = Don't know
		07 = Powder inj.	
[_____]		[___|___]	
Don't know = 98	***If Other, specify*** [_____]		

P12. What antimalarial medicine for treating uncomplicated malaria in adults do you most often recommend to customers?

Generic or brand name	**Dosage form** 01 = Tablet 02 = Suppository 03 = Granule 04 = Syrup 05 = Suspension 06 = Liquid inj. 07 = Powder inj. 95 = No preference 96 = Other ***(specify)*** 98 = Don't know
[_____]	[___|___]
Don't know = 98	***If Other, specify*** [_____]

P13. What antimalarial medicine for treating uncomplicated malaria in children under five do you most often recommend to customers?

Generic or brand name	**Dosage form** 01 = Tablet 02 = Suppository 03 = Granule 04 = Syrup 05 = Suspension 06 = Liquid inj. 07 = Powder inj. 95 = No preference 96 = Other ***(specify)*** 98 = Don't know
[_____]	[___|___]
Don't know = 98	***If Other, specify*** [_____]

P14. Please name the first line medicine recommended by the government to treat uncomplicated malaria fever.

Do not read list. Only one response allowed.

01 = Artemether Lumefantrine (Lonart, Artefan, Lumartem, Coartem)..... ***go to P15***
02 = ACT..... ***go to P15***
03 = ACTm..... ***go to P15***
04 = Artesunate Amodiaquine (DUAC, Coarsucam, Winthrop)
05 = Dihydroartemisinin Piperaquine
06 = Amodiaquine
07 = Artemether
08 = Artemisinin
09 = Artesunate
10 = Chloroquine
11 = Quinine
12 = Sulfadoxine Pyrimethamine (Fansidar, SP,)
96 = Other ***specify***: [_____]
98 = Don't know

go to P17

[___|___]

P15. Please explain the government recommended treatment regimen for this drug for an adult (60kg)
Read the following 3 questions to the provider

I. How many tablets should they take at a time? [___|___].[___|___]

II. How many times per day? [___|___]

III. Over how many days? [___|___]

Don't know = 98

NA = 95

If respondent has the medicine available use the package to complete the table below.
If the medicine is not available ask respondent to identify from prompt card.
If identification not possible, ask respondent to recall medicine details.

	Generic name	Strength	Brand name	Manufacturer
[__|__]	_____	[__|__|__].[__]mg		
[__|__]	_____	[__|__|__].[__]mg		
[__|__]	_____	[__|__|__].[__]mg		
	[___|___]			

Is this drug a **fixed-dose combination**

1 = Yes
0 = No [___]
8 = Don't know

P16. Please explain the government recommended treatment regimen for this drug for a 2-year old child (10kg) ***Read the following 3 questions to the provider***

I. How many tablets should they take at a time? [___|___].[___|___]

II. How many times per day? [___|___]

III. Over how many days? [___|___]

Don't know = 98

NA = 95

Syrup/Suspension=94

If respondent has the medicine available use the package to complete the table below.
If the medicine is not available ask respondent to identify from prompt card.
If identification not possible, ask respondent to recall medicine details.

	Generic name	Strength	Brand name	Manufacturer
[__|__]	_____	[__|__|__].[__]mg		
[__|__]	_____	[__|__|__].[__]mg		
[__|__]	_____	[__|__|__].[__]mg		
	[___|___]			

Is this drug a **fixed-dose combination**

1 = Yes
0 = No [___]
8 = Don't know

P17. Malaria rapid diagnostic tests, also called RDTs, are small, individually wrapped blood tests that are able to quickly diagnose whether a person has malaria. ***Show RDT images in prompt card***

Have you ever tested a client for malaria using an RDT? [___]

1 = Yes ***go to P18***
0 = No ***go to P20***
8 = Don't know ***go to P20***

P18. Would you ever recommend a patient/customer take an antimalarial if a blood test using a rapid diagnostic test produced a negative test result for malaria? **Read list. Record only one response.** 1 = Yes, Sometimes 2 = Yes, Always 3 = No, Never ***go to P20*** 8 = Don't know ***go to P20***	[___]

P19. Under what circumstances would you recommend a patient/customer take an antimalarial following a negative RDT test for malaria? ***Do not read list. Prompt "anything else" until the respondent is finished.*** ***Circle ALL responses given***	
When they have signs/symptoms of malaria	A
When they ask for antimalarial treatment	B
When they are a child	C
When they are an adult	D
When they are a pregnant woman	E
When I do not trust/believe the test	F
When I know the patient/customer	G
Other **Other (specify)** [_____]	X

P20. What are the danger signs of <u>severe</u> illness in a child under 5? ***Do not read list. Prompt "anything else" until the respondent is finished.*** ***Circle ALL responses given***	
Unable to drink /unable to breastfeed	A
Vomits everything	B
Convulsions	C
Lethargic or unconscious	D
Aneamia/Paleness/lack of enough blood	E
Body aches and pains/Joint pains	F
Difficulty in breathing, Abnormal breathing	G
Fever, Hot body, High temperature	H
Don't know	Z
Other Other (specify) [_____]	X

P21. What would you do if a 2-year old child was brought to this outlet with the danger signs of **severe** illness? ***Do not read list. Only one response allowed.*** 01 = Seek advice/help from someone in this facility 02 = Treat the child in this facility 03 = Refer to a health facility (clinic, hospital) with or without treating here 04 = Refer to a non-health facility outlet (not a clinic or hospital) with or without treating here 05 = Send them away/home without medicine 06 = Send them away/home with medicine 96 = Other – *specify:* [_____] 98 = Don't know	[___|___]

Complete the audit sheet tracker on the next page then follow the instructions for ending the interview.

Section V: Audit Tracking Sheet

T1. Were there any antimalarial TABLETS/SUPPOSITORIES/GRANULES in stock at this outlet? 1 = Yes 0 = No ***go to T4*** 8 = Don't know ***go to T4***	[___]
T2. Total number of TABLET/SUPPOSITORY/GRANULE audit sheets completed	[___|___]
T3. Did you complete audit sheet information for all available TABLETS/SUPPOSITORIES/GRANULES*?* 1 = Yes, audit complete 0 = No, audit not complete	[___]

T4. Were there any antimalarial NON TABLETS (Syrups, suspensions, Injectables) in stock at this outlet? 1 = Yes 0 = No ***go to T7*** 8 = Don't know ***go to T7***	[___]
T5. Total number of NON-TABLET audit sheets completed	[___|___]
T6. Did you complete audit sheet information for all available NON-TABLETS*?* 1 = Yes, audit complete 0 = No, audit not complete	[___]

T7. Were there any RDTs in stock at this outlet? 1 = Yes 0 = No ***go to T10*** 8 = Don't know ***go to T10***	[___]
T8. Total number of RDT audit sheets completed	[___|___]
T9. Did you complete audit sheet information for all available RDT*?* 1 = Yes, audit complete 0 = No, audit not complete	[___]

T10. COMMENTS: Reason for incomplete audit sheets (if response is no to T3, T6, or T9):

THANK THE PROVIDER FOR THEIR PARTICIPATION

Return to C9 and record the final status of the interview and time completed. Then complete Section X: Ending the Interview.

Annex 7: Antimalarial Reference

	Table X3: Number of antimalarials audited										
	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public/Not For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General retailer	Itinerant Vendor	**Total Private**	**ALL Outlets**
Urban											
Census	206	12	132	350	415	2978	21	2266	851	6531	6881
Booster	292	0	0	292	0	4577	28	0	0	4605	4897
Rural											
Census	82	34	8	124	81	0	9	201	18	309	433
Booster	640	0	0	640	0	1462	65	0	0	1527	2167
TOTAL	1220	46	140	1406	496	9017	123	2467	869	12972	14378
	There were 7 inconsistent antimalarials, 4 in the booster and 3 in the census, all from pharmacy outlets.										
	Source: ACTwatch Outlet Survey, Benin, 2014.										

Table X4: Quality-Assured (QAACT) and Non-Quality Assured ACTs

Quality-Assured ACT (QAACT)

QAACTs are ACTs that comply with the Global Fund to Fight AIDS, Tuberculosis and Malaria's Quality Assurance Policy. A QAACT is any ACT that appeared on the Global Fund's indicative list of antimalarials meeting the Global Fund's quality assurance policy* prior to data collection, or that previously had C-status in an earlier Global Fund quality assurance policy and was used in a program supplying subsidized ACTs. QAACTs also include ACTs that have been granted regulatory approval by the European Medicines Agency (EMA)** – specifically Eurartesim® and Pyramax®.

Artesunate Amodiaquine Tablets	**Artemether Lumefantrine Tablets**
Winthrop Infant 2-11 Months ^#	Artefan 20/120 Dispersible 5-14Kg ^#
Winthrop Toddler 1-5 Years ^#	Artefan 20/120 Dispersible 15-24Kg ^#
Winthrop Child 6-13 Years ^#	Artefan 20/120 25-34Kg #
Winthrop Adult +14 Years ^#	Artefan 20/120 35+Kg #
Coarsucam Infant 2-11 Months #	Artemether + Lumefantrine <3years (Ipca Laboratories Ltd) ^#
Coarsucam Toddler 1-5 Years #	Artemether + Lumefantrine 3-8years (Ipca Laboratories Ltd) ^#
Coarsucam Child 6-13 Years #	Artemether + Lumefantrine 9-14years (Ipca Laboratories Ltd) #
Coarsucam Adult +14 Years #	Artemether + Lumefantrine >14 years (Ipca Laboratories Ltd) ^#
	Coartem Dispersible 5-14kg ^#
	Coartem Dispersible 15-25kg ^#
	Coartem 20/120 25-35 Kg ^#
	Coartem 20/120 35 Kg+ ^#
	Coartem 20/120 ^#
	Combiart 20/120 #
	Combisunate 20/120 15-24Kg #
	Laritem 20/120 #
	Lumartem 5-15kg (Cipla Pharma Ltd) ^#
	Lumartem 15-25kg (Cipla Pharma Ltd) ^#
	Lumartem 25-35kg (Cipla Pharma Ltd) ^#
	Lumartem 35kg+ (Cipla Pharma Ltd) ^#
	Lumiter #

Non-Quality-Assured ACT

ACTs that do not meet the definition of being quality-assured.

Artemether Lumefantrine Tablets	**Artesunate Amodiaquine Tablets**
AL 20/120 Tong Mei #	Artediam #
Artefan 40/240 ^#	Asaq-Denk #
Artefan 80/480 #	Cospherunat Enfant #
Artel #	
Artiz Forte #	**Artesunate Amodiaquine (Granule & Suspension)**
Artiz DP #	Camoquin Plus Pediatrique #
Artluf-Forte #	
Artrim-GH #	**Dihydroartemisinin Piperaquine Tablets**
Artrin (Medreich Plc) #	Darte-Q 40/320 #
Artrine 20/120 (Lic Pharma) #	Duo-Cotecxin 40/320Mg ^#
Artrine 40/240 (Lic Pharma) ^#	Malacur 40/320 ^#
Artrine 80/480 (Lic Pharma) #	P-Alaxin #
Bimalaril 80/480Mg #	
Cachart 20/120 #	**Dihydroartemisinin Piperaquine Suspension**
Cachart Forte 80/480 #	Malacur Suspension ^#
Cether-L 80/480Mg #	P-Alaxin Suspension #
Chinther 20/120 #	
Chinther 40/240 #	**Dihydroartemisinin Piperaquine Granules**
Cofantrine Dispersible Enfants #	Darte-Q Pediatric #
Cofantrine Adultes 20/120 #	
Cofantrine 80/480 #	**Artesunate Sulfadoxine Pyrimethamine Tablets**
Colart 20Mg/120Mg (Glaxosmithkline Group Of Companies) #	Alaxin SP #
Combiart 80/480 #	Artedar-100 Adulte #
Falciart Dispersible 20/120 #	Artedar-50 Pediatrique #
Falciart DT #	Asu-Denk #

Table X4: Quality-Assured (QAACT) and Non-Quality Assured ACTs	
Falciart 80/480Mg ^#	Asunate Denk 100 Plus #
Laritem 40/240 #	Asunate Denk 200 Plus ^#
Laritem 80/480 #	Co-Arinate Adult ^#
Lufanter 20/120 Dispersible #	Co-Arinate Enfant #
Lufanter 20/120 #	
Lufanter 40/240 ^#	**Artemisinin Napthoquine Tablets**
Luma ^#	Arco 125/50Mg #
Lumart #	
Lumarte Forte #	**Artemisinin Piperaquine Tablets**
Lumet Forte #	Artequick #
Philco-Artelu ^	
Pomex 20/120 #	**Artesunate Mefloquine Tablets**
R-Lume 80/480 #	Artequin 300/375 #
Sharlum 20/120 #	Artequin 600/750 #
Sharlum 40/240 #	
Sharlum 80/480 #	**Artesunate Mefloquine Granules**
Tarlum 80/480 ^#	Artequin Paediatric #
Tonlum 20/120 #	
Tonlum 80/480 #	**Dihydroartemisinin Piperaquine Trimethoprim Tablets**
V-Martem #	Artecom #
Artemether Lumefantrine Suspensions	**Dihydroartemisinin Piperaquine Trimethoprim Suspension**
Artefan Suspension ^#	Artecom Suspension #
Artiz Suspension #	
Artome Suspension #	**Dihydroartemisinin Sulfadoxine Pyrimethamine Tablets**
Artrim Suspension ^#	Alaxin Plus #
Bimalaril Suspension ^#	
Cether-L Suspension #	
Co-Artesiane 180/1080 #	
Co-Artesiane 360/2160 ^#	
Cofantrine #	
Falciart #	
Fantem Suspension #	
Lufanter Suspension #	
Lumiter Suspension #	
Tarlum Suspension #	

* http://www.theglobalfund.org/en/procurement/quality/pharmaceutical
**http://www.ema.europa.eu/
^ Product audited in the public sector
# Product audited in the private sector

Table X5: Nationally Registered ACTs	
ACT registered with Benin's national drug regulatory authority and permitted for sale or distribution in Benin.	
Artemether Lumefantrine Tablets	**Artesunate Sulfadoxine Pyrimethamine Tablets**
Artefan 20/120 Dispersible 5-14Kg ^#	Artedar-100 Adulte #
Artefan 20/120 Dispersible 15-24Kg ^#	Asunate Denk 100 Plus #
Artefan 20/120 25-34Kg #	Asunate Denk 200 Plus ^#
Artefan 20/120 35+Kg #	Co-Arinate Adult ^#
Artefan 40/240 ^#	Co-Arinate Enfant #
Artefan 80/480 #	
Cofantrine Dispersible Enfants #	**Artesunate Mefloquine Tablets**
Cofantrine Adultes 20/120 #	Artequin 300/375 #
Cofantrine 80/480 #	
Combiart 20/120 #	**Dihydroartemisinin Piperaquine Tablets**
Combiart 80/480 #	Duo-Cotecxin 40/320Mg ^#
Falciart Dispersible 20/120 #	Malacur 40/320 ^#
Lufanter 40/240 ^#	
Pomex 40/240 #	**Dihydroartemisinin Piperaquine Suspension**
Tonlum 20/120 #	P-Alaxin Suspension #
Tonlum 80/480 #	
	Dihydroartemisinin Piperaquine Trimethoprim Tablets
Artemether Lumefantrine Suspensions	Artecom #
Artefan Suspension ^#	
Co-Artesiane 180/1080 #	**Dihydroartemisinin Sulfadoxine Pyrimethamine Tablets**
Co-Artesiane 360/2160 ^#	Alaxin Plus #
Cofantrine #	
	Artemisinin Napthoquine Tablets
Artesunate Amodiaquine Tablets	Arco 125/50Mg #
Artediam #	
Coarsucam Infant 2-11 Months #	
Coarsucam Toddler 1-5 Years #	
Coarsucam Child 6-13 Years #	
Coarsucam Adult +14 Years #	
^ Product audited in the public sector # Product audited in the private sector	

Table X6: Severe Malaria Treatment

WHO recommends parenteral artesunate as first-line treatment in the management of severe falciparum malaria, with artemether or quinine injections as acceptable alternatives if parenteral artesunate is not available*. If complete treatment for severe malaria is not possible, patients with severe malaria should be given pre-referral treatment and referred immediately to an appropriate facility for further treatment. The following are options for pre-referral treatment: rectal artesunate, injectable quinine, injectable artesunate, injectable artemether, and injectable arteether/artemotil.

Quinine Liquid Injection (Manufacturer)	**Artemether Liquid Injection (Manufacturer)**
Ecnuqunine (Yanzhou Xier Kangtai Pharmaceutical Co. Ltd) #	Artem (Kunming Pharmaceutical Corp) ^#
Paluject (Sanofi Aventis) ^#	Artemether (Tongmei Laboratoire) #
Pecgina (Jiangsu Ruinian Qianjin Pharmaceutical Co.Ltd) ^#	Artenam (Arenco Pharmaceutical) #
Philoquin (Greenfield Pharmaceutical (Jiangsu) Co Ltd) ^#	Artesiane 80 (Dafra Pharma Gmbh) #
Quinido (Kilitch Drugs (India) Ltd) ^#	Artesiane 40 (Dafra Pharma Gmbh) #
Quinimax 250Mg/2Ml (Sanofi Aventis) #	Artesiane 20 (Dafra Pharma Gmbh) #
Quinimax 500Mg/4Ml (Sanofi Aventis) #	Arthepa-I (Bda Pharma Pvt Ltd) #
Quinyn (E-Globa Pharmaceuticals Gmbh Ltd) ^#	Climax (Greenfield Pharmaceutical (Jiangsu) Co Ltd) #
Philco-Quinine 600 (Philco Pharma) ^#	Gvither Forte (Bliss Gvs Pharma Ltd) #
Quininject (Medreich Plc) #	Labnat (Laborate Pharmaceutical) #
Quinipack (Yanzhou Xier Kangtai Pharmaceutical Co. Ltd) #	Larither-40 (Ipca Laboratories Ltd) #
Rindoquine (Wuhan Grand Pharmaceutical Group Co. Ltd) ^#	Larither-80 (Ipca Laboratories Ltd) #
Quinine Dihydrochloride (Jiangsu Pengyao Pharmaceutical Co.Ltd) ^#	Malather 80 (Bliss Gvs Pharma Ltd) #
Quinine Dihydrochloride (Intas Pharmaceuticals Ltd) ^	Paraline (Shanghai Harvest Pharmaceutical Co. Ltd) #
Quinine Dihydrochloride (Laborate Pharmaceutical) ^#	Philomether (Greenfield Pharmaceutical (Jiangsu) Co Ltd) ^#
Quinine Dihydrochloride (Ldi International) ^#	
Quinine Dihydrochloride (Tongmei Laboratoire) #	
Quinine Dihydrochloride (Gland Pharma Ltd) ^#	
Quinine Dihydrochloride (Yanzhou Xier Kangtai Pharmaceutical Co. Ltd) #	
Artesunate Suppository (Manufacturer)	
Plasmotrim 200Mg (Mepha Ltd) #	
Plasmotrim 50Mg (Mepha Ltd) #	

Annex 8: RDT Reference

	Table X7: Number of RDTs audited								
	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	Private For-Profit Facility	Pharmacy	Drug Store	General retailer	Itinerant Vendor	**ALL Outlets**
Urban									
Census	26	4	4	13	0	0	2	0	49
Booster	46	0	0	0	1	0	0	0	47
Rural									
Census	16	9	1	3	0	0	0	0	29
Booster	114	0	0	0	0	0	0	0	114
TOTAL	202	13	5	16	1	0	2	0	239
	Source: ACTwatch Outlet Survey, Benin, 2014.								

Table X8: RDT Brand Names and Manufacturers*

Brand Name	Manufacturer
ABON#	CTK BIOTECH INC
CARESTART ^ #	ACCESS BIO
CARESTART #	ACCESS BIO
FIRST RESPONSE #	HEMOTRANS INTERNATIONAL S.R.L
ONSITE ^#	CTK BIOTECH INC
ONSITE#	CTK BIOTECH INC
SD BIOLINE^ #	MT PROMEDT CONSULTING GMBH
SD BIOLINE Public ^ #	STANDARD DIAGNOSTICS INC
SD BIOLINE #	STANDARD DIAGNOSTICS INC

* 239 RDTs were audited. No RDTs was missing brand name information (missing or don't know) or were missing manufacturer name (missing or don't know).
^ Product audited in the public sector
# Product audited in the private sector

Annex 9: Sampling Weights

Sampling weights were applied for analysis of the Benin 2014 outlet survey data to account for variations in probability of selection as a result of the sampling design:

1) **Stratification**: Disproportionate allocation stratification was used to ensure adequate sample size within the urban and rural domains to allow for domain-specific estimates. The research domains were based on national designation of urban and rural wards. A representative sample was selected within each domain.

2) **One-stage cluster sampling**: Arrondissements were selected from sampling frames within each domain with probability proportional to size. Within each arrondissement, a census of all outlets with the potential to sell or distribute antimalarials and/or provide malaria blood testing was conducted.

3) **Booster sample – public health facilities (PHFs)**: The geographic area for the outlet census was extended to the commune level for public health facilities, pharmacies and drug stores. All public health facilities, pharmacies and drug stores within communes in which the selected arrondissements were located were included in the study.

The sampling weights applied during analysis are the inverse of the probability of selection:

$$W_i = \frac{1}{\mathrm{a} \times \frac{\mathrm{M}_\alpha}{\sum \mathrm{M}_\alpha}}$$

Where:

- M_α = estimated cluster (population size)
- ΣM_α = sum of estimated cluster sizes (population size) in the entire stratum
- a = number of clusters selected within the stratum

Sampling weights are calculated at the cluster level and are applied to all outlets within a given cluster, irrespective of outlet type.

Market share was calculated using the full census data at the arrondissement level only (i.e. the booster sample was not included in market share calculations). Arrondissement sampling weights were created using the sampling weight formula (W_i), where:

- M_α = estimated arrondissement population size
- ΣM_α = sum of estimated arrondissement population size in the entire stratum
- a = number of arrondissements selected within the stratum

The arrondissement sampling weights were applied to all other indicators in the report for all outlet types with the exception of:

1. Public health facilities, pharmacies and drug stores: Given that these outlet types were included in the sample through a commune-wide census, the weights applied to these outlet types for all indicators other than market share were calculated using the sampling weight formula (W_i), where:

    - M_α = estimated commune population size
    - ΣM_α = sum of estimated commune population size in the entire stratum
    - a = number of communes selected within the stratum

The population estimates used to select arrondissements with PPS and to create sampling weights were obtained from the 2002 Benin Population and Housing Census. A sampling frame with population sizes was used for selecting the sample because accurate estimates on the total number of outlets per geographic/administrative unit that may be eligible for a medicine outlet survey do not exist. The major assumption in using population figures for sampling and weighting is that distribution of outlets and/or distribution of medicines moving through outlets in a given cluster is correlated with population size.

Annex 10: Indicator Definitions

Table 1: Availability of antimalarials, among all screened outlets

Table 1 reports the proportion of all outlets enumerated that had any antimalarial in stock at the time of the survey visit. Antimalarial availability is reported among all outlets as well as among individual outlet types, all public outlets, and all private outlets. Availability is reported for any antimalarial as well as specific types of antimalarial medicines.

Numerator	Number of outlets with any antimalarial in stock at the time of the survey visit, as confirmed by presence of at least one antimalarial (defined as a medicine with antimalarial ingredients) recorded in the antimalarial audit section.
Denominator	Number of outlets screened.
Calculation	Numerator divided by denominator.
Handling missing values	All screened outlets will contribute to the denominator. This includes outlets that were eligible for interview (including antimalarial audit) but: 1) were not interviewed; or 2) the interview was partially completed.
Notes and considerations	Given partial or non-completion of interviews among eligible outlets and the inclusion of these outlets in the denominator, these availability indicators can be considered conservative estimates of antimalarial availability.

Table 2: Availability of antimalarials, among outlets stocking at least one antimalarial

Table 2 reports the proportion of antimalarial-stocking outlets with specific antimalarial in stock at the time of the survey visit. Antimalarial availability is reported among all outlets as well as among individual outlet types, all public outlets, and all private outlets. Availability is reported for any antimalarial as well as specific types of antimalarial medicines.

Numerator	Number of outlets with any antimalarial in stock at the time of the survey visit, as confirmed by presence of at least one antimalarial (defined as a medicine with antimalarial ingredients) recorded in the antimalarial audit section.
Denominator	Number of outlets with at least 1 antimalarial audited.
Calculation	Numerator divided by denominator.
Handling missing values	All outlets with at least one antimalarial recorded in the antimalarial audit sheet will contribute to the denominator. This includes outlets where the interview was not fully completed (partial interview).
Notes and considerations	Given partial completion of interviews among antimalarial-stocking outlets and the inclusion of these outlets in the denominator, these availability indicators can be considered conservative estimates of antimalarial availability.

Table 3: Antimalarial market composition

Table 3 reports the distribution of outlet types among outlets with at least one antimalarial in stock on the day of the survey.

Numerator	By outlet type, the number of outlets with any antimalarial in stock at the time of the survey visit, as confirmed by presence of at least one antimalarial (defined as a medicine with antimalarial ingredients) recorded in the antimalarial audit section.
Denominator	Total number of outlets with any antimalarial in stock at the time of the survey visit, as confirmed by presence of at least one antimalarial (defined as a medicine with antimalarial ingredients) recorded in the antimalarial audit section.
Calculation	Numerator for each outlet type divided by the denominator.
Handling missing values	All outlets with at least one antimalarial recorded in the antimalarial audit sheet will contribute to the indicator. This includes outlets where the interview was not fully completed (partial interview).
Notes and considerations	Market composition is calculated among outlets located within the representative sample of clusters, and excludes the booster sample.

Table 4: Price of antimalarials

Table 4a provides the median price of an adult equivalent treatment dose (AETD, see Annex 11) for select tablet formulation types of antimalarials across outlet types. The inter-quartile range (IQR) is provided as a measure of dispersion.

Calculation	Median antimalarial AETD (see Annex 11) price in US dollars with inter-quartile range (25th and 75th percentiles).
Handling missing values	Antimalarials with missing price information are excluded from the median price calculation.
Notes and considerations	Price in US dollars is calculated based on exchange rates available from www.oanda.com using the historical exchange rates tool. The average exchange rate over the entire data collection period is used for converting local currency captured during data collection to US dollars.

A. Table 4b reports the median price of one injection of an antimalarial that should be used for severe malaria treatment only (artemether injection, quinine injection). The inter-quartile range (IQR) is provided as a measure of dispersion.
B. Table 4b also provides the median price of two pre-packaged QA ACT therapies: pediatric appropriate for a 10kg child (2 years of age), and adult appropriate for a 60kg adult. The inter-quartile range (IQR) is provided as a measure of dispersion.

Calculation	Median antimalarial injection price in US dollars with inter-quartile range (25th and 75th percentiles). Median pre-packaged therapy price in US dollars with inter-quartile range (25th and 75th percentiles.
Handling missing values	Antimalarials with missing price information are excluded from the median price calculation.
Notes and considerations	Price in US dollars is calculated based on exchange rates available from www.oanda.com using the historical exchange rates tool. The average exchange rate over the entire data collection period is used for converting local currency captured during data collection to US dollars.

Table 5: Availability of malaria blood testing among antimalarial-stocking outlets

Table 5 reports the proportion of antimalarial-stocking outlets that had malaria blood testing available. Testing availability is reported among all outlets as well as among individual outlet types, all public outlets, and all private outlets. Availability is reported for any blood test as well as specific test types: microscopy and rapid diagnostic test (RDT).

Numerator	Number of outlets with malaria blood testing available (any, microscopy, RDT).
Denominator	Number of outlets with any antimalarial in stock at the time of the survey visit or reportedly stocked any antimalarial in the previous three months.
Calculation	Numerator divided by denominator.
Handling missing values	• Antimalarial-stocking outlets with missing information about both availability of microscopy and availability of RDTs are excluded from this table. The number of such outlets is provided in a footnote. • Outlets with partial information about availability of blood testing (information about microcopy or RDTs) are included in the denominator of the indicator "any blood testing available." The number of such outlets is provided in a footnote. • Indicators for RDT and microscopy availability exclude outlets with missing availability information respectively (i.e. outlets missing information about microscopy availability are excluded from the microscopy indicator).
Notes and considerations	Survey inclusion criteria extended to outlets providing blood testing but not stocking antimalarials ("diagnosis/testing-only outlets"). These outlets are excluded from this availability table.

Table 6: Malaria blood testing market composition

Table 6 reports the distribution of outlet types among outlets with malaria blood testing available on the day of the survey.

Numerator	By outlet type, the number of outlets with malaria blood testing available at the time of the survey visit, as confirmed by presence of at least one RDT recorded in the RDT audit section and/or reported availability of malaria microscopy services.
Denominator	Total number of outlets with malaria blood testing available at the time of the survey visit, as confirmed by presence of at least one RDT recorded in the RDT audit section and/or reported availability of malaria microscopy services.
Calculation	Numerator for each outlet type divided by the denominator.
Handling missing values	All outlets with non-missing values for the RDT audit or malaria microscopy availability questions are included in the indicators. This includes outlets where the interview was not fully completed (partial interview).
Notes and considerations	Market composition is calculated among outlets located within the representative sample of clusters, and excludes the booster sample.

Table 7: Price of malaria blood testing

A. Table 7 reports the median price of blood testing to consumers including any consultation or service fees. The inter-quartile range (IQR) is provided as a measure of dispersion.

Calculation	Median total blood test price in US dollars with inter-quartile range (25^{th} and 75^{th} percentiles).
Handling missing values	Microscopy-stocking outlets that are missing information about price of microscopy are excluded from this indicator. Audited RDTs with missing information about price of testing are excluded from this indicator.
Notes and considerations	Price in US dollars is calculated based on exchange rates available from www.oanda.com using the historical exchange rates tool. The average exchange rate over the entire data collection period is used for converting local currency captured during data collection to US dollars.

Table 8: Antimalarial market share

Antimalarial market share is the amount of adult equivalent treatment doses (AETD) reportedly sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold/distributed in the previous week. Expressed as a percentage, market share is the amount of a specific antimalarial sold/distributed by a specific outlet type relative to the entire antimalarial market (all antimalarial types sold/distributed by all outlet types). Totals are reported per antimalarial medicine type and per outlet type. Across antimalarial medicine types and outlet types, percentages in the entire table sum to 100% (the total market).

Numerator	Number of AETDs sold/distributed for a specific antimalarial drug category and outlet type.
Denominator	Total number of AETDs sold/distributed.
Calculation	Numerator divided by denominator.
Handling missing values	AETDs sold/distributed are calculated among audited medicines with complete and consistent information. Antimalarials with incomplete or inconsistent information among key variables that define AETD sold/distributed (active ingredients, strength, formulation, package size, amount sold/distributed) are excluded from the calculation.
Notes and considerations	See Annex 11 for a description of AETD calculation.

Table 9: Antimalarial market share across outlet type

Antimalarial market share across outlet type is the amount of adult equivalent treatment doses (AETD) reportedly sold or distributed in the previous week by antimalarial type within each outlet type as a percentage of all AETDs sold/distributed in the previous week within the specified outlet type. Expressed as a percentage, outlet-type market share is the amount of a specific antimalarial sold/distributed relative to the entire antimalarial market segment for the specified outlet type (all antimalarial types sold/distributed by the specific outlet type). Totals are reported per antimalarial medicine type for each outlet type. Across antimalarial medicine types within each outlet type, percentages sum to 100%.

Numerator	Number of AETDs sold/distributed for a specific antimalarial drug category within the specified outlet type.
Denominator	Total number of AETDs sold/distributed within the specific outlet type.
Calculation	Numerator divided by denominator.
Handling missing values	AETDs sold/distributed are calculated among audited medicines with complete and consistent information. Antimalarials with incomplete or inconsistent information among key variables that define AETD sold/distributed (active ingredients, strength, formulation, package size, amount sold/distributed) are excluded from the calculation.
Notes and considerations	See Annex 11 for a description of AETD calculation.

Table 10: Malaria blood testing market share

Malaria blood testing market share is the number of malaria blood tests reportedly sold or distributed in the previous week by outlet type and malaria blood test type (RDT, microscopy) as a percentage of all malaria blood tests sold/distributed in the previous week. Expressed as a percentage, market share is the number of a specific malaria blood test type by a specific outlet type relative to the entire malaria blood testing market (all malaria blood tests sold/distributed by all outlet types). Totals are reported per test type and per outlet type. Across malaria blood test types and outlet types, percentages in the entire table sum to 100% (the total market).

Numerator	Number of malaria blood tests sold/distributed for a specific blood test type (RDT, microscopy) and outlet type.
Denominator	Total number of malaria blood tests sold/distributed.
Calculation	Numerator divided by denominator.
Handling missing values	Malaria blood tests sold/distributed are calculated among audited RDTs and microscopy services with complete and consistent information. RDTs and microscopy services with incomplete or inconsistent information about the amount sold/distributed) are excluded from the calculation.
Notes and considerations	Records and/or recall of testing with microscopy versus malaria RDT may differ within a given outlet, introducing an unquantifiable bias in estimating total tests performed.

Table 11: Malaria blood testing market share across outlet type

Malaria blood testing market share across outlet type is the number of malaria blood tests reportedly sold or distributed in the previous week by blood test type within each outlet type as a percentage of all blood tests sold/distributed in the previous week within the specified outlet type. Expressed as a percentage, outlet-type market share is the amount of a specific malaria blood test sold/distributed relative to the entire blood testing market segment for the specified outlet type (all malaria tests sold/distributed by the specific outlet type). Totals are reported per test type for each outlet type. Across malaria blood test types within each outlet type, percentages sum to 100%.

The market share for each RDT manufacturer is also reported across outlet type. Within each outlet type, the number of RDTs for a specific manufacturer sold/distributed relative to all RDTs distributed within that outlet type is reported as a percentage. Totals for RDT market share across all manufacturers' sums to 100% within each outlet type.

Numerator	Number of malaria blood tests sold/distributed for a specific blood test type (RDT, microscopy), or number of malaria RDTs sold/distributed for a specific manufacturer, within the specified outlet type.
Denominator	Total number of malaria blood tests/RDTs sold/distributed within the specific outlet type.
Calculation	Numerator divided by denominator.
Handling missing values	Malaria blood tests sold/distributed are calculated among audited RDTs and microscopy services with complete and consistent information. RDTs and microscopy services with incomplete or inconsistent information about the amount sold/distributed) are excluded from the calculation.
Notes and considerations	Records and/or recall of testing with microscopy versus malaria RDT may differ within a given outlet, introducing an unquantifiable bias in estimating total tests performed.

Table 12: Provider case management knowledge and practices

Table 12 reports key indicators of provider case management knowledge and practices. These include referral practices for severe malaria; and self-reported practices for managing clients who test negative for malaria.

Numerator	A. Referral: respondents who indicated that they would refer to a health facility (response option #3). Note this numerator excludes providers located in a public or private health facility. B. Recommends antimalarials to test-negative clients: respondents who indicated "yes, always," or "yes sometimes." C. Circumstances for recommending an antimalarial: individual indicators for the most common responses provided to this open-ended question. Note this numerator excludes providers who did not respond to the previous question about recommending antimalarials to test-negative clients with "yes always" or "yes sometimes."
Denominator	A. Referral: respondents who provided a response to this question, including "don't know." Note this denominator excludes providers located in a public or private health facility. B. Recommends antimalarials to test-negative clients: respondents who provided a response to this question, including "don't know." C. Circumstances for recommending an antimalarial: respondents who provided at least 1 response to this question, including "don'tknow" (i.e. at least 1 variable in this series is non-missing). Note this denominator excludes providers who did not respond to the previous question about recommending antimalarials to test-negative clients with "yes always" or "yes sometimes."
Calculation	Numerator divided by denominator.
Handling missing values	A. Providers missing a response to this question will be excluded from the indicator. B. Providers missing a response to this question will be excluded from the indicator. C. This indicator is assessed using an open-ended multiple response option question. Providers with at least one non-missing response in the variable series for this question will be included in the indicator. Among these sets of responses, missing will be treated as not mentioned.
Notes and considerations	In some cases, multiple providers were interviewed at one outlet. A provider with responsibilities related to diagnosis may have responded to questions about malaria diagnosis and diagnostics (indicators B and C in Table 9), while a different provider responsible for prescribing and/or dispensing medicines may have responded to questions about danger signs of severe illness and referral for severe malaria (indicator A in Table 8). In all cases, the questions assessing provider knowledge and practices were administered only one time per outlet. As such, indicators are tabulated at the outlet level.

Table 13: Provider antimalarial treatment knowledge and practices

Table 13 reports key indicators of provider antimalarial treatment knowledge and practices. These include knowledge of the first-line treatment; knowledge of the first-line treatment dosing regimen for adults and children; citing ACT as most effective to treat malaria in adults and children; and citing ACT as most commonly recommended by the provider to manage malaria in adults and children.

Numerator	A. State first-line: providers who responded to p17 with a generic or brand name consistent with a national first-line treatment, or responded to p17 with "ACT," or "ACTm" and in p18 provided a generic or brand name consistent with a national first-line treatment. In other words, providers must specifically name the first-line treatment using generic or brand name language in either p17 or p18. B. First-line regimen, adult: providers who correctly stated the first-line generic ingredients and strengths in p18, and correctly stated: number of days, times per day, and tablets per dose to be taken. C. ACT most effective, adult & child: Any response for this open-ended question whereby: 1) one medicine or a set of medicines to be used in combination is mentioned only i.e. multiple antimalarial medicines mentioned will be counted as incorrect; and 2) the combination of medicines is an ACT – defined either by using a brand name, generic name, "ACT," or "ACTm." If the provider mentions a correct ACT response and also mentioned an anti-pyretic (e.g. paracetamol), this response will be counted as correct. However, if the provider mentions a correct ACT response and also mentioned other drugs – such as an antibiotic – this answer will be counted as incorrect. D. ACT most often recommended, adult & child: Any response for this open-ended question whereby: 1) one medicine or a set of medicines to be used in combination is mentioned only i.e. multiple antimalarial medicines mentioned will be counted as incorrect; and 2) the combination of medicines is an ACT – defined either by using a brand name, generic name, "ACT," or "ACTm." If the provider mentions a correct ACT response and also mentioned an anti-pyretic (e.g. paracetamol), this response will be counted as correct. However, if the provider mentions a correct ACT response and also mentioned other drugs – such as an antibiotic – this answer will be counted as incorrect.
Denominator	A. State first-line: All providers who responded to p17 – please name the first-line medicine. B. First-line regimen, adult: All providers who responded to p17 (starting the series on first-line knowledge). C. ACT most effective, adult & child: All providers who responded to p13/14, including providers who responded with "don't know," who provided names of non-antimalarial medicines, and who responded with more than one antimalarial medicine not intended to be used as combination therapy. D. ACT most often recommended, adult & child: All providers who responded to p13/14, including providers who responded with "don't know," who provided names of non-antimalarial medicines, and who responded with more than one antimalarial medicine not intended to be used as combination therapy.
Calculation	Numerator divided by denominator.
Handling missing values	A. Providers missing a response to this question will be excluded from this indicator. B. Providers with partial information for the regimen questions will be included in the denominator (i.e. missing treated as not mentioned). C. Providers missing a response to this question will be excluded from the indicator. D. Providers missing a response to this question will be excluded from the indicator.

Annex 11: Adult Equivalent Treatment Dose (AETD)

Definition

Antimalarial medicines are manufactured using a variety of active pharmaceutical ingredients, dosage forms, strengths, and package sizes. ACTwatch uses the adult equivalent treatment dose (AETD) as a standard unit for price and sale/distribution analyses. One AETD is defined as the number of milligrams (mg) of an antimalarial drug required to treat an adult weighing 60 kilograms (kg). For each antimalarial generic, the AETD is defined as the number of mg recommended in treatment guidelines for uncomplicated malaria in areas of low drug resistance issued by the WHO. Where WHO treatment guidelines do not cover a specific generic, the AETD is defined based on peer-reviewed research or the product manufacturer's recommended treatment course for a 60kg adult. Table X9 lists AETD definitions used in this report.

While it is recognized that the use of AETDs may over-simplify and ignore many of the complexities of medicine consumption and use, this analytical approach was selected because it standardizes medication dosing across drug types and across countries (which may sometimes vary) thus permitting comparisons on both prices and volumes calculated on the basis of an AETD.

Additional considerations:

- Where combination therapies consist of two or more active antimalarial ingredients packaged together (co-formulated or co-blistered), the strength of only one principal ingredient is used. The artemisinin derivative is used as the principal ingredient for ACT AETD calculations.

- Co-blistered combinations are generally assumed to be 1:1 ratio of tablets unless otherwise documented during fieldwork or through manufacturer websites.

- Sulfamethoxpyrazine-pyrimethamine is assumed to have the same full course adult treatment dose as sulfadoxine-pyrimethamine.

Calculation

Information collected on drug strength and unit size as listed on the product packaging was used to calculate the total amount of each active ingredient found in the package. The number of AETDs in a unit was calculated. [22] The number of AETDs in a monotherapy is calculated by dividing the total amount of active ingredient contained in the unit by the AETD (i.e. the total number of mg required to treat a 60kg adult). The number of AETDs for a combination therapy was calculated by dividing the total amount of the active ingredient that was used as the basis for the AETD by the AETD.

[22] The unit is dependent on the drug dosage form. The unit for antimalarials in tablet, suppository, or granule form is the package. The unit for injectable antimalarials is the ampoule. The unit for syrup and suspension antimalarials is the bottle.

Table X9: Adult Equivalent Treatment Dose Definitions		
Antimalarial Generic [Ingredient used for AETD mg dose value]	**Dose used for calculating 1 AETD (mg required to treat a 60kg adult)**	**Source**
Amodiaquine	1800mg	WHO Model Formulary, 2008
Artemether	960mg	WHO Use of Antimalarials, 2001
Artemether-Lumefantrine [Artemether]	480mg	WHO Guidelines for the treatment of malaria 2nd edition, 2010
Artemisinin-Naphthoquine [Artemisinin]	2400mg	WHO Use of Antimalarials, 2001
Artemisinin-Piperaquine [Artemisinin]	504mg	Thanh NX, Trung TN, Phong NC, et al. 2012. The efficacy and tolerability of artemisinin-piperaquine (Artequick®) versus artesunate-amodiaquine (Coarsucam™) for the treatment of uncomplicated Plasmodium falciparum malaria in south-central Vietnam. *Malaria Journal*, *11*:217.
Artesunate	960mg	WHO Use of Antimalarials, 2001
Artesunate-Amodiaquine [Artesunate]	600mg	WHO Guidelines for the treatment of malaria 2nd edition, 2010
Artesunate-Mefloquine [Artesunate]	600mg	WHO Guidelines for the treatment of malaria 2nd edition, 2010
Artesunate- Sulfadoxine-Pyrimethamine [Artesunate]	600mg	WHO Guidelines for the treatment of malaria 2nd edition, 2010
Atovaquone-Proguanil [Atovaquone]	3000mg	WHO Guidelines for the treatment of malaria 2nd edition, 2010
Chloroquine	1500mg	WHO Guidelines for the treatment of malaria 2nd edition, 2010
Dihydroartemisinin-Piperaquine [Dihydroartemisinin]	360mg	WHO Guidelines for the treatment of malaria 2nd edition, 2010
Dihydroartemisinin-Piperaquine-Trimethoprim [Dihydroartemisinin]	256mg	Manufacturer Guidelines (*Artecxin – Medicare Pharma; Artecom – Ctonghe)*
Dihydroartemisinin-Sulfadoxine-Pyrimethamine [Dihydroartemisinin]	360mg	Manufacturer Guidelines (*Dalasin – Adams Pharma)*
Mefloquine	1000mg	WHO Model Formulary, 2008
Quinine	10408mg	WHO Model Formulary, 2008
Sulfadoxine-Pyrimethamine	1500mg	WHO Model Formulary, 2008

Annex 12: Antimalarial Volumes

Table X10: Antimalarial volumes, by outlet type

AETDs sold or distributed in the previous week by outlet type and antimalarial type:*	Public Health Facility	Community Health Worker	Private Not For-Profit Facility	**ALL Public/Not For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Vendor	**TOTAL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
1. Any ACT	20621.6 (13238.2, 28005.0)	3521.7 (0.0, 7721.2)	1082.2 (439.7, 1724.7)	25225.5 (17771.8, 32679.2)	8193.6 (2794.1, 13593.1)	19939.7 (4704.4, 35174.9)	207.4 -	12796.0 (7431.7, 18160.3)	1630.1 -	42766.8 (26984.1, 58549.5)	67992.3 (51014.5, 84970.1)
Artemether Lumefantrine (AL) Ψ	20531.1 (13150.7, 27911.5)	3521.7 (0.0, 7721.2)	1028.6 (398.5, 1658.8)	25081.4 (17622.0, 32540.9)	7957.6 (2564.0, 13351.2)	13631.3 (3331.5, 23931.2)	120.1 -	12758.5 (7392.0, 18125.0)	1630.1 -	36097.7 (24467.8, 47727.5)	61179.1 (47488.3, 74869.9)
Artesunate Sulfadoxine Pyrimethamine (ASSP)	34.2 (0.0, 327.1)	0.0 -	0.0 -	34.2 (0.0, 327.1)	20.7 (0.0, 43.0)	1884.0 (349.5, 3418.4)	26.9 -	0.0 -	0.0 -	1931.5 (402.7, 3460.3)	1965.7 (438.7, 3492.8)
DHA PPQ	0.0 -	0.0 -	28.4 -	28.4 -	63.2 -	1990.0 (639.7, 3340.3)	60.4 -	27.0 (0.0, 164.7)	0.0 -	2140.5 (824.7, 3456.3)	2168.9 (837.8, 3500.0)
ASAQ	56.3 -	0.0 -	25.1 -	81.4 -	152.2 -	784.0 (117.3, 1450.7)	0.0 -	10.5 (0.0, 32.6)	0.0 -	946.7 (293.2, 1600.1)	1028.1 -
Quality Assured ACT (QA ACT)	20452.8 (13074.3, 27831.4)	3521.7 (0.0, 7721.2)	984.2 (359.5, 1608.9)	24958.8 (17493.9, 32423.7)	6828.5 (2185.6, 11471.3)	3065.7 (782.0, 5349.4)	89.9 -	12726.1 (7352.0, 18100.2)	1630.1 -	24340.2 (16984.4, 31696.0)	49299.0 (37840.6, 60757.4)
QA ACT with the 'green leaf' logo	482.4 -	0.0 -	678.1 -	1160.5 -	5678.2 (1044.7, 10311.7)	0.0 -	56.2 -	11690.0 (6521.9, 16858.2)	1102.7 -	18527.2 (11614.7, 25439.7)	19687.7 (12728.9, 26646.5)
QA ACT without the 'green leaf' logo	19970.5 (12567.1, 27373.8)	3521.7 (0.0, 7721.2)	306.1 -	23798.3 (16207.7, 31388.9)	1150.2 (362.3, 1938.2)	3065.7 (782.0, 5349.4)	33.6 -	1036.0 (561.6, 1510.5)	527.4 (26.3, 1028.4)	5813.0 (3472.5, 8153.5)	29611.3 (21349.1, 37873.5)
Non-quality-assured ACT	168.8 (0.0, 785.8)	0.0 -	98.0 (0.0, 725.2)	266.7 (57.8, 475.7)	1365.2 -	16874.0 (3887.8, 29860.1)	117.6 -	69.9 (0.0, 162.0)	0.0 -	18426.6 (5626.7, 31226.4)	18693.3 (5700.3, 31686.3)
Nationally Registered ACT	84.6 (0.0, 251.1)	9.4 -	65.5 (0.0, 239.3)	159.4 (57.2, 261.6)	119.8 (31.1, 208.5)	7197.2 (1848.2, 12546.1)	117.6 -	136.3 (55.6, 217.0)	42.1 (0.0, 290.3)	7612.9 -	7772.3 -
2. Any non-artemisinin therapy	11489.4 (5853.1, 17125.8)	1788.5 (0.0, 22681.2)	2077.9 (954.3, 3201.6)	15355.9 (8532.7, 22179.0)	7661.3 (600.8, 14721.9)	5899.4 (906.9, 10891.9)	391.9 -	32220.6 (19792.0, 44649.3)	9086.5 (3606.9, 14566.1)	55259.8 (35549.1, 74970.4)	70615.6 (52265.0, 88966.2)

Sulfadoxine-Pyrimethamine	6200.0 (1302.8, 11097.1)	1761.4 -	1110.3 (704.6, 1516.1)	9071.7 (2886.5, 15256.9)	1693.2 (0.0, 4206.3)	4891.3 (848.2, 8934.4)	242.2 -	10375.3 (6225.5, 14525.1)	5691.6 (860.6, 10522.7)	22893.7 (11854.0, 33933.5)	31965.5 (19946.7, 43984.2)
Oral Quinine	5002.0 (2723.4, 7280.6)	27.1 -	889.2 (69.2, 1709.1)	5918.3 (3513.9, 8322.7)	4601.1 (23.9, 9178.3)	726.4 (101.7, 1351.0)	137.2 -	3852.6 (2407.4, 5297.7)	1166.1 -	10483.3 (4299.8, 16666.9)	16401.6 (9996.7, 22806.5)
Quinine IV/IM	286.9 (78.8, 494.9)	0.0 -	49.4 -	336.2 (114.5, 558.0)	487.6 (86.6, 888.7)	14.2 (1.5, 26.8)	0.0 -	282.9 -	0.0 -	784.7 (203.9, 1365.5)	1120.9 (511.1, 1730.7)
3. Oral artemisinin monotherapy	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
4. Non-oral artemisinin monotherapy	101.3 (0.5, 202.2)	0.0 -	1.8 (0.0, 4.0)	103.1 (7.7, 198.6)	111.9 (20.1, 203.7)	258.3 (85.9, 430.8)	0.0 -	37.3 -	0.0 -	407.5 (195.1, 619.9)	510.6 (292.4, 728.8)
Injectable artesunate	101.3 (0.5, 202.2)	0.0 -	1.8 (0.0, 4.0)	103.1 (7.7, 198.6)	95.7 (28.7, 162.8)	74.8 (0.0, 152.5)	0.0 -	12.1 -	0.0 -	182.6 (80.5, 284.7)	285.7 (157.2, 414.2)
Injectable artemether	101.3 (0.5, 202.2)			103.1 (7.7, 198.6)	95.7 (28.7, 162.8)	74.8 (0.0, 152.5)	0 -	12.1 -		182.6 (80.5, 284.7)	285.7 (157.2, 414.2)
Injectable artemotil	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
5. Any treatment for severe malaria	388.2 (132.9, 643.4)	0.0 -	51.2 -	439.3 (172.8, 705.9)	597.5 (125.8, 1069.2)	247.9 (80.4, 415.4)	0.0 -	320.1 -	0.0 -	1165.6 (473.9, 1857.3)	1604.9 (868.7, 2341.1)
OUTLET TYPE TOTAL****	32212.4 (20572.6, 43852.1)	5310.2 (0.0, 10723.4)	3161.9 (1843.8, 4480.0)	40684.5 (29878.9, 51490.0)	15966.8 (5622.2, 26311.4)	26097.4 (5908.2, 46286.5)	599.4 -	45053.9 (28297.0, 61810.7)	10716.6 (5043.8, 16389.4)	98434.0 (65558.6, 131309.4)	139118.5 (106402.9, 171834.0)
	* A total of 19756.59 AETDs were reportedly sold or distributed in the previous seven days. See Annex 11 for a description of AETD calculation. Ψ At the time of the 2014 ACTwatch outlet survey artemether lumefantrine was Benin's first line treatment for uncomplicated malaria. A total of 7,357 antimalarials were audited in the census clusters. Of these, 835 audited antimalarials were not included in market share calculations due to incomplete or inconsistent information.										
	Source: ACTwatch Outlet Survey, Benin, 2014.										