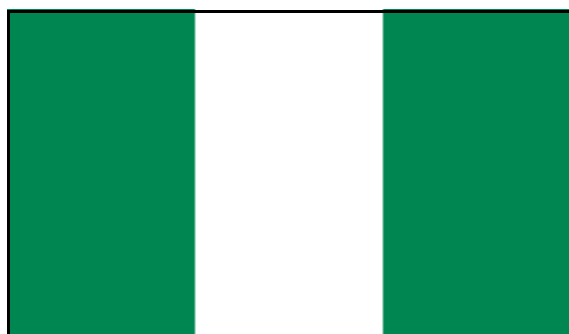




Outlet Survey Nigeria 2009 Survey Report



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ACTwatch's Advisory Committee:

Mr. Suprotik Basu	Advisor to the UN Secretary General's Special Envoy for Malaria
Mr. Rik Bosman	Supply Chain Expert, Former Senior Vice President, Unilever
Ms. Renia Coghlan	Global Access Associate Director, Medicines for Malaria Venture (MMV)
Dr. Thom Eisele	Assistant Professor, Tulane University
Mr. Louis Da Gama	Malaria Advocacy & Communications Director, Global Health Advocates
Dr. Paul Lalvani	Executive Director, RaPID Pharmacovigilance Program
Dr. Ramanan Laxminarayan	Senior Fellow, Resources for the Future
Dr. Matthew Lynch	Project Director, VOICES, Johns Hopkins University Centre for Communication
Dr. Bernard Nahlen	Deputy Coordinator, President's Malaria Initiative (PMI)
Dr. Jayesh M. Pandit	Head, Pharmacovigilance Department, Pharmacy and Poisons Board-Kenya
Dr. Melanie Renshaw	Advisor to the UN Secretary General's Special Envoy for Malaria
Mr. Oliver Sabot	Vice-President, Vaccines Clinton Foundation
Ms. Rima Shretta	Senior Program Associate, Strengthening Pharmaceutical Systems Program,
Dr. Rick Steketee	Science Director, Malaria Control and Evaluation Partnership in Africa (MACEPA)
Dr. Warren Stevens	Health Economist
Dr. Gladys Tetteh	CDC Resident Advisor, President's Malaria Initiative-Kenya
Prof. Nick White, OBE	Professor of Tropical Medicine, Mahidol and Oxford Universities
Prof. Prashant Yadav	Professor of Supply Chain Management, MIT-Zaragoza International Logistics
Dr. Shunmay Yeung	Paediatrician & Senior Lecturer, LSHTM

The following individuals contributed as follows to the research study in Nigeria:

Dr. Jide Coker	National Coordinator, National Malaria Control Programme, FMOH/Nigeria, assisted with advocacy and survey implementation.
Dr. Audu Bal	M & E Branch Head, National Malaria Control Programme, FMOH/ Nigeria, assisted with advocacy and survey implementation.
Dr. Jennifer Anyanti	Director, Technical Services, Research and Evaluation Division, SFH/Nigeria, provided overall guidance during the survey.
Dr. Samson Adebayo	Associate Director, Research and Evaluation Division, SFH/Nigeria, assisted with advocacy and survey implementation.
Wale Adedeji	Director, Field Operations, SFH/Nigeria, provided logistical support during the survey.
Dr. Ronke Ladipo	Director, Global Fund, SFH/Nigeria, provided logistical support during the survey.
Dr. Ernest Nwokolo	Associate Director, Global Fund – Malaria, SFH/Nigeria, provided information on the national malaria context in Nigeria.
Uche Ndukwu	Deputy Director, Finance, SFH/Nigeria, provided financial oversight during the survey.
Kene Eruchalu	Deputy Director, Procurement, SFH/Nigeria, assisted in procurement of all survey materials.
Mrs. Ekundayo D. Arogundade	<i>ACTwatch</i> Country Program Coordinator, SFH/Nigeria, was responsible for all aspects of implementation and management of the survey.
Hellen Gatakaa	Senior Research Associate, <i>ACTwatch</i> Central, provided overall guidance on the analysis and construction of indicators.
Tsione Solomon	Research Associate, <i>ACTwatch</i> Central, assisted the Country Program Coordinator and assisted with the coordination and facilitation of trainings, data collection, and data entry.
Emily Harris	Research Associate, <i>ACTwatch</i> Central, assisted the Country Program Coordinator and was responsible for the coordination of trainings, data collection, and data entry.
Julius Ngigi	Research Associate, <i>ACTwatch</i> Central, conducted analysis on the data.

Dr. Kathryn O'Connell Principal Investigator, *ACTwatch* Central, provided overall technical guidance on the study.

Tanya Shewchuk Project Director, *ACTwatch* Central, provided overall oversight and dissemination.

The *ACTwatch* Group is comprised of the following individuals:

PSI *ACTwatch* Central Tanya Shewchuk, Project Director; Dr. Kathryn O'Connell, Principal Investigator; Hellen Gatakaa, Senior Research Associate; Stephen Poyer, Illah Evance, Julius Ngigi, Research Associates.

PSI *ACTwatch* Country Program Coordinators Cyprien Zinsou, PSI/Benin; Sochea Phok, PSI/Cambodia; Dr. Louis Akulayi, SFH/DRC; Jacky Raharinjatovo, PSI/Madagascar; Ekundayo Arogundade, SFH/Nigeria; Peter Buyungo, PACE/Uganda; Felton Mpasela, SFH/Zambia.

LSHTM Dr. Kara Hanson, Principal Investigator; Edith Patouillard, Dr. Catherine Goodman, Benjamin Palafox, Sarah Tougher, Immo Kleinschmidt, co-investigators. LSHTM is responsible for the supply chain research component of *ACTwatch*.

The Independent Evaluator for the Affordable Medicines Facility-malaria Phase 1 Evaluation is comprised of the following individuals:

LSHTM Dr. Kara Hanson, Principal Investigator, Dr. Catherine Goodman, Sarah Tougher, Dr. Barbara Willey, Dr. Andrea Mann, co-investigators.

ICF International Dr. Fred Arnold, Director, Dr. Yazoume Ye, Dr. Ruilin Run, co-investigators.

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***ACTwatch* Contacts**

Nigeria

Mrs. Ekundayo D. Arogundade
Society for Family Health/Nigeria
8, Portharcourt Crescent
Area 11, Garki
Abuja, Nigeria
Phone: + 234 8033116065
Email: earogundade@sfnigeria.org

***ACTwatch* Central**

Dr. Kathryn O'Connell
ACTwatch Principal Investigator
Malaria Control & Child Survival Department
Population Services International
Regional Technical Office
P.O. Box 14355-00800 Nairobi, Kenya
Phone: + 254 20 4440125/6/7/8
Email: koconnell@psi.org

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Definitions

Term	Definition
Adult Equivalent Treatment Dose (AETD)	An AETD is the number of milligrams (mg) of an antimalarial drug needed to treat a 60 kg adult.
Antimalarial	Any medicine recognized by the WHO for the treatment of malaria. Medicines used solely for the prevention of malaria were excluded from analysis in this report.
Antimalarial combination therapy	The simultaneous use of two or more drugs with different modes of action to treat malaria.
Artemisinin-based Combination Therapy (ACT)	An antimalarial that combines artemisinin or one of its derivatives with an antimalarial or antimalarials of a different class. Refer to Combination Therapy (below).
Artemisinin monotherapy	An antimalarial medicine that has a single active compound, where this active compound is artemisinin or one of its derivatives.
Artemisinin and its derivatives	Artemisinin is a plant extract used in the treatment of malaria. The most common derivatives of artemisinin used to treat malaria are artemether, artesunate, and dihydroartemisinin.
Booster Sample	A booster sample is an extra sample of units (in this case, outlets) of a type not adequately represented in the main survey, but which are of special interest. In this survey, five additional localities were selected as the booster sample. In these additional areas, all public health facilities and pharmacies were censused.
Censused locality	A locality where field teams conducted a full census of all outlets with the potential to sell antimalarials.
Cluster	The primary sampling unit, or cluster, for the outlet survey. It is an administrative unit determined by the Ministry of Health (MOH) that hosts a population size of approximately 10,000 to 15,000 inhabitants. These units are defined by political boundaries. In Nigeria, they were defined as <i>localities</i> .
Combination therapy	The use of two or more classes of antimalarial drugs/molecules in the treatment of malaria that have independent modes of action.
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.
Enumerated Outlets	Outlets that were visited by a member of one of the field teams and for which, at a minimum, basic descriptive information was collected.

First-line treatment	The government recommended treatment for uncomplicated malaria. Nigeria's first-line treatment for malaria is artemether-lumefantrine (AL) 20mg/120mg. Artesunate-amodiaquine (ASAQ) 50mg/153mg is the alternate first -line and commonly used in certain regions of the country. Where it appears as a row heading in tables, <i>FAACT</i> includes both AL and ASAQ unless otherwise specified.
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.
Nationally registered ACTs	ACTs registered with a country's national drug regulatory authority and permitted for sale or distribution in-country. Each country determines its own criteria for placing a drug on its nationally registered listing.
Non-artemisinin therapy	An antimalarial treatment that does not contain artemisinin or any of its derivatives.
Outlet	Any point of sale or provision of a commodity to an individual. Outlets are not restricted to stationary points of sale and may include mobile units or individuals. Refer to Appendix for a description of the outlet types visited for this survey.
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.
Rapid Diagnostic Test (RDT) for malaria	A test used to confirm the presence of malaria parasites in a patient's bloodstream.
Screened	An outlet that was administered the screening questions (S1 to S4) of the outlet survey questionnaire (see Screening criteria).
Screening criteria	The set of requirements that must be satisfied before the full questionnaire is administered. In this survey an outlet met the screening criteria if (1) they had antimalarials in stock at the time of the survey visit, or (2) they report having stocked them in the past three months.
Second-line treatment	The government recommended second-line treatment for uncomplicated malaria. Nigeria's second-line treatment for malaria is quinine. Second-line treatment indicators include all dosage forms.
Treatment/dosing regimen	The posology or timing and number of doses of an antimalarial used to treat malaria. This schedule often varies by patient weight.

Classification of ACTs

Term	Definition
Quality assured ACTs [QAACTs]:	<p>For the purpose of the Independent Evaluation, a QAACT is any ACT which appeared on the Global Fund's Indicative List of antimalarials meeting the Global Fund's quality assurance policy as at June 2010 (http://www.theglobalfund.org/en/procurement/quality/pharmaceutical/#General), or which previously had C-status in an earlier Global Fund quality assurance policy and was used in a programme supplying subsidised ACTs.</p> <p>In Nigeria, the following quality assured ACTs were found in outlets:</p> <p>Coartem 20/120, AL, Novartis Pharma Coartem D 20/120, AL, Novartis Pharma Lumerax 20/120, AL, Ipca Laboratories Ltd Arsumoon, ASAQ, 50mg/150mg, Guilin Pharmaceutical Co., Ltd Coarsucam 25mg/67,5mg, ASAQ, Sanofi-Aventis Coarsucam 50mg/135mg, ASAQ, Sanofi-Aventis Coarsucam 100mg/270mg, ASAQ, Sanofi-Aventis Larimal, ASAQ, 50mg/153mg, Guilin Pharmaceutical Co., Ltd Artecospe, AS+SP, 100mg+500mg/25mg, Guilin Pharmaceutical Co., Ltd</p>
First-line, quality assured ACTs [FAACTs]:	<p>Government recommended first-line ACTs (any AL or ASAQ) for uncomplicated malaria meeting the quality-assured definition. A complete listing of these antimalarials is provided in the Appendix.</p> <p>In Nigeria, the following first-line quality assured ACTs were found in outlets:</p> <p>Artemether-Lumefantrine Coartem 20/120, Novartis Pharma Coartem D 20/120, Novartis Pharma Lumerax 20/120, Ipca Laboratoires Ltd</p> <p>Artesunate+Amodiaquine Arsumoon, 50mg/150mg, Guilin Pharmaceutical Co., Ltd Coarsucam 25mg/67,5mg, ASAQ, Sanofi-Aventis Coarsucam 50mg/135mg, ASAQ, Sanofi-Aventis Coarsucam 100mg/270mg, ASAQ, Sanofi-Aventis Larimal, 50mg/153mg, Guilin Pharmaceutical Co., Ltd</p>
Non first-line, quality assured ACTs [NAACTs]:	<p>ACTs that are <u>not</u> the government's recommended first-line treatment for uncomplicated malaria, but which do meet the quality-assured definition. A complete listing of these antimalarials is provided in the Appendix. In Nigeria, the following non first-line quality assured ACTs were found in outlets:</p> <p>Artecospe, AS+SP, 100mg+500mg/25mg, Guilin Pharmaceutical Co., Ltd</p>

Term	Definition		
Non-quality assured ACTs:	ACTs that do not meet with the definition of being quality assured. In Nigeria, the following non-quality assured ACTs were found in outlets:		
	ACT Pro AL	Arthemed	Joartin
	ACT-A	Arthlon-Plus	La-Tesen
	Actimax	Artrin 20/120	Lokmal
	Activin	Arzamal	Lokmal Suspension
	Adesunate	Askamether 20/120	Lonart
	Amalar Plus	Askasunate	Lonart –DS
	Amatem 20/120	Atmal 20/120	Lumether
	Amdin 600/750	Avenax Plus	Macsunate Fdc
	Amo-Art	Axcin-DP	Malact
	Amosinin	Blofast	Malagard
	Amosinin Junior	Camoquin Plus	Malicare
	Anate	Camosunate	Malmed
	Aphamal	Celoluther	Malosunate
	Archy Synamef	Co-Arinate	Maltarka
	Arco	Co-Artesiane	Mednovas Kit
	Arcofan	Coatal 20/120	Meta moquine
	Arcomb	Coatal 80/480	Nexanate
	Arenax Plus	Cofantrine 20/120	Odieshinate
	Arfloquin 600/750	Cofetran	Ogamal 20/120
	Armact	Cotemal	Oxacin
	Arofen 200/600	Dart	P-Alaxin
	Arsugin M	Dartemaquine	Palu Care
	Arte Plus Combi	Diasunate	Paluexit Plus 20/120
	Arte-Phin	Dlanate-A	Pesridon 20/120
	Artecom	Dlanate-C	Pesridon Paediatric
	Artecxin	Duo Cotecxin	Quinamet
	Arteria	Efonrex	Quinsunat
	Artedox	Erimal	Rtsunate Kit
	Artefan 40/240	Euronet Lar	Shreemal
	Artefan Suspension	Euronet Quine	SMT 20/120
	Artekam Kit	Fabither	Solartep
	Artelum 20/120	Falcet 20/120	Sunatab
	Artelum 40/240	Fanmet	Synamef
	Artemef	Fanterm	Synartem
	Artemether Plus	Farenax	Talxcin Plus
	Arteplus Combi	Fevacomb	Tamether 20/120
	Artequin 300/375	Fynale	Tamether 40/240
	Artequin 600/750	Fynale Paediatric	Tamether 80/480
	Artequin Paediatric	Genomsunate	Tamether Powder 20/120
	Arterakine	Glumet	Tanmocom
	Artesmequine 600/750	Gomaxine	Thydop 600/750
	Artesmodia	Gsunate 100 Kit	Trimalact 100/300
	Artesunat-Plus	Havax 20/120	Vema
	Artetrine	Ibasunate	Waipa ACT
			Zeromal

Other ACT Classifications

Term	Definition
Nationally registered ACTs:	ACTs registered with a country's national drug regulatory authority and permitted for sale or distribution in-country. Each country determines its own criteria for placing a drug on its nationally registered listing. A full list of nationally registered antimalarials can be found in the Appendix. In Nigeria, the following nationally registered ACTs were found in outlets:
ACT Pro AL	Atmal 20/120
Actimax	Axcin-DP
Amalar Plus	Camosunate
Amatem 20/120	Celoluther
Amdin 600/750	Co-Arinate
Amosinin	Co-Artesiane
Amosinin Junior	Coartem 20/120
Arcofan	Coartem D 20/120
Arenax Plus	Coatal 20/120
Arfloquin 600/750	Coatal 80/480
Arsumoon	Cofantrine 20/120
Artecom	Cofetran
Artedox	Cotemal
Artefan 40/240	Dart
Artefan Suspension	Efonrex
Artelum 20/120	Fabither
Artelum 40/240	Falcet 20/120
Artemef	Fanterm
Artemether Plus	Farenax
Artequin 300/375	Fynale
Artequin 600/750	Fynale Paediatric
Artetrine	Havax 20/120
	La-Tesen
	Larimal
	Lokmal Suspension
	Lonart
	Lonart –DS
	Lumerax 20/120
	Lumether
	Malact
	Malagard
	Malicare
	Malosunate
	Ogamal 20/120
	Paluexit Plus 20/120
	Pesridon Paediatric
	Quinsunat
	SMT 20/120
	Tamether 20/120
	Tamether 40/240
	Tamether 80/480
	Tamether Powder 20/120
	Waipa ACT

List of Abbreviations

--	No data were available
***	Undefined ratio as a non-zero value is being divided by a value of zero
ACT	Artemisinin-based Combination Therapy
AETD	Adult Equivalent Treatment Dose
AL	Artemether-Lumefantrine
AMFm	Affordable Medicines Facility – malaria
ASAQ	Artesunate Amodiaquine
CHW	Community Health Worker (called Community Health Extension Workers in Nigeria [CHEW])
CQ	Chloroquine
FAACT	First-line Quality Assured ACT
FBO	Faith Based Organization
Global Fund	The Global Fund to Fight AIDS, Tuberculosis and Malaria
GPS	Global Positioning System
IE	Independent Evaluation
IQR	Inter-Quartile Range
ITN	Insecticide Treated Net
LLIN	Long Lasting Insecticidal Net
LSHTM	London School of Hygiene and Tropical Medicine
MOH	Ministry of Health
n/a	Not applicable: Indicates statistic cannot be calculated as the numerator is zero
NAACT	Non-First-line Quality Assured ACT
NMCP	National Malaria Control Program
PMI	President’s Malaria Initiative
PPS	Probability Proportional to Size
PSI	Population Services International
QAACT	Quality Assured ACT
SP	Sulfadoxine-Pyrimethamine
UN	United Nations
UNICEF	United Nations Children’s Fund
WHO	World Health Organization

Executive Summary

Overview

The *ACTwatch* Outlet Survey involves quantitative research at the outlet level in *ACTwatch* countries (Cambodia, Uganda, Zambia, Nigeria, Benin, Madagascar and the Democratic Republic of Congo). Other elements of *ACTwatch* research include Household Surveys led by Population Services International (PSI) and Supply Chain Research led by the London School of Hygiene & Tropical Medicine (LSHTM). This report presents the results of a cross-sectional survey of outlets conducted in Nigeria from August to September 2009 and also serves as the baseline for the Affordable Medicines Facilities –malaria (AMFm) Phase 1 Independent Evaluation.

Overview of the AMFm independent evaluation process

The independent evaluation is part of a multi-faceted monitoring and evaluation framework developed for Phase 1 of the Affordable Medicines Facility – malaria (AMFm). It is intended to assess whether, and to what extent, AMFm Phase 1 achieves its objectives. The findings of the independent evaluation will be summarized in a report to be considered by the Global Fund Board at the end of Phase 1. The four main objectives of AMFm are: (i) to increase ACT affordability, (ii) to increase ACT availability, (iii) to increase ACT use, including among vulnerable groups, and (iv) to “crowd out” other oral antimalarials by gaining market share.

Through a competitive bid, the Global Fund contracted ICF Macro and the London School of Hygiene and Tropical Medicine (LSHTM) to carry out the Independent Evaluation (IE) in all of the currently operational Phase 1 countries (Ghana, Kenya, Madagascar, Niger, Nigeria, Tanzania mainland, Uganda, and Zanzibar). The baseline of the AMFm assessment relied on primary data collected from outlet surveys. In addition, with the exception of Nigeria, in-depth interviews with key stakeholders involved in the drug supply chain in the country, and a review of documents was also collected. *ACTwatch* provided data for Kenya, Madagascar, Nigeria, Tanzania mainland, Uganda, and Zanzibar.

Baseline outlet surveys were carried out in 8 pilots in 7 countries with the objectives of assessing availability, affordability, and market share of co-paid ACTs in rural and urban areas in each of the seven participating countries. The Independent Evaluation uses outlet survey data from two groups: 1) those in which nationally representative outlet surveys have been conducted under the *ACTwatch* program (Madagascar and Nigeria), and 2) those in which new outlet surveys were conducted under the AMFm Phase 1 IE (Ghana, Kenya, Niger, Tanzania mainland, Uganda and Zanzibar). The surveys were conducted in all the countries between August 2009 and December 2010.

Nigeria Outlet Survey Methods

A nationally representative sample of all outlets that could sell or provide antimalarials to a consumer was taken through a census approach in 114 clusters across six geo-political strata in Nigeria. A cluster sampling approach was used because there were no reliable lists of all outlets stocking antimalarials. Clusters were localities, with an average of 10,000 to 15,000 inhabitants. Clusters were selected with probability proportional to size (PPS)—a sampling technique in which the probability that a particular commune is selected is proportional to its population size. For all localities (i.e. regardless of the locality population size) a full census of public health facilities, private health facilities, and pharmacies was conducted. For localities with fewer than 50,000 inhabitants, a full census of drug stores (known as Proprietary Patent Medicine Vendors [PPMVs]), grocery stores (general retailers), Community Health Workers (CHWs), and hawkers was conducted. For localities with more than 50,000 inhabitants, the census of PPMVs, general retailers, CHWs, and hawkers was restricted to 3 randomly selected Enumeration Areas of that locality. The sample size was powered to detect a change of 20% percentage points in availability of ACTs over time.

Outlet inclusion criteria for this study included outlets which stocked an antimalarial at the time of survey or in the previous three months. An outlet is defined as any point of sale or provision of commodities for individuals. Outlets included in the survey are as follows: 1) public health facilities (government hospitals, health centres and CHWs); 2) pharmacies; 3) private health facilities (private clinics, private practices, NGO health centres and dispensaries); 4) drug stores (PPMVs); 5) grocery stores (general retailers); and 6) hawkers (itinerant drug vendors).

Three paper based questionnaire modules were administered to participating outlets: 1) Screening Module, 2) Audit Sheet and 3) Provider Module. For all outlets, trained interviewers administered the screening module to collect information on the outlet type; location, including the outlet's longitude and latitude; and information on availability of antimalarials. Among those outlets that stocked antimalarials at the time of survey, the audit sheet was administered. For each antimalarial, information was recorded on the brand and generic names, strength, expiry, amount sold in the last week and price to the consumer. Among outlets that stocked antimalarials at the time of interview, or in the past three months, the interviewer collected information on provider demographics, knowledge, and perceptions. Interviewers also observed outlet licensing and storage conditions of medicines using the provider module.

Double data entry was conducted using Microsoft Access (Microsoft Cooperation, Seattle, WA, USA). To ensure a high level of data quality, *ACTwatch* performed cleaning using standard *ACTwatch* guidelines, and cleaning was performed in SPSS version 14. For the analysis, the Independent Evaluators provided a tabulation plan for all tables presented in this report for the IE indicators, and analysis do-files in STATA, which produced all the required indicators and automatically generated the tables. *ACTwatch* adapted these analysis files to the country setting and ran the analysis using STATA version 11, recording results in a log file. Additional analysis for other *ACTwatch* specific indicators was conducted by *ACTwatch* following standard guidelines in STATA.

More information on the study design is available at www.actwatch.info.

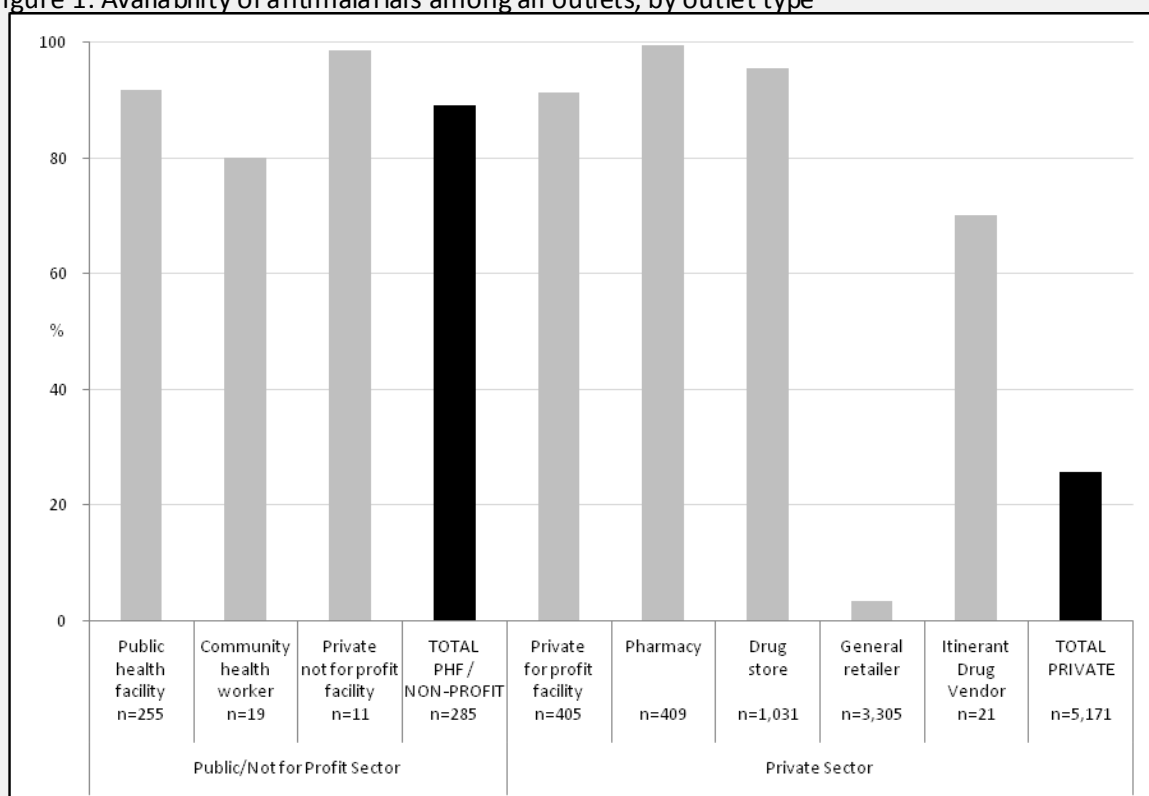
Key findings

Data were collected between 14th September and 2nd November, 2009. A total of 6,089 outlets were approached. Of these, 633 outlets were not screened for various reasons: 168 providers refused to be interviewed; 108 outlets were closed down permanently; 165 outlets were not open at the time of the survey visit; in 158 outlets, providers were not available for interview at the time of survey visit; 34 providers were unable to be interviewed for other reasons. Overall, 5,456 outlets agreed to participate in the *ACTwatch* outlet survey and were screened. Of these, 2,210 outlets met our screening criteria; however, interviews could not be conducted for 4 outlets. Of the 2,206 interviews conducted, 93 reported having stocked antimalarials at any point in the three months prior to the interview and 2,113 outlets stocked antimalarials at the time of the interview.

AVAILABILITY OF ANY ANTIMALARIAL: Stocking rates of any antimalarial varied by outlet type. In the public/not-for-profit sector, 89% of outlets had at least one antimalarial in stock on the day of interview. 92% of public health facilities stocked antimalarials.

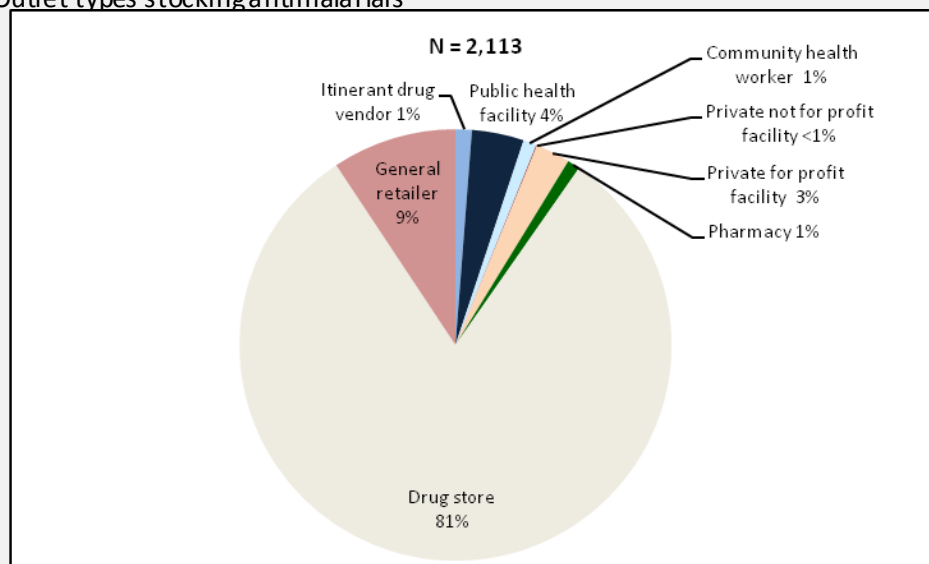
There was substantial variation in the private sector. More than 90% of private-for-profit facilities, pharmacies and drugs stores stocked antimalarials, in contrast to only 3.3% of general retailers. Almost one in three of itinerant drug vendors (70%) had at least one antimalarial in stock (Figure 1).

Figure 1. Availability of antimalarials among all outlets, by outlet type



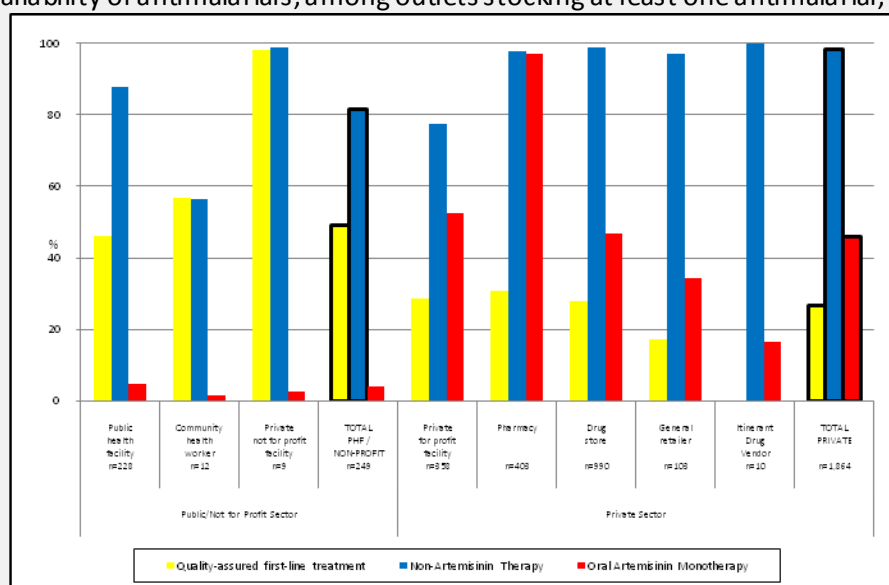
OUTLET TYPES STOCKING ANTIMALARIALS: Figure 2 shows the relative distribution of all outlets that had at least one antimalarial in stock. Drug stores, known also as proprietary patent medicine vendors (PPMVs), were the most common type of outlet stocking antimalarials (81%), followed by general retailers (9%).

Figure 2. Outlet types stocking antimalarials



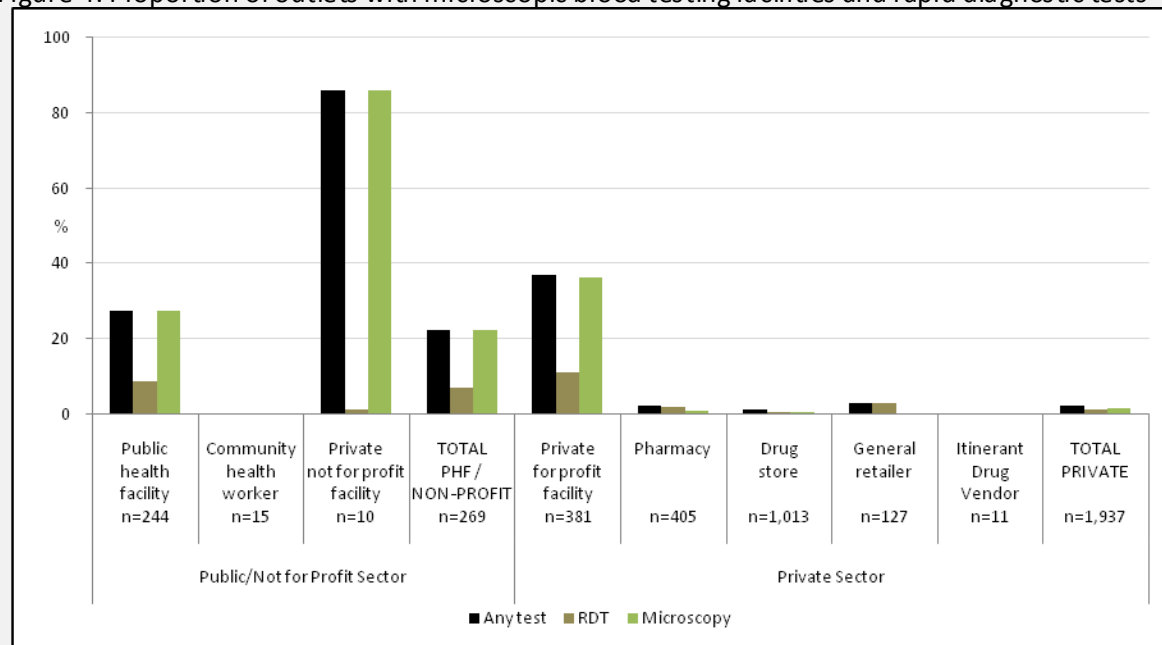
AVAILABILITY OF DIFFERENT CLASSES OF ANTIMALARIALS: First-line quality assured ACTs (FAACTs) were present in 46% of public health facilities and 27% of private sector outlets that stocked antimalarials on the day of interview. Non-artemisinin therapies were more commonly available than FAACTs in both the public/not-for-profit sector and the private sector (82% and 98% respectively). Availability of oral artemisinin monotherapy was greater than that of FAACTs for all private sector outlet types. 97% of pharmacies and 47% of PPMVs stocked oral artemisinin monotherapy.

Figure 3. Availability of antimalarials, among outlets stocking at least one antimalarial, by outlet type



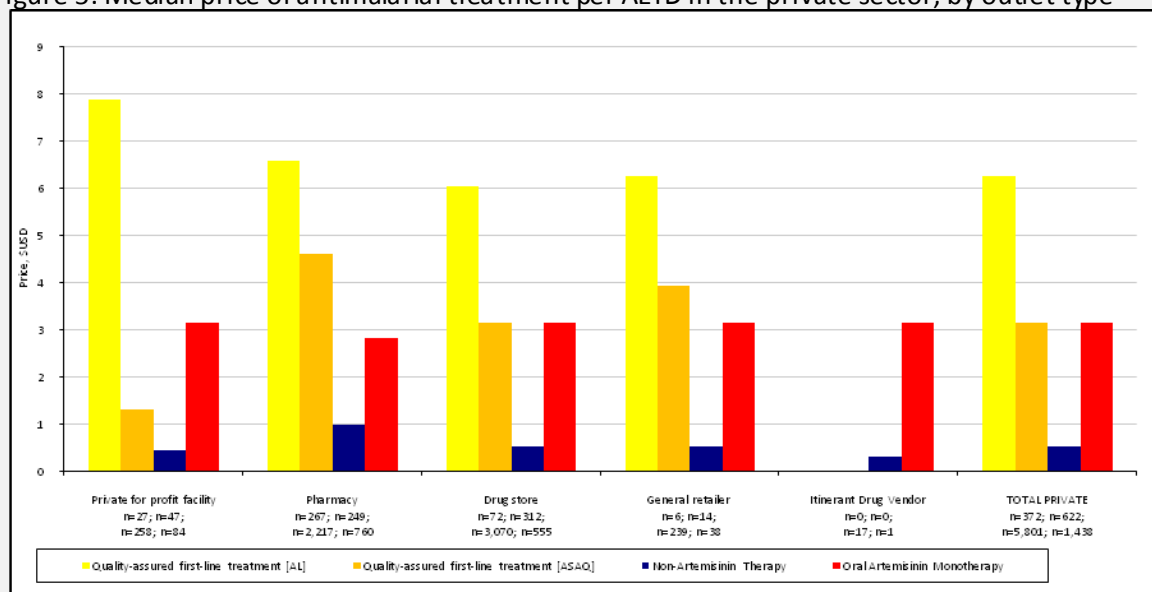
AVAILABILITY OF DIAGNOSTIC BLOOD TESTING: Among outlets stocking antimalarials in the last three months, 28% of public health facilities reported offering microscopic diagnostic testing services on the day of interview. While 36% of private for-profit facilities offered microscopy, availability of any test was less than 3% across the other outlet types in the private sector. Availability of RDTs was less than 12% across all outlets.

Figure 4. Proportion of outlets with microscopic blood testing facilities and rapid diagnostic tests



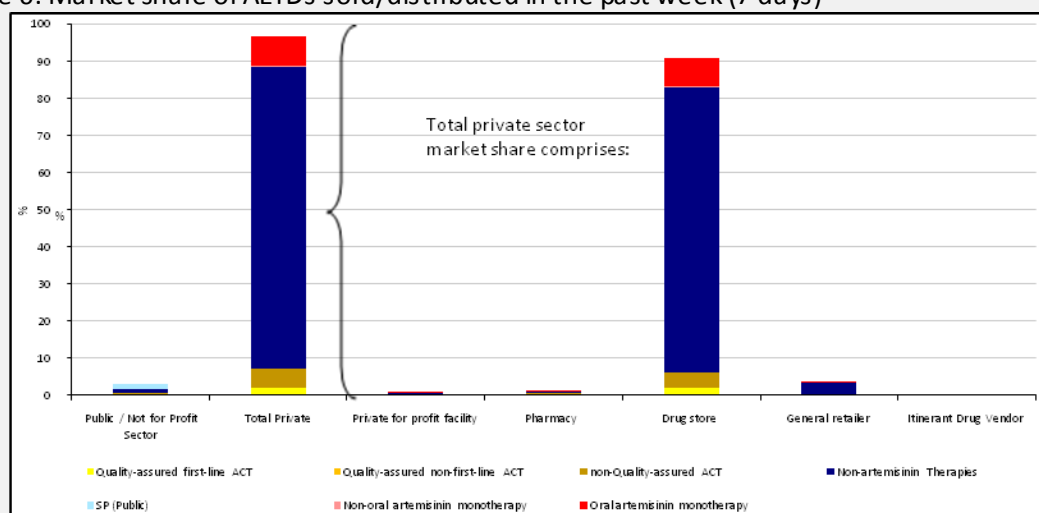
PRICE OF ANTIMALARIALS: Almost all public health facilities (99%), distributed antimalarials free of cost. In the private sector, the median price of quality assured AL and ASAQ was \$6.15 (IQR: \$4.93-\$6.57) and \$3.15 (IQR: \$1.84-\$3.94) respectively. The median private-sector price of the most popular antimalarial, Sulfadoxine-Pyrimethamine (SP), was \$0.53 (IQR: \$0.39-\$0.99). In the private sector, oral artemisinin monotherapy was cheaper than quality assured AL and priced similarly to ASAQ, at \$3.15 (IQR: \$2.63-\$3.68).

Figure 5. Median price of antimalarial treatment per AETD in the private sector, by outlet type



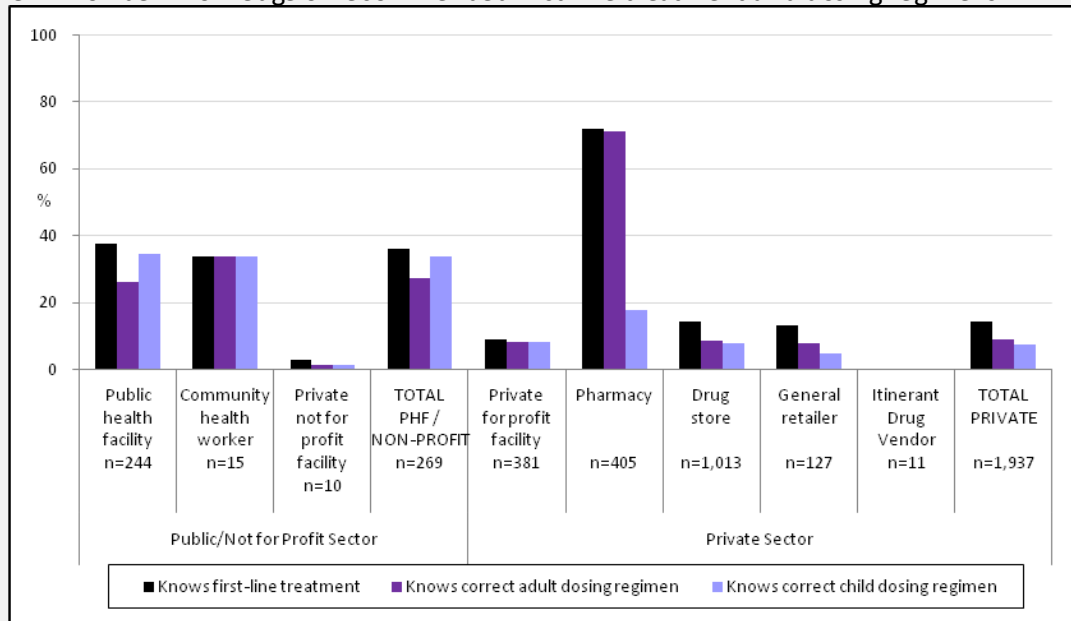
VOLUMES OF ANTIMALARIALS SOLD/DISTRIBUTED: The private sector dominated the antimalarial market, representing 97% of antimalarials distributed. Drug stores (PPMVs) accounted for 90% of the total volumes sold/distributed. Over 80% of all treatments distributed were non-artemisinin therapies, mainly SP (48%) and chloroquine (CQ) (35%). QAActs represented only 2.4% of the total market share, three times smaller than oral artemisinin monotherapy (8%). Most antimalarials distributed in the public sector were either CQ or SP.

Figure 6. Market share of AETDs sold/distributed in the past week (7 days)



PROVIDER KNOWLEDGE: Knowledge of the first-line treatment was recorded only for AL, not for the alternative first-line ASAQ. Overall, 15% of providers were able to correctly state AL as the recommended first-line treatment for uncomplicated malaria in Nigeria. By sector, knowledge was highest among providers at public/not-for-profit health facilities (38% and 14% in private for profit outlets). Across outlets, knowledge was highest for providers in pharmacies (72%). While knowledge was generally similar regarding adult and child dosing regimens, an exception was found for pharmacy respondents, who were less likely to know the correct child dosing regimen for AL.

Figure 7. Provider knowledge of recommended first-line treatment and dosing regimens



1. Background

Overview of the ACTwatch Research Project

In 2008, Population Services International (PSI) in partnership with the London School of Hygiene and Tropical Medicine (LSHTM) launched a five-year multi-country research project called *ACTwatch*. The project is designed to provide a comprehensive picture of the antimalarial market to inform national and international antimalarial drug policy evolution. The research is designed to detect changes in the availability, price and use of antimalarials over time and between sectors, and to monitor the effects of policy or intervention developments at country level.

ACTwatch addresses both the supply and demand side of the market. The supply side is evaluated by collecting level and trend data on antimalarials and rapid diagnostic tests (RDTs) in public and private sector outlets and wholesalers of antimalarial drugs. To evaluate demand, data are collected at the household level on consumer treatment-seeking behaviour and knowledge. In combination, the research components thread together the antimalarial market and consumer behaviour. Findings can help determine where and to what extent interventions may positively impact access to and use of quality-assured ACTs and RDTs as well as resistance containment efforts.

The project is being conducted in seven malaria-endemic countries: Benin, Cambodia, Democratic Republic of Congo, Madagascar, Nigeria, Uganda and Zambia between 2008 and 2012. Countries were selected with the aim of studying a diverse range of markets from which comparisons and contrasts could be made. The research in Nigeria is planned as follows: three outlet surveys (2008, 2009 and 2011); supply chain research (2009); and two household surveys (2009 and 2012).

This report presents the results of a cross-sectional survey of outlets conducted in Nigeria between September and November 2009. Indicators to address the research questions were developed in consultation with partners and the *ACTwatch* Advisory Committee. Indicators were selected to provide relevant information for policy makers in relation to price, availability, volumes, mark-ups and treatment seeking behaviour, including type of treatment and source. While data were collected prior to the AMFm Phase 1 Independent Evaluation, data were retrospectively analysed to produce indicators to inform the evaluation. The Independent Evaluator provided technical oversight on the analysis presented in this report, to ensure that results are aligned as far as possible with the AMFm indicators. The 2009 Nigeria Outlet Survey is being employed as part of the baseline for the Independent Evaluation of the AMFm Phase 1.

Information on other *ACTwatch* studies can be found at www.actwatch.info.

Overview of the AMFm phase 1

The success of malaria control efforts depends on high level of coverage in use of effective antimalarials such as artemisinin-based combination therapies (ACTs). Although these antimalarials have been procured in large amounts by countries, evidence suggests that ACT use still remains far below target levels. Reasons suggested for the low uptake of ACTs include interruptions in public sector supply; limited availability outside major urban centers; the high prices of the drugs, particularly in the private sector; lack of provider adherence to new recommendations; and patient self-treatment with other more common and cheaper antimalarials (Sabot et al., 2009). Lowering the cost of ACTs to the end user through a subsidy mechanism could be an effective way to increase their uptake (Arrow et al., 2004).

In response to this issue, the Affordable Medicines Facility – malaria (AMFm) hosted by Fund the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) was set up. As described by Adeyi and Atun (2010), AMFm is a financing mechanism designed to incorporate three elements: (1) price reductions through negotiations with manufacturers of ACTs; (2) a buyer subsidy, via a co-payment at the top of the global supply chain by AMFm on behalf of eligible buyers from the public, private for-profit and private not-for-profit sectors; and (3) support of interventions to promote appropriate use of ACTs. Examples of these “supporting interventions” include training providers and outreach to communities to promote ACT utilization. AMFm is being tested in a first phase that includes 9 pilots in 8 countries: Cambodia, Ghana, Kenya, Madagascar, Niger, Nigeria, Republic of Tanzania (mainland and Zanzibar) and Uganda.

It is expected that in the last quarter of 2012, the Global Fund Board will make a decision regarding the future of the AMFm on the basis of evidence gathered during Phase 1 that the initiative is likely to achieve its four stated objectives: (i) increased ACT affordability, (ii) increased ACT availability, (iii) increased ACT use, including among vulnerable groups, and (iv) “crowding out” oral artemisinin monotherapies, chloroquine and sulfadoxine-pyrimethamine by gaining market share. The AMFm Phase 1 Independent Evaluation has been commissioned to address the need for evidence on which to base the Global Fund Board decision.

Overview of the AMFm Phase 1 Independent Evaluation (IE)

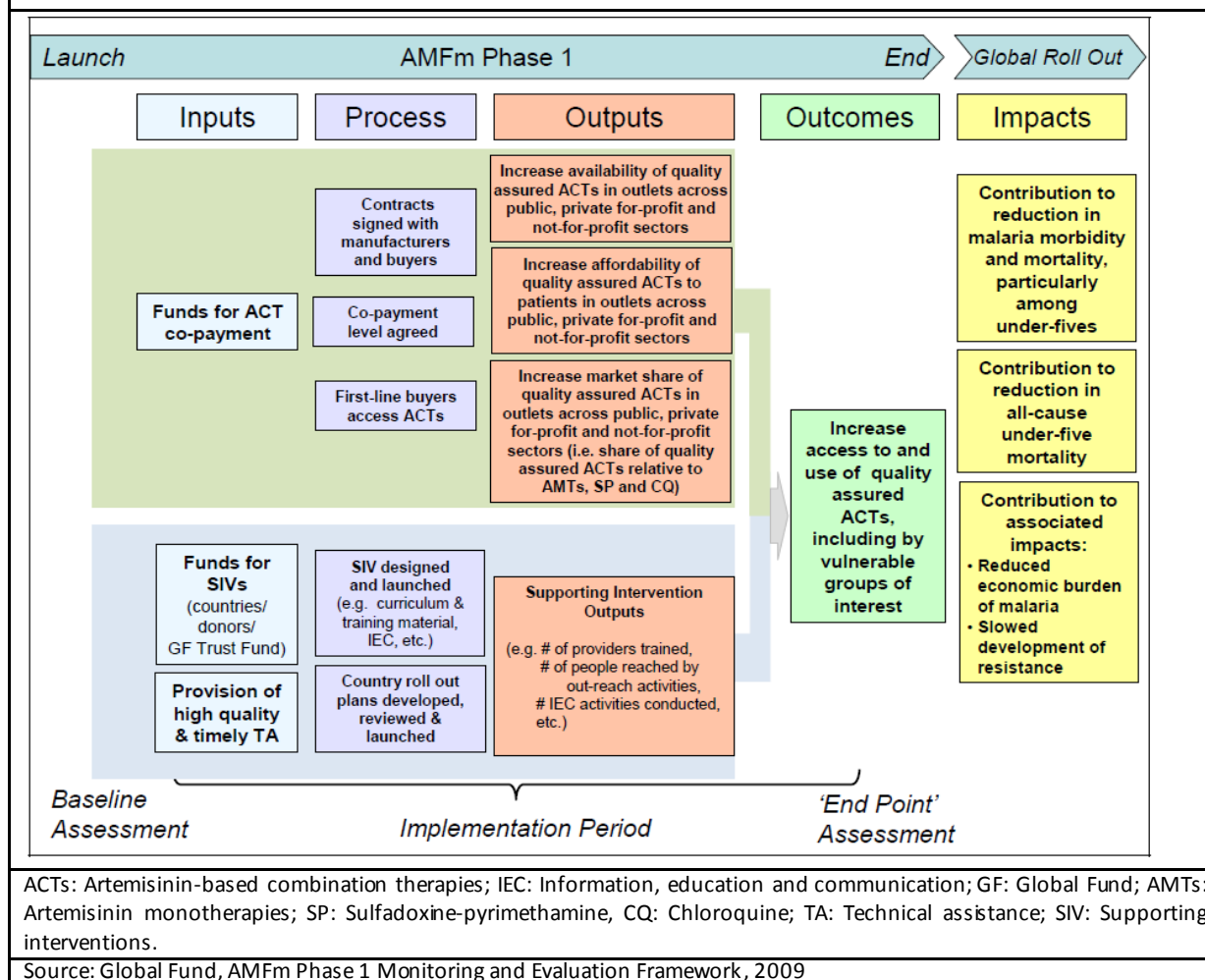
Through a competitive bid, the Global Fund contracted ICF Macro and the London School of Hygiene and Tropical Medicine (LSHTM) to carry out the Independent Evaluation (IE) in all the Phase 1 countries¹. In addition, the Global Fund contracted three other institutions (Population Services International (PSI), Drugs for Neglected Diseases initiative and Centre de Recherche pour le Développement Humain) to serve as data collection contractors (DCCs) responsible for collecting required data and information within countries. PSI is responsible for data collection in Cambodia, Kenya, Madagascar, Nigeria, Uganda, Tanzania mainland (subcontracted to the Ifakara Health Institute) and Zanzibar. With funding from the Bill and Melinda Gates Foundation, in Nigeria data were collected prior to the AMFm Phase 1 Independent Evaluation as part of the *ACTwatch* Project.

¹ In March 2011 the AMFm Ad Hoc Committee decided to drop Cambodia from the evaluation due to the lack of an eligible ACT for subsidy.

The 2009 Outlet Survey in Nigeria represents the baseline survey for the Independent Evaluation and it was conducted based on the *ACTwatch* questionnaire.

The purpose of the IE is to assess how the AMFm has evolved in each pilot and changes between baseline and endline in the values of key measures (i.e., availability, price, market share and use of quality-assured ACTs²) to inform decisions regarding the future of the AMFm beyond Phase 1. The IE is in line with the AMFm (Phase 1) Monitoring and Evaluation (M&E) Results Framework, but with a focus on Outputs and Outcomes (Figure 8).

Figure 8: AMFm Phase 1 Results Framework



The IE is therefore set to answer four questions related to the availability, affordability, market share and use of ACTs. These questions are formulated as follows:

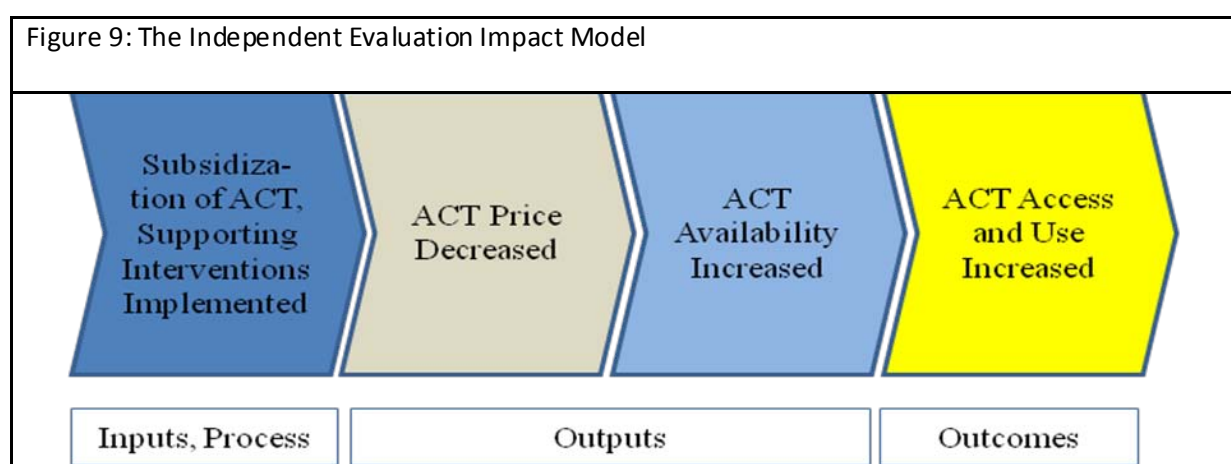
- Has the AMFm mechanism helped increase the availability of quality-assured ACTs to patients across public, private for-profit and not-for-profit sectors, in rural/urban areas?

² Quality-assured ACTs are defined as those ACTs that meet the Global Fund's quality assurance policy.

- Has the AMFm mechanism helped to reduce the cost of quality-assured ACTs to patients at public, private for-profit and not-for-profit outlets in rural/urban areas to a price comparable to the price of most popular antimalarials?
- Has the AMFm mechanism helped increase use of quality-assured ACTs, including among vulnerable groups, such as poor people, rural residents and children?
- Has the AMFm mechanism helped increase the market share of quality-assured ACTs relative to all antimalarial treatments in the public, private for-profit and not-for-profit sectors in rural/urban areas?

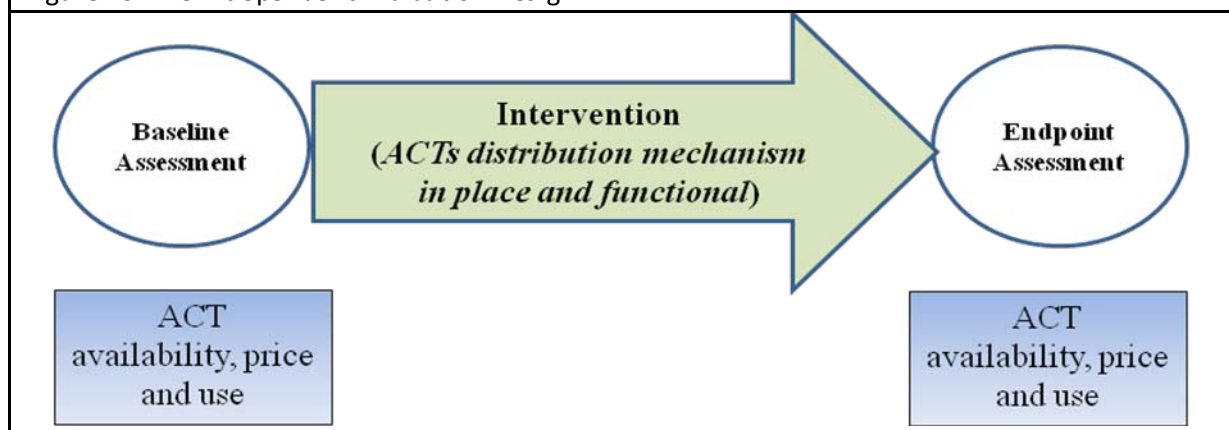
To answer these questions, building on the AMFm results framework, the IE impact model (Figure 9) foresees that subsidizing ACTs, accompanied by effective supporting interventions, will lead to a decrease in the ACT price. It is therefore anticipated in the model that if ACT price decreases, more outlets will be willing to stock the product and thereby increase availability. The increase in availability and the substantial decrease in price will potentially lead to an increase in use.

Figure 9: The Independent Evaluation Impact Model



While an evaluation based on experimental design would have provided stronger evidence to attribute any change in primary outcomes to the intervention, it is challenging to execute such a study design for an evaluation of a complex public health program such as the AMFm which is implemented on a national scale with multiple players. The IE therefore uses a pre- and post-test/intervention design (Figure 10) in which each participating country is treated independently as a case study. As the literature suggests (Craig et al., 2008, deSavigny and Adam, 2009, Habicht et al., 1999) for the evaluation of such a complex intervention, in addition to measuring the changes in key indicators pre- and post-intervention, the evaluation should include an assessment of the implementation process to determine whether any lack of impact reflects implementation failure or genuine ineffectiveness and a comprehensive documentation of context both to inform assessments about causality and to aid in generalizability to other contexts.

Figure 10: The Independent Evaluation Design



The evaluation, therefore, includes two major components: (1) a pre- and post-intervention study of key outcomes through outlet surveys and use of secondary household survey data, and (2) documentation of key features of the context at baseline and endpoint, and the implementation process in each pilot. The descriptions of context and implementation process provide the information needed to interpret the changes in outcomes over the implementation period, and to judge whether any observed changes are likely to be due to AMFm. The evaluation is based on primary data collected from outlet surveys conducted at baseline and endline (for questions related to availability, affordability and market share of ACTs); secondary data from national household surveys (for questions related to use of ACT), such as Demographic and Health Surveys (DHS), Malaria Indicators Surveys (MIS) and Multiple Indicator Cluster Surveys (MICS); in-depth interviews with key stakeholders involved in the drug supply chain in the country; and review of documents such as reports from AMFm operations research, malaria treatment guidelines, pharmacy regulations, country-level reports from MOH and donor partners, including national malaria control strategy documents, and results from national surveys, and any other documents relevant to the context data described above.

For each country, relevant indicators will be computed for the baseline and endpoint from the outlet surveys. For secondary data from existing national household surveys, appropriate indicators will be extracted from existing reports. To assess change, the IE will calculate the percentage point change or the percent change (whichever is relevant for each indicator) between the baseline and the endpoint. Contextual information will then be processed to help in the interpretation of these results.

Pilot-specific case studies will be produced, making use of the qualitative and quantitative approaches described above, to document and describe how the AMFm has evolved in each country. The evaluation will distinguish two parts: (i) the upstream part, with emphasis on the business model of the AMFm as a financing platform; and (ii) the downstream part, with emphasis on service delivery to increase access to and use of ACTs, including by poor people. In the case studies, findings from nationally representative outlet surveys will be compared before and after the introduction of the AMFm, taking into account relevant contextual information and results from operational

research that become available to help learn how and why the new model unfolds in a variety of contexts while drawing lessons that can help future operations.

While this section gives an overview of the IE to provide the reader with the relevant context, this report presents the country context and results of the baseline outlet survey for Nigeria. This is Step 1 of a four step process. These baseline results from Step 1 will be integrated into a “Comprehensive Baseline Report” to be produced by the Independent Evaluation Team (i.e., Step 2). In Step 3, later in 2011, a national level outlet survey will be conducted to produce endline results, resulting in an end-line report for Nigeria. These findings will be used to inform Step 4, the development of the full AMFm Phase 1 Independent Evaluation report to be submitted to the Global Fund Board.

1. Background

Overview of the country

Nigeria is located in the West Africa sub-region and is bordered by Niger to the north, Chad to the northeast, Cameroun to the east and Benin to the west (Figure 11). The country has approximately 850 km of coastline along the Atlantic Ocean, stretching from Badagry in the west to the Rio del Rey in the east. With a total land area of 923,768 square kilometres, Nigeria is the fourteenth largest country in Africa. It is the most populous nation in Africa and the eighth most populous country in the world, with a total population of 158 million (UN Population Division, 2010). 50% of the population are estimated to live in urban areas. There are more than 250 ethnic groups, the largest of which are the Hausa, Fulani, Igbo, Yoruba, and Kanuri. The official language of Nigeria is English; with Hausa, Fulani, Igbo, Yoruba, and Kanuri the most widely spoken Nigerian languages.

Nigeria has a varied climate. Distinct climatic zones can be distinguished, progressing from south to north. The southern part of the country has an equatorial monsoon climate, while the central regions are tropical and the northern-most parts are arid. In the south there is rainfall during most of the year, with a short break around August and a longer dry period from December to January. The central regions experience rains between March and October, and a pronounced dry season (including the Harmattan) between November and March. Temperatures are high during the dry season but fall during the rains.

Figure 11: Location of Nigeria



Source: Central Intelligence Agency, *The World Factbook 2009*,
<https://www.cia.gov/library/publications/the-world-factbook/index.html>

Between 2000 and 2009 Nigeria's GDP grew at an average 6% year-on-year (mostly driven by oil revenues) compared to a population growth rate estimated at 2% (World Bank, 2010). During the same period GDP per capita rose from \$1,456 to \$2,001, an increase of 38% (World Bank, 2010).

Despite this recent positive economic growth, an estimated 84% of the population continues to live on under \$2 a day, and the country ranks 142nd out of 169 in the 2010 Human Development Index. Under-five mortality has dropped significantly, from 201 per 1000 births between 1998 and 2003, (National Population Commission, 2004) to 157 per 1000 births between 2003 and 2008 (DHS, 2008). However, this is still higher than the figure for sub-Saharan Africa as a region. Only 23% of children are fully vaccinated. Malaria remains largely unchecked and leads to an estimated 300,000 deaths in children under five each year (Federal MOH, 2009).

Nigeria is sub-divided into 6 geopolitical zones, 36 states (plus the Federal Capital Territory, Abuja), and 774 Local Government Areas (LGAs). The public health system in Nigeria operates through three tiers, linked to the three levels of health care. At the highest level, the Federal Ministry of Health (FMOH) provides policy and technical guidance for the health sector. The FMOH also supports and manages tertiary level care, research and academic “centres of excellence”. State Ministries of Health (SMOH) fund and manage state hospitals, maternities, and teaching colleges. SMOHs are also responsible for the professional development of health sector staff for secondary and primary health care, from midwives and nurses to Community Health Extension Workers (CHEWS). At the third tier, LGAs are tasked with planning, managing, staffing, supporting and implementing primary health care (PHC) services. 71% of Nigerians have access to a PHC facility within five kilometres of their homes (Federal MOH, 2010); however, many of these centres are not effectively functional due to lack of equipment, essential supplies, and qualified staff.

Description of health care system

A national health facilities census was conducted in 2007. According to the census, the public sector comprises 42 teaching hospitals and federal medical centres; 533 secondary-level hospitals, including general and specialist hospitals; and 14,635 primary-level facilities, including 4,149 dispensaries (NPHCDA, 2007).

The private health care system consists of formal tertiary-, secondary- and primary facilities, and pharmacies, as well as informal proprietary patent medicine vendors (PPMVs) and drug sellers. Private health facility figures for the period 1999 to 2001 include 2,147 secondary facilities and 7,000 PHC facilities (Federal MOH, 2009). For the same period there were a total of 2,751 registered pharmacies, and an estimated 36,000 PPMVs (2002 estimate). The private sector provides over 65% of healthcare delivery in Nigeria (Onwujekwe O et al., 2005). PPMVs are usually the first choice in health care and are a recognized primary source of manufactured drugs for both rural and urban populations, especially the poor (Uzochukwu & Onwujekwe, 2004; Uzochukwu et al., 2008; Oladepo et al., 2008). In addition to selling drugs, they are also a major source of advice about illness and drug therapy (Ross-Degnan et al., 1996).

As a general policy, healthcare consumers are expected to pay for curative services, but preventive services are often subsidized. Health financing has been largely out of pocket and efforts are made to provide public assistance to the socially and economically disadvantaged segments of the population (Federal MoH, 2004a). To reduce the financial barriers that prevent people in Nigeria, especially children, from accessing healthcare services, pre-payment schemes such as the National Health Insurance Scheme (NHIS) are being introduced (Federal MoH, 2006).

The public and private sectors have distinct and independent drug supply chains, although both are regulated by the National Agency for Food and Drug Administration and Control (NAFDAC). Quality control is provided by NAFDAC at the point of entry for imported products and at the factory gate for locally-manufactured products.

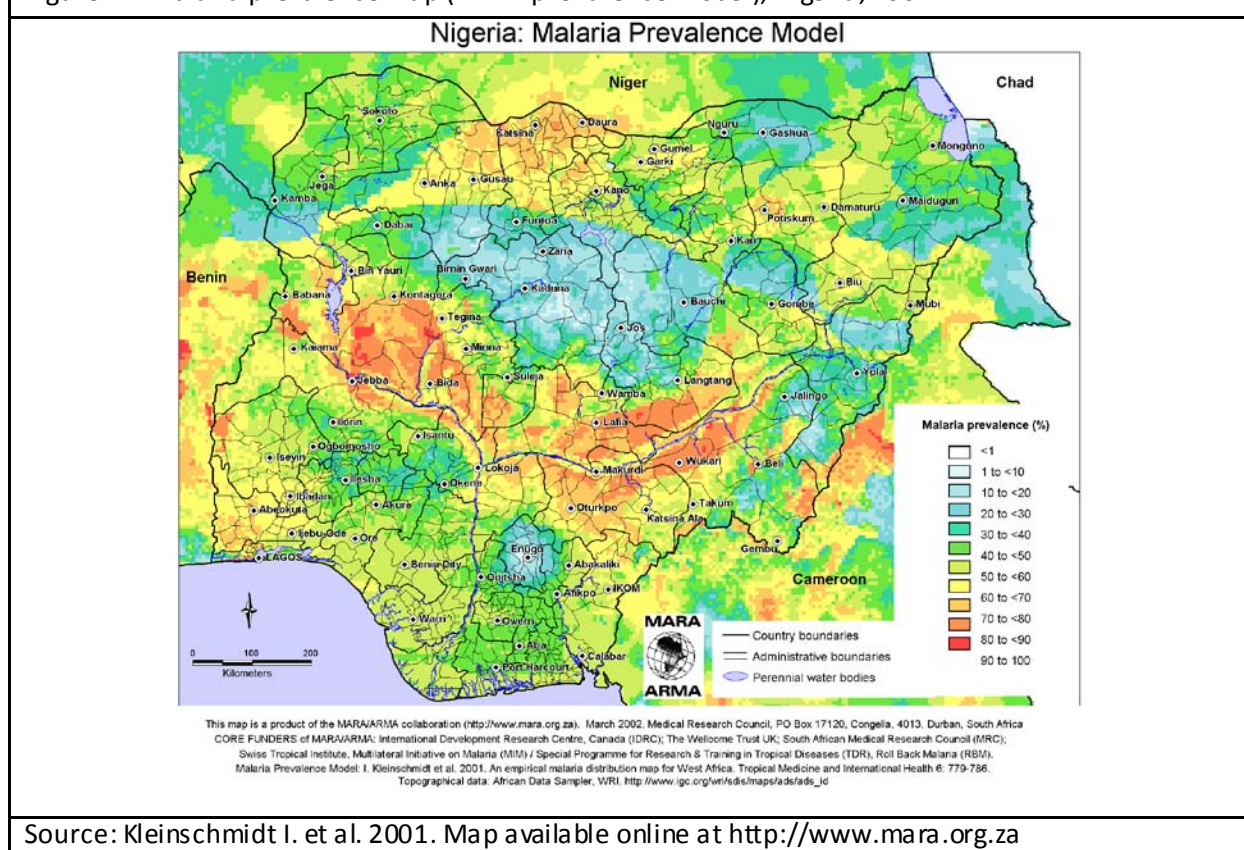
The public sector system is highly fragmented, with each disease having its own supply chain system. Government agencies and partners are first-line buyers and purchase medicines directly from manufacturers. Manufacturers bid to supply the government through local and international competitive bid processes, managed by the Tenders Unit of the FMOH. However, donors also supply commodities directly to state-level medical stores, and both States and LGAs have funding for procurement. In anticipation of the AMFm pilot, donors are supporting the development of an improved logistics management information system for malaria commodities (PMI, 2010).

Procurement in the private sector is informed by government treatment guidelines, but predominantly driven by demand. In-country manufacturers are a key source of commodities for Nigerian wholesalers and distributors: there are almost 40 nationally-registered ACTs that are manufactured in-country (PMI, 2010). For products manufactured outside of Nigeria, it is common practice for an importer to act as the sole agent for a manufacturer. While importers are free to choose their suppliers, a tendency to enter into exclusivity agreements is fostered by the stringency of the registration requirements, the amount of time that it takes to develop a relationship with the supplier, and the amount of investment that goes into developing the local market for the imported product.

Epidemiology of malaria

Malaria is endemic in Nigeria and 97% of the population is at risk of infection. The country exhibits five ecological strata from south to north which define the seasonality and intensity of malaria transmission, and vector species dominance: mangrove swamps, rain forest, guinea-savannah, Sudan-savannah and Sahel-savannah. The duration of the transmission season decreases from perennial in the south to around 3 months in the northern border region with Chad. In the northern part of the country transmission is highly intense during the short wet season as compared with general low transmission during the long dry season. In the southern part of the country, transmission is intense, stable and uniform throughout the year. Malaria prevalence in the population has been modelled by the Mapping Malaria Risk in Africa (MARA) collaboration (Figure 12).

Figure 12: Malaria prevalence map (MARA prevalence model), Nigeria, 2001



Source: Kleinschmidt I. et al. 2001. Map available online at <http://www.mara.org.za>

Malaria is considered to be a major public health problem in Nigeria. It causes more than 50% of the disease burden (Federal MoH, 2005) and almost 50% of all-cause health expenditure (Onwujekwe O, et al., 2000). 20% of all hospital admissions, 30% of outpatient visits, and 10% of hospital deaths are attributable to malaria, and half of Nigeria's population is exposed to at least one episode of malaria every year (Okeke et al., 2003). Results of a modelling exercise presented in the National Malaria Control Program (NMCP) Strategic Plan 2009-2013 show that malaria accounts for an estimated 300,000 deaths in children under five each year, and 11% of the maternal mortality burden in Nigeria. Malaria is responsible for 25% of all infant-related mortality and 30% of child-related mortality (National Population Commission, 2009). In relative terms, Nigeria contributes more than a third of the total African malaria burden (RBM, 2008).

Health facility data show that between 2001 and 2007 there was an increase in the number of malaria deaths: from 4,317 in 2001 to 10,289 in 2007 (all ages), and 721 to 2,695 for under five year olds. This upward trend may be due to improvements in reporting of cases (WHO, 2008).

Antimalarial Policies and Regulatory Environment

In January 2005 the NMCP adopted artemether-lumefantrine (AL) as the first-line treatment for uncomplicated malaria (Federal MoH, 2004b). Artesunate+amodiaquine (ASAQ) is recommended as the alternative first-line treatment, should AL not be available. At the time of the policy change, AL and ASAQ were prescription-only medications; NAFDAC reclassified these medicines as over-the-counter in 2006.

Parenteral quinine is recommended for the treatment of severe malaria and as pre-referral treatment. In addition, artemether and artesunate injections are included on the list of current medicines for severe malaria. Artesunate suppositories are also used at peripheral health facilities where parenteral treatment cannot be administered (they are included in the national policy on malaria treatment as a pre-referral treatment only).

Oral artemisinin monotherapies have been banned in Nigeria since 2006, under legislation that prohibits their importation and local production. In order to support broader adoption of ACTs, NAFDAC stopped registering new artemisinin monotherapies in 2006. Licenses for the sale of oral artemisinin monotherapies were not renewed when they expired (which was by late 2009). In order to mitigate the risk of artemisinin monotherapy stockpiling prior to the end of valid registration, NAFDAC provided several incentives including a reduction in the cost of registering ACTs.

Malaria control strategy

The core interventions for malaria control in Nigeria include long lasting insecticide-treated net (LLIN) distribution through antenatal care clinics, immunization visits, large-scale stand-alone campaigns, and subsidized and at-cost sales in the commercial sector; intermittent preventive treatment for pregnant women (IPTp); case management following prompt diagnosis at all levels of health care; and, to a more-limited extent, indoor residual spraying (IRS).

Up to late 2008, public sector bed net distribution campaigns focussed on the most vulnerable groups: children under five and pregnant women. Initially starting with insecticide-treated nets (ITNs), distribution switched to LLINs in 2006. Nigeria has removed import tariffs on bed nets (M-TAP, 2010). More than 19 million ITNs were distributed during 2009 (WHO, 2010a), a substantial increase on previous years. Results from the 2008 DHS show low net ownership and use: an estimated 8% of households own at least one ITN, and only 6% of children under five are reported to have slept under an ITN the night before the survey. Looking to the future, sufficient donor funds have been mobilised to enable the procurement of more than 62 million nets, enough to achieve universal coverage with two LLINs per household (PMI, 2010).

Large-scale IRS campaigns have not been conducted in Nigeria since the mid-1970s, and present institutional capacity for spraying is weak. Several trials have been conducted in recent years with the support of insecticide manufacturing companies, and World Bank-supported campaigns are present in 7 states. The NMCP Strategic Plan 2009-2013 sees an increased role for IRS in specific situations (such as where ITN usage rates remain low, and in more densely populated areas), and sets a target of 20% of households covered by IRS by 2013.

Nationwide, an estimated 58% of pregnant women have access to antenatal care (ANC) from a skilled provider, but only 5% receive the recommended two doses of sulphadoxine-pyrimethamine (SP) for IPTp (National Population Commission, 2009). These figures vary widely by State, and coverage is greater in urban areas than in rural areas. IPTp is free when given through ANC at public and NGO health facilities. However due to the supply chain problems, it is unclear if LGAs have sufficient stocks of SP to meet demand for IPTp.

Case management for malaria is based on prompt treatment with effective ACT. The NMCP's desire that such treatment be available close to home is aided by the classification of AL and ASAQ as over-the-counter medicines, and the policy supporting community case management of malaria with ACTs. The National Antimalarial Treatment Policy states that parasitological diagnosis is essential for all suspected cases of malaria, with microscopy providing the gold-standard. However, there is an understanding that the cost and capacity for providing laboratory services present a barrier to achieving coverage with microscopy, and as such RDTs should be introduced in facilities with no microscopes. Within the public sector, policy states that ACT is available free of charge for both under fives (as of 2006) and over fives (as of 2009).

Malaria financing

Despite government and donor funding increasing from \$18.5 million in 2005 to \$84.5 million in 2008 there is no evidence of a systematic decline in malaria burden in Nigeria (WHO, 2008). The NMCP delivered about 17 million insecticide treated bed nets during 2005-2007, enough to cover only 23% of the population at risk. The programme delivered 4.5 million courses of ACT in 2006 and 9 million in 2007 which is far below the country's total requirements (WHO, 2008).

A subsidy program run by SFH and funded by the Global Fund has made child doses of ASAQ available since 2008 through private sector health facilities, pharmacies and PPMVs in 18 of the 36 states and the Federal Capital Territory. These products, with brand names Arsuamoon and Larimal, were sold for a wholesale purchase price of 5 NGN (US\$ 0.03) per treatment with an approved retail price set at 30 NGN (US\$ 0.20). However, the subsidized Arsuamoon and Larimal products distributed under this program had identical packaging to their non-subsidized commercial equivalents that were being concurrently sold by private sector wholesalers and retailers across the entire country at considerably higher prices. Therefore, to ensure that the target retail price was achieved and also to minimize leakage of the subsidized product outside of program areas and target retail outlet types, SFH chose to bypass private sector wholesalers and distributed these subsidized products directly to target outlets in the participating states from their own warehouses and only in limited quantities (e.g. PPMVs were permitted to purchase 2 packages from SFH per transaction). Subsidized ASAQ was also distributed through several civil society partners (Africare Nigeria, Errand Express, Planned Parenthood Federation of Nigeria) strategically selected by SFH in order to improve coverage in underserved rural areas. In 2007, a total of 17.5 million doses of ACTs (AL and ASAQ) were distributed in the public and NGO sectors or sold in the private sector at subsidized prices through SFH. While this represents notable progress compared to 2006 when less than half of this volume was distributed, it still only provided treatment for about 25% of the estimated number of malaria cases (FMOH, 2009).

Since 2007 funding for malaria control has dramatically increased. Nigeria signed a \$461 million Global Fund Round 8 grant in 2008, and additional funds were made available through the World Bank Malaria Booster Program and the UK Department for International Development (DfID). The Round 8 grant will contribute to providing universal coverage with LLINs; continued roll-out of ACT; and increased access to malaria diagnostics, including roll-out of RDTs to primary health facilities.

2. Methods

Key ACTwatch indicators

The following table shows the primary *ACTwatch* indicators measured through the outlet survey, and presented in this report. Results are presented by geo-political region, and nationally. They are also presented by outlet type (though there may not be sufficient power to detect statistical differences between outlet types).

Figure 13: Primary *ACTwatch* indicators

Availability indicators	
	<p>Proportion of censused outlets that have any antimalarials in stock at the time of survey visit.</p> <p>Proportion of outlets that have any ACTs in stock among outlets with any antimalarials in stock at the time of survey, including:</p> <ul style="list-style-type: none"> • Quality-assured ACTs <ul style="list-style-type: none"> ○ First-line quality assured ACTs ○ Non-first line quality assured ACTs • Non-quality assured ACTs • Nationally registered ACTs <p>Proportion of outlets that have any non-artemisinin therapy in stock at the time of survey visit, including:</p> <ul style="list-style-type: none"> • Chloroquine • Sulfadoxine-pyrimethamine • Quinine <p>Proportion of outlets that have artemisinin monotherapy in stock among outlets with any antimalarials in stock at the time of survey visit, including</p> <ul style="list-style-type: none"> • Oral artemisinin monotherapy • Non-oral artemisinin monotherapy
Stock outs	
	<p>Proportion of outlets that report no disruption in stock of any antimalarial, among outlets with any antimalarial in stock or reported stock outs in the last three months.</p> <p>Proportion of outlets that report no disruption in the first line quality assured ACT, among outlets with any antimalarials in stock or reported stock outs in the last three months.</p>
Pricing indicators	
	<p>Median cost to patients of one adult equivalent treatment dose (AETD) of ACTs, including:</p> <ul style="list-style-type: none"> • Quality-assured ACTs <ul style="list-style-type: none"> ○ First-line quality assured ACTs ○ Non-first line quality assured ACTs • Non-quality assured ACTs • Nationally registered ACTs

	<p>Median cost to patients of one AETD of any non-artemisinin therapy, including:</p> <ul style="list-style-type: none"> • Chloroquine • Sulfadoxine-pyrimethamine • Quinine <p>Median cost to patients of one AETD of artemisinin monotherapy, including</p> <ul style="list-style-type: none"> • Oral artemisinin monotherapy • Non-oral artemisinin monotherapy
Affordability	
	<p>Median cost to patients of one adult equivalent treatment dose (AETD) of first-line quality assured ACTs relative to the most popular antimalarial treatment.</p> <p>Median cost to patients of one AETD of first-line quality assured ACTs relative to the minimum legal daily wage.</p> <p>Median cost to patients of one AETD of first-line quality assured ACTs relative to the international reference price.</p>
Market share indicators	
	<p>Total volume of ACTs sold or distributed in the last week, as a proportion of the total volume of all anti-malarials sold or distributed in the last week.</p>
Provider knowledge	
	<p>Proportion of providers that can correctly state the recommended first-line treatment for uncomplicated malaria, among outlets with any antimalarials in stock or reported stock outs in the last three months.</p> <p>Proportion of providers that can state the dosing regimen of the first-line treatment for an adult among outlets with any antimalarials in stock or reported stock outs in the last three months.</p> <p>Proportion of providers that can state the dosing regimen of the first-line treatment for a two year old, among outlets with any antimalarials in stock or reported stock outs in the last three months.</p>

Key AMFm Phase 1 Independent Evaluation indicators

The following table shows the indicators that the *ACTwatch* survey was able to measure for the Independent Evaluation of the AMFm Phase 1. Results are presented by urban and rural locations, and nationally. They will also be presented by outlet type (though there may not be sufficient power to detect statistical differences between outlet types).

Figure 14: Primary AMFm indicators measured by the *ACTwatch* survey

Availability indicators	
1.1	Proportion of censused outlets that have any anti-malarials in stock at the time of survey visit in rural and urban areas.
1.2	Proportion of outlets that have non-artemisinin monotherapy or non-artemisinin combination therapy in stock among outlets with any antimalarials in stock at the time of survey visit in rural and urban areas.
1.3	Proportion of outlets that have any artemisinin monotherapy in stock among outlets with any antimalarials in stock at the time of survey visit in rural and urban areas.
1.4	Proportion of outlets that have non-quality assured ACTs in stock among outlets with any antimalarials in stock at the time of survey visit in rural and urban areas.
1.5	Proportion of outlets that have quality-assured ACTs in stock at the time of survey visit among outlets with any antimalarials in stock at the time of survey visit in rural and urban areas.
1.7	Proportion of the population living in a sub-county where there is at least one outlet that had a quality assured ACT in stock at the time of the survey visit in rural and urban areas.
Pricing indicators	
2.1	Median cost to patients of one adult equivalent treatment dose (AETD) of quality assured ACTs in rural and urban areas.
2.2	Median cost to patients of one AETD of non-quality assured ACTs in rural and urban areas
2.3	Median cost to patients of one AETD of artemisinin monotherapy in rural and urban areas
2.4	Median cost to patients of one AETD of non-artemisinin monotherapy or non-artemisinin combination therapy in rural and urban areas.
2.5	Median percentage mark up between retail purchase and selling price of quality assured ACTs in rural and urban areas.

Market share indicators	
4.1	Total volume of quality assured ACTs sold or distributed in the last week, as a proportion of the total volume of all anti-malarials sold or distributed in the last week in rural and urban areas

Background on *ACTwatch* and the AMFm Phase 1 Indicators

The methods and procedures used for this survey follow the standard *ACTwatch* approach as data collection took place from September 2009, prior to the development of AMFm Independent Evaluation protocols. Specifically, the sample size determination, selection procedure of communes, questionnaire development, training curriculum, PDA programming, and field implementation were guided by the standard operating procedures used for *ACTwatch*. Where possible, data were then analysed retrospectively to inform AMFm Phase 1 indicators, with the Independent Evaluator providing oversight on the analysis plan, key informant interview methods and the reporting template.

While there many similarities between the AMFm Phase 1 and *ACTwatch* indicators there are notable differences, particularly in terms of the types of antimalarial classifications, denominators for some provider indicators, prices (notably the use of different exchange rates and presentation of median prices for tablet vs. other formulations) and the presentation of indicators in the report. The following subsection helps to explain these differences by providing background on: 1) antimalarial classifications 2) *ACTwatch* primary indicators and 3) AMFm Phase 1 primary indicators.

Classification of antimalarials

Antimalarials are presented within three broad policy-relevant categories:

- non-artemisinin therapy
- artemisinin monotherapy
- artemisinin combination therapy (ACT).

ACTs are further sub-divided as:

- quality assured ACTs (QAACTs), which include:
 - first-line, quality assured ACTs (FAACTs),
 - non first-line quality assured ACTs (NAACTs)
 - non quality assured ACTs

For the purpose of the Independent Evaluation and *ACTwatch*, a QAACT is any ACT which appeared on the Global Fund's Indicative List of antimalarials meeting the Global Fund's quality assurance

policy as at June 2010³, or which previously had C-status in an earlier Global Fund quality assurance policy and was used in a programme supplying subsidised ACTs. FAACTs and NAACTs are sub-classifications of QAACTs. FAACTs are government recommended first-line ACTs (i.e. ASAQ in Madagascar) for uncomplicated malaria meeting the quality assured definition. NAACTs are ACTs that are not the government's recommended first-line treatment for uncomplicated malaria (for example, AL in Madagascar), but which do meet the quality-assured definition.

For *ACTwatch* only, indicators are also calculated for nationally registered ACTs. Nationally registered ACTs are ACTs registered with a country's national drug regulatory authority and permitted for sale or distribution in-country. Each country determines its own criteria for placing a drug on its nationally registered listing. A list of nationally registered ACTs at the time of data collection is given in the appendix.

ACTwatch versus AMFm classifications

Given the objectives of the AMFm Phase 1, indicators focus on the following antimalarial classifications: 1) non-artemisinin therapy, 2) artemisinin monotherapy, 3) QAACTs and 4) non-quality assured ACTs.

In addition to these classifications, *ACTwatch* also presents data on FAACTs, NAACTs, and nationally registered antimalarials, which are relevant for national policy. Artemisinin monotherapy is also further classified as oral and non-oral artemisinin monotherapy as per WHO recommendations that intravenous artesunate should be used as first-line treatment in the management of severe *P. falciparum* malaria in African children and adults (WHO, 2010b). *ACTwatch* further classifies non-artemisinin therapy into chloroquine, sulfadoxine-pyrimethamine and quinine.

ACTwatch versus AMFm denominators

Provider knowledge

The *ACTwatch* indicator on provider knowledge of the first-line antimalarial treatment includes outlets that had an antimalarial at the time of survey or in the previous three months. For the AMFm Evaluation Indicator, only outlets that had an antimalarial in stock at the time of survey are included in the denominator. Therefore there are slight differences in the results for these knowledge indicators.

Rapid diagnostic tests and malaria microscopy

The *ACTwatch* indicator on availability of RDTs and malaria microscopy includes outlets that had an antimalarial at the time of survey or in the previous three months. For the AMFm Evaluation Indicator, only outlets that had an antimalarial in stock at the time of survey are included in the denominator. Therefore there are slight differences in the results for these diagnosis indicators.

³ List available at: <http://www.theglobalfund.org/en/procurement/quality/pharmaceutical/#General>

ACTwatch versus AMFm evaluation exchange rates

Price

Price data were collected in local currencies and converted to their US\$ equivalent. The US\$ conversion used in this report (for both *ACTwatch* and AMFm indicators) is equivalent to the average interbank rate for the period of data collection. This approach is used to facilitate comparisons over time between other rounds of *ACTwatch* data collection, and between other *ACTwatch* countries. This differs from the AMFm approach, which uses the average 2010 exchange rate over the whole year in which data collection took place. Given these differences, separate tables for price indicators were provided to the Independent Evaluator for AMFm using the 2010 exchange rate. The prices presented in this report are therefore slightly different from those presented in the “Multicounty Baseline Report” produced by the Independent Evaluation Team, which synthesizes results from all pilot AMFm countries.

In addition, another notable difference between the price measures for the AMFm indicators and the *ACTwatch* indicators is the presentation of price for tablets and other formulations. Price measures for *ACTwatch* only include tablet formulations. The price of non-tablet formulations, such as powders for reconstitution, suspensions, suppositories and syrups, are excluded. In contrast to this, the AMFm indicators present information for both tablet and non-tablet formulations.

Outlet survey

Sampling Approach

The target sampling units were all types of outlets that have the potential to sell or provide antimalarials in Nigeria. The outlets were classified into two main categories:

Category 1: public health facilities (University Teaching Hospitals, Federal Medical Centres, General or Specialist Hospitals, Primary Health Care Centres) and pharmacies.

Category 2: other antimalarial drug sellers, including ward-level extensions of the public health system such as Community Health Extension Workers (CHEWs), private, NGO and Mission health clinics, Proprietary Patent Medicine Vendors (PPMVs), general retailers (supermarkets, market stalls, provision stores) and hawkers (itinerant drug vendors).

Sampling procedures were employed to select outlets within each category, as described below.

Sample size determination

The proportion of outlets with any ACT, estimated to be 40%, was the primary outcome measure. A minimum of 290 outlets with antimalarials in stock were needed to provide detectable changes in ACT availability per stratum (urban, rural) and between the public and private sectors. With this number, 19 clusters per stratum provided a representative sample to detect a 20% point increase in availability at 80% power, setting the level of significance at 5% and adjusting for an estimated design effect of 3.

Selection procedure of the sub-districts

The desired cluster size for the outlet survey was approximately 10,000 to 15,000 inhabitants, which corresponded most closely to localities in Nigeria. It is notable that there were a wide range of population sizes, from as few as 500 people per locality to 250,000. Each locality was classified according to one of the six geo-political zones. Facility listings obtained from the Ministry of Health were used as a sampling frame to confirm the location of public sector Category 1 outlets.

The sample was selected using a stratified cluster design, according to the 6 geo-political zones. A total of 114 clusters were selected with probability proportional to population size (19 clusters per zone). For localities with population sizes greater than 50,000, a second stage of selection was conducted and 3 Enumeration Areas (EAs) were randomly selected within the locality. Localities were designated as urban or rural according to their definition in the sampling frame.

For localities that had population sizes smaller than 50,000, a census of all Category 1 and Category 2 outlets was conducted. For localities with population sizes greater than 50,000, a census of all Category 1 and Category 2 outlets was conducted; however, the census of PPMVs, general retailers, CHEWs, and hawkers was restricted to the 3 Enumeration Areas.

All outlets that stocked antimalarials at the time of survey or in the past three months were eligible for interview.

Selection procedure of the booster sample

The sample was supplemented by a booster sample of Category 1 outlets. Oversampling ensured adequate representation of relatively rare but important antimalarial outlet types. The booster sample comprised five additional localities, selected purposively on the basis of having a large population size. All Category 1 outlets in the booster localities that stocked antimalarials at the time of the survey or in the past 3 months were eligible for interview.

Data collection

Preparatory phase

A Memorandum of Understanding was obtained from the Federal Ministry of Health (FMOH) (MH:1156/5.127, dated 17/09/2009), which outlined the purpose of the study and stipulated the FMOH's approval of the outlet survey.

The questionnaire mirrored the *ACTwatch* questionnaire employed in Nigeria in 2008. Three modules were used in the outlet survey: 1) a screening module identified outlets that were eligible for the audit and provider interview; 2) a provider module collected information on outlet demographics (e.g. health qualifications of staff, number of staff that prescribe or dispense medicines), provider knowledge of the first-line treatment, and provider perceptions; and 3) an antimalarial audit module collected data for each antimalarial stocked, including information on brand name, generic name and strengths, package type and size, recall of volumes sold over the week before the survey, recall of last purchase price and selling price.

Paper questionnaires were administered during data collection. The questionnaires were written and administered in English (the official language in Nigeria), and in some cases Pidgin English (a local English variant). Prior to finalisation, the questionnaire was pilot tested to assess the appropriateness of question wording as well as to verify the skip patterns and interviewer instructions.

Given the large number of staff required to conduct data collection, 2 central-level trainings were conducted in the north and south of Nigeria. Supervisor, quality controller and interviewer trainings were conducted in Abuja from September 4th–12th and in Lagos from 24th September until October 1st 2009. All trainings were facilitated by staff from SFH/Nigeria and the *ACTwatch* Central team.

Supervisors and quality controllers were selected in advance of the interviewer training and received a separate, two-day training before the interviewer training. The supervisor and quality controller training agenda focused on sampling procedures, outlet types, timelines, advocacy, monitoring tools and terms of reference for field staff. A field visit was incorporated to discern the differences between particular outlet types which were ambiguous, in particular the differences between pharmacies and PPMVs.

A six-day training program was followed by all interviewers, in addition to the supervisors and quality controllers. Standardised training materials developed by *ACTwatch* were adapted to the national setting, and administered by research staff from SFH/Nigeria and *ACTwatch* Central. Training sessions covered completing the questionnaire, informed consent, conducting the census, and identifying outlet types. Interviewers were trained to identify antimalarial medicines, including the differences between ACTs and non-ACTs, trade names and generics, packaged and loose tablets, and the various formulations. A field practice session was undertaken to mimic actual data collection. From the 2 central trainings, 12 supervisors, 6 quality controllers and 72 interviewers were selected to conduct fieldwork.

Fieldwork

Twelve teams carried out data collection across the six strata, with two teams operating in each region. Each team comprised one supervisor and six interviewers, with one quality controller operating between teams in each region. Two coordinators were responsible for managing the supervisors and ensuring that standardized methodologies were implemented. Fieldwork commenced on the 14th September, 2009 in the North and on the 3rd October in the South; data collection was completed on the 2nd November, 2009.

Upon arrival in a study area, team supervisors first met with local leaders to introduce themselves and seek permission to carry out the study. For small and/or rural localities, team supervisors conferred with local authorities and residents to identify locality boundaries, roads and outlet locations. For large and/or urbanized localities, maps had been procured from the National Population Commission of Nigeria prior to data collection. In these localities, boundaries were confirmed with local authorities and outlet locations marked-up for reference. Team supervisors assigned data collectors to a particular area within the locality based on these maps and boundaries.

During fieldwork, data collectors systematically canvassed the locality, approaching every outlet with the potential to sell antimalarials, according to the outlet type definitions designated for this study. Official lists of public health facilities operating in selected localities were obtained from the Ministry of Health prior to fieldwork, and were then used to help verify outlets within each locality. In addition, supervisors identified key informants (such as health officials and other local government officials) and, through discussion with these key informants, obtained a list of potential medicine outlets in their area. Finally, during data collection a snowball technique was used whereby outlets included in the survey were asked to identify other outlets stocking, or with the potential to stock, medicine in the locality.

For each outlet that was identified during the census, the outlet type and location were noted, along with its longitude and latitude coordinates (obtained via hand-held GPS units). The fieldworker then identified the most senior staff member present at the outlet, and screening questions were administered. For outlets that were eligible, the interviewer read the information sheet to the senior staff person and obtained witnessed oral consent to proceed with the full interview. The questionnaire is included in the appendix.

To identify mobile providers, information regarding their presence in the communities was initially sought during visits to SFH field offices, state or local government medical offices, and/or to medical

detailers. Similarly, data collectors systematically asked about their existence at all public health facilities, rural PPMVs and of community residents. Mobile providers were screened and administered the questionnaire in the same manner as any stationary point of sale. Longitude and latitude coordinates were taken, if possible, from the location the mobile providers considered their “base”. If this was not possible, then the coordinates were taken where the interview was conducted.

Quality Control

During data collection, supervisors and quality controllers performed back-checks on approximately 30% of questionnaires. Key variables were checked for accuracy, including eligibility criteria and the number and price of antimalarials in stock. Providers were also asked if the interviewer had explained the study fully and left an information sheet, and to estimate the length of the interview.

Two reviews of questionnaires were performed on the same day the interview was conducted. The supervisor performed the first review, scrutinizing for verbal consent; completion; filter errors; and consistency between questions. Second reviews were conducted by the quality controller. Queries were followed-up with the interviewer and, as required, a call-back was performed by the interviewer, supervisor, or quality controller.

SFH Nigeria and *ACTwatch* Central staff also provided monitoring and supervision during data collection. Staff travelled from team to team and conducted spot-checks to ensure supervisors and quality controllers were performing their responsibilities adequately. Spot-checks included re-examining audit sheets and questionnaires already reviewed by supervisors and quality controllers, re-visiting randomly selected outlets to verify questionnaires, and informal meetings with interviewers to get feedback on the supervisors.

Supervisors and quality controllers followed data safeguarding procedures during data collection including: collecting questionnaires from interviewers at the end of each day; storing questionnaires in envelopes labelled with the total number, locality name, and supervisor name; and sending questionnaires to the SFH head office in Abuja whenever an opportunity to do so arose, for example, relinquishing questionnaires to SFH staff who were in the field for monitoring trips.

Data processing

Double data entry was performed using Microsoft Access by experienced data entry clerks hired from the SFH Nigeria pool of consultants. A trained SFH Nigeria research staff member was responsible for validating the double data entry. After the first round of data entry, errors were flagged and corrected with reference to the hard-copy questionnaires. This process continued until the two data entry files were identical. A final Access database file was sent to *ACTwatch* Central. Staff reviewed these data, and any entries requiring clarification were documented and raised with SFH Nigeria. SFH Nigeria staff responded to these requests by making reference to the hard-copy questionnaires. In addition to the hard-copy questionnaires, the electronic data entry files are backed up at SFH Nigeria. Additional electronic copies are kept at *ACTwatch* Central.

Accounting for the survey design in data analysis

We accounted for three aspects of the sampling design during the analysis:

Sampling weights: Sample weights were calculated for the outlet survey data to allow for 1) differences in sampling probabilities due to variation in the size of strata; 2) the oversampling of the booster sample; and 3) the sampling strategy which involved a census of outlets in localities of varying size selected with probability proportional to size (PPS). Weights were based on sampling probabilities and were calculated by the IE after data cleaning was complete. Refer to the Appendix for a detailed description of the calculations performed and weights used.

Clustering: The sample was clustered at the level of the locality for all outlets. PPMVs, general retailers, CHEWs and hawkers in populous localities were clustered a lower level within the locality, that of the 3 enumeration areas. The calculation of standard errors took this clustering into account because outlets in a given cluster are likely to be more similar to each other than to outlets in other clusters. The standard errors did not take into account clustering of products within outlets because a complete list of all relevant products in each outlet was obtained and no sampling was performed. **Stratification:** Localities were sampled separately in each stratum and this was also adjusted for in the calculation of the standard error terms during analysis.

To account for these design features in the tabulations, we used the Stata svy commands for analyzing complex survey data to weight the data and calculate confidence intervals which account for clustering and stratification. We declared the primary sampling unit (locality), the weight variable (wt), the strata and the finite population correction (fpc) in the svy command. The fpc equalled the sampling fraction for each stratum (the number of sampled localities in a stratum divided by the total number of localities in the stratum, or 0.5 if the sampling fraction was greater than 50 percent)⁴. This was specified as:

```
svyset district [pweight=wt], strata(strata) fpc(fpc)
```

We calculated a proportion and its 95 percent confidence interval (CI) as:

```
svy: proportion VariableName
```

Data Analysis

Calculation of antimalarial volumes, prices and markups

Antimalarial volume and price data are reported in terms of adult equivalent treatment doses (AETDs). An AETD is defined as the number of milligrams (mg) of an antimalarial drug needed to treat a 60kg adult (refer to the Appendix for details). The number of mg/kg used to calculate one AETD was defined as what was recommended for a particular drug in the treatment guidelines for

⁴ For simplicity we used the locality as the primary sampling unit for all outlets. No localities were chosen more than once during sample selection and thus any group of 3 second-stage EAs are from a unique locality. We defined the fpc on the basis of the number of localities in the stratum to present a true picture of the proportion of clusters selected.

uncomplicated malaria in areas of low drug resistance issued by WHO (as of 5 April 2011). Where WHO treatment guidelines did not exist, AETDs were based on the product manufacturer's treatment guidelines. In the case of ACTs, which have two or more active antimalarial ingredients packaged together (either co-formulated or co-blistered), the strength of the artemisinin-based component was used as the basis for the AETD calculations. Information collected on the medicine strength and unit size, as listed on the product packaging, was then used to calculate the number of AETDs contained in each unit.

Market share was calculated by dividing the number of AETDs of a particular antimalarial category sold by the total number of AETDs of all antimalarials sold. In cases where outlets stocked antimalarials but some or all sales volumes were missing we did not impute for missing values.

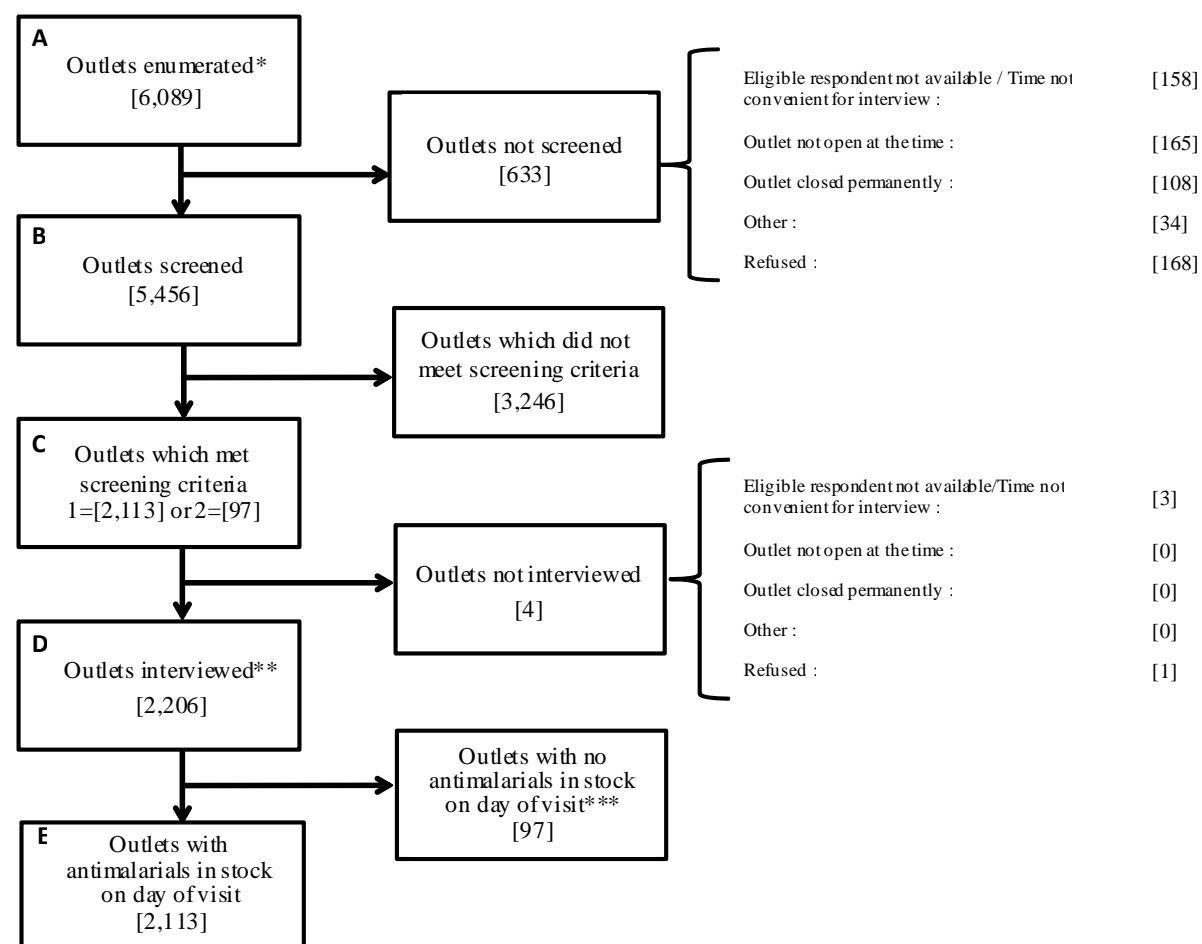
Price data were collected in local currencies and converted to their US\$ equivalent using the average interbank rate for the period of data collection (US\$ = 152.25 Naira, source: www.oanda.com). This differs from the IE approach, which uses the average 2010 exchange rate for the baseline surveys (thus inflating prices for Nigeria, given data were collected in 2009, but ensuring that results are comparable with other AMFm baseline pilot country price results). Given these differences, separate tables for price indicators were provided to the Independent Evaluator using the 2010 exchange rate. Price data are reported using median and inter-quartile range, which are appropriate for describing distributions likely to be skewed.

Retail percentage mark-ups were calculated for each product as the difference between selling price and purchase price, divided by purchase price. In cases where an outlet received an antimalarial for free from its supplier and distributed the product for free, the retail mark-up was set to 0%. In cases where an outlet received an antimalarial for free from its supplier, but did not distribute the product for free, the retail mark-up was set to missing. The tables that present mark-up data indicate the number of observations set to missing for this reason.

3. Results - Outlet survey

Characteristics of the sample

Figure 15: Survey flow diagram, in Nigeria, 2009



1: Antimalarials in stock on day of visit;

2: No antimalarials in stock on day of visit, but antimalarials in stock in previous 3 months

* Enumerated means were visited and filled in at a minimum basic descriptive information (questions C1-C9 of questionnaire)

**Interviewed means that final interview status was 'Completed' or 'Partially Completed'

***but had stock in previous 3 months

Table 3.1.1: Outlets enumerated by location, drugs stocked and final interview status			
Final interview status	Urban n	Rural n	Total n
Number of outlets enumerated (Figure 15 Reference A)	4654	1435	6089
Number of outlet stocking drugs at the time of the survey visit	--	--	--
Number of outlets meeting the screening criteria* (Figure 15 Reference C)	1816	394	2210
Number of outlets stocking antimalarials at the time of the survey visit (Figure 15 Reference E)	1746	367	2113
Number of outlets without antimalarials in stock at the time of the survey visit, but who had antimalarials in stock at some time in the 3 months previous to the survey	69	28	97
Final interview status			
Outlet Not Screened	492	141	633
Eligible respondent not available	129	29	158
Outlet not open at the time	105	60	165
Outlet closed permanently	88	20	108
Refused	145	23	168
Other	24	10	34
Outlet did not meet screening criteria	2348	898	3246
Outlet met screening criteria, but not interviewed (total)	3	1	4
Interview interrupted	0	0	0
Eligible respondent not available	2	1	3
Outlet not open at the time	0	0	0
Refused	1	0	1
Other	0	0	0
Completed interview	1740	380	2120
Partially completed interview	73	13	86
Interview interrupted	73	13	86
Eligible respondent not available	0	0	0
Outlet not open at the time	0	0	0
Refused	0	0	0
Other	0	0	0
Response rate (%)	%	%	%
Proportion of outlets enumerated that were screened	89.4	90.1	89.6
Proportion of outlets meeting screening criteria that were interviewed**	99.8	99.7	99.8
* The number of outlets meeting the screening criteria is defined as the sum of the number of outlets stocking antimalarials at the time of the survey and the number of outlets without antimalarials in stock at the time of the survey, but who had antimalarials in stock at some time in the 3 months previous to the survey.			
** Response rate was calculated as outlets where final interview status was "Completed interview" or "Partially completed" as a percentage of all outlets meeting the screening criteria (i.e. Figure 15 reference D divided by C).			



ACTwatch Indicators

Table A.1: Availability of antimalarials, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
	% (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 that had:	N=255	N=19	N=11	N=285	N=405	N=409	N=1,031	N=3,305	N=21	N=5,171	N=5,456
Antimalarials in stock at the time of survey visit	91.8 (80.2, 96.9)	80.0 (54.6, 93.0)	98.6 (89.6, 99.8)	89.2 (79.0, 94.8)	91.4 (72.2, 97.8)	99.5 (98.0, 99.9)	95.6 (93.4, 97.0)	3.3 (2.0, 5.3)	70.2 (33.9, 91.6)	25.6 (22.4, 29.2)	26.6 (23.3, 30.1)
Any ACT	55.9 (34.1, 75.5)	45.5 (17.0, 77.3)	99.1 (93.2, 99.9)	54.1 (36.0, 71.2)	31.1 (24.3, 38.7)	97.0 (90.0, 99.1)	36.9 (28.0, 46.7)	0.7 (0.3, 2.2)	0.0 --	9.5 (7.2, 12.4)	10.1 (7.9, 12.9)
Quality Assured ACT (QAACT)	42.5 (23.9, 63.5)	45.5 (17.0, 77.3)	97.8 (85.6, 99.7)	43.9 (28.1, 61.1)	26.1 (17.6, 36.9)	30.8 (9.1, 66.4)	26.7 (21.1, 33.1)	0.5 (0.2, 1.5)	0.0 --	6.7 (5.1, 8.9)	7.3 (5.6, 9.4)
First-line (FAACT)	42.5 (23.9, 63.5)	45.5 (17.0, 77.3)	97.8 (85.6, 99.7)	43.9 (28.1, 61.1)	26.1 (17.6, 36.9)	30.7 (9.1, 66.2)	25.7 (20.2, 32.2)	0.5 (0.2, 1.5)	0.0 --	6.5 (4.9, 8.7)	7.1 (5.4, 9.2)
Non first-line (NAACT)	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --	0.3 (<0.1, 2.5)	1.0 (0.3, 3.1)	0.0 --	0.0 --	0.2 (0.1, 0.7)	0.2 (0.1, 0.7)
Non-quality Assured ACT	16.3 (7.0, 33.4)	1.0 (0.1, 7.2)	83.6 (34.0, 98.1)	13.7 (6.3, 27.6)	27.0 (19.4, 36.3)	96.1 (88.2, 98.8)	21.8 (13.1, 34.0)	0.6 (0.2, 1.6)	0.0 --	5.9 (3.9, 8.8)	6.0 (4.0, 8.9)
Other ACT Classifications											
Nationally registered ACT	51.7 (29.6, 73.2)	45.5 (17.0, 77.3)	99.1 (93.2, 99.9)	51.0 (32.7, 69.0)	30.0 (23.0, 38.0)	95.2 (85.1, 98.6)	34.2 (25.8, 43.8)	0.7 (0.2, 2.0)	0.0 --	8.8 (6.6, 11.7)	9.4 (7.3, 12.2)
Any non-artemisinin therapy	80.6 (62.2, 91.3)	45.1 (16.9, 76.9)	98.6 (89.2, 99.8)	72.9 (55.0, 85.5)	70.9 (62.0, 78.4)	97.6 (90.5, 99.4)	94.6 (92.3, 96.3)	3.2 (2.0, 5.2)	70.2 (33.9, 91.6)	25.2 (22.1, 28.6)	25.9 (22.9, 29.3)
Chloroquine	63.0 (45.6, 77.6)	9.7 (2.1, 34.8)	98.6 (88.8, 99.8)	51.5 (36.7, 66.0)	67.5 (60.3, 73.9)	42.5 (11.1, 81.5)	91.4 (88.9, 93.5)	2.8 (1.7, 4.6)	18.3 (6.8, 40.9)	23.7 (20.7, 27.0)	24.1 (21.1, 27.4)
Sulfadoxine-pyrimethamine (SP)	63.5 (45.7, 78.1)	28.3 (7.8, 64.7)	97.1 (82.6, 99.6)	56.0 (39.0, 71.7)	35.3 (29.7, 41.3)	93.9 (79.8, 98.3)	76.1 (67.4, 83.0)	2.6 (1.5, 4.2)	55.2 (36.1, 72.9)	20.1 (18.1, 22.3)	20.7 (18.7, 22.8)
Second-line treatment (Quinine)	17.2 (7.8, 33.7)	16.7 (2.6, 60.1)	79.3 (29.0, 97.3)	17.9 (8.4, 34.1)	7.0 (1.8, 23.1)	16.4 (5.2, 41.2)	9.7 (5.5, 16.6)	0.1 (<0.1, 0.4)	0.0 --	2.4 (1.4, 4.0)	2.6 (1.6, 4.2)
Any artemisinin monotherapy	26.2 (9.0, 55.9)	1.3 (0.3, 6.5)	80.6 (30.2, 97.6)	21.3 (7.7, 46.7)	51.0 (33.2, 68.5)	96.8 (90.6, 99.0)	45.4 (35.2, 56.0)	1.0 (0.5, 2.1)	11.6 (1.9, 47.2)	11.8 (9.5, 14.6)	12.0 (9.7, 14.7)
Oral artemisinin monotherapy	4.3 (1.7, 10.4)	1.3 (0.3, 6.5)	2.6 (0.3, 17.1)	3.6 (1.6, 8.1)	48.1 (28.5, 68.3)	96.7 (90.3, 98.9)	44.7 (34.7, 55.1)	1.0 (0.5, 2.1)	11.6 (1.9, 47.2)	11.6 (9.4, 14.3)	11.5 (9.3, 14.1)
Non oral artemisinin monotherapy	22.6 (6.5, 55.1)	0.0 --	80.6 (30.2, 97.6)	18.3 (5.6, 46.0)	6.4 (1.9, 19.5)	12.7 (4.2, 32.7)	5.7 (1.7, 17.3)	0.0 --	0.0 --	1.4 (0.4, 4.3)	1.6 (0.6, 4.3)

Source: ACTwatch 2009 Nigeria Outlet Survey

Table A.2: Availability of antimalarials among outlets stocking at least one antimalarial, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
	% (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 that had:	N=255	N=19	N=11	N=285	N=405	N=409	N=1,031	N=3,305	N=21	N=5,171	N=5,456
Antimalarials in stock at the time of survey visit	91.8 (80.2, 96.9)	80.0 (54.6, 93.0)	98.6 (89.6, 99.8)	89.2 (79.0, 94.8)	91.4 (72.2, 97.8)	99.5 (98.0, 99.9)	95.6 (93.4, 97.0)	3.3 (2.0, 5.3)	70.2 (33.9, 91.6)	25.6 (22.4, 29.2)	26.6 (23.3, 30.1)
Among outlets with an antimalarial in stock, proportion of outlets that had:	N=228	N=12	N=9	N=249	N=358	N=403	N=990	N=103	N=10	N=1,864	N=2,113
Any ACT	60.8 (38.2, 79.6)	56.9 (19.8, 87.6)	99.4 (93.3, 99.9)	60.6 (41.1, 77.3)	33.9 (27.1, 41.5)	97.4 (90.8, 99.3)	38.6 (29.0, 49.0)	24.7 (10.5, 47.8)	0.0 --	37.3 (28.5, 47.0)	38.5 (30.1, 47.6)
Quality Assured ACT (QAACT)	46.3 (26.6, 67.3)	56.9 (19.8, 87.6)	98.1 (85.8, 99.8)	49.2 (31.9, 66.7)	28.5 (20.7, 37.7)	30.9 (9.1, 66.7)	27.9 (21.9, 34.8)	17.2 (7.7, 33.9)	0.0 --	26.6 (21.0, 33.0)	27.7 (22.4, 33.9)
First-line (FAACT)	46.3 (26.6, 67.3)	56.9 (19.8, 87.6)	98.1 (85.8, 99.8)	49.2 (31.9, 66.7)	28.5 (20.7, 37.7)	30.8 (9.1, 66.6)	26.9 (20.9, 33.8)	17.2 (7.7, 33.9)	0.0 --	25.8 (20.3, 32.2)	26.9 (21.6, 33.0)
Non first-line (NAACT)	0.0 --	0.0 --	0.0 --	0.0 --	0.0 --	0.3 (<0.1, 2.5)	1.0 (0.3, 3.2)	0.0 --	0.0 --	0.9 (0.3, 2.8)	0.8 (0.2, 2.7)
Non-quality Assured ACT	17.7 (7.7, 35.8)	1.3 (0.2, 9.4)	83.9 (34.0, 98.1)	15.4 (7.0, 30.5)	29.5 (22.8, 37.2)	96.6 (89.1, 99.0)	22.8 (13.6, 35.7)	20.4 (9.6, 38.1)	0.0 --	23.2 (14.5, 35.0)	22.8 (14.5, 34.0)
Other ACT Classifications											
Nationally registered ACT	56.3 (33.1, 77.1)	56.9 (19.8, 87.6)	99.4 (93.3, 99.9)	57.1 (37.3, 74.8)	32.8 (26.1, 40.2)	95.6 (85.9, 98.7)	35.8 (26.7, 46.0)	23.4 (10.4, 44.6)	0.0 --	34.7 (26.4, 44.1)	35.9 (27.9, 44.6)
Any non-artemisinin therapy	87.8 (69.2, 95.9)	56.4 (18.6, 88.0)	98.9 (89.0, 99.9)	81.7 (62.5, 92.3)	77.4 (61.9, 87.9)	98.0 (90.9, 99.6)	98.9 (97.3, 99.6)	97.0 (91.1, 99.0)	100.0 --	98.2 (96.5, 99.1)	97.3 (95.6, 98.4)
Chloroquine	68.6 (50.5, 82.4)	12.1 (2.6, 41.5)	98.9 (88.5, 99.9)	57.7 (41.9, 72.1)	73.7 (63.6, 81.8)	42.7 (11.0, 81.8)	95.6 (93.9, 96.9)	87.7 (79.9, 92.8)	26.1 (13.5, 44.6)	92.9 (90.5, 94.7)	91.1 (88.5, 93.1)
Sulfadoxine-pyrimethamine (SP)	69.1 (50.8, 82.9)	35.4 (9.0, 75.2)	97.4 (82.9, 99.7)	62.7 (44.2, 78.2)	38.5 (31.0, 46.6)	94.3 (80.3, 98.5)	79.5 (70.4, 86.4)	76.7 (61.9, 87.0)	78.6 (56.9, 91.1)	78.3 (69.8, 84.9)	77.5 (69.5, 83.9)
Second-line treatment (Quinine)	18.7 (8.6, 36.1)	20.8 (3.1, 68.3)	79.5 (29.0, 97.4)	20.0 (9.4, 37.6)	7.6 (1.9, 26.6)	16.5 (5.2, 41.4)	10.2 (5.8, 17.3)	3.4 (1.1, 10.2)	0.0 --	9.4 (5.5, 15.8)	10.0 (6.0, 16.0)

Continued on following page

Table A.1: Availability of antimalarials, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Among outlets with an antimalarial in stock, proportion of outlets that had:	N=228	N=12	N=9	N=249	N=358	N=403	N=990	N=103	N=10	N=1,864	N=2,113
Any artemisinin monotherapy	28.5 (9.9, 59.2)	1.7 (0.3, 8.5)	80.8 (30.3, 97.6)	23.9 (8.7, 50.9)	55.7 (40.3, 70.0)	97.2 (91.7, 99.1)	47.5 (36.5, 58.7)	34.2 (18.7, 54.1)	16.5 (1.8, 68.3)	46.6 (36.2, 57.4)	45.5 (35.5, 55.8)
Oral artemisinin monotherapy	4.7 (1.9, 11.4)	1.7 (0.3, 8.5)	2.6 (0.3, 17.1)	4.1 (1.8, 9.2)	52.6 (34.8, 69.7)	97.1 (91.4, 99.1)	46.7 (36.1, 57.7)	34.2 (18.7, 54.1)	16.5 (1.8, 68.3)	45.9 (35.7, 56.4)	43.8 (34.0, 54.1)
Non oral artemisinin monotherapy	24.7 (7.1, 58.2)	0.0 --	80.8 (30.3, 97.6)	20.5 (6.3, 50.0)	7.0 (1.9, 22.7)	12.7 (4.2, 32.9)	6.0 (1.8, 18.2)	0.0 --	0.0 --	5.5 (1.7, 15.9)	6.2 (2.4, 15.4)

Source: ACTwatch 2009 Nigeria Outlet Survey

Table A.3: Disruption in stock, expiry and storage conditions of antimalarials, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
	N=244	N=15	N=10	N=269	N=381	N=405	N=1,013	N=127	N=11	N=1,937	N=2,206
No disruption in stock of any antimalarial in the past three months ⁵	28.9 (16.2, 46.0)	10.2 (2.1, 37.6)	1.1 (0.1, 11.5)	24.5 (14.8, 37.8)	49.6 (30.2, 69.1)	16.8 (4.7, 45.1)	26.5 (21.9, 31.8)	32.1 (19.9, 47.4)	36.9 (18.1, 60.8)	27.7 (23.8, 32.0)	27.5 (23.8, 31.7)
	N=134	N=8	N=6	N=148	N=148	N=316	N=362	N=20	N=1	N=847	N=995
No disruption in stock of first-line quality assured ACT (FAACT) in the past three months	44.1 (26.8, 63.0)	29.0 (4.1, 79.8)	82.4 (30.8, 98.0)	42.1 (25.9, 60.2)	82.4 (49.1, 95.8)	72.3 (60.9, 81.4)	62.0 (53.8, 69.6)	49.8 (28.7, 71.0)	0.0 --	62.0 (54.6, 68.9)	59.9 (52.8, 66.6)
	N=228	N=12	N=9	N=249	N=358	N=403	N=990	N=103	N=10	N=1,864	N=2,113
Expired stock of any antimalarial ⁶	10.5 (2.3, 36.7)	1.4 (0.2, 10.4)	0.0 --	8.4 (1.8, 31.2)	0.9 (0.3, 3.0)	3.3 (1.0, 9.8)	2.4 (1.5, 3.9)	0.0 --	0.0 --	2.2 (1.3, 3.5)	2.5 (1.5, 4.0)
	N=60	N=7	N=6	N=73	N=96	N=292	N=303	N=18	N=0	N=709	N=782
Expired stock of first-line quality assured ACT (FAACT) ⁷	0.1 (<0.1, 0.7)	0.0 --	0.0 --	0.1 (<0.1, 0.5)	0.5 (<0.1, 4.4)	1.4 (0.7, 2.9)	0.0 --	0.0 --	--	<0.1 (<0.1, 0.1)	<0.1 (<0.1, 0.1)
	N=244	N=15	N=10	N=269	N=381	N=405	N=1,013	N=127	N=11	N=1,937	N=2,206
Acceptable storage conditions for medicines ⁸	89.6 (62.4, 97.8)	100 --	100 --	91.4 (66.5, 98.3)	98.6 (90.0, 99.8)	98.8 (95.6, 99.7)	95.5 (93.5, 96.9)	90.5 (67.7, 97.8)	5.4 (0.6, 34.0)	94.2 (91.6, 96.0)	94.1 (91.5, 95.9)

Source: ACTwatch 2009 Nigeria Outlet Survey

⁵ Information on stock disruption is missing for 4% of cases [n=2,123].

⁶ Indicators of expired stock are based upon the expiry information from one sample of each drug audited in an outlet; a full examination of all packages in stock was not conducted. Information on expired stock is missing for 13% of cases [n=1,844], including 8% of private for-profit health facilities; 15% of pharmacies; and 13% of drug stores.

⁷ Information on expired stock of FAACT is missing for 3% of cases [n=762].

⁸ An outlet is considered to have acceptable storage conditions for medicines if it is in compliance with all the following three standards: (1) medicines are stored in a dry area; (2) medicines are protected from direct sunlight; and (3) medicines are not kept on the floor. Information on acceptable storage condition was missing for 9% of cases [n=2,000], including 16% of public health facilities; 20% of private for-profit health facilities; and 22% of general retailers.

Table A.4: Price of antimalarials, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
Proportion of outlets that:	%	%	%	%	%	%	%	%	%	%	%
Proportion of first-line quality assured ACT (FAACT) distributed free of cost, by volume	99.2	0.8	1.2	57.4	2.2	0.1	3.7	0.0	--	3.6	10.1
Median price of a tablet AETD ⁹ :	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)	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	\$0.00 [0.00-2.89] ⁽²²⁹⁾	\$0.79 [0.00-1.31] ⁽¹⁰⁾	\$0.79 [0.79-4.60] ⁽¹⁰⁾	\$0.79 [0.00-2.63] ⁽²⁴⁹⁾	\$3.28 [1.31-5.58] ⁽²⁰⁸⁾	\$4.20 [3.28-5.58] ^(2,938)	\$3.94 [2.63-4.93] ⁽⁷⁹⁸⁾	\$4.60 [3.28-5.91] ⁽⁵²⁾	— ⁽⁰⁾	\$3.94 [2.63-5.17] ^(3,996)	\$3.94 [2.30-4.93] ^(4,245)
Quality Assured ACT (QAACT)	\$0.00 [0.00-2.30] ⁽⁷⁹⁾	\$0.79 [0.00-1.31] ⁽⁸⁾	\$0.79 [0.00-0.79] ⁽⁶⁾	\$0.79 [0.00-2.30] ⁽⁹³⁾	\$1.31 [1.31-1.58] ⁽⁷⁴⁾	\$6.57 [4.27-7.23] ⁽⁵¹⁹⁾	\$3.94 [1.97-5.25] ⁽³⁸⁸⁾	\$5.25 [2.63-6.57] ⁽²⁰⁾	— ⁽⁰⁾	\$3.94 [2.10-5.58] ^(1,001)	\$3.28 [1.84-5.25] ^(1,094)
First-line (FAACT) AL	\$0.00 [0.00-00] ⁽⁵⁰⁾	\$0.00 [0.00-00] ⁽³⁾	\$0.00 [n/a] ⁽²⁾	\$0.00 [0.00-00] ⁽⁵⁵⁾	\$7.88 [4.73-13.14] ⁽²⁷⁾	\$6.57 [5.91-6.90] ⁽²⁶⁷⁾	\$6.04 [4.60-6.57] ⁽⁷²⁾	\$6.24 [5.91-6.24] ⁽⁶⁾	— ⁽⁰⁾	\$6.24 [4.93-6.57] ⁽³⁷²⁾	\$5.91 [1.64-6.57] ⁽⁴²⁷⁾
First-line (FAACT) ASAQ	\$2.30 [1.64-2.89] ⁽²⁹⁾	\$1.31 [0.79-1.31] ⁽⁵⁾	\$0.79 [0.79-0.79] ⁽⁴⁾	\$1.64 [1.31-2.89] ⁽³⁸⁾	\$1.31 [0.79-1.31] ⁽⁴⁷⁾	\$4.60 [2.96-7.23] ⁽²⁴⁹⁾	\$3.15 [1.84-3.94] ⁽³¹²⁾	\$3.94 [2.63-6.57] ⁽¹⁴⁾	— ⁽⁰⁾	\$3.15 [1.84-3.94] ⁽⁶²²⁾	\$3.15 [1.84-3.94] ⁽⁶⁶⁰⁾
Non first-line (NAACT)	— ⁽⁰⁾	— ⁽⁰⁾	— ⁽⁰⁾	— ⁽⁰⁾	— ⁽⁰⁾	\$4.31 [3.69-4.31] ⁽³⁾	\$5.75 [3.08-12.32] ⁽⁴⁾	— ⁽⁰⁾	— ⁽⁰⁾	\$4.93 [3.08-12.32] ⁽⁷⁾	\$4.93 [3.08-12.32] ⁽⁷⁾
Non-quality Assured ACT	\$2.96 [0.00-4.01] ⁽¹⁵⁰⁾	\$0.00 [n/a] ⁽²⁾	\$4.60 [4.60-4.60] ⁽⁴⁾	\$3.61 [0.00-4.01] ⁽¹⁵⁶⁾	\$4.42 [3.28-5.58] ⁽¹³⁴⁾	\$3.94 [3.28-5.25] ^(2,419)	\$3.69 [2.96-4.80] ⁽⁴¹⁰⁾	\$4.60 [3.28-5.25] ⁽³²⁾	— ⁽⁰⁾	\$3.94 [2.96-4.93] ^(2,995)	\$3.94 [2.96-4.93] ^(3,151)
Other ACT Classifications											
Nationally registered ACT	\$1.64 [0.00-2.89] ⁽¹³⁷⁾	\$0.79 [0.00-1.31] ⁽¹⁰⁾	\$0.79 [0.79-4.60] ⁽⁹⁾	\$0.79 [0.00-2.89] ⁽¹⁵⁶⁾	\$2.63 [1.31-5.58] ⁽¹⁵⁹⁾	\$4.60 [3.28-5.91] ^(2,062)	\$3.94 [2.50-4.93] ⁽⁶⁶⁹⁾	\$4.93 [3.94-5.91] ⁽⁴²⁾	— ⁽⁰⁾	\$3.94 [2.63-5.25] ^(2,932)	\$3.94 [2.30-4.93] ^(3,088)

Continued on following page

⁹ A total of 20,841 antimalarials were found in 2,113 outlets (excluding products used solely for prophylaxis). Of these, 11,869 antimalarials are included in the pricing analysis. Free antimalarials were found in 8.1% of outlets in the sample with antimalarials, and 465 of the total 19,135 antimalarials for which price information was recorded were available for free.

Table A.4: Price of antimalarials, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
Any non-artemisinin therapy	\$0.32 [0.00-0.53] ⁽³⁰⁰⁾	\$0.66 [0.00-0.66] ⁽¹²⁾	\$0.59 [0.38-4.14] ⁽¹⁶⁾	\$0.39 [0.00-0.66] ⁽³²⁸⁾	\$0.46 [0.33-0.66] ⁽²⁵⁸⁾	\$0.99 [0.46-1.48] ^(2,217)	\$0.53 [0.39-0.99] ^(3,070)	\$0.53 [0.39-0.99] ⁽²³⁹⁾	\$0.33 [0.33-0.46] ⁽¹⁷⁾	\$0.53 [0.39-0.99] ^(5,801)	\$0.53 [0.39-0.99] ^(6,129)
Chloroquine	\$0.16 [0.06-0.16] ⁽⁶⁴⁾	\$5.25 [5.25-5.25] ⁽⁵⁾	\$0.38 [0.38-0.38] ⁽⁵⁾	\$0.16 [0.06-0.32] ⁽⁷⁴⁾	\$0.26 [0.13-0.32] ⁽⁴³⁾	\$0.53 [0.39-0.66] ⁽³⁹¹⁾	\$0.38 [0.16-0.66] ⁽⁶⁸⁴⁾	\$0.39 [0.32-0.66] ⁽³⁷⁾	\$0.25 [0.25-0.25] ⁽⁴⁾	\$0.38 [0.19-0.66] ^(1,159)	\$0.38 [0.16-0.66] ^(1,233)
Sulfadoxine-pyrimethamine (SP) ¹⁰	\$0.39 [0.00-0.53] ⁽²¹¹⁾	\$0.00 [0.00-0.66] ⁽⁷⁾	\$0.59 [0.59-0.59] ⁽⁹⁾	\$0.39 [0.00-0.66] ⁽²²⁷⁾	\$0.46 [0.46-0.66] ⁽¹⁷¹⁾	\$0.99 [0.46-1.48] ^(1,446)	\$0.53 [0.39-0.99] ^(2,233)	\$0.53 [0.39-0.99] ⁽¹⁹⁸⁾	\$0.33 [0.33-0.46] ⁽¹³⁾	\$0.53 [0.39-0.99] ^(4,061)	\$0.53 [0.39-0.99] ^(4,288)
Second-line treatment (Quinine)	\$2.76 [0.00-4.14] ⁽¹⁵⁾	— ⁽⁰⁾	\$4.14 [n/a] ⁽¹⁾	\$4.14 [4.14-4.14] ⁽¹⁶⁾	\$6.90 [5.52-7.45] ⁽²⁰⁾	\$6.90 [5.52-7.88] ⁽⁷²⁾	\$5.52 [5.52-6.90] ⁽³⁷⁾	— ⁽⁰⁾	— ⁽⁰⁾	\$5.52 [5.52-6.90] ⁽¹²⁹⁾	\$5.52 [5.52-6.90] ⁽¹⁴⁵⁾
Artemisinin monotherapy											
Oral artemisinin monotherapy	\$2.31 [2.31-2.63] ⁽⁵²⁾	\$1.58 [n/a] ⁽²⁾	\$6.31 [4.60-10.51] ⁽³⁾	\$2.31 [2.31-2.63] ⁽⁵⁷⁾	\$3.15 [2.10-4.20] ⁽⁸⁴⁾	\$2.84 [2.63-3.28] ⁽⁷⁶⁰⁾	\$3.15 [2.63-3.68] ⁽⁵⁵⁵⁾	\$3.15 [2.96-3.68] ⁽³⁸⁾	\$3.15 [n/a] ⁽¹⁾	\$3.15 [2.63-3.68] ^(1,438)	\$3.15 [2.63-3.68] ^(1,495)

Source: ACTwatch 2009 Nigeria Outlet Survey

¹⁰ Sulfadoxine-pyrimethamine (SP) was the most popular non-ACT in Nigeria, by volumes sold/distributed in the past week.

Table A.5: Affordability of antimalarials, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
Median price of a tablet AETD relative to sulfadoxine-pyrimethamine (SP), the 'most popular' antimalarial treatment in Nigeria:	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Any ACT	n/a	n/a	1.3	2.0	7.1	4.3	7.6	8.8	--	7.6	7.6
First-line (FAACT) AL	n/a	***	n/a	n/a	17.1	6.7	11.6	12.0	--	12.0	11.4
Median price of a tablet AETD relative to the minimum legal daily wage (\$1.98)¹¹:	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Any ACT	n/a	0.4	0.4	0.4	1.7	2.1	2.0	2.3	--	2.0	2.0
First-line (FAACT) AL	n/a	n/a	n/a	n/a	4.0	3.3	3.1	3.2	--	3.2	3.0
	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Median price of an AETD of FAACT AL relative to the international reference price for AL (\$1.45) ¹²	n/a	n/a	n/a	n/a	5.4	4.5	4.2	4.3	--	4.3	4.1
	--	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
	--	N=15	N=10	N=25	N=381	N=405	N=1,013	N=127	N=11	N=1,937	N=1,962
Proportion of outlets that offer credit to consumers for antimalarials ¹³	--	64.6 (20.9, 92.7)	5.4 (0.7, 31.3)	60.8 (21.3, 89.9)	46.0 (31.1, 61.7)	19.1 (6.0, 46.5)	60.8 (52.8, 68.2)	46.9 (30.5, 63.9)	24.7 (12.2, 43.7)	58.1 (50.9, 64.9)	58.1 (51.0, 64.9)
Source: ACTwatch 2009 Nigeria Outlet Survey											

¹¹ Minimum daily wage information taken from United States Department of State, 2010. *Country Reports on Human Rights Practices*. Available at: <http://www.state.gov/g/drl/rls/hrrpt/2010/index.htm>

¹² International reference price taken from Management Sciences for Health, 2009. *International drug price indicator guide*. Available at: <http://www.erc.msh.org/pricguide>. \$1.45 is the median listed supplier price for 24 tablets of AL 20mg/120mg.

¹³ This question was not asked in public health facilities. Information on proportion of outlets that offer credit to consumers for antimalarials was missing for 7% of cases [n=1,828].

Table A.6: Availability of diagnostic tests & cost to patients, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
	% (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 that had:	N=244	N=15	N=10	N=269	N=381	N=405	N=1,013	N=127	N=11	N=1,937	N=2,206
Any diagnostic test ¹⁴	27.5 (9.8, 57.0)	0.0 --	86.1 (33.9, 98.7)	22.4 (8.2, 48.4)	37.0 (30.1, 44.4)	2.3 (0.6, 8.0)	1.0 (0.4, 2.5)	2.8 (0.4, 17.4)	0.0 --	2.2 (1.1, 4.5)	3.3 (1.8, 6.0)
Microscopic blood tests	27.5 (9.7, 57.0)	0.0 --	86.1 (33.9, 98.7)	22.4 (8.2, 48.4)	36.1 (29.7, 43.0)	0.7 (0.2, 2.4)	0.6 (0.2, 1.8)	0.0 --	0.0 --	1.5 (0.7, 3.2)	2.6 (1.3, 5.0)
Rapid diagnostic tests	8.7 (1.8, 33.3)	0.0 --	1.3 (0.1, 12.9)	6.8 (1.3, 27.9)	11.1 (2.7, 36.0)	1.9 (0.5, 6.9)	0.5 (0.1, 1.9)	2.8 (0.4, 17.4)	0.0 --	1.0 (0.3, 2.9)	1.3 (0.5, 3.2)
Proportion of outlets that provided diagnostic tests for free, among outlets providing diagnostic tests¹⁵	N=67	N=0	N=6	N=73	N=212	N=23	N=6	N=1	N=0	N=242	N=315
Any diagnostic test	1.1 (0.2, 5.2)	--	0.0 --	1.0 (0.2, 4.7)	0.3 (<0.1, 1.3)	9.7 (1.2, 49.1)	1.0 (0.1, 9.6)	--	--	0.7 (0.2, 2.7)	0.8 (0.3, 2.2)
	N=66	N=0	N=6	N=72	N=198	N=10	N=4	N=0	N=0	N=212	N=284
Microscopic blood tests	0.8 (0.2, 4.7)	--	0.0 --	0.8 (0.2, 4.3)	0.0 --	25.8 (3.7, 76.1)	0.0 --	--	--	0.1 (<0.1, 1.2)	0.5 (0.1, 1.7)
	N=15	N=0	N=1	N=16	N=80	N=16	N=3	N=1	N=0	N=100	N=116
Rapid diagnostic tests	3.0 (0.3, 21.7)	--	--	3.0 (0.3, 21.8)	1.0 (0.2, 4.6)	0.0 --	2.0 (0.1, 24.1)	--	--	1.5 (0.3, 7.1)	2.1 (0.6, 6.9)
Median price of:	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)
Microscopic blood tests	\$1.64 [0.33-1.97] ⁽⁴²⁾	-- ⁽⁰⁾	\$0.66 [0.66-0.66] ⁽⁴⁾	\$1.64 [0.33-1.97] ⁽⁴⁶⁾	\$1.97 [1.31-1.97] ⁽¹⁵⁷⁾	\$1.44 [0.66-2.63] ⁽⁶⁾	\$0.66 [n/a] ⁽²⁾	-- ⁽⁰⁾	-- ⁽⁰⁾	\$1.97 [0.66-1.97] ⁽¹⁶⁵⁾	\$1.64 [0.66-1.97] ⁽²¹¹⁾
Rapid diagnostic tests	\$1.97 [1.97-1.97] ⁽⁵⁾	-- ⁽⁰⁾	-- ⁽⁰⁾	\$1.97 [1.97-1.97] ⁽⁵⁾	\$1.31 [0.66-1.97] ⁽⁴¹⁾	\$0.99 [0.33-1.12] ⁽⁹⁾	\$3.28 [n/a] ⁽²⁾	-- ⁽⁰⁾	-- ⁽⁰⁾	\$3.28 [1.31-3.28] ⁽⁵²⁾	\$1.97 [1.97-3.28] ⁽⁵⁷⁾

Source: ACTwatch 2009 Nigeria Outlet Survey

¹⁴ Information on proportion of outlets that had diagnostic tests was missing for 4% of cases [n=2,116].

¹⁵ Information on the availability of any free test was missing for 35% of cases [n=204], due to inconsistent recording of price information for diagnostic tests.

Table A.7: Market share, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL Outlets
Each antimalarial category as a proportion of the total volume of all AETDs sold or distributed in the past week ¹⁶ :	%	%	%	%	%	%	%	%	%	%	%
Any ACT	0.4	<0.1	0.2	0.6	0.2	0.4	6.3	0.2	0	7.1	7.7
Quality Assured ACT (QAACT)	0.2	<0.1	0.1	0.3	<0.1	0.1	2.0	<0.1	0	2.1	2.4
First-line (FAACT)	0.2	<0.1	0.1	0.3	<0.1	0.1	2.0	<0.1	0	2.1	2.4
Non first-line (NAACT)	0	0	0	0	0	<0.1	<0.1	0	0	<0.1	<0.1
Non-quality Assured ACT	0.2	0	0.1	0.3	0.1	0.4	4.3	0.2	0	5.0	5.2
Other ACT Classifications											
Nationally registered ACT	0.3	<0.1	0.2	0.5	0.1	0.3	5.2	0.1	0	5.8	6.3
Any non-artemisinin therapy	2.4	<0.1	0.1	2.5	0.7	0.7	76.5	3.3	0.1	81.4	83.9
Chloroquine	1.0	<0.1	<0.1	1.1	0.4	0.2	32.2	0.8	<0.1	33.6	34.7
Sulfadoxine-pyrimethamine (SP)	1.3	<0.1	0.1	1.4	0.3	0.4	43.4	2.4	0.1	46.7	48.1
Second-line treatment (Quinine)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0	0.2	0.2
Any artemisinin monotherapy	<0.1	<0.1	<0.1	0.1	0.1	0.2	8.0	0.2	<0.1	8.4	8.5
Oral artemisinin monotherapy	<0.1	<0.1	<0.1	<0.1	0.1	0.2	7.6	0.2	<0.1	8.0	8.1
Non oral artemisinin monotherapy	<0.1	0	<0.1	<0.1	<0.1	<0.1	0.4	0	0	0.4	0.4

Source: ACTwatch 2009 Nigeria Outlet Survey

¹⁶ There were a total of 112,159 AETDs (unweighted) sold or distributed in the past one week; this value was the denominator used to calculate the market share in each cell. Any ACT subgroups are not mutually exclusive: Any ACT subdivides fully into QAACTs and Non-quality Assured ACT; QAACTs decompose fully into FAACTs and NAACTs; nationally registered ACTs are either QAACTs or non-QAACTs. Row and column totals exhibit minor rounding errors.

Table A.8: Provider knowledge, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
	% (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 that:	N=244	N=15	N=10	N=269	N=381	N=405	N=1,013	N=127	N=11	N=1,937	N=2,206
Correctly state the recommended first-line treatment for uncomplicated malaria (AL) ¹⁷	37.5 (26.4, 50.0)	33.6 (12.2, 64.8)	2.7 (0.4, 17.6)	36.2 (24.8, 49.3)	8.9 (2.3, 28.8)	71.8 (37.3, 91.6)	14.2 (10.2, 19.4)	13.1 (7.2, 22.6)	0.0 --	14.3 (10.9, 18.7)	15.5 (12.1, 19.6)
Correctly state the dosing regimen of the first-line treatment for an adult	26.2 (14.5, 42.6)	33.6 (12.2, 64.8)	1.3 (0.1, 13.2)	27.4 (16.1, 42.8)	8.2 (2.1, 27.4)	71.0 (36.1, 91.4)	8.7 (6.0, 12.5)	7.7 (3.8, 15.0)	0.0 --	9.1 (6.7, 12.4)	10.1 (7.6, 13.3)
Correctly state the dosing regimen of the first-line treatment for a two year old	34.4 (23.2, 47.6)	33.6 (12.2, 64.8)	1.3 (0.1, 13.2)	33.7 (22.5, 47.2)	8.1 (2.0, 27.1)	17.6 (5.0, 46.5)	7.8 (5.3, 11.3)	4.7 (1.8, 11.5)	0.0 --	7.4 (5.3, 10.4)	8.8 (6.6, 11.8)
	--	N=15	N=10	N=25	N=381	N=405	N=1,013	N=127	N=11	N=1,937	N=1,962
Can list at least one health danger sign in a child that requires referral to a public health facility: ¹⁸	--	83.9 (41.1, 97.5)	97.2 (82.1, 99.6)	85.1 (45.1, 97.6)	27.3 (6.8, 65.9)	35.1 (9.7, 73.2)	68.5 (60.9, 75.2)	50.4 (35.8, 65.0)	76.3 (28.3, 96.3)	65.1 (57.6, 72.0)	65.3 (57.8, 72.2)
• Convulsions	--	55.2 (15.9, 89.0)	95.9 (77.7, 99.4)	59.0 (19.7, 89.4)	13.7 (3.6, 40.6)	19.7 (6.1, 48.0)	40.8 (33.9, 48.1)	21.5 (14.3, 31.0)	70.4 (24.5, 94.6)	38.1 (31.5, 45.1)	38.2 (31.7, 45.2)
• Vomiting	--	53.8 (23.8, 81.3)	1.9 (0.2, 14.2)	49.0 (19.9, 78.8)	16.6 (4.3, 46.6)	23.0 (6.7, 55.3)	39.0 (34.0, 44.3)	39.3 (27.0, 53.1)	25.2 (7.2, 59.3)	38.1 (32.9, 43.6)	38.2 (33.0, 43.7)
• Unable to drink / breastfeed	--	0.3 (<0.1, 2.6)	0.0 --	0.3 (<0.1, 2.3)	3.9 (0.7, 19.7)	2.6 (0.8, 8.0)	8.3 (5.7, 11.9)	7.8 (3.5, 16.6)	0.1 (<0.1, 0.8)	8.0 (6.0, 10.6)	7.9 (6.0, 10.5)
• Excessive sleep / difficult to wake up	--	0.0 --	1.3 (0.1, 13.3)	0.1 (<0.1, 1.0)	1.0 (0.3, 3.7)	1.7 (0.5, 5.4)	5.8 (3.8, 8.7)	2.0 (0.7, 5.9)	5.3 (0.6, 34.2)	5.2 (3.4, 7.8)	5.2 (3.4, 7.8)
• Unconscious / coma	--	12.4 (2.9, 40.2)	0.0 --	11.2 (2.5, 38.6)	5.5 (1.5, 18.0)	6.2 (2.1, 17.4)	15.7 (12.6, 19.4)	10.3 (5.0, 20.1)	0.5 (0.1, 4.2)	14.6 (11.6, 18.2)	14.6 (11.6, 18.1)

Source: ACTwatch 2009 Nigeria Outlet Survey

¹⁷ For the purposes of this question, the alternative first-line treatment (ASAQ) was not considered a correct response. Information on this indicator was missing for 5% of cases [n=2,097].

¹⁸ This question was not asked in public health facilities. Information on proportion of providers that correctly state at least one health danger sign was missing for 6% of cases [n=1,852].

Table A.9: Provider perceptions, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
	N=244	N=15	N=10	N=269	N=381	N=405	N=1,013	N=127	N=11	N=1,937	N=2,206
Agree with the statement, "Most customers request an antimalarial by brand name or generic name." ¹⁹	3.4 (1.2, 8.9)	18.8 (3.0, 63.8)	0.0 --	6.6 (2.2, 18.5)	8.8 (2.2, 29.2)	25.3 (7.6, 58.3)	58.2 (50.3, 65.8)	57.4 (46.4, 67.8)	16.8 (2.0, 67.1)	55.9 (48.6, 62.9)	53.3 (46.0, 60.4)
Agree with the statement, "I decide which antimalarial medicine most customers receive."	90.8 (81.6, 95.7)	100.0 --	20.5 (2.6, 71.0)	91.8 (83.6, 96.1)	93.3 (78.4, 98.2)	81.2 (54.0, 94.1)	48.2 (41.9, 54.6)	51.4 (33.7, 68.7)	60.1 (36.2, 80.0)	50.3 (44.1, 56.4)	52.5 (46.0, 58.9)
Report that an ACT is the most effective antimalarial medicine	38.5 (23.4, 56.3)	42.1 (13.0, 77.9)	94.9 (72.3, 99.3)	40.1 (24.4, 58.1)	27.5 (20.0, 36.5)	83.3 (57.7, 94.8)	17.3 (11.1, 26.0)	24.1 (12.5, 41.6)	0.0 --	18.8 (12.5, 27.2)	19.9 (13.9, 27.7)
Proportion of providers than state the following reasons for stocking antimalarials: ²⁰	N=244	N=15	N=10	N=269	N=381	N=405	N=1,013	N=127	N=11	N=1,937	N=2,206
• Most profitable	14.9 (6.4, 31.0)	25.4 (8.3, 56.0)	0.0 --	14.7 (6.3, 30.7)	3.3 (0.7, 14.6)	3.4 (1.1, 9.9)	10.3 (7.9, 13.3)	13.7 (7.2, 24.3)	20.1 (7.7, 43.0)	10.5 (8.0, 13.6)	10.7 (8.3, 13.8)
• Recommended by government	51.3 (34.1, 68.3)	43.8 (17.7, 73.9)	18.5 (2.3, 68.9)	50.9 (34.2, 67.4)	9.8 (2.6, 30.4)	10.5 (3.4, 28.4)	10.1 (7.2, 13.9)	2.1 (0.4, 10.9)	0.0 --	9.1 (6.4, 12.8)	11.2 (8.3, 15.0)
• Lowest priced	31.1 (13.5, 56.6)	44.3 (14.2, 79.3)	1.8 (0.2, 12.7)	30.7 (13.3, 56.1)	6.1 (1.6, 21.2)	4.7 (1.5, 13.8)	26.1 (21.4, 31.5)	12.2 (7.0, 20.4)	56.6 (32.0, 78.4)	24.2 (19.3, 30.0)	24.6 (19.7, 30.1)
• Consumer demand	8.1 (3.8, 16.4)	5.5 (0.7, 30.8)	14.6 (1.5, 66.3)	8.2 (3.9, 16.3)	10.1 (2.8, 30.4)	28.7 (8.6, 63.3)	68.6 (63.0, 73.6)	68.4 (56.2, 78.5)	23.4 (11.3, 42.4)	66.0 (59.1, 72.2)	63.0 (55.8, 69.6)

Continued on following page

¹⁹ 5% of cases [n=2,092] were missing for the indicator "Most customers request an antimalarial by brand name or generic name"; 5% of cases [n=2,100], were missing for the indicator, "I decide which antimalarial medicine most customers receive"; and 8% of cases [n=2,033] were missing for the indicator on the belief that ACTs are the most effective antimalarials medicine.

²⁰ 4% of cases [n=2,110] were missing reasons for stocking antimalarials; providers could state multiple responses and totals may sum to more than 100%.

Table A.9: Provider perceptions, by outlet type

	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
	N=244	N=15	N=10	N=269	N=381	N=405	N=1,013	N=127	N=11	N=1,937	N=2,206
• Easily available	43.9 (24.1, 65.8)	18.7 (2.9, 64.1)	1.3 (0.1, 13.3)	43.3 (23.6, 65.3)	5.9 (1.4, 21.8)	4.9 (1.7, 13.9)	21.1 (16.9, 26.0)	18.3 (9.7, 31.7)	36.2 (17.6, 60.2)	20.4 (16.5, 24.9)	21.6 (17.6, 26.1)
• Drug company	1.0 (0.2, 5.4)	0.0 --	1.3 (0.1, 13.3)	1.0 (0.2, 5.3)	0.5 (0.1, 1.9)	10.1 (2.3, 35.0)	4.8 (2.3, 9.6)	2.1 (0.5, 8.5)	15.3 (1.6, 66.6)	4.5 (2.4, 8.4)	4.4 (2.3, 8.0)
• Brand reputation	16.0 (6.3, 34.9)	35.1 (9.0, 74.8)	1.3 (0.1, 13.3)	15.8 (6.2, 34.5)	26.9 (19.2, 36.2)	20.6 (5.9, 51.6)	27.2 (22.0, 33.2)	23.1 (10.7, 42.9)	0.0 --	26.4 (21.7, 31.6)	25.8 (21.3, 30.9)
• Dosage form	1.1 (0.2, 5.0)	0.0 --	0.0 --	1.1 (0.2, 4.9)	5.1 (1.2, 18.9)	2.3 (0.7, 7.2)	2.9 (2.0, 4.1)	3.2 (0.7, 12.4)	0.0 --	2.9 (2.1, 4.1)	2.9 (2.0, 4.0)
• Frequently prescribed	11.4 (4.2, 27.5)	0.2 (<0.1, 1.5)	1.3 (0.1, 12.9)	11.3 (4.1, 27.2)	11.4 (3.0, 34.4)	12.5 (4.1, 32.3)	13.9 (9.9, 19.1)	8.1 (2.9, 20.6)	0.0 --	13.0 (9.2, 18.0)	12.9 (9.3, 17.7)
• Effectiveness	11.9 (5.1, 25.4)	41.6 (15.8, 73.0)	94.2 (72.2, 99.0)	13.0 (5.7, 26.9)	6.4 (1.6, 22.4)	5.4 (1.3, 19.5)	10.9 (8.3, 14.2)	6.7 (2.6, 16.4)	0.0 --	10.1 (7.5, 13.4)	10.2 (7.8, 13.3)
• Other reasons	11.8 (4.8, 26.0)	13.2 (3.9, 36.1)	1.3 (0.1, 12.9)	11.6 (4.7, 25.7)	1.4 (0.4, 5.1)	53.4 (14.4, 88.7)	6.2 (3.9, 9.9)	10.1 (3.2, 28.0)	40.7 (20.4, 64.8)	7.4 (4.7, 11.6)	7.7 (5.0, 11.6)

Source: ACTwatch 2009 Nigeria Outlet Survey

Table A.10: Availability of antimalarials, by strata

	North Central	North East	North West	South East	South	South West	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets that had:	N=808	N=488	N=1,060	N=756	N=930	N=1,414	N=5,456
Antimalarials in stock at the time of survey visit	23.4 (20.9, 26.2)	24.5 (19.2, 30.7)	23.8 (17.2, 31.9)	31.5 (21.1, 44.2)	23.2 (21.9, 24.6)	33.2 (22.4, 46.2)	26.6 (23.3, 30.1)
Among outlets with an antimalarial in stock, proportion of outlets that had:	N=367	N=285	N=261	N=339	N=349	N=512	N=2,113
Any ACT	27.9 (17.6, 41.2)	35.3 (26.2, 45.6)	22.1 (17.9, 27.0)	55.2 (36.1, 72.8)	52.8 (35.7, 69.2)	37.7 (22.8, 55.2)	38.5 (30.1, 47.6)
Quality Assured ACT (QAACT)	19.1 (9.4, 34.9)	28.7 (18.6, 41.4)	19.5 (17.2, 22.0)	40.5 (25.7, 57.3)	32.2 (23.5, 42.5)	29.1 (17.9, 43.6)	27.7 (22.4, 33.9)
First-line (FAACT)	16.4 (6.7, 35.0)	28.7 (18.6, 41.4)	19.5 (17.2, 22.0)	40.5 (25.7, 57.3)	30.4 (23.1, 38.8)	29.1 (17.9, 43.6)	26.9 (21.6, 33.0)
Non first-line (NAACT)	2.7 (0.5, 12.5)	0.0 --	0.0 --	0.0 --	1.9 (0.5, 6.6)	0.0 --	0.8 (0.2, 2.7)
Non-quality Assured ACT	15.8 (11.0, 22.1)	10.7 (5.5, 19.8)	8.6 (3.0, 22.0)	30.1 (13.0, 55.5)	39.4 (24.9, 56.1)	22.3 (7.3, 51.2)	22.8 (14.5, 34.0)
Other ACT Classifications							
Nationally registered ACT	23.7 (13.0, 39.3)	34.7 (25.6, 45.0)	21.2 (17.4, 25.7)	52.0 (31.9, 71.6)	47.8 (29.9, 66.2)	36.4 (23.0, 52.3)	35.9 (27.9, 44.6)
Any non-artemisinin therapy	97.8 (93.2, 99.3)	90.9 (74.9, 97.1)	98.8 (91.3, 99.9)	98.2 (94.8, 99.4)	100.0 (99.9, 100.0)	95.6 (92.1, 97.6)	97.3 (95.6, 98.4)
Chloroquine	87.5 (78.8, 93.0)	87.9 (71.4, 95.5)	92.4 (85.4, 96.2)	91.6 (85.6, 95.2)	94.5 (92.0, 96.3)	90.3 (83.6, 94.4)	91.1 (88.5, 93.1)
Sulfadoxine-pyrimethamine (SP)	75.6 (65.7, 83.4)	64.2 (54.9, 72.5)	69.8 (67.5, 72.0)	91.6 (87.9, 94.2)	95.3 (91.5, 97.5)	68.6 (50.9, 82.1)	77.5 (69.5, 83.9)
Second-line treatment (Quinine)	11.5 (4.8, 25.2)	4.4 (1.5, 12.6)	10.4 (4.7, 21.8)	6.5 (3.9, 10.6)	23.6 (10.2, 45.7)	1.8 (0.5, 6.9)	10.0 (6.0, 16.0)
Any artemisinin monotherapy	32.0 (24.8, 40.2)	26.8 (18.3, 37.4)	51.7 (35.3, 67.7)	60.1 (38.9, 78.0)	62.8 (53.4, 71.4)	36.5 (16.5, 62.5)	45.5 (35.5, 55.8)
Oral artemisinin monotherapy	27.5 (19.5, 37.3)	24.7 (16.8, 34.8)	46.7 (34.2, 59.6)	59.6 (38.5, 77.7)	62.8 (53.3, 71.4)	36.4 (16.4, 62.4)	43.8 (34.0, 54.1)
Non oral artemisinin monotherapy	5.0 (0.8, 25.9)	3.0 (0.9, 9.0)	27.9 (11.8, 52.9)	0.7 (0.2, 2.8)	0.3 (0.1, 1.3)	2.1 (0.5, 8.9)	6.2 (2.4, 15.4)

Source: ACTwatch 2009 Nigeria Outlet Survey

Table A.11: Disruption in stock, expiry and storage conditions of antimalarials, by strata

	North Central	North East	North West	South East	South	South West	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
	N=385	N=301	N=270	N=348	N=371	N=531	N=2,206
No disruption in stock of any antimalarial in the past three months	22.8 (14.1, 34.8)	17.2 (8.4, 32.0)	16.0 (10.0, 24.5)	18.3 (13.6, 24.1)	31.4 (22.2, 42.2)	38.3 (34.0, 42.8)	27.5 (23.8, 31.7)
	N=181	N=164	N=109	N=166	N=158	N=217	N=995
No disruption in stock of any first-line quality assured ACT (FAACT) treatment in the past three months	45.8 (26.8, 66.1)	44.6 (22.4, 69.1)	40.6 (28.5, 54.0)	46.2 (36.6, 56.0)	62.2 (57.1, 67.0)	82.5 (71.1, 90.0)	59.9 (52.8, 66.6)
	N=367	N=285	N=261	N=339	N=349	N=512	N=2,113
Expired stock of any antimalarial	5.6 (2.6, 11.7)	6.4 (2.4, 15.8)	4.0 (2.4, 6.7)	1.7 (0.6, 5.0)	1.1 (0.2, 5.5)	0.5 (0.1, 3.5)	2.5 (1.5, 4.0)
	N=144	N=116	N=83	N=122	N=132	N=185	N=782
Expired stock of first-line quality assured ACT (FAACT)	0.2 (<0.1, 1.4)	<0.1 (<0.1, 0.1)	0.0 --	0.0 --	<0.1 (<0.1, 0.3)	<0.1 (<0.1, 0.1)	<0.1 (<0.1, 0.1)
	N=385	N=301	N=270	N=348	N=371	N=531	N=2,206
Acceptable storage conditions for medicines	94.7 (88.7, 97.6)	93.7 (78.7, 98.3)	92.0 (84.0, 96.2)	96.3 (87.6, 99.0)	98.0 (97.0, 98.7)	91.6 (85.5, 95.2)	94.1 (91.5, 95.9)

Source: ACTwatch 2009 Nigeria Outlet Survey

	North Central	North East	North West	South East	South	South West	TOTAL
	%	%	%	%	%	%	%
Proportion of first-line quality assured ACT (FAACT) distributed free of cost, by volume	1.3	30.4	26.2	0.4	1.2	2.4	10.1
Median price of a tablet AETD:	Median [IQR] (Number of antimalaria ls)	Median [IQR] (Number of antimalaria ls)	Median [IQR] (Number of antimalaria ls)	Median [IQR] (Number of antimalaria ls)	Median [IQR] (Number of antimalaria ls)	Median [IQR] (Number of antimalaria ls)	Median [IQR] (Number of antimalaria ls)
Any ACT	\$3.15 [2.30-4.93] ⁽⁸⁵⁵⁾	\$1.31 [0.00-4.01] ⁽⁸¹⁸⁾	\$2.63 [0.79-3.68] ⁽²²⁵⁾	\$3.61 [1.97-4.27] ⁽⁴⁹²⁾	\$3.94 [2.63-5.25] ⁽⁹⁵¹⁾	\$3.94 [2.96-5.25] ⁽⁹⁰⁴⁾	\$3.94 [2.30-4.93] ^(4,245)
Quality Assured ACT (QAACT)	\$2.89 [2.10-4.93] ⁽¹⁸⁶⁾	\$0.79 [0.00-2.10] ⁽¹⁹⁴⁾	\$1.58 [0.53-3.68] ⁽¹¹⁴⁾	\$3.42 [2.63-3.94] ⁽¹⁵⁶⁾	\$3.94 [2.63-7.89] ⁽²⁰⁸⁾	\$3.94 [2.63-5.91] ⁽²³⁶⁾	\$3.28 [1.84-5.25] ^(1,094)
First-line (FAACT) AL	\$6.57 [5.58-7.55] ⁽⁸⁸⁾	\$0.00 [0.00-0.00] ⁽⁸³⁾	\$0.00 [0.00-2.63] ⁽²⁷⁾	\$5.91 [4.93-7.23] ⁽⁴⁸⁾	\$7.23 [6.57-10.51] ⁽⁷⁶⁾	\$6.04 [5.58-6.57] ⁽¹⁰⁵⁾	\$5.91 [1.64-6.57] ⁽⁴²⁷⁾
First-line (FAACT) ASAQ	\$2.63 [1.64-3.15] ⁽⁹³⁾	\$1.31 [0.79-3.94] ⁽¹¹¹⁾	\$2.10 [0.79-3.68] ⁽⁸⁷⁾	\$2.63 [2.10-3.94] ⁽¹⁰⁸⁾	\$3.94 [2.63-6.57] ⁽¹³⁰⁾	\$2.63 [1.84-3.94] ⁽¹³¹⁾	\$3.15 [1.84-3.94] ⁽⁶⁶⁰⁾
Non first-line (NAACT)	\$4.93 [4.93-6.57] ⁽⁵⁾	-- ⁽⁰⁾	-- ⁽⁰⁾	-- ⁽⁰⁾	\$7.70 [n/a] ⁽²⁾	-- ⁽⁰⁾	\$4.93 [3.08-12.32] ⁽⁷⁾
Non-quality Assured ACT	\$3.28 [2.96-4.27] ⁽⁶⁶⁹⁾	\$4.01 [4.01-4.60] ⁽⁶²⁴⁾	\$3.61 [3.28-3.94] ⁽¹¹¹⁾	\$3.61 [1.97-4.27] ⁽³³⁶⁾	\$3.69 [2.63-4.60] ⁽⁷⁴³⁾	\$4.60 [3.33-5.25] ⁽⁶⁶⁸⁾	\$3.94 [2.96-4.93] ^(3,151)
Other ACT Classifications							
Nationally registered ACT	\$3.15 [2.96-3.94] ⁽⁵⁸⁰⁾	\$1.31 [0.00-4.01] ⁽⁵⁸⁴⁾	\$2.63 [0.79-3.68] ⁽¹⁸⁵⁾	\$3.61 [2.10-4.27] ⁽³⁹⁰⁾	\$3.94 [2.63-5.25] ⁽⁶⁶¹⁾	\$4.27 [3.15-5.25] ⁽⁶⁸⁸⁾	\$3.94 [2.30-4.93] ^(3,088)
Any non-artemisinin therapy	\$0.53 [0.33-0.79] ^(1,081)	\$0.39 [0.32-0.79] ⁽⁸⁵⁰⁾	\$0.33 [0.25-0.48] ⁽⁵⁶⁵⁾	\$0.46 [0.39-0.79] ^(1,015)	\$0.66 [0.46-0.99] ^(1,297)	\$0.53 [0.39-0.99] ^(1,321)	\$0.53 [0.39-0.99] ^(6,129)
Chloroquine	\$0.32 [0.16-0.66] ⁽²¹⁹⁾	\$0.25 [0.13-0.32] ⁽¹⁷²⁾	\$0.25 [0.16-0.32] ⁽¹⁸⁵⁾	\$0.46 [0.16-0.74] ⁽¹⁷¹⁾	\$0.66 [0.39-0.79] ⁽²³⁴⁾	\$0.39 [0.32-0.66] ⁽²⁵²⁾	\$0.38 [0.16-0.66] ^(1,233)
Sulfadoxine-pyrimethamine (SP)	\$0.53 [0.39-0.79] ⁽⁷⁴⁴⁾	\$0.53 [0.33-0.99] ⁽⁵⁷³⁾	\$0.33 [0.33-0.66] ⁽³⁵⁴⁾	\$0.46 [0.39-0.79] ⁽⁷⁵⁹⁾	\$0.66 [0.46-0.92] ⁽⁹³⁷⁾	\$0.56 [0.39-0.99] ⁽⁹²¹⁾	\$0.53 [0.39-0.99] ^(4,288)
Second-line treatment (Quinine)	\$5.52 [5.52-5.52] ⁽²⁹⁾	\$4.14 [4.14-4.14] ⁽³⁴⁾	\$5.52 [5.52-5.52] ⁽¹⁶⁾	\$2.76 [2.76-5.52] ⁽¹⁰⁾	\$6.90 [5.52-6.90] ⁽³⁶⁾	\$6.07 [3.03-6.07] ⁽²⁰⁾	\$5.52 [5.52-6.90] ⁽¹⁴⁵⁾
Artemisinin monotherapy							
Oral artemisinin monotherapy	\$3.15 [2.63-3.68] ⁽³⁰²⁾	\$2.63 [2.10-3.15] ⁽²²³⁾	\$2.63 [2.10-2.63] ⁽¹⁴⁹⁾	\$2.73 [2.63-3.15] ⁽¹⁷⁰⁾	\$3.68 [3.15-3.68] ⁽³²⁵⁾	\$3.15 [2.63-3.15] ⁽³²⁶⁾	\$3.15 [2.63-3.68] ^(1,495)

Source: ACTwatch 2009 Nigeria Outlet Survey

Table A.13: Affordability of antimalarials, by strata

	North Central	North East	North West	South East	South	South West	TOTAL
Median price of a tablet AETD relative to sulfadoxine-pyrimethamine (SP), the 'most popular' antimalarial treatment in Nigeria:	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Any ACT	6.1	2.5	8.0	7.9	6.0	7.0	7.6
First-line (FAACT) AL	12.6	n/a	n/a	12.9	11.0	10.7	11.4
Median price of a tablet AETD relative to the minimum legal daily wage (\$1.98):	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Any ACT	1.6	0.7	1.3	1.8	2.0	2.0	2.0
First-line (FAACT) AL	3.3	n/a	n/a	3.0	3.7	3.1	3.0
	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Median price of an AETD of FAACT AL relative to the international reference price for AL (\$1.45)	4.5	n/a	n/a	4.1	5.0	4.2	4.1
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
	N=355	N=225	N=246	N=303	N=345	N=488	N=1,962
Proportion of outlets that offer credit to consumers for antimalarials ²¹	57.6 (51.4, 63.5)	64.6 (39.1, 83.8)	80.0 (77.2, 82.5)	85.2 (79.2, 89.7)	52.8 (48.7, 57.0)	42.2 (33.7, 51.3)	58.1 (51.0, 64.9)

Source: ACTwatch 2009 Nigeria Outlet Survey

²¹ This question was not asked in public health facilities.

Table A.14: Availability of diagnostic tests & cost to patients, by strata

	North Central	North East	North West	South East	South	South West	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets that had:	N=385	N=301	N=270	N=348	N=371	N=531	N=2,206
Any diagnostic test	11.7 (4.1, 29.2)	4.1 (1.2, 13.5)	2.1 (0.5, 8.8)	0.3 (0.1, 0.8)	1.2 (0.5, 2.7)	2.1 (4.1, 9.7)	3.3 (1.8, 6.0)
Microscopic blood tests	8.2 (2.3, 25.4)	2.2 (0.5, 9.8)	1.9 (0.5, 7.7)	0.3 (0.1, 0.8)	1.1 (0.5, 2.8)	2.0 (0.4, 9.8)	2.6 (1.3, 5.0)
Rapid diagnostic tests	6.9 (2.2, 20.1)	2.1 (0.3, 12.5)	0.2 (<0.1, 0.7)	0.2 (<0.1, 0.6)	0.1 (<0.1, 0.7)	0.2 (<0.1, 0.4)	1.3 (0.5, 3.2)
Proportion of outlets that provided diagnostic tests for free, among outlets providing diagnostic tests:	N=94	N=68	N=15	N=27	N=54	N=57	N=315
Any diagnostic test	<0.1 (<0.1, 0.7)	0.6 (<0.1, 6.2)	0.9 (<0.1, 11.6)	25.1 (6.5, 61.6)	0.0 --	1.9 (0.2, 15.0)	0.8 (0.3, 2.2)
	N=82	N=65	N=14	N=24	N=51	N=48	N=284
Microscopic blood tests	<0.1 (<0.1, 0.6)	0.6 (<0.1, 6.0)	0.9 (<0.1, 12.0)	0.0 --	0.0 --	1.1 (<0.1, 11.0)	0.5 (0.1, 1.7)
	N=34	N=18	N=4	N=16	N=20	N=24	N=116
Rapid diagnostic tests	<0.1 (<0.1, 0.5)	18.8 (3.3, 61.2)	16.0 (1.4, 71.3)	60.0 (21.6, 89.1)	0.0 --	29.2 (8.1, 66.0)	2.1 (0.6, 6.9)
Median price of:	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)
Microscopic blood tests	\$1.64 [0.33-1.97] ⁽⁶⁸⁾	\$0.66 [0.66-1.31] ⁽⁵⁰⁾	\$0.66 [0.66-0.66] ⁽¹⁰⁾	\$1.97 [1.64-2.30] ⁽¹⁹⁾	\$1.31 [1.31-1.97] ⁽³⁵⁾	\$1.97 [1.97-1.97] ⁽²⁹⁾	\$1.64 [0.66-1.97] ⁽²¹¹⁾
Rapid diagnostic tests	\$1.97 [1.97-3.28] ⁽¹⁹⁾	\$1.97 [1.31-3.28] ⁽⁸⁾	\$2.30 [1.31-2.30] ⁽³⁾	\$0.00 [0.00-0.99] ⁽⁸⁾	\$1.97 [1.31-1.97] ⁽⁵⁾	\$0.99 [0.00-1.97] ⁽¹⁴⁾	\$1.97 [1.97-3.28] ⁽⁵⁷⁾

Source: ACTwatch 2009 Nigeria Outlet Survey

Table A.15: Market share, by strata							
	North Central	North East	North West	South East	South	South West	TOTAL
Each antimalarial category as a proportion of the total volume of all AETDs sold or distributed in the past week:	%	%	%	%	%	%	%
Any ACT	0.3	0.4	0.9	0.8	3.3	2.0	7.7
Quality Assured ACT (QAACT)	0.1	0.3	0.5	0.3	0.6	0.7	2.4
First-line (FAACT)	0.1	0.3	0.5	0.3	0.6	0.7	2.4
Non first-line (NAACT)	<0.1	0	0	0	<0.1	0	<0.1
Non-quality Assured ACT	0.2	0.2	0.3	0.5	2.7	1.3	5.2
Other ACT Classifications							
Nationally registered ACT	0.2	0.4	0.8	0.8	2.4	1.8	6.3
Any non-artemisinin therapy	6.7	5.4	28.7	7.2	24.2	11.6	83.9
Chloroquine	3.4	3.2	16.3	1.9	5.7	4.2	34.7
Sulfadoxine-pyrimethamine (SP)	3.2	2.2	12.3	4.9	18.1	7.3	48.1
Second-line treatment (Quinine)	<0.1	<0.1	0.1	<0.1	0.1	<0.1	0.2
Any artemisinin monotherapy	0.2	0.2	4.9	0.5	1.8	0.9	8.5
Oral artemisinin monotherapy	0.2	0.1	4.5	0.5	1.8	0.9	8.1
Non oral artemisinin monotherapy	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	0.4
Source: ACTwatch 2009 Nigeria Outlet Survey							

Table A.16: Provider knowledge, by strata

	North Central	North East	North West	South East	South	South West	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers that:	N=385	N=301	N=270	N=348	N=371	N=531	N=2,206
Correctly state the recommended first-line treatment for uncomplicated malaria (AL)	16.6 (8.6, 29.5)	17.4 (10.9, 26.8)	17.3 (14.1, 21.1)	13.9 (9.4, 19.9)	20.8 (13.2, 31.1)	10.4 (13.2, 31.1)	15.5 (12.1, 19.6)
Correctly state the dosing regimen of the first-line treatment for an adult	14.8 (8.5, 24.7)	7.8 (3.0, 18.7)	10.2 (7.3, 14.1)	10.3 (5.1, 19.8)	12.1 (6.8, 20.4)	7.0 (2.8, 16.4)	10.1 (7.6, 13.3)
Correctly state the dosing regimen of the first-line treatment for a two year old	10.0 (3.9, 23.4)	12.1 (7.3, 19.5)	11.8 (9.4, 14.7)	11.9 (6.2, 21.7)	8.5 (3.9, 17.9)	5.4 (2.2, 12.5)	8.8 (6.6, 11.8)
	N=355	N=225	N=246	N=303	N=345	N=488	N=1,962
Can list at least one health danger sign in a child that requires referral to a public health facility: ²²	88.0 (78.1, 93.8)	53.2 (34.6, 70.9)	76.9 (68.2, 83.8)	60.6 (44.3, 74.8)	70.9 (66.3, 75.1)	48.9 (34.5, 63.6)	65.3 (57.8, 72.2)
• Convulsions	56.0 (45.7, 65.8)	32.5 (20.9, 46.9)	53.5 (36.2, 70.0)	21.6 (14.2, 31.3)	42.2 (34.1, 50.8)	25.7 (17.6, 35.9)	38.2 (31.7, 45.2)
• Vomiting	38.5 (26.0, 52.7)	25.4 (10.3, 50.2)	39.9 (34.2, 45.8)	41.4 (29.4, 54.6)	48.8 (37.9, 59.8)	31.1 (20.6, 44.0)	38.2 (33.0, 43.7)
• Unable to drink / breastfeed	16.9 (11.7, 23.8)	2.9 (0.6, 13.3)	3.8 (2.5, 5.9)	13.4 (6.9, 24.3)	5.7 (3.9, 8.1)	6.9 (4.9, 9.6)	7.9 (6.0, 10.5)
• Excessive sleep / difficult to wake up	4.5 (2.4, 8.1)	4.7 (1.0, 20.1)	4.3 (1.4, 12.5)	11.3 (9.0, 14.1)	8.4 (3.5, 18.8)	2.0 (0.8, 4.5)	5.2 (3.4, 7.8)
• Unconscious / coma	17.0 (9.7, 28.0)	14.6 (6.0, 31.3)	18.8 (15.0, 23.4)	9.7 (3.9, 22.2)	19.8 (14.9, 25.8)	9.1 (4.9, 16.2)	14.6 (11.6, 18.1)

Source: ACTwatch 2009 Nigeria Outlet Survey

²² This question was not asked in public health facilities.

Table A.17: Provider perceptions, by strata							
	North Central	North East	North West	South East	South	South West	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers that:	N=385	N=301	N=270	N=348	N=371	N=531	N=2,206
Agree with the statement, "Most customers request an antimalarial by brand name or generic name."	47.5 (40.7, 54.5)	17.2 (10.1, 27.6)	33.8 (30.2, 37.6)	63.7 (50.2, 75.4)	67.3 (52.7, 79.2)	61.2 (52.0, 69.6)	53.3 (46.0, 60.4)
Agree with the statement, "I decide which antimalarial medicine most customers receive."	71.3 (56.3, 82.8)	75.6 (59.4, 86.8)	46.7 (37.0, 56.7)	79.0 (70.0, 85.9)	39.7 (33.7, 46.0)	42.7 (35.3, 50.4)	52.5 (46.0, 58.9)
Report that an ACT is the most effective antimalarial medicine	13.3 (5.9, 27.2)	24.3 (10.4, 47.0)	8.3 (2.5, 24.3)	22.1 (11.5, 38.2)	30.0 (22.0, 39.6)	20.4 (9.1, 39.8)	19.9 (13.9, 27.7)
Proportion of providers than state the following reasons for stocking antimalarials:	N=385	N=301	N=270	N=348	N=371	N=531	N=2,206
• Most profitable	20.5 (15.9, 26.1)	21.8 (11.5, 37.3)	9.6 (3.3, 24.8)	6.4 (5.0, 8.1)	8.2 (5.5, 12.0)	7.3 (4.0, 12.9)	10.7 (8.3, 13.8)
• Recommended by government	23.3 (15.7, 33.2)	11.7 (4.5, 27.0)	13.2 (11.3, 15.3)	8.8 (5.1, 14.5)	17.6 (9.8, 29.6)	0.7 (0.2, 2.1)	11.2 (8.3, 15.0)
• Lowest priced	25.5 (18.4, 34.2)	23.4 (10.0, 45.7)	41.1 (31.5, 51.4)	21.0 (12.2, 33.6)	30.3 (23.7, 37.9)	12.8 (7.7, 20.6)	24.6 (19.7, 30.1)
• Consumer demand	53.8 (45.6, 61.9)	35.9 (22.9, 51.5)	61.7 (46.1, 75.3)	61.6 (55.1, 67.6)	68.7 (59.1, 76.9)	70.2 (52.0, 83.7)	63.0 (55.8, 69.6)
• Easily available	28.3 (16.8, 43.5)	24.1 (11.4, 44.1)	21.0 (17.9, 24.6)	18.1 (6.9, 39.5)	30.0 (17.7, 46.0)	13.3 (7.7, 21.9)	21.6 (17.6, 26.1)
• Drug company	0.1 (<0.1, 0.3)	14.9 (6.2, 31.7)	9.7 (2.1, 34.8)	1.9 (0.4, 8.2)	3.7 (2.0, 6.9)	2.4 (0.7, 8.2)	4.4 (2.3, 8.0)
• Brand reputation	9.5 (5.6, 15.5)	21.2 (9.0, 42.4)	16.3 (12.0, 21.8)	48.1 (43.3, 52.9)	34.5 (29.8, 39.5)	26.9 (18.9, 36.9)	25.8 (21.3, 30.9)
• Dosage form	2.3 (0.9, 5.5)	0.1 (<0.1, 0.2)	3.4 (2.1, 5.4)	1.0 (0.2, 4.3)	2.2 (0.8, 5.7)	4.4 (2.9, 6.6)	2.9 (2.0, 4.0)
• Frequently prescribed	11.4 (6.6, 18.9)	7.9 (2.6, 21.6)	25.5 (16.1, 37.9)	7.1 (5.4, 9.3)	15.4 (12.4, 19.1)	8.1 (2.8, 21.6)	12.9 (9.3, 17.7)
• Effectiveness	10.5 (4.5, 22.5)	29.4 (17.5, 45.1)	11.2 (7.2, 16.8)	17.0 (11.5, 24.4)	4.9 (3.5, 6.8)	7.2 (4.7, 11.1)	10.2 (7.8, 13.3)
• Other reasons	1.4 (0.4, 4.9)	12.1 (7.1, 19.8)	18.9 (12.6, 27.3)	6.9 (3.4, 13.3)	3.3 (1.2, 8.8)	7.1 (2.4, 19.5)	7.7 (5.0, 11.6)

Table A.17: Provider perceptions, by strata

	North Central	North East	North West	South East	South	South West	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)

Source: *ACTwatch* 2009 Nigeria Outlet Survey

Table A.18: Availability of antimalarials, by urban/rural classification

	Urban	Rural	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets that had:	N=4,167	N=1,289	N=5,456
Antimalarials in stock at the time of survey visit	26.5 (22.7, 30.7)	26.9 (21.0, 33.6)	26.6 (23.3, 30.1)
Among outlets with an antimalarial in stock, proportion of outlets that had:	N=1,749	N=364	N=2,113
Any ACT	40.0 (29.8, 51.2)	32.7 (25.6, 40.8)	38.5 (30.1, 47.6)
Quality Assured ACT (QAACT)	28.8 (22.6, 36.0)	23.7 (16.3, 33.1)	27.7 (22.4, 33.9)
First-line (FAACT)	27.8 (21.6, 35.0)	23.7 (16.3, 33.1)	26.9 (21.6, 33.0)
Non first-line (NAACT)	1.0 (0.3, 3.4)	0.0 --	0.8 (0.2, 2.7)
Non-quality Assured ACT	24.8 (14.5, 38.9)	15.5 (10.6, 22.1)	22.8 (14.5, 34.0)
Other ACT Classifications			
Nationally registered ACT	37.7 (27.6, 48.1)	30.6 (23.5, 38.7)	35.9 (27.9, 44.6)
Any non-artemisinin therapy	98.0 (96.2, 98.9)	95.0 (89.8, 97.6)	97.3 (95.6, 98.4)
Chloroquine	92.6 (90.5, 94.2)	85.7 (78.8, 90.6)	91.1 (88.5, 93.1)
Sulfadoxine-pyrimethamine (SP)	79.8 (69.2, 87.4)	69.2 (63.2, 74.6)	77.5 (69.5, 83.9)
Second-line treatment (Quinine)	9.9 (5.4, 17.7)	10.2 (4.9, 20.0)	10.0 (6.0, 16.0)
Any artemisinin monotherapy	47.5 (35.1, 60.1)	38.2 (29.1, 48.2)	45.5 (35.5, 55.8)
Oral artemisinin monotherapy	46.6 (34.6, 59.1)	33.3 (23.3, 45.1)	43.8 (34.0, 54.1)
Non oral artemisinin monotherapy	5.8 (1.6, 19.2)	7.7 (3.2, 17.5)	6.2 (2.4, 15.4)

Source: ACTwatch 2009 Nigeria Outlet Survey

Table A.19: Disruption in stock, expiry and storage conditions of antimalarials, by urban/rural classification

	Urban	Rural	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)
	N=1,816	N=390	N=2,206
No disruption in stock of any antimalarial in the past three months	28.4 (23.9, 33.4)	24.4 (18.1, 32.1)	27.5 (23.8, 31.7)
	N=862	N=133	N=995
No disruption in stock of any first-line quality assured ACT (FAACT) treatment in the past three months	62.5 (54.5, 69.9)	49.9 (35.2, 64.5)	59.9 (52.8, 66.6)
	N=1,749	N=364	N=2,113
Expired stock of any antimalarial	2.4 (1.4, 4.0)	2.7 (0.8, 8.9)	2.5 (1.5, 4.0)
	N=680	N=102	N=782
Expired stock of first-line quality assured ACT (FAACT)	<0.1 (<0.1, 0.1)	0.0 --	<0.1 (<0.1, 0.1)
	N=1,816	N=390	N=2,206
Acceptable storage conditions for medicines	94.1 (91.1, 96.1)	94.0 (87.6, 97.2)	94.1 (91.5, 95.9)

Source: ACTwatch 2009 Nigeria Outlet Survey

Table A.20: Price of antimalarials, by urban/rural classification

	Urban	Rural	TOTAL
	%	%	%
Proportion of first-line quality assured ACT (FAACT) distributed free of cost, by volume	5.8	30.6	10.1
Median price of a tablet AETD:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Any ACT	\$3.94 [2.63-5.25] ^(4,027)	\$2.89 [0.79-3.94] ⁽²¹⁸⁾	\$3.94 [2.30-4.93] ^(4,245)
Quality Assured ACT (QAACT)	\$3.94 [1.97-5.91] ⁽⁹⁶³⁾	\$2.10 [0.00-3.15] ⁽¹³¹⁾	\$3.28 [1.84-5.25] ^(1,094)
First-line (FAACT) AL	\$6.24 [4.93-6.57] ⁽³⁹⁸⁾	\$0.00 [0.00-0.00] ⁽²⁹⁾	\$5.91 [1.64-6.57] ⁽⁴²⁷⁾
First-line (FAACT) ASAQ	\$3.15 [1.84-3.94] ⁽⁵⁵⁸⁾	\$2.63 [1.64-3.15] ⁽¹⁰²⁾	\$3.15 [1.84-3.94] ⁽⁶⁶⁰⁾
Non first-line (NAACT)	\$4.93 [3.08-12.32] ⁽⁷⁾	-- ⁽⁰⁾	\$4.93 [3.08-12.32] ⁽⁷⁾
Non-quality Assured ACT	\$3.94 [2.96-4.93] ^(3,064)	\$3.94 [3.28-4.01] ⁽⁸⁷⁾	\$3.94 [2.96-4.93] ^(3,151)
Other ACT Classifications			
Nationally registered ACT	\$3.94 [2.63-5.25] ^(2,9040)	\$2.63 [0.79-3.61] ⁽¹⁸⁸⁾	\$3.94 [2.30-4.93] ^(3,088)
Any non-artemisinin therapy	\$0.53 [0.39-0.99] ^(5,270)	\$0.46 [0.32-0.79] ⁽⁸⁵⁹⁾	\$0.53 [0.39-0.99] ^(6,129)
Chloroquine	\$0.39 [0.20-0.66] ⁽⁹⁹⁹⁾	\$0.22 [0.16-0.33] ⁽²³⁴⁾	\$0.38 [0.16-0.66] ^(1,233)
Sulfadoxine-pyrimethamine (SP)	\$0.53 [0.39-0.99] ^(3,700)	\$0.53 [0.39-0.92] ⁽⁵⁸⁸⁾	\$0.53 [0.39-0.99] ^(4,288)
Second-line treatment (Quinine)	\$5.52 [5.52-6.90] ⁽¹³⁶⁾	\$5.52 [5.52-5.52] ⁽⁹⁾	\$5.52 [5.52-6.90] ⁽¹⁴⁵⁾
Artemisinin monotherapy			
Oral artemisinin monotherapy	\$3.15 [2.63-3.68] ^(1,360)	\$3.15 [2.10-3.68] ⁽¹³⁵⁾	\$3.15 [2.63-3.68] ^(1,495)

Source: ACTwatch 2009 Nigeria Outlet Survey

Table A.21: Affordability of antimalarials, by urban/rural classification			
	Urban	Rural	TOTAL
Median price of a tablet AETD relative to sulfadoxine-pyrimethamine (SP), the 'most popular' antimalarial treatment in Nigeria:	Ratio	Ratio	Ratio
Any ACT	7.6	5.6	7.6
First-line (FAACT) AL	12.0	n/a	11.4
Median price of a tablet AETD relative to the minimum legal daily wage (\$1.98):	Ratio	Ratio	Ratio
Any ACT	2.0	1.5	2.0
First-line (FAACT) AL	3.2	n/a	3.0
	Ratio	Ratio	Ratio
Median price of an AETD of FAACT AL relative to the international reference price (\$1.45)	4.3	n/a	4.1
	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets that:	N=1,620	N=342	N=1,962
Offer credit to consumers for antimalarials ²³	57.1 (48.6, 65.1)	62.6 (50.8, 73.0)	58.1 (51.0, 64.9)
Source: ACTwatch 2009 Nigeria Outlet Survey			

²³ This question was not asked in public health facilities.

Table A.22: Availability of diagnostic tests & cost to patients, by urban/rural classification

	Urban	Rural	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets that had:	N=1,816	N=390	N=2,206
Any diagnostic test	1.8 (0.8, 4.0)	8.5 (4.2, 16.7)	3.3 (1.8, 6.0)
Microscopic blood tests	1.0 (0.5, 1.9)	8.5 (4.1, 16.6)	2.6 (1.3, 5.0)
Rapid diagnostic tests	1.0 (0.3, 3.6)	2.5 (0.8, 7.9)	1.3 (0.5, 3.2)
Proportion of outlets that provided diagnostic tests for free, among outlets providing diagnostic tests:	N=297	N=18	N=315
Any diagnostic test	2.8 (0.8, 8.4)	0.0 --	0.8 (0.3, 2.2)
	N=267	N=17	N=284
Microscopic blood tests	2.2 (0.5, 9.1)	0.0 --	0.5 (0.1, 1.7)
	N=109	N=7	N=116
Rapid diagnostic tests	5.7 (1.1, 25.5)	0.0 --	2.1 (0.6, 6.9)
Median price of:	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)
Microscopic blood tests	\$0.66 [0.66-1.97] ⁽¹⁹⁶⁾	\$1.64 [0.66-1.97] ⁽¹⁵⁾	\$1.64 [0.66-1.97] ⁽²¹¹⁾
Rapid diagnostic tests	\$3.28 [3.28-3.28] ⁽⁵²⁾	\$1.97 [1.97-1.97] ⁽⁵⁾	\$1.97 [1.97-3.28] ⁽⁵⁷⁾
Source: ACTwatch 2009 Nigeria Outlet Survey			

Table A.23: Market share, by urban/rural classification

	Urban	Rural	TOTAL
Each antimalarial category as a proportion of the total volume of all AETDs sold or distributed in the past week:	%	%	%
Any ACT	6.8	0.8	7.7
Quality Assured ACT (QAACT)	2.0	0.4	2.4
First-line (FAACT)	2.0	0.4	2.4
Non first-line (NAACT)	<0.1	0	<0.1
Non-quality Assured ACT	4.8	0.4	5.2
Other ACT Classifications			
Nationally registered ACT	5.6	0.7	6.3
Any non-artemisinin therapy	69.6	14.2	83.9
Chloroquine	26.2	8.5	34.7
Sulfadoxine-pyrimethamine (SP)	42.4	5.6	48.1
Second-line treatment (Quinine)	0.2	0.1	0.3
Any artemisinin monotherapy	8.0	0.5	8.5
Oral artemisinin monotherapy	7.6	0.4	8.1
Non oral artemisinin monotherapy	0.4	0.1	0.4

Source: ACTwatch 2009 Nigeria Outlet Survey

Table A.24: Provider knowledge, by urban/rural classification			
	Urban	Rural	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers that:	N=1,816	N=390	N=2,206
Correctly state the recommended first-line treatment for uncomplicated malaria (AL)	15.5 (11.4, 20.7)	15.4 (12.0, 19.4)	15.5 (12.1, 19.6)
Correctly state the dosing regimen of the first-line treatment for an adult	9.7 (6.9, 13.7)	11.4 (7.8, 16.4)	10.1 (7.6, 13.3)
Correctly state the dosing regimen of the first-line treatment for a two year old	8.3 (5.7, 11.8)	10.9 (6.7, 17.2)	8.8 (6.6, 11.8)
	N=1,620	N=342	N=1,962
Can list at least one health danger sign in a child that requires referral to a public health facility: ²⁴	67.8 (59.7, 75.0)	54.1 (37.2, 70.1)	65.3 (57.8, 72.2)
• Convulsions	39.8 (32.6, 47.4)	31.5 (18.5, 48.1)	38.2 (31.7, 45.2)
• Vomiting	40.1 (35.0, 45.5)	29.9 (17.6, 45.9)	38.2 (33.0, 43.7)
• Unable to drink / breastfeed	8.5 (6.2, 11.6)	5.3 (2.5, 10.9)	7.9 (6.0, 10.5)
• Excessive sleep / difficult to wake up	4.9 (3.0, 8.0)	6.3 (2.9, 13.1)	5.2 (3.4, 7.8)
• Unconscious / coma	15.8 (12.4, 19.8)	9.2 (5.0, 16.4)	14.6 (11.6, 18.1)
Source: ACTwatch 2009 Nigeria Outlet Survey			

²⁴ This question was not asked in public health facilities.

Table A.25: Provider perceptions, by urban/rural classification

	Urban	Rural	TOTAL
	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers that:	N=1,816	N=390	N=2,206
Agree with the statement, "Most customers request an antimalarial by brand name or generic name."	58.4 (50.2, 66.3)	34.8 (28.4, 41.9)	53.3 (46.0, 60.4)
Agree with the statement, "I decide which antimalarial medicine most customers receive."	47.6 (41.1, 54.3)	69.9 (60.6, 77.8)	52.5 (46.0, 58.9)
Report that an ACT is the most effective antimalarial medicine	20.1 (12.8, 30.1)	19.4 (13.8, 26.4)	19.9 (13.9, 27.7)
Proportion of providers than state the following reasons for stocking antimalarials:	N=1,816	N=390	N=2,206
• Most profitable	10.5 (7.8, 14.1)	11.5 (6.7, 19.1)	10.7 (8.3, 13.8)
• Recommended by government	8.5 (5.7, 12.7)	21.1 (12.6, 33.0)	11.2 (8.3, 15.0)
• Lowest priced	25.8 (20.2, 32.3)	19.9 (11.7, 31.8)	24.6 (19.7, 30.1)
• Consumer demand	69.6 (64.3, 74.5)	38.7 (28.6, 49.9)	63.0 (55.8, 69.6)
• Easily available	19.9 (15.8, 24.9)	27.5 (17.4, 40.5)	21.6 (17.6, 26.1)
• Drug company	4.3 (2.1, 8.7)	4.5 (1.4, 14.0)	4.4 (2.3, 8.0)
• Brand reputation	28.3 (22.7, 34.6)	16.8 (11.7, 23.6)	25.8 (21.3, 30.9)
• Dosage form	3.3 (2.4, 4.6)	1.3 (0.5, 3.1)	2.9 (2.0, 4.0)
• Frequently prescribed	13.7 (9.5, 19.3)	10.1 (5.1, 19.1)	12.9 (9.3, 17.7)
• Effectiveness	9.7 (7.3, 12.7)	12.4 (6.2, 23.1)	10.2 (7.8, 13.3)
• Other reasons	6.5 (3.9, 10.7)	11.9 (6.3, 21.4)	7.7 (5.0, 11.6)
Source: ACTwatch 2009 Nigeria Outlet Survey			



AMFm Phase 1 Indicators

Additional Characteristics of the sample

Table 3.1.2: Outlets enumerated* in Nigeria, 2009									
Number of outlets enumerated, by location and type of outlet									
Type of outlet	Urban			Rural			Total		
	Censused localities	Booster sample	Total	Censused localities	Booster sample	Total	Censused localities	Booster sample	Total
Public health facility	239	15	254	83	0	83	322	15	337
Private not-for-profit health facility	11	0	11	3	0	3	14	0	14
Private for-profit outlet									
<i>Private-for-profit health facility</i>	527	0	527	36	0	36	563	0	563
<i>Pharmacy</i>	447	24	471	4	0	4	451	24	475
<i>Drug Store</i>	898	0	898	345	0	345	1,243	0	1,243
<i>General retailer</i>	2,468	0	2468	943	0	943	3,411	0	3,411
<i>Itinerant drug vendor</i>	16	0	16	5	0	5	21	0	21
<i>Total</i>	4,356	24	4,380	1,333	0	1,333	5,689	24	5,713
Community health worker	9	0	9	16	0	16	25	0	25
Total	4,615	39	4,654	1,435	0	1435	6,050	39	6,089
* Figure 15 reference A									

Table 3.1.3: Outlets with antimalarials in stock* in Nigeria, 2009**									
Number of outlets with antimalarials in stock at the time of the survey where an interview was conducted, by location and type of outlet									
Type of outlet	Urban			Rural			Total		
	Censused localities	Booster sample	Total	Censused localities	Booster sample	Total	Censused localities	Booster sample	Total
Public health facility	174	9	183	45	0	45	219	9	228
Private not-for-profit health facility	7	0	7	2	0	2	9	0	9
Private for-profit outlet									
<i>Private-for-profit health facility</i>	336	0	336	22	0	22	358	0	358
<i>Pharmacy</i>	387	14	401	2	0	2	389	14	403
<i>Drug Store</i>	722	0	722	268	0	268	990	0	990
<i>General retailer</i>	87	0	0	16	0	16	103	0	103
<i>Itinerant drug vendor</i>	7	0	7	3	0	3	10	0	10
<i>Total</i>	1,539	14	1,553	311	0	311	1,850	14	1,864
Community health worker	6	0	6	6	0	6	12	0	12
Total	1,726	23	1,749	364	0	364	2,090	23	2,113
* Figure 15, reference E. An interview was conducted if final interview status for an outlet was "Completed interview" or "Partially completed".									
** These numbers form the denominator for all subsequent tables, unless specified otherwise. Any variation in the stated denominator in subsequent tables is due to missing data on specific variables.									

Table 3.1.4: Number of products audited in Nigeria, 2009			
Number of products audited by outlet type, product type, and location			
	Urban	Rural	Total
	Number of products audited	Number of products audited	Number of products audited
<i>Quality assured ACTs</i>			
Public health facility	60	26	86
Private not for profit health facility	4	3	7
Private for profit outlet	984	107	1,091
Community health worker	5	3	8
Total	1,053	139	1,192
<i>Non-quality assured ACTs</i>			
Public health facility	202	13	215
Private not for profit health facility	11	1	12
Private for profit outlet	4,269	126	4,395
Community health worker	0	2	2
Total	4,482	142	4,624
<i>Artemisinin monotherapy</i>			
Public health facility	124	16	140
Private not for profit health facility	11	1	12
Private for profit outlet	2,509	227	2,736
Community health worker	2	1	3
Total	2,646	245	2,891
<i>Non-Artemisinin therapy</i>			
Public health facility	510	109	619
Private not for profit health facility	22	7	29
Private for profit outlet	9,684	1,779	11,463
Community health worker	8	15	23
Total	10,224	1,910	12,134
<i>All antimalarials</i>			
Public health facility	896	164	1,060
Private not for profit health facility	48	12	60
Private for profit outlet	17,446	2,239	19,685
Community health worker	8	21	36
Total	18,405	2,436	20,841

Table 3.1.5: Outlets with at least one staff member who completed secondary school or primary school* in Nigeria, 2009						
Outlets with at least one staff member who completed secondary school or primary school (n) as a percentage of all outlets with any antimalarials in stock at the time of the survey visit (N), by location and type of outlet.						
Type of outlet	Urban		Rural		Total	
	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N
At least one staff member completed primary school						
Public health facility	100	181	100	43	100	224
Private not-for-profit health facility	100	6	100	2	100	8
Private for-profit outlet						
<i>Private-for-profit health facility</i>	100	329	100	22	100	351
<i>Pharmacy</i>	100	386	100	2	100	388
<i>Drug Store</i>	99.8 (98.9,100)	699	99.9 (99.3,100)	259	99.8 (99.1,100)	958
<i>General retailer</i>	99.9 (99.3,100)	77	89.1 (52.0,98.4)	13	97.8 (87.3,99.6)	90
<i>Itinerant drug vendor</i>	64.8 (35.6,86.0)	6	100	3	74.0 (39.6,92.5)	9
<i>Total</i>	99.5 (98.1,99.9)	1,497	98.7 (93.7,99.8)	299	99.4 (98.2,99.8)	1,796
Community health worker	100	6	100	6	100	12
Total	99.5 (98.1,99.9)	1,690	99.0 (95.1,99.8)	350	99.4 (98.3,99.8)	2,040
At least one staff member completed secondary school						
Public health facility	99.1 (94.6,99.9)	181	100	43	99.9 (99.6,100)	224
Private not-for-profit health facility	100	6	100	2	100	8
Private for-profit outlet						
<i>Private-for-profit health facility</i>	99.8 (98.5,100)	329	100	22	100 (99.7,100)	351
<i>Pharmacy</i>	100	386	100	2	100	388
<i>Drug Store</i>	97.5 (94.9,98.8)	699	94.1 (80.2,98.5)	259	97.0 (94.3,98.4)	958
<i>General retailer</i>	84.8 (70.6,92.8)	77	81.8 (51.3,95.1)	12	84.3 (72.3,91.6)	89
<i>Itinerant drug vendor</i>	0.2 (0.0,2.1)	5	96.5 (68.1,99.7)	3	34.3 (6.2,80.5)	8
<i>Total</i>	95.8 (92.7,97.7)	1,496	94.1 (88.2,97.2)	298	95.5 (92.9,97.2)	1,794
Community health worker	100	6	100	6	100	12
Total	95.9 (92.7,97.7)	1,689	95.3 (89.9,97.9)	349	95.8 (93.3,97.4)	2,038
* The two groups are not mutually exclusive. Providers noted as having completed primary school include those who have completed secondary school and those who have not completed secondary school but who have completed primary school.						

Table 3.1.6: Outlets with a staff member with a health-related qualification* in Nigeria, 2009						
Outlets with at least one staff member with a health-related qualification (n) as a percentage of all outlets with any antimalarials in stock at the time of the survey visit (N), by location and type of outlet.						
Type of outlet	Urban		Rural		Total	
	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N
Public health facility	83.0 (73.7,89.5)	175	45.8 (21.8,72.0)	42	48.1 (24.7,72.3)	217
Private not-for-profit health facility	100	6	85.5 (23.3,99.1)	2	86.7 (32.4,98.9)	8
Private for-profit outlet						
<i>Private-for-profit health facility</i>	96.0 (88.8,98.6)	319	94.1 (72.4,99.0)	21	94.4 (78.3,98.8)	340
<i>Pharmacy</i>	92.1 (84.3,96.2)	377	100.0	2	96.4 (88.0,99.0)	379
<i>Drug Store</i>	36.7 (28.9,45.4)	661	20.1 (13.7,28.5)	247	34.2 (27.4,41.7)	908
<i>General retailer</i>	34.2 (19.7,52.5)	74	39.2 (9.7,79.5)	13	35.2 (20.8,53.0)	87
<i>Itinerant drug vendor</i>	0.0	6	21.1 (1.8,79.3)	3	5.5 (0.6,35.8)	9
<i>Total</i>	36.8 (29.1,45.2)	1,437	34.4 (19.6,52.9)	286	36.4 (29.3,44.1)	1,723
Community health worker	100	6	4.5 (0.8,22.3)	6	20.9 (5.5,54.6)	12
Total	37.0 (29.4,45.3)	1,624	35.7 (22.4,51.7)	336	36.7 (29.9,44.1)	1,960
* A health-related qualification was defined as pharmacy, nurse or medical doctor related training. Pharmacy related training includes pharmacy studied to a certificate or diploma level; Nurse related training includes studying nursing to a certificate level (nurse aid) and diploma level; Medical doctor training includes clinical officers who studied medicine to a diploma level and fully qualified physicians.						

Availability of antimalarial drugs

Antimalarials in stock

Table 3.2.1: Outlets with antimalarials in stock in Nigeria, 2009						
Indicator 1.1 Outlets that had any antimalarials in stock at the time of the survey visit* (n) as a percentage of all outlets where screening questions were completed** (N), by location and type of outlet						
Type of outlet	Urban		Rural		Total	
	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N
Public health facility	90.2 (82.8,94.6)	203	91.9 (79.2,97.1)	52	91.8 (80.2,96.9)	255
Private not-for-profit health facility	88.5 (61.4,97.4)	9	100.0	2	98.6 (89.6,99.8)	11
Private for-profit outlet						
<i>Private-for-profit health facility</i>	89.6 (83.4,93.7)	377	91.8 (66.6,98.4)	28	91.4 (72.2,97.8)	405
<i>Pharmacy</i>	98.9 (97.1,99.6)	407	100.0	2	99.5 (98.0,99.9)	409
<i>Drug Store</i>	95.9 (93.4,97.5)	748	93.5 (87.6,96.8)	283	95.6 (93.4,97.0)	1,031
<i>General retailer</i>	3.4 (1.9,6.1)	2,401	3.0 (1.5,5.9)	904	3.3 (2.0,5.3)	3,305
<i>Itinerant drug vendor</i>	67.0 (25.3,92.4)	16	85.6 (40.8,98.1)	5	70.2 (33.9,91.6)	21
<i>Total</i>	26.3 (22.5,30.5)	3,949	22.9 (16.6,30.6)	1,222	25.6 (22.4,29.2)	5,171
Community health worker	100	6	69.1 (36.6,89.6)	13	80.0 (54.6,93.0)	19
Total	26.5 (22.7,30.7)	4,167	26.9 (21.0,33.6)	1,289	26.6 (23.3,30.1)	5,456
* Figure 15 reference E						
** Figure 15 reference B. Screening questions asked whether outlets had any medicines in stock that day, or any antimalarials in stock that day, and if not whether they had had any medicines, or any antimalarials, in stock in the previous 3 months.						

Antimalarials in stock by type

Table 3.2.2: Outlets with non-artemisinin therapy in stock in Nigeria, 2009

Indicator 1.2 Outlets that had non-artemisinin monotherapy or non-artemisinin combination therapy in stock (n) as a percentage of outlets with any antimalarials in stock at the time of the survey visit* (N), by location and type of outlet.

Type of outlet	Urban		Rural		Total	
	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N
Public health facility	97.7 (92.7,99.3)	182	87.2 (67.3,95.8)	45	87.8 (69.2,95.9)	227
Private not-for-profit health facility	89.5 (51.9,98.5)	7	100.0	2	98.9 (89.0,99.9)	9
Private for-profit outlet						
<i>Private-for-profit health facility</i>	93.4 (88.4,96.3)	335	74.3 (61.1,84.1)	22	77.4 (61.9,87.9)	357
<i>Pharmacy</i>	95.7 (86.6,98.7)	399	100.0	2	98.0 (90.8,99.6)	401
<i>Drug Store</i>	98.8 (96.8,99.5)	722	99.7 (98.1,100.0)	268	98.9 (97.3,99.6)	990
<i>General retailer</i>	96.3 (89.4,98.8)	87	100.0	16	97.0 (91.1,99.0)	103
<i>Itinerant drug vendor</i>	100.0	7	100.0	3	100.0	10
<i>Total</i>	98.5 (97.0,99.3)	1,550	96.5 (87.9,99.1)	311	98.2 (96.5,99.1)	1,861
Community health worker	1.0 (0.1,10.1)	6	100.0	6	56.4 (18.6,88.0)	12
Total	98.0 (96.2,98.9)	1,745	95.0 (89.8,97.6)	364	97.3 (95.6,98.4)	2,109

* Figure 15 reference E

Table 3.2.3: Outlets with artemisinin monotherapy in stock in Nigeria, 2009						
Indicator 1.3 Outlets that had an artemisinin monotherapy in stock (n) as a percentage of outlets with any antimalarials in stock at the time of the survey visit* (N), by location and type of outlet.						
Type of outlet	Urban		Rural		Total	
	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N
Public health facility	32.5 (22.8,44.0)	181	28.3 (9.0,61.2)	45	28.5 (9.9,59.2)	226
Private not-for-profit health facility	30.9 (7.3,71.9)	6	85.5 (27.5,98.9)	2	80.8 (30.3,97.6)	8
Private for-profit outlets						
<i>Private-for-profit health facility</i>	49.0 (40.9,57.1)	334	57.0 (40.0,72.5)	22	55.7 (40.3,70.0)	356
<i>Pharmacy</i>	94.0 (89.7,96.6)	399	100.0	2	97.2 (91.7,99.1)	401
<i>Drug Store</i>	48.5 (35.8,61.4)	715	42.1 (31.3,53.7)	268	47.5 (36.5,58.7)	983
<i>General retailer</i>	41.6 (22.9,63.0)	78	3.6 (0.5,22.5)	13	34.2 (18.7,54.1)	91
<i>Itinerant drug vendor</i>	20.9 (1.8,79.3)	7	0.0	3	16.5 (1.8,68.4)	10
<i>Total</i>	47.8 (35.3,60.5)	1,533	41.4 (31.3,52.3)	308	46.6 (36.2,57.4)	1,841
Community health worker	1.0 (0.1,10.1)	6	2.2 (0.3,16.6)	6	1.7 (0.3,8.5)	12
Total	47.5 (35.1,60.1)	1,726	38.2 (29.1,48.2)	361	45.5 (35.5,55.8)	2,087
* Figure 15 reference E						

Table 3.2.4: Outlets with non-quality-assured ACTs in stock in Nigeria, 2009						
Indicator 1.4 Outlets that had non-quality-assured ACTs in stock (n) as a percentage of outlets with any antimalarials in stock at the time of the survey visit* (N), by location and type of outlet.						
Type of outlet	Urban		Rural		Total	
	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N
Public health facility	44.0 (33.3,55.3)	180	16.0 (5.9,36.5)	45	17.7 (7.7,35.8)	225
Private not-for-profit health facility	70.2 (33.8,91.6)	7	85.5 (27.5,98.9)	2	83.9 (34.0,98.1)	9
Private for-profit outlet						
<i>Private-for-profit health facility</i>	33.5 (20.7,49.2)	334	28.7 (20.7,38.3)	22	29.5 (22.8,37.2)	356
<i>Pharmacy</i>	92.5 (85.9,96.2)	400	100.0	2	96.6 (89.1,99.0)	402
<i>Drug Store</i>	24.7 (14.1,39.7)	714	12.1 (7.0,20.0)	266	22.8 (13.6,35.7)	980
<i>General retailer</i>	25.3 (12.9,43.6)	78	0.0	13	20.4 (9.6,38.1)	91
<i>Itinerant drug vendor</i>	0.0	7	0.0	3	0.0	10
<i>Total</i>	24.9 (14.6,39.2)	1,533	15.5 (9.8,23.7)	306	23.2 (14.5,35.0)	1,839
Community health worker	0.0	6	2.3 (0.3,17.3)	6	1.3 (0.2,9.4)	12
Total	24.8 (14.6,39.0)	1,726	15.5 (10.6,22.1)	359	22.8 (14.5,34.0)	2,085
* Figure 15 reference E						

Table 3.2.5: Outlets with quality assured ACTs in stock in Nigeria, 2009						
Indicator 1.5 Outlets that had quality assured ACTs in stock (n) as a percentage of outlets with any antimalarials in stock at the time of the survey visit* (N), by location and type of outlet.						
Type of outlet	Urban		Rural		Total	
	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N
Public health facility	18.3 (11.0,28.7)	181	48.1 (27.3,69.5)	45	46.3 (26.5,67.3)	226
Private not-for-profit health facility	77.1 (36.0,95.3)	6	100.0	2	98.1 (85.8,99.8)	8
Private for-profit outlet						
<i>Private-for-profit health facility</i>	21.0 (12.7,32.7)	333	30.0 (22.0,39.4)	22	28.5 (20.7,37.8)	355
<i>Pharmacy</i>	63.2 (44.7,78.6)	392	3.6 (0.2,36.3)	2	30.9 (9.1,66.7)	394
<i>Drug Store</i>	29.4 (22.7,37.2)	715	19.3 (12.4,28.7)	266	27.9 (21.9,34.8)	981
<i>General retailer</i>	21.1 (10.2,38.5)	78	0.7 (0.1,5.2)	13	17.2 (7.7,33.9)	91
<i>Itinerant drug vendor</i>	0.0	7	0.0	3	0.0	10
Total	28.5 (22.2,35.8)	1,525	18.1 (12.6,25.2)	306	26.6 (21.0,33.0)	1,831
Community health worker	99.5 (94.8,100.0)	6	23.5 (3.4,72.7)	6	56.9 (19.9,87.6)	12
Total	28.8 (22.6,36.0)	1,718	23.7 (16.3,33.1)	359	27.7 (22.4,33.9)	2,077
* Figure 15 reference E						

Stock-outs of quality assured ACTs

Table 3.2.6: Outlets with stock-outs of quality assured ACTs in Nigeria, 2009

Indicator 1.6 Outlets that were out of stock of all quality assured ACTs for at least 1 day in the last 7 days (n) as a percentage of outlets with any quality assured ACTs in stock at the time of the survey visit or in the 4 weeks preceding the survey visit (N), by location and type of outlet.*

Indicator not available

This is an indicator of the Independent Evaluation of the AMFm which was determined only after the fieldwork for this study was launched. This survey round was not designed to collect data needed to calculate this indicator and therefore this indicator cannot be calculated given the data set.

Population coverage of outlets with quality assured ACTs

Table 3.2.7: Percentage of the population living in censused localities with outlets with quality assured ACTs in stock at the time of survey in Nigeria, 2009

Indicator 1.7: Population living in a censused localities where there was at least one of a given type of outlet with a QAACT in stock at the time of the survey visit (n) as a percentage of the total population living in all the censused localities (N), by location.

Indicator not available

This is an indicator of the Independent Evaluation of the AMFm which was determined only after the fieldwork for this study was launched. This indicator was not calculated for Nigeria because of the highly variable size of the clusters sampled in the *ACTwatch* survey.

Pricing of antimalarials (Affordability)

Cost to patients of antimalarials

Table 3.3.1: Cost to patients of non-artemisinin therapy, in US dollars* in Nigeria, 2009						
Indicator 2.4: Median cost to patients of one adult equivalent treatment dose (AETD)** of non-artemisinin monotherapy or non-artemisinin combination therapy, by location, type of outlet and dosage form.						
Type of outlet	Urban		Rural		Total***	
	Median cost [IQR]	Number of products	Median cost [IQR]	Number of products	Median cost [IQR]	Number of products
All dosage forms						
Public health facility	0.00 [0.00, 0.69]	463	0.53 [0.06, 0.99]	85	0.53[0.01, 0.99]	548
Private not-for-profit health facility	0.82 [0.59, 1.77]	20	1.64 [0.38, 4.14]	7	1.64[0.59, 4.14]	27
Private for-profit outlet	0.82 [0.46, 1.31]	8,933	0.82 [0.46, 1.23]	1,714	0.82[0.46, 1.31]	10,647
Community health workers	1.07 [0.36, 1.38]	8	0.66 [0.00, 4.14]	14	0.66[0.00, 4.14]	22
Total	0.82 [0.46, 1.31]	9,424	0.82 [0.39, 1.23]	1,820	0.82[0.46, 1.31]	11,244
Tablets						
Public health facility	0.00 [0.00, 0.33]	260	0.39 [0.00, 0.53]	40	0.32 [0.00, 0.53]	300
Private not-for-profit health facility	0.64[0.59, 1.31]	11	0.59 [0.38, 4.14]	5	0.59 [0.38, 4.14]	16
Private for-profit outlet	0.53[0.39, 0.99]	4,995	0.46 [0.32, 0.79]	806	0.53 [0.39, 0.99]	5,801
Community health workers	0.36 [0.10, 0.76]	4	0.66 [0.00, 0.66]	8	0.66 [0.00, 0.66]	12
Total	0.53 [0.39, 0.99]	5,270	0.46 [0.32, 0.79]	859	0.53 [0.39, 0.99]	6,129
Oral liquids						
Public health facility	0.82 [0.00, 1.15]	105	0.82 [0.01, 1.31]	19	0.82 [0.01, 1.31]	124
Private not-for-profit health facility	1.64 [0.10, 11.82]	5	1.64	1	1.64 [1.64, 1.64]	6
Private for-profit outlet	1.23 [0.92, 1.64]	3,486	1.15 [0.82, 1.64]	801	1.18 [0.92, 1.64]	4,287
Community health workers	1.23 [1.15, 1.97]	3	1.43 [1.31, 1.54]	2	1.31 [1.31, 1.54]	5
Total	1.23 [0.92, 1.64]	3,599	1.15 [0.82, 1.64]	823	1.18 [0.92, 1.64]	4,422
Injectables						
Public health facility	0.31 [0.00, 0.82]	98	0.61 [0.25, 1.97]	26	0.61 [0.25, 1.97]	124
Private not-for-profit health facility	2.96 [0.49, 2.96]	4	13.79 [n/a]	1	13.79 [13.79, 13.79]	5
Private for-profit outlet	0.61 [0.46, 0.99]	452	0.49 [0.33, 0.74]	107	0.61 [0.41, 0.92]	559
Community health workers	1.53 [n/a]	1	4.14 [0.57, 13.79]	4	4.14 [0.57, 13.79]	5

Table 3.3.1: Cost to patients of non-artemisinin therapy, in US dollars* in Nigeria, 2009						
Indicator 2.4: Median cost to patients of one adult equivalent treatment dose (AETD)** of non-artemisinin monotherapy or non-artemisinin combination therapy, by location, type of outlet and dosage form.						
Type of outlet	Urban		Rural		Total***	
	Median cost [IQR]	Number of products	Median cost [IQR]	Number of products	Median cost [IQR]	Number of products
Total	0.61 [0.46, 0.99]	555	0.49 [0.33, 0.99]	138	0.61 [0.41, 0.99]	693
<i>Other</i>						
Public health facility	–	0	–	0	–	0
Private not-for-profit health facility	–	0	–	0	–	0
Private for-profit outlet	–	0	–	0	–	0
Community health workers	–	0	–	0	–	0
Total	–	0	–	0	–	0
* 1 USD = 152.25 Naira; ** An AETD is the number of milligrams (mg) of a given drug that is required to treat a 60 kg adult. AETDs were calculated for every audited antimalarial. *** Fluctuations in Ns are due to missing price data for a number of audited products.						

Table 3.3.2: Cost to patients of artemisinin monotherapy, in US dollars* in Nigeria, 2009**Indicator 2.3** Median cost to patients of one adult equivalent treatment dose (AETD)** of artemisinin monotherapy, by location, type of outlet and dosage form.

Type of outlet	Urban		Rural		Total***	
	Median cost [IQR]	Number of products	Median cost [IQR]	Number of products	Median cost [IQR]	Number of products
All dosage forms						
Public health facility	8.67 [2.63, 13.24]	108	35.47 [2.31, 39.41]	15	35.47 [2.31, 39.41]	123
Private not-for-profit health facility	19.51 [10.51, 31.53]	10	15.76	1	15.76 [15.76, 15.76]	11
Private for-profit outlet	3.36 [2.63, 8.87]	2,258	3.68 [2.63, 10.84]	213	3.61 [2.63, 9.46]	2,471
Community health workers	1.58 [0.00, 3.15]	2	25.62	1	25.62 [3.15, 25.62]	3
Total	3.36 [2.63, 8.87]	2,378	3.99 [2.63, 15.76]	230	3.68 [2.63, 9.85]	2,608
Tablets						
Public health facility	2.63 [2.63, 3.15]	47	2.31 [2.31, 2.31]	5	2.31 [2.31, 2.63]	52
Private not-for-profit health facility	6.31 [4.60, 10.51]	3	–	0	6.31 [4.60, 10.51]	3
Private for-profit outlet	3.15 [2.63, 3.68]	1,308	3.15 [2.10, 3.68]	130	3.15 [2.63, 3.68]	1,438
Community health workers	1.58 [0.00, 3.15]	2	–	0	1.58 [0.00, 3.15]	2
Total	3.15 [2.63, 3.68]	1,360	3.15 [2.10, 3.68]	135	3.15 [2.63, 3.68]	1,495
Oral liquids						
Public health facility	10.84 [8.87, 15.76]	16	–	0	10.84 [8.87, 15.76]	16
Private not-for-profit health facility	13.24 [13.24, 13.79]	2	–	0	13.24 [13.24, 13.79]	2
Private for-profit outlet	12.61 [8.87, 17.73]	626	15.76 [9.85, 17.73]	63	13.66 [9.46, 17.73]	689
Community health workers	–	0	25.62	1	25.62	1
Total	12.61 [8.87, 17.73]	644	15.76 [9.85, 17.73]	64	13.66 [9.46, 17.73]	708
Injectables						
Public health facility	11.82 [6.57, 19.71]	45	35.47 [31.53, 39.41]	9	35.47 [26.27, 39.41]	54
Private not-for-profit health facility	31.53 [27.59, 37.44]	5	15.76	1	15.76 [15.76, 15.76]	6
Private for-profit outlet	11.82 [10.01, 15.76]	316	14.98 [9.46, 15.76]	20	11.82 [9.46, 15.76]	336
Community health workers	–	0	–	0	–	0
Total	11.82 [9.46, 15.76]	366	26.27 [11.82, 35.47]	30	15.76 [10.25, 19.71]	396
Other						
Public health facility	–	0	0.00	1	0.00	1
Private not-for-profit health facility	–	0	–	0	–	0
Private for-profit outlet	3.78 [3.78, 4.20]	8	–	0	3.78 [3.78, 4.20]	8
Community health workers	–	0	–	0	–	0
Total	3.78 [3.78, 4.20]	8	0.00	1	0.00 [0.00, 0.00]	9

* 1 USD = 152.25 Naira;

** An AETD is the number of milligrams (mg) of a given drug that is required to treat a 60 kg adult. AETDs were calculated for every audited antimalarial.

***Fluctuations in Ns are due to missing price data for a number of audited products.

Table 3.3.3: Cost to patients of non-quality-assured ACTs, in US dollars* in Nigeria, 2009

Indicator 2.2: Median cost to patients of one adult equivalent treatment dose (AETD)** of non-quality-assured ACTs by location, type of outlet and dosage form.

Type of outlet	Urban		Rural		Total ***	
	Median cost [IQR]	Number of products	Median cost [IQR]	Number of products	Median cost [IQR]	Number of products
All dosage forms						
Public health facility	0.00 [0.00, 3.61]	180	4.01 [0.00, 4.01]	10	2.63 [0.00, 4.01]	190
Private not-for-profit health facility	4.60 [1.97, 9.20]	5	4.60	1	4.60 [4.60, 4.60]	6
Private for-profit outlet	4.06 [2.96, 5.25]	3,887	3.94 [3.28, 5.25]	104	3.94 [2.96, 5.25]	3,991
Community health workers	–	0	0.00 [0.00, 0.00]	2	0.00 [0.00, 0.00]	2
Total	4.06 [2.96, 5.25]	4,072	3.94 [2.96, 4.60]	117	3.94 [2.96, 5.25]	4,189
Tablets						
Public health facility	0.00 [0.00, 2.76]	140	4.01 [0.00, 4.01]	10	2.96 [0.00, 4.01]	150
Private not-for-profit health facility	4.60 [1.97, 5.91]	3	4.60	1	4.60 [4.60, 4.60]	4
Private for-profit outlet	3.94 [2.96, 4.93]	2,921	3.61 [3.28, 4.27]	74	3.94 [2.96, 4.93]	2,995
Community health workers	–	0	0.00 [0.00, 0.00]	2	0.00 [0.00, 0.00]	2
Total	3.94 [2.96, 4.93]	3,064	3.94 [3.28, 4.01]	87	3.94 [2.96, 4.93]	3,151
Oral liquids						
Public health facility	6.57 [0.00, 12.26]	36	–	0	6.57 [0.00, 12.26]	36
Private not-for-profit health facility	14.01 [9.20, 14.01]	2	–	0	14.01 [9.20, 14.01]	2
Private for-profit outlet	10.51 [8.76, 13.14]	697	7.88 [7.88, 10.51]	20	10.51 [7.88, 12.26]	717
Community health workers	–	0	–	0	–	0
Total	10.51 [8.76, 13.14]	735	7.88 [7.88, 10.51]	20	10.51 [7.88, 12.26]	755
Injectables						
Public health facility	–	0	–	0	–	0
Private not-for-profit health facility	–	0	–	0	–	0
Private for-profit outlet	–	0	–	0	–	0
Community health workers	–	0	–	0	–	0
Total	–	0	–	0	–	0
Other						
Public health facility	0.88 [0.88, 0.88]	4	–	0	0.88 [0.88, 0.88]	4
Private not-for-profit health facility	–	0	–	0	–	0
Private for-profit outlet	1.31 [1.09, 3.07]	269	2.19 [2.19, 2.19]	10	2.19 [1.09, 2.63]	279
Community health workers	–	0	–	0	–	0
Total	1.31 [1.09, 3.07]	273	2.19 [2.19, 2.19]	10	2.19 [1.09, 2.63]	283

* 1 USD = 152.25 Naira;

** An AETD is the number of milligrams (mg) of a given drug that is required to treat a 60 kg adult. AETDs were calculated for every audited antimalarial.

***Fluctuations in Ns are due to missing price data for a number of audited products.

Table 3.3.4: Cost to patients of quality assured ACTs in US dollars* in Nigeria, 2009

Indicator 2.1: Median cost to patients of one treatment dose of quality assured ACTs by location and type of outlet

Type of outlet	Urban		Rural		Total****	
	Median cost [IQR]	Number of products	Median cost [IQR]	Number of products	Median cost [IQR]	Number of products
Adult equivalent treatment dose (AETD)**						
Public health facility	0.00 [0.00, 0.00]	55	0.00 [0.00, 2.30]	24	0.00 [0.00, 2.30]	79
Private not-for-profit health facility	2.63 [1.31, 2.63]	3	0.79 [0.00, 0.79]	3	0.79 [0.00, 0.79]	6
Private for-profit outlet	3.94 [2.10, 5.91]	900	2.63 [1.97, 4.60]	101	3.94 [2.10, 5.58]	1,001
Community health worker	1.31 [0.79, 1.31]	5	0.00 [0.00, 0.00]	3	0.79 [0.00, 1.31]	8
Total	3.94 [1.97, 5.91]	963	2.10 [0.00, 3.15]	131	3.28 [1.84, 5.25]	1,094
Paediatric formulation -Pack for a two-year old child (10kg)***						
Public health facility	0.00 [0.00, 0.00]	28	0.00 [0.00, 0.72]	13	0.00 [0.00, 0.72]	41
Private not-for-profit health facility	0.66 [0.33, 0.66]	3	0.20 [0.20, 0.20]	2	0.20 [0.20, 0.20]	5
Private for-profit outlet	0.99 [0.46, 1.31]	495	0.66 [0.53, 0.99]	79	0.92 [0.46, 1.31]	574
Community health worker	0.33 [0.20, 0.33]	5	0.00	1	0.20 [0.20, 0.33]	6
Total	0.99 [0.46, 1.31]	531	0.66 [0.20, 0.79]	95	0.79 [0.46, 1.31]	626

* 1 USD = 152.25 Naira;

** An AETD is the number of milligrams (mg) of a given drug that is required to treat a 60 kg adult. AETDs were calculated for every audited antimalarial;

*** Paediatric formulations (PFs) are packages intended for children. In the calculation of median cost we include only packages whose age (weight) range includes a 2 year old (10kg) child.

****Fluctuations in Ns are due to missing price data for a number of audited products.

Gross percentage markup between purchase price and retail selling price

Table 3.3.5: Gross percentage mark-up between purchase price and retail selling price of non-artemisinin therapy in Nigeria, 2009						
Median percentage mark-up between purchase price and retail selling price of non-artemisinin monotherapy or non-artemisinin combination therapy by location and type of outlet*						
Type of outlet	Urban		Rural		Total	
	Median mark-up [IQR]	Number of products	Median mark-up [IQR]	Number of products	Median mark-up [IQR]	Number of products**
Public health facility	0.0 [0.0, 20.0]	340	19.0 [0.0, 50.0]	70	19.0 [0.0, 42.9]	410
Private not-for-profit health facility	40.0 [25.0, 66.7]	13	25.0 [8.7, 50.0]	6	25.0 [8.7, 50.0]	19
Private for-profit outlet						
<i>Private-for-profit health facility</i>	50.0 [33.3, 100.0]	336	45.5 [39.5, 60.0]	39	47.1 [39.5, 66.7]	375
<i>Pharmacy</i>	33.3 [25.0, 53.8]	2,128	55.0 [32.3, 69.0]	20	36.4 [25.0, 60.0]	2,148
<i>Drug Store</i>	40.0 [25.0, 60.0]	3,845	40.0 [25.0, 60.0]	1,420	40.0 [25.0, 60.0]	5,265
<i>General retailer</i>	33.3 [16.7, 50.0]	294	25.0 [20.0, 33.3]	47	27.3 [19.4, 45.5]	341
<i>Itinerant drug vendor</i>	33.3 [25.0, 66.7]	12	60.0 [60.0, 60.0]	4	40.0 [25.0, 66.7]	16
Total	40.0 [25.0, 60.0]	6,615	38.9 [25.0, 60.0]	1,530	40.0 [25.0, 60.0]	8,145
Community health worker	20.8 [10.7, 50.0]	8	42.9 [0.0, 50.0]	14	42.9 [0.0, 50.0]	22
Total	40.0 [25.0, 60.0]	6,976	33.3 [25.0, 60.0]	1,620	40.0 [25.0, 60.0]	8,596
* 16 markups were treated as missing because the purchase price was zero and the retail selling price was non-zero.						
**Fluctuations in Ns are due to missing price data for a number of audited products.						

Table 3.3.6: Gross percentage mark-up between purchase price and retail selling price of artemisinin monotherapy in Nigeria, 2009

Median percentage mark-up between purchase price and retail selling price of artemisinin monotherapy by location and type of outlet*						
Type of outlet	Urban		Rural		Total**	
	Median mark-up [IQR]	Number of products	Median mark-up [IQR]	Number of products	Median mark-up [IQR]	Number of products
Public health facility	11.1 [5.3, 21.1]	74	0.0 [0.0, 22.2]	10	4.2 [0.0, 22.2]	84
Private not-for-profit health facility	28.0 [20.3, 75.0]	10	–	0	28.0 [20.3, 75.0]	10
Private for-profit outlet						
<i>Private-for-profit health facility</i>	33.3 [20.0, 60.0]	121	39.5 [17.6, 39.5]	5	39.5 [20.0, 39.5]	126
<i>Pharmacy</i>	28.6 [17.5, 40.0]	794	29.9 [11.1, 56.3]	19	29.9 [14.3, 48.9]	813
<i>Drug Store</i>	21.6 [14.3, 33.3]	597	25.0 [14.3, 50.0]	163	22.2 [14.3, 36.4]	760
<i>General retailer</i>	20.0 [12.0, 25.0]	33	–	0	20.0 [12.0, 25.0]	33
<i>Itinerant drug vendor</i>	50.0	1	–	0	50.0	1
Total	21.6 [14.3, 33.3]	1,546	29.6 [14.3, 50.0]	187	22.4 [14.3, 36.4]	1,733
Community health worker	10.0 [0.0, 20.0]	2	30.0	1	30.0 [20.0, 30.0]	3
Total	21.6 [14.3, 33.3]	1,632	28.6 [14.3, 50.0]	198	22.4 [14.3, 36.4]	1,830

* 3 markups were treated as missing because the purchase price was zero and the retail selling price was non-zero.

** Fluctuations in Ns are due to missing price data for a number of audited products.

Table 3.3.7: Gross percentage mark-up between purchase price and retail selling price of non-quality-assured ACTs in Nigeria, 2009

Median percentage mark-up between purchase price and retail selling price of non-quality-assured ACTs by location and type of outlet

Type of outlet	Urban		Rural		Total	
	Median mark-up [IQR]	Number of products	Median mark-up [IQR]	Number of products	Median mark-up [IQR]	Number of products**
Public health facility	0.0 [0.0, 7.8]	139	0.0 [0.0, 0.0]	6	0.0 [0.0, 0.0]	145
Private not-for-profit health facility	12.9 [11.1, 40.0]	3	7.7	1	7.7 [7.7, 7.7]	4
Private for-profit outlet						
<i>Private-for-profit health facility</i>	31.1 [22.2, 51.5]	146	41.7 [41.7, 41.7]	2	33.3 [25.0, 50.0]	148
<i>Pharmacy</i>	25.0 [15.4, 35.3]	1833	25.0 [16.9, 25.0]	28	25.0 [16.9, 29.3]	1861
<i>Drug Store</i>	19.0 [11.1, 28.9]	391	25.0 [15.4, 30.0]	59	19.0 [11.1, 29.0]	450
<i>General retailer</i>	28.6 [18.2, 40.0]	26	–	0	28.6 [18.2, 40.0]	26
<i>Itinerant drug vendor</i>	–	0	–	0	–	0
Total	19.0 [11.1, 31.0]	2396	25.0 [16.9, 28.6]	89	20.0 [12.1, 30.0]	2,485
Community health worker		0	0.0 [0.0, 0.0]	2	0.0 [0.0, 0.0]	2
Total	19.0 [11.1, 31.0]	2538	22.2 [12.4, 25.0]	98	19.0 [11.1, 29.6]	2,636

* 1 markup was treated as missing because the purchase price was zero and the retail selling price was non-zero.

** Fluctuations in Ns are due to missing price data for a number of audited products.

Table 3.3.8: Gross percentage mark-up between purchase price and retail selling price of quality assured ACTs in Nigeria, 2009						
Indicator 2.5: Median percentage mark-up between purchase price and retail selling price of quality assured ACTs by location and type of outlet						
Type of outlet	Urban		Rural		Total	
	Median mark-up [IQR]	Number of products	Median mark-up [IQR]	Number of products	Median mark-up [IQR]	Number of products**
Public health facility	0.0 [0.0, 0.0]	51	0.0 [0.0, 0.0]	19	0.0 [0.0, 0.0]	70
Private not-for-profit health facility	900.0 [0.0, 900.0]	2	500.0 [0.0, 500.0]	3	500.0 [0.0, 500.0]	5
Private for-profit outlet						
<i>Private-for-profit health facility</i>	25.0 [14.3, 143.9]	52	66.7	1	66.7 [66.7, 66.7]	53
<i>Pharmacy</i>	25.0 [18.0, 42.9]	287	42.9 [37.5, 60.0]	3	28.6 [20.0, 43.8]	290
<i>Drug Store</i>	31.6 [20.0, 50.0]	262	33.3 [25.0, 66.7]	71	33.3 [20.0, 50.0]	333
<i>General retailer</i>	33.3 [13.6, 50.0]	12	50.0 [50.0, 50.0]	1	33.3 [13.6, 50.0]	13
<i>Itinerant drug vendor</i>	–	0	–	0	–	0
Total	30.8 [19.0, 50.0]	613	33.3 [29.0, 66.7]	76	33.3 [20.0, 50.0]	689
Community health worker	500.0 [66.7, 500.0]	5	0.0 [0.0, 0.0]	3	66.7 [0.0, 500.0]	8
Total	33.3 [20.0, 50.0]	671	25.0 [0.0, 42.9]	101	30.8 [17.6, 50.0]	772
* 4 markups were treated as missing because the purchase price was zero and the retail selling price was non-zero.						
** Fluctuations in Ns are due to missing price data for a number of audited products.						

Availability and cost to patients of diagnostic tests (RDT/microscopy)

Malaria microscopy

Table 3.3.9: Availability of malaria microscopy, in Nigeria, 2009

Outlets where malaria microscopic tests were available* (n) as a percentage of outlets with any antimalarials in stock at the time of the survey visit** (N), by location and type of outlet

Type of outlet	Urban		Rural		Total	
	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N
Public health facility	33.2 (21.6,47.3)	181	28.3 (9.1,61.0)	45	28.6 (10.0,59.1)	226
Private not-for-profit health facility	92.7 (61.0,99.0)	6	85.5 (27.8,98.9)	2	86.1 (33.9,98.7)	8
Private for-profit outlet						
<i>Private-for-profit health facility</i>	47.5 (38.3,56.8)	331	34.8 (27.7,42.5)	22	36.8 (30.0,44.3)	353
<i>Pharmacy</i>	1.5 (0.7,3.1)	385	0.0	2	0.7 (0.2,2.4)	387
<i>Drug Store</i>	0.7 (0.2,2.2)	710	0.0	264	0.6 (0.2,1.9)	974
<i>General retailer</i>	0.0	76	0.0	13	0.0	89
<i>Itinerant drug vendor</i>	0.0	7	0.0	3	0.0	10
Total	0.9 (0.4,1.9)	1,509	4.5 (1.6,11.6)	304	1.5 (0.7,3.3)	1,813
Community health worker	0.0	6	0.0	6	0.0	12
Total	1.0 (0.5,2.0)	1,702	8.8 (4.3,17.2)	357	2.6 (1.3,5.2)	2,059

* Malaria microscopic testing is considered to be available if the respondent reported that the service is available in the outlet on the day of the survey visit

** Figure 15 reference E

Table 3.3.10: Cost to patients of malaria microscopy in US dollars in Nigeria, 2009						
Median cost to patients of one malaria diagnostic test with microscopy, by outlet type**						
Type of outlet	Urban		Rural		Total	
	Median cost [IQR]	Number of outlets reporting price of malaria microscopy	Median cost [IQR]	Number of outlets reporting price of malaria microscopy	Median cost [IQR]	Number of outlets reporting price of malaria microscopy
Public health facility	0.85 [0.66,1.31]	34	1.64 [0.33,1.97]	7	1.64 [0.33,1.97]	41
Private not-for-profit health facility	1.97 [1.97,1.97]	3	0.66	1	0.66 [0.66,0.66]	4
Private for-profit outlet, of which						
<i>Private-for-profit health facility</i>	1.97 [1.31,3.28]	151	1.97 [1.31,1.97]	6	1.97 [1.31,1.97]	157
<i>Pharmacy</i>	1.44 [0.66,2.63]	6	–	0	1.44 [0.66,2.63]	6
<i>Drug Store</i>	0.66	1	–	0	0.66	1
<i>General retailer</i>	–	0	–	0	–	0
<i>Itinerant drug vendor</i>	–	0	–	0	–	0
<i>Total</i>	0.66 [0.66,1.97]	158	1.97 [1.31,1.97]	6	1.97 [0.66,1.97]	164
Community health workers	–	0	–	0	–	0
Total	0.66 [0.66,1.64]	195	1.64 [0.66,1.97]	14	1.64 [0.66,1.97]	209
* 1 USD = 152.25 Naira						
** Cost of a malaria microscopic test for a child, which is included in the standard IE template, is not included here given this information was not collected in the ACTwatch questionnaire.						

Diagnostic test with rapid diagnostic tests

Table 3.3.11: Availability of rapid diagnostic tests for malaria, in Nigeria, 2009						
Outlets where rapid diagnostic tests were available (n) as a percentage of outlets with any antimalarials in stock at the time of the survey visit* (N), by location and type of outlet.						
Type of outlet	Urban		Rural		Total	
	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N
Public health facility	10.2 (4.0, 23.6)	179	9.1 (1.7,37.1)	45	9.1 (1.9,34.6)	224
Private not-for-profit health facility	15.3 (2.2,59.6)	6	0.0	2	1.3 (0.1,12.9)	8
Private for-profit outlet						
<i>Private-for-profit health facility</i>	16.5 (10.4,25.1)	330	10.3 (1.7,42.7)	22	11.3 (2.7,37.1)	352
<i>Pharmacy</i>	4.1 (1.7,9.4)	382	0.0	2	1.8 (0.5,6.9)	384
<i>Drug Store</i>	0.6 (0.1,2.4)	706	0.0	262	0.5 (0.1,2.0)	968
<i>General retailer</i>	0.0	76	0.0	13	0.0	89
<i>Itinerant drug vendor</i>	0.0	7	0.0	3	0.0	10
Total	0.6 (0.2,2.1)	1,501	1.3 (0.4,4.4)	302	0.7 (0.3,1.8)	1,803
Community health worker	0.0	6	0.0	6	0.0	12
Total	0.6 (0.2,2.0)	1,692	2.6 (0.8,8.2)	355	1.1 (0.5,2.5)	2,047
* Figure 15 reference E						

Table 3.3.12: Cost to patients of rapid diagnostic tests (RDTs) for malaria in US dollars in Nigeria, 2009						
Median cost to patients of one rapid diagnostic test for malaria, by outlet type**						
Type of outlet	Urban		Rural		Total	
	Median cost [IQR]	Number of RDT products	Median cost [IQR]	Number of RDT products	Median cost [IQR]	Number of RDT products
Public health facility	0.00[0.00,0.00]	3	1.97	1	1.97[1.97,1.97]	4
Private not-for-profit health facility	–	0	–	0	–	0
Private for-profit outlet, of which						
<i>Private-for-profit health facility</i>	1.97[1.31,2.63]	37	1.31[0.66,1.97]	4	1.31[0.66,1.97]	41
<i>Pharmacy</i>	0.99[0.33,1.12]	9	–	0	0.99[0.33,1.12]	9
<i>Drug Store</i>	3.28	1	–	0	3.28	1
<i>General retailer</i>	–	0	–	0	–	0
<i>Itinerant drug vendor</i>	–	0	–	0	–	0
<i>Total</i>	3.28[3.28,3.28]	47	1.31[0.66,1.97]	4	3.28[1.31,3.28]	51
Community health workers	–	0	–	0	–	0
Total	3.28[3.28,3.28]	50	1.97[1.97,1.97]	5	1.97[1.97,3.28]	55
* 1 USD = 152.25 Naira						
** Cost of an RDT for a child, which is included in the standard IE template, is not included here given this information was not collected in the <i>ACTwatch</i> questionnaire.						

Quality assured ACTs market share

Table 3.4.1: Percentage breakdown of antimalarial sales volumes in Nigeria, 2009						
Total number of antimalarial AETDs sold or distributed in the week preceding the survey visit (n), as a percentage of all antimalarial AETDs sold or distributed in the week preceding the survey visit (N), by antimalarial category, location and type of outlet.						
	Urban		Rural		Total	
	Percentage	N	Percentage	N	Percentage	N
<i>Public health facility</i>						
Quality assured ACTs	8.3		6.0		6.4	
Non-quality-assured ACTs	35.0		0.5		7.2	
Artemisinin monotherapy	2.5		1.5		1.7	
Non-artemisinin therapy	54.2		91.9		84.7	
Total	100	12,549	100	1,202	100	13,751
<i>Private not-for-profit health facility</i>						
Quality assured ACTs	6.8		34.8		33.8	
Non-quality-assured ACTs	10.0		28.2		27.5	
Artemisinin monotherapy	17.4		0.3		0.9	
Non-artemisinin therapy	65.9		36.7		37.7	
Total	100	231	100	152	100	383
<i>Private-for-profit outlet</i>						
Quality assured ACTs	2.3		1.6		2.2	
Non-quality-assured ACTs	5.5		2.5		5.1	
Artemisinin monotherapy	9.5		3.6		8.7	
Non-artemisinin therapy	82.7		92.4		84.0	
Total	100	86,795	100	11,174	100	97,970
<i>Community health worker</i>						
Quality assured ACTs	97.2		0		49.2	
Non-quality-assured ACTs	--		0		0	
Artemisinin monotherapy	0.1		0		<0.1	
Non-artemisinin therapy	2.7		100		50.8	
Total	100	38	100	17	100	55

Table 3.4.1: Percentage breakdown of antimalarial sales volumes in Nigeria, 2009						
Total number of antimalarial AETDs sold or distributed in the week preceding the survey visit (n), as a percentage of all antimalarial AETDs sold or distributed in the week preceding the survey visit (N), by antimalarial category, location and type of outlet.						
	Urban		Rural		Total	
	Percentage	N	Percentage	N	Percentage	N
All outlets						
Quality assured ACTs	2.4		2.8		2.4	
Non-quality-assured ACTs	5.7		2.6		5.2	
Artemisinin monotherapy	9.4		3.2		8.5	
Non-artemisinin therapy	82.5		91.5		83.9	
Total	100	99,613	100	12,545	100	112,159
The most popular antimalarial drug in Nigeria is SP in urban areas, chloroquine in rural areas, and SP overall. The most popular drug is defined as the highest number AETDs sold in the week preceding the survey.						

Provider knowledge of first-line antimalarial treatment and ACT regimen

Table 3.5.1: Provider knowledge of first-line antimalarial treatment in Nigeria, 2009						
Providers able to correctly identify the antimalarial for first line treatment* (n) as a percentage of outlets with antimalarials in stock at the time of the survey visit** (N), by location and type of outlet						
Type of outlet	Urban		Rural		Total	
	Percentage (95% CI)	N	Percentage (95% CI)	N	Percentage (95% CI)	N
Public health facility	52.5 (40.7,64.0)	179	38.1 (26.3,51.5)	43	39.0 (27.9,51.5)	222
Private not-for-profit health facility	35.7 (7.9,78.1)	5	0.0	2	2.6 (0.3,17.6)	7
Private for-profit outlet						
<i>Private-for-profit health facility</i>	22.8 (13.8,35.3)	329	6.4 (1.0,30.5)	22	9.0 (2.3,29.7)	351
<i>Pharmacy</i>	42.4 (27.4,59.0)	382	96.4 (63.7,99.8)	2	71.9 (37.5,91.6)	384
<i>Drug Store</i>	15.0 (10.4,21.1)	693	9.4 (5.2,16.5)	254	14.1 (10.1,19.4)	947
<i>General retailer</i>	15.8 (7.5,30.3)	76	0.0	13	12.6 (6.3,23.6)	89
<i>Itinerant drug vendor</i>	0.0	7	0.0	3	0.0	10
<i>Total</i>	15.1 (11.0,20.3)	1,487	10.6 (7.2,15.5)	294	14.3 (10.8,18.6)	1,781
Community health worker	58.3 (18.8,89.4)	6	21.2 (2.7,72.4)	6	37.5 (13.5,69.9)	12
Total	15.4 (11.3,20.7)	1,677	15.7 (12.2,20.0)	345	15.5 (12.1,19.6)	2,022
* For the purposes of this indicator, the alternative first-line treatment (ASAQ) was not considered a correct response.						
** Figure 15 reference E						

Table 3.5.2: Provider knowledge of dosing regimen for quality assured ACTs (QAACTs) for an adult in Nigeria, 2009

Providers able to describe correctly the dosing regimen for quality assured ACTs for an adult (n) as a percentage of the number of outlets with QAACTs in stock at the time of the survey visit (N), by location and type of outlet*

Indicator not available

This is an indicator of the Independent Evaluation of the AMFm which was determined only after the fieldwork for this study was launched. This survey round was not designed to collect data needed to calculate this indicator and therefore this indicator cannot be calculated given the data set.

Table 3.5.3: Provider knowledge of dosing regimen for quality assured ACTs (QAACTs) for a child in Nigeria, 2009

Providers able to describe correctly the dosing regimen for quality assured ACT for a child (n) as a percentage of the number of outlets with QAACTs in stock at the time of the survey visit (N), by location and type of outlet*
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Indicator not available

This is an indicator of the Independent Evaluation of the AMFm which was determined only after the fieldwork for this study was launched. This survey round was not designed to collect data needed to calculate this indicator and therefore this indicator cannot be calculated given the data set.

Table 3.5.4: Reasons for not stocking quality assured ACTs (QAACTs) by private providers in Nigeria, 2009
Providers stating a specific reason for why they were not stocking QAACTs (n) as a percentage of all outlets not stocking QAACTs at the time of the survey visit (N),* by location

Indicator not available

This is an indicator of the Independent Evaluation of the AMFm which was determined only after the fieldwork for this study was launched. This survey round was not designed to collect data needed to calculate this indicator and therefore this indicator cannot be calculated given the data set.

AMFm logo

Table 3.6.1: Provider recognition of AMFm logo in Nigeria, 2009

Providers able to recognize the AMFm logo* (n) as a percentage of the number of outlets with antimalarials in stock at the time of the survey visit** (N), by location and type of outlet

Indicator not available

This is an indicator of the Independent Evaluation of the AMFm which was determined only after the fieldwork for this study was launched. This survey round was not designed to collect data needed to calculate this indicator and therefore this indicator cannot be calculated given the data set.

Table 3.6.2: Provider knowledge of the AMFm Logo in Nigeria, 2009
Providers stating a specific meaning of the AMFm Logo (n) as a percentage of outlets with any antimalarials in stock at the time of the survey visit* (N), * by location

Indicator not available

This is an indicator of the Independent Evaluation of the AMFm which was determined only after the fieldwork for this study was launched. This survey round was not designed to collect data needed to calculate this indicator and therefore this indicator cannot be calculated given the data set.

Table 3.6.3: Sources from which providers have seen or heard of the AMFm Logo in Nigeria, 2009
Providers stating a specific source where they have seen or heard of the AMFm Logo (n) as a percentage of outlets with any antimalarials in stock at the time of the survey visit* (N), * by location

Indicator not available

This is an indicator of the Independent Evaluation of the AMFm which was determined only after the fieldwork for this study was launched. This survey round was not designed to collect data needed to calculate this indicator and therefore this indicator cannot be calculated given the data set.

Table 3.6.4: Percentage of antimalarials bearing the AMFm logo, in Nigeria, 2009
Antimalarials bearing the AMFm logo (n) as a percentage of all antimalarials audited (N), by location and antimalarial type

Indicator not available

This is an indicator of the Independent Evaluation of the AMFm which was determined only after the fieldwork for this study was launched. This survey round was not designed to collect data needed to calculate this indicator and therefore this indicator cannot be calculated given the data set.

4. Summary of key findings

Quality of the data collected

No major issues were found during data cleaning and data appeared to be logical.

Efforts were made during data collection and planning to ensure data quality. The presence of *ACTwatch* Central researchers during training and the first weeks of field work along with regular communication with *ACTwatch* Central ensured that problems could be resolved quickly when issues arose in the field. Additional field monitoring tools were used to help keep track of the number of outlets sampled and number of antimalarials audited. Also, additional quality controllers were added to the team in order to review the data as it was collected. Two trainings in the north and south were also conducted to help address the size of the survey and help manage data collection.

Availability of quality assured ACTs

Public/not for profit sector

Among all public health facilities interviewed, 91.8% stocked antimalarials at any time in the three months preceding the survey, and 42.5% stocked a quality assured ACT (QAACT) at the time of the survey.

Among public/not for profit sector facilities stocking at least one antimalarial on the day of survey, higher stocking rates were found for chloroquine (57.7%) and SP (62.7%) than QAACTs (49.2%). Non quality assured ACTs were found in 15.4% of the public/not for profit sector facilities that stocked any antimalarial on the day of survey.

Findings from community health workers (CHWs) and private not for profit outlets are difficult to interpret given small sample sizes (n=12 and n=8, respectively). Availability of QAACTs/FAACTs in outlets stocking at least one antimalarial on the day of survey was 56.9% for CHWs and 98.1% for private not for profit outlets.

Private for profit sector

Among all private for profit outlets interviewed, 25.6% stocked any antimalarial, and only 6.7% stocked a QAACT (6.5% stocked FAACTs) at the time of survey.

Of those private for profit sector outlets stocking at least one antimalarial on the day of survey, 26.6% stocked QAACTs (25.8% FAACTs). Around one-third of private health facilities, pharmacies and drugs stores stocking at least one antimalarial on the day of survey stocked QAACTs (28.5%, 30.9% and 27.9% respectively) compared to 17.2% of general retailers. Stocking rates of non-quality assured ACTs among private for profit facilities stocking at least one antimalarial on the day of survey were similar to stocking rates of QAACTs, except in pharmacies: 96.6% of which had non quality assured ACT in stock.

There were high stocking rates of non-artemisinin therapy (98.2%) in private for profit sector outlets stocking at least one antimalarial on the day of survey. Chloroquine was found in 95.6% of drug stores, 87.7% of general retailers, 73.7% of private health facilities and 42.7% of pharmacies stocking at least one antimalarial. High stocking rates of SP was found in pharmacies (94.3%), drug stores (79.5%) and general retailers (76.7%) in private for profit sector outlets stocking at least one antimalarial on the day of survey.

Urban and Rural differences

Among public health facilities that stocked antimalarials at any time in the three months preceding the survey, those located in rural areas were more likely to stock QAACTs than those in urban areas (48.1% and 18.3% respectively). By contrast, in the private sector figures were higher for outlets in urban areas (28.5% urban versus 18.1% rural outlets stocking antimalarials at any time in the previous three months preceding the survey).

Pricing/affordability of quality assured ACTs

Of those public health facilities stocking a QAACT on the day of interview, 99.2% provided the drug for free. Community health workers charged a median of \$0.79 (IQR: \$0.00-\$1.31, n=8) for a QAACT.

In the private sector the median price of an AETD QAACT was \$3.94. There was variation in the median price across outlet types, with QAACTs being most expensive in pharmacies (\$6.57) and least expensive in private for-profit facilities (\$1.31). There was also substantial variation in the price of FACCTs, when presented as either AL or ASAQ. The median price of AL in the private sector was \$6.24 and there was less variation between outlet types (range of median prices: \$6.04 to \$7.88) as compared with ASAQ at \$3.15 (range of median prices: \$1.31 to \$4.60).

In the private sector QAACTs were over seven times more expensive than SP, the most popular antimalarial by volumes, which had a median price of \$0.53.

Market share of quality assured ACTs

QAACTs made up only 2.4% of the total market share while 83.9% of volumes sold in the last week were non-artemisinin therapies. SP represented 48.1% of total market share, and chloroquine 34.7%. Oral artemisinin monotherapy made up 8.1% of total market share, almost all of which moved through urban PPMVs (drug stores).

The private sector dominated the antimalarial market, representing 97% of all antimalarials distributed. Drug stores accounted for almost 90% of the total volumes sold/distributed in the private sector.

5. Conclusion and Recommendations

Given the variation in population size of localities in Nigeria, a modified sampling approach was employed for the survey. This complicated field logistics and directions for interviewers in the field. Given that localities will be used as clusters for the endline survey, it should be ensured that maps are provided in advance to field teams to facilitate clear demarcation of the areas. It is also recommended that if a sufficient sample of public health facilities and pharmacies are found through the census approach, the booster component should be removed from the endline survey. The survey should also take into account the sheer number of antimalarials found at certain outlets – up to 60 different brands of antimalarials were found in some outlets. The data collection teams should have an adequate number of interviewers to ensure such large numbers of antimalarials can be audited within a reasonable time period.

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We would like to express our thanks to the field teams and individuals involved in the survey. Their names are presented in the Appendix.

Finally, we would like to thank the thousands of providers who took time to complete the interview. Without them, we would have nothing to say.

8. Appendices

8.1 Country profile - Fact sheet

Country Name:			NIGERIA				
			National	Urban	Rural	Source	Year
Demography							
	Total population	158,259,000	78,818,000	79,441,000	World Population Prospects, 2010 and World Urbanization Prospects, 2009	2010 (est.)	
	Under five population	26,569,000	13,284,500	13,284,500			
Heath facilities (Public)							
	Number of National Referral Hospitals	n/a		NPHCDA Health Facilities Survey 2007	2007		
	Number of Regional Hospitals (Tertiary)	42					
	Number of District Hospitals (Secondary)	533					
	Number of Health Centres (Primary)	14,635					
	Number of Dispensaries	4,149					
Heath facilities (FBO and NGO)							
	Number of National Referral Hospitals	n/a					
	Number of Regional Hospitals	n/a					
	Number of District Hospitals	n/a					
	Number of Health Centres	n/a					
	Number of Dispensaries	n/a					
Heath facilities (Private-for-profit)							
	Number of National Referral Hospitals	n/a		National Malaria Control Programme Strategic Plan 2009-2013	2001		
	Number of Regional Hospitals	2,147					
	Number of District Hospitals	n/a					
	Number of Health Centres	7,000					
	Number of Dispensaries	n/a					
Retail Medicine Outlets							
	Number of Registered retail pharmacies	2,751		National Malaria Control Programme Strategic Plan 2009-2013	2002		
	Number of registered drug stores	8,824					
Malaria Endemicity (Mark approx % of area)							
	Holoendemic (Transmission occurs all year)	100%		World Malaria Report, 2010	2009		
	Hyperendemic (Intense, but with periods of no transmission during dry season)	0%					
	Mesoendemic (Regular seasonal transmission)	0%					
	Hypoendemic (Very intermittent transmission)	0%					
	Epidemic	0%					

	No transmission	0%				
		National	Urban	Rural	Source	Year
Coverage of Major Interventions						
IRS						
	Has IRS program (Yes/No)	Yes			World Malaria Report, 2010	2010
	Number of households sprayed, last 12 months	n/a	n/a	n/a	n/a	n/a
	% of targeted-households sprayed	0.7	0.5	0.8	NMIS, 2011	2010
Nets, availability, possession and use						
	Number of ITNs distributed or sold in last 12 months	19,300,000			World Malaria Report, 2010	2009
	% of households with at least one mosquito net	16.9	14.1	18.5	NDHS, 2009	2008
	% of households with at least one ITN	8.0	8.6	7.6		
	% of children <5 sleeping under ITN last night	5.5	6.5	5.0		
Malaria diagnosis and treatment						
	When was ACT adopted as first-line (Year)?	2004			World Malaria Report, 2010	2009
	When was ACT rolled out in public sector (Year)?	2009				
	Total ACT purchased by the government in 2009	n/a			n/a	n/a
	Total ACT distributed by the government in 2009	18,397,352			World Malaria Report, 2010	2009
	Name of the country's recommended ACT	Artemether-Lumefantrine; Artesunate+ amodiaquine			World Malaria Report, 2010	2009
	Names of other ACTs registered	n/a				
	Parasite confirmation for U5s official policy in public sector (Yes/No)	Yes				
	Parasite confirmation for over 5s official policy in public sector (Yes/No)	Yes				
	% of pregnant women receiving IPTp (2 doses)	4.9	7.9	3.7	NDHS, 2009	2008
	% of children <5 with fever in last 2 weeks receiving any antimalarial medicine	33.2	41.1	30.5		
	% of children <5 with fever in last 2 weeks receiving an ACT	2.4	4.3	1.8		
Malaria burden						
	Annual number of reported malaria cases	120,000,000			Nigeria AMFm Phase1 Application	2009
	All cause under five mortality (per 1000)	157			NDHS, 2009	2008
	Parasite prevalence among children <5	42.0			NMIS, 2011	2010
	Prevalence of severe anaemia (<8 g/dl) among children <5	n/a			n/a	n/a
Other major health interventions						
	Community case management of malaria with ACT through CHWs (Yes/No)	Yes			World Malaria Report, 2010	2009

8.2 Country document log book

Table 8.2.1: List of documents reviewed, Nigeria, 2009			
Title	Year of publication	Availability	Issues addresses in this source
National Antimalarial Treatment Policy	2005 (May)	Yes	Treatment Guidelines.
Federal Republic of Nigeria Official Gazette	2007 (May)	Yes	Population Sizes.
Monitoring and Evaluation plan for malaria control in Nigeria	2008 (December)	Yes	Issues on the state of malaria treatments, guidelines, control and measurement.
Nigeria Demographic and Health Survey 2008	2009 (November)	Yes	Issues on state of malaria treatment.

8.3 Questionnaire

NIGERIA

Section I: Census Information [Interviewer completes this section for all outlets.]

C1. Today's date (DD/MM/YYYY)		[][]-[][]-[2][0][0][9]	
C1a. Interviewer's name []	Interviewer Info	C1b. Interviewer's code [][]	
C2. State []	District	C2a. State code [][]	
C3. Local Government Authority (LGA) []	LGA	C3a. LGA code [][][]	
C4. Locality []	Sub-District (SD)	C4a. Locality code [][][]	C4b. Cluster []
C5. Name of outlet (if no name, record "no name" or owners name) []	ID	C5a. Outlet code [][][]	
C6. Is the outlet in an urban or rural area (circle one answer below) 0 = Urban 1 = Rural			
C6a. Stratum: (circle one answer below) 1 = North Central 2 = North East 3 = North West 4 = South East 5 = South-South 6 = South West			
C7. Type of Outlet			
1) Public Health facility (circle type) a. University Hospital/Federal Medical Center b. General Hospital/Specialist c. Primary Health Care Center	2) NGO Hospital 3) Private hospital/Private clinic 4) Pharmacy 5) Proprietary Patent Medicine Vendor 6) Super / Mini-market / Provisions store 7) Kiosk / Table	8) Community Health Extension Worker 9) Role Model Mother 10) Village Health Worker 11) Hawker 12) Other (describe) []	
C8. Is the outlet part of the booster sample? (Circle only one answer) 1 = Yes 0 = No			
GPS: C9a. North: Latitude reading [N]-[][][][][][]		C9b. East: Longitude reading [E]-[][][][][][]	

C10. Number of Visits

	Visit 1	Visit 2	Visit 3
Date dd/mm/yy	[][]-[][]-[0][9]	[][]-[][]-[0][9]	[][]-[][]-[0][9]
Result: 1 = Completed interview 2 = Outlet not eligible 3 = Interview interrupted 4 = Eligible provider not available 5 = Outlet not open at the time 6 = Outlet closed down 7 = Refused – if refused go to C11 8 = Other: []	[]	[]	[]
Time Started	[][]:[][]:[][]	[][]:[][]:[][]	[][]:[][]:[][]
Time Completed	[][]:[][]:[][] Enter using 24 hour clock	[][]:[][]:[][] Enter using 24 hour clock	[][]:[][]:[][] Enter using 24 hour clock

REFUSAL:

C11. If the provider refused, why? (Circle one answer and end interview. If provider is busy with heavy client load, ask for a time he would prefer to be interviewed, note in C12, and return at this time).

- 1 = Client load
 2 = Thinks it's an inspection / nervous about license
 3 = Not interested
 4 = Refuses to give reason
 5 = Other (describe) []

C12. Any other comments:

Section II. Screening Section & Consent

Interviewer enters outlet.

S1. Observe the main items for sale in the outlet. *(Do not ask. Observe. Multiple Response)*

- 1 = Medicine
- 2 = Food
- 3 = Toiletries
- 4 = Household goods
- 5 = Mobile air time
- 6 = Cigarettes
- 7 = Other (describe): [_____]



Screening Questions:

S2. Do you have any antimalarial medicines in stock today?

(Circle one answer. If necessary, prompt with common antimalarial names.)

1 = Yes If yes, provide information on study & gain consent. Start audit sheet: **Go to Q1**

0 = No If no, go to **question S3**

S3. Are there any antimalarial medicines that are out of stock today, but that you stocked in the past **3 months**? *(Circle one answer).*

1 = Yes If yes, provide information on study & gain consent. **Go to Q13a**

0 = No **END INTERVIEW** (Return to complete *Question C10*)

99 = Don't know **END INTERVIEW** (Return to complete *Question C10*)

Section III. Audit Sheet

Proceed to the drug audit. Different Drug Audit Sheets will be used to record the antimalarial information based on the dosage form of the medicine. Look at the top of each sheet to see what type it is.

If the antimalarial is in the form of tablets or suppositories, use the **"Tablets & Suppositories Drug Audit Sheet."**

If the antimalarial is in any form other than tablets or suppositories, use the **"Non-Tablet Drug Audit Sheet."**

1b. Generic name	2b. Strength [][][][][] mg/[][][][][] ml. [][][][][] mg/[][][][][] ml. [][][][][] mg/[][][][][] ml. <i>(Note: no ml. required for Powders and Granules)</i>	3b. Dosage form 3 = Syrup 4 = Suspension 5 = Liquid injectable 6 = Powder injectable 7 = Granule 8 = Other (describe)	4b. Brand name	5a. Manufacturer	6b. Is this antimalarial expired? 1 = Yes 0 = No 99 = Don't Know	7b. Package size (Fill in # AND circle type) There are a total of [][][][] ml. (or mg for granules & powder injections) <i>(circle package type):</i> 1 = Bottle 2 = Ampoule 3 = Oral granules
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1c. Generic name	2c. Strength [][][][][] mg/[][][][][] ml. [][][][][] mg/[][][][][] ml. [][][][][] mg/[][][][][] ml. <i>(Note: no ml. required for Powders and Granules)</i>	3c. Dosage form 3 = Syrup 4 = Suspension 5 = Liquid injectable 6 = Powder injectable 7 = Granule 8 = Other (describe)	4c. Brand name	5c. Manufacturer	6c. Is this antimalarial expired? 1 = Yes 0 = No 99 = Don't Know	7c. Package size (fill in # AND circle type) There are a total of [][][][] ml. (or mg for granules & powder injections) <i>(circle package type):</i> 1 = Bottle 2 = Ampoule 3 = Small ampoule
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13. Are there any antimalarial medicines that are out of stock today, but that you stocked in the past **3 months**?

1 = Yes go to question 13a
0 = No go to question 14
99 = Don't know go to question 14

13a. What are the names of these treatments? *(Will accept Generic or Brand names. Record one medicine per line.)*

[_____]	[_____]
[_____]	[_____]
[_____]	[_____]
[_____]	[_____]

99 = Don't know

14. Is malaria microscopic testing available here?

1 = Yes go to question 14a
0 = No go to question 15

14a. How much does a microscopic test for malaria cost? *Write cost in local currency:* [__|__|__|__|__] =N=

00000 = If free

99999 = Don't know

15. Are malaria diagnostic test kits available here? *(If yes, must show you the kit.)*

1 = Yes go to questions 15a
0 = No go to question P1

15a. How much does a malaria diagnostic test kit cost? *Write cost in local currency:* [__|__|__|__|__] =N=

00000 = If free

99999 = Don't know

IV. Provider Questionnaire

P1. What is your job at this outlet? *(Unprompted. Multiple answers possible)*

1 = Pharmacist
2 = Medical doctor
3 = Midwife
4 = Nurse
5 = Lab technician
6 = Owner
7 = Shop assistant
8 = Relative of the owner
9 = Other *(describe)* [_____]

P2. How long have you worked in this outlet? *(if less than 1 year, enter 01)* [__|__] years

- 1 = Painkillers/antipyretics
- 2 = Anti-helminthics (worms)
- 3 = Antibiotics
- 4 = Oral anti-fungals
- 5 = Cardiovascular (angina, arrhythmia, hypertension)
- 6 = Ointments and creams (anti-fungal, acne)
- 7 = Gastro-Intestinal (stomach) conditions (antacid, laxative, diarrhea)
- 8 = Vitamins
- 9 = Cough medicines
- 10 = None, Antimalarials only.

1 = Yes in stock Ask to physically see the medicine and use packaging to fill in *questions P3a-f*
0 = Not in stock Ask provider to recall as much of the information in *questions P3a-f* as possible

P3a. Generic name of the drug sold the most of in the <u>past month</u>	P3b. Strength <i>(Must enter strength and correct units. Note: no mL recorded for Tablet, Suppositories, Powders and Granules)</i>	P3c. Dosage form	P3d. Brand name 99 = Don't know	P3f. Retail price 99 = Don't know <i>(If free, enter 00000; if "don't know", enter 99999)</i>
99 = Don't know	99 = Don't know			
	[][] [][] . [] mg/ [][] [][] . [] mL	1 = Tablet 2 = Suppository 3 = Syrup	P3e. Manufacturer 99 = Don't know	[][] tablets or suppositories cost [][][][][][]=N=
	[][] [][] . [] mg/ [][] [][] . [] mL	4 = Suspension 5 = Liquid injectable 6 = Powder injectable		OR [][][][] bottles or ampoules or sachets cost
	[][] [][] . [] mg/ [][] [][] . [] mL	7 = Granule 8 = Other (<i>describe</i>) [][][][][][][][] 99 = Don't know		[][][][][][][][][][]=N=

Write response 99 = Don't know (If don't know, go to question P5)

1 = Yes
0 = No

P5. What antimalarial medicine do you most often recommend to customers? (*Looking for Generic name or Brand name. Ask provider to show you the medicine if in stock.*)

Write response [_____]

P5a. Is the antimalarial medicine in stock?

1 = Yes

0 = No

P6. How do you typically decide which antimalarials to stock? (*Prompted. Multiple response.*)

1 = Most profitable

2 = Recommended by government

3 = Lowest priced

4 = Drug company/sales rep influence

5 = Consumer demand

6 = Brand reputation

7 = Dosage form (e.g. provider prefers to stock tablets or injections)

8 = Easily available

9 = Prescribed most often by doctors

10 = Other (*describe*) [_____]

99 = Don't know

P7. Do your customers usually ask for a specific antimalarial medicine by name? (*Prompted. One response only*)

0 = No, they ask for a recommendation

1 = Yes (*describe antimalarial*) [_____]

2 = No, they have a prescription

99 = Don't know

P8. Do you normally decide which antimalarial medicines customers receive? (*Prompted. One response only*)

0 = No

1 = Yes

2 = No, they have a prescription

99 = Don't know

P9. Approximately how many people bought or were dispensed an antimalarial here in the last week? [__] [__] [__]

P10. In the last month, have customers bought antimalarials on credit? (*Only ask of providers in private facilities. If outlet is a Public Health Facility, select "82=Not applicable" and go to question P11.*)

1 = Yes go to question P10a

0 = No go to question P11

99 = Don't know go to question P11

82 = Not applicable go to question P11

P10a. In the past month, how many customers have bought antimalarials on credit?..... [__] [__] [__]

999 = Don't know

P10b. Which customers have bought antimalarial medicines with credit? (*Do not read options. Multiple response.*)

1 = Regular customers

2 = Outlet staff

3 = People who can't afford

4 = Clients with sick children

5 = Clients who are known to provider

6 = Other (*describe*) [_____]

99 = Don't know

P11. In the past month, did you ever cut blisters or sell partial packs of antimalarials for customers who cannot afford to buy the entire pack?

- 1 = Yes
- 0 = No
- 99 = Don't know

P12. Please name the first-line medicine recommended by the government to treat uncomplicated malaria fever.
(Circle one response only)

- | | |
|-------------------------------------|----------------------|
| 1 = Artemether Lumefantrine (AL) | go to question P12a |
| 2 = Coartem | go to question P12a |
| 3 = Artesunate Amodiaquine (ASAQ) | SKIP to question P13 |
| 4 = Larimal | SKIP to question P13 |
| 5 = Arsucam | SKIP to question P13 |
| 6 = Arsuamoon | SKIP to question P13 |
| 0 = Other answer (describe) [_____] | SKIP to question P13 |
| 99 = Don't know | SKIP to question P13 |

P12a. Please explain the government recommended treatment regimen for this drug for an adult. (Can prompt by saying "How many tablets a day, for how many days." It is ok if they get the answer from reading the package, but do not prompt provider to do this.)

- 0 = Incorrect answer
- 1 = 4 tablets in am, 4 tablets in pm, for 3 days
- 99 = Don't know

P12b. Please explain the government recommended treatment regimen for this drug for a 2 year old child. (Can prompt by saying "How many tablets a day for how many days." It is ok if they get the answer from reading the package, but do not prompt provider to do this.)

- 0 = Incorrect answer
- 1 = 1 tablet in am, 1 tablets in pm, for 3 days
- 99 = Don't know

P13. What are health danger signs for a child under 5? (Multiple response. Prompt provider that this question is not specific to malaria. Don't read answers or prompt.)

- 1 = Convulsions
- 2 = Vomiting
- 3 = Unable to drink / breastfeed
- 4 = Abnormal breathing
- 5 = Excessive sleep / difficult to wake
- 6 = Floppy / unable to sit
- 7 = Unconscious / coma
- 8 = Fever / high temperature / hot body
- 9 = Other (describe): [_____]
- 99 = Don't know

P14. (Only ask of providers in private facilities.)

What health danger signs in a child under 5 would prompt you to refer the child to a public health facility? *(Prompt provider that this question is not specific to malaria. If in a Public Health Facility, select "82=Not applicable" and go to question P15. Multiple response. Don't read answers or prompt.)*

- 1 = Convulsions
- 2 = Vomiting
- 3 = Unable to drink / breastfeed
- 4 = Abnormal breathing
- 5 = Excessive sleep / difficult to wake
- 6 = Floppy / unable to sit
- 7 = Unconscious / coma
- 8 = Fever / high temperature/ hot body
- 9 = Other (describe): [_____]
- 99 = Don't know
- 82 = Not applicable (Public health facility)

P15. Has the staff that work here participated in any type of health trainings put on by NGOs or the government in the past 2 years? (Exclude any school training)

- 1 = Yes
- 0 = No
- 99 = Don't know

P16. Including the owner and yourself, how many people work here? (If outlet has multiple dispensaries, record number of workers at the dispensary only.)[] []

P17. Of all the people who work here, how many prescribe or dispense medicines?[] []

P18. Has anybody working in this outlet completed primary school? (Circle one answer)

- 1 = Yes go to question P19
- 0 = No go to question P20
- 99 = Don't know go to question P20

P19. Has anybody working in this outlet completed secondary school? (Circle one answer)

- 1 = Yes
- 0 = No
- 99 = Don't know

P20. Does anyone working in this outlet have any health related qualifications? (Circle one answer)

- 1 = Yes go to question N5
- 0 = No go to question N6
- 99 = Don't know go to question N6

N5. How many people working in this business [including the owner] have the following types of health qualifications?
(Read the list. Enter 00 if the answer is none.)

Type of Health Qualification	Number
1 = Medical Doctor	[] []
2 = Nurse	[] []
3 = Midwife	[] []
4 = Community Health Worker	[] []
5 = Junior Community Health Worker	[] []
6 = Pharmacist	[] []
7 = Pharmacy Technician	[] []
8 = Other (Describe): [] [] [] [] [] [] [] [] [] []	[] []

SOURCE OF SUPPLY OF ANTIMALARIALS

N6. In the last **3 months**, from how many suppliers have you purchased antimalarials?
(If 1 or more suppliers, enter number of suppliers, then go to question P21) [] []

00= No suppliers in past 3 months go to question P22 - Registration Status
88= Refuses go to question P22 - Registration Status
99 = Don't know go to question P22 - Registration Status

P21. In the last **3 months**, from whom did you obtain or purchase antimalarials? (Please list the two places where this outlet most frequently buys antimalarial drugs)

First source:

P21a. Type of supplier (Read options. Single response):

- 1 = General wholesaler
- 2 = Drug wholesaler
- 3 = Pharmacy (registered)
- 4 = PPMV / Chemist
- 5 = Wholesale drug distributor
- 6 = Drug factory
- 7 = Other (describe):..... [] [] [] [] [] [] [] [] [] []
- 8 = Government medical store
- 9 = Non-governmental providers (NGO [e.g. SFH] or faith-based organisation)
- 88 = Refuses
- 99 = Don't know

P21b. Name of business:..... [] [] [] [] [] [] [] [] [] []
88 = Refuses 99 = Don't know

P21c. Town: [] [] [] [] [] [] [] [] [] []
88 = Refuses 99 = Don't know

P21d. Physical address or location identifiers:
[] [] [] [] [] [] [] [] [] []
88 = Refuses 99 = Don't know

P21e. Telephone number: [] [] [] [] [] [] [] [] [] []
88 = Refuses 99 = Don't know

P21f. How do you receive your antimalarials from this provider (*Prompt. One response only*)

- 1 = Supplier delivers to you
- 2 = You collect from supplier
- 3 = Both
- 88 = Refuses
- 99 = Don't know

P21g. Is this a supplier of malaria test kits? (*Do not ask if provider answered "No" to Question 15. Select "82 = Not applicable."*)

- 1 = Yes
- 0 = No
- 82 = Not applicable
- 99 = Don't know

Second source:

P21h. Type of supplier (*Read options. Single response*):

- 1 = General wholesaler
- 2 = Drug wholesaler
- 3 = Pharmacy (registered)
- 4 = PPMV / Chemist
- 5 = Wholesale drug distributor
- 6 = Drug factory
- 7 = Other (*describe*):..... [_____]
- 8 = Government medical store
- 9 = Non-governmental providers (NGO [e.g. SFH] or faith-based organisation)
- 88 = Refuses
- 99 = Don't know

P21i. Name of business: [_____]
88 = Refuses 99 = Don't know

P21j. Town/District: [_____]
88 = Refuses 99 = Don't know

P21k. Physical address or location identifiers:
[_____] 88 = Refuses 99 = Don't know

P21l. Telephone number: [_____]
88 = Refuses 99 = Don't know

P21m. How do you receive your antimalarials from this provider? (*Prompt, one response only*)

- 1 = Supplier delivers to you
- 2 = You collect from supplier
- 3 = Both
- 88 = Refuses
- 99 = Don't know

P21n. Is this a supplier of malaria test kits? *(Do not ask if provider answered "No" to Question 15. Select "82 = Not applicable.")*

- 1 = Yes
- 0 = No
- 82 = Not applicable
- 99 = Don't know

REGISTRATION STATUS

P22. Do you have a pharmacy or clinic license? *(Do not ask if in a Public Health Facility, select "82 = Not applicable.")*

- 1 = Yes go to question P23
- 0 = No go to question P23
- 82 = Not applicable go to question P24

P23. Do you have any other types of license or registration?

- 1 = Yes go to question P23a
- 0 = No go to question P24

P23a. What type/class of license? *(Circle all that apply)*

- 1 = Patent/business
- 2 = Laboratory
- 3 = Other *(describe)*: [_____]

OBSERVATION RECORD

P24. Pharmacy or clinic license observed? *(If in a Public Health Facility, select "82 = Not applicable.")*

- 1 = Confirm certificate observed
- 0 = Certificate not observed
- 82 = Not applicable (Public health facility)

P25. Are medicines stored in a dry area?

- 1 = Yes, stored in a dry area
- 0 = No, not stored in a dry area
- 99 = Did not observe medicines



P26. Are medicines protected from direct sunlight?

- 1 = Yes, protected from direct sunlight
- 0 = No protections from direct sunlight
- 99 = Did not observe medicines

P27. Are medicines kept on the floor?

- 1 = Yes, they are kept on the floor
- 0 = No, not kept on the floor
- 99 = Did not observe medicines

X2. Final comments (if any)

END OF INTERVIEW. Thank the provider for their participation in the audit. Return to question C10 to record final status of interview and time of completion.

8.4 ACTs classified as quality assured

Key indicators for the Independent Evaluation of AMFm measure the price, availability and market share of quality assured ACTs (QAACT). A QAACT is defined as any ACT that meets the Global Fund to Fight AIDS, Tuberculosis and Malaria's quality-assurance policy. According to this policy, a quality-assured product must be either WHO pre-qualified and/or authorized for marketing by a Stringent Drug Regulatory Authority. Products that have not yet been WHO pre-qualified or approved by a Stringent Drug Regulatory Authority must be evaluated and recommended for use by an independent panel of technical experts hosted by World Health Organization's Department for Essential Medicines and Pharmaceutical Policies (Global Fund, 2010).

The list of antimalarials that complies with the quality-assurance policy varies over time. Consequently, an operational definition that would establish a fixed list of QAACTs was adopted for the purpose of the baseline outlet survey. For the purpose of the Independent Evaluation, a QAACT is any ACT which appeared on the Global Fund's Indicative List of antimalarials meeting the Global Fund's quality assurance policy as at June 2010²⁵, or which previously had C-status in an earlier Global Fund quality assurance policy and was used in a programme supplying subsidised ACTs.

In June 2010, the Global Fund provided the Independent Evaluator with the indicative list of antimalarials that met the quality-assurance policy. Since brand names are not pre-qualified by the WHO or registered when recommended by the Expert Review Panel, the Independent Evaluator contacted each manufacturer on the list to get details on all of the brand names used for each product appearing on the list and produced at the approved manufacturing site. In addition, quality-assured products are also often re-packaged and re-branded for the use in domestic social marketing or subsidy programmes. Details on the brand names used in in-country marketing programmes were compiled by contacting national authorities, or the organization involved in the marketing campaign (e.g. PSI and MENTOR).

For the availability, price, mark-up and market-share indicators, products were classified as quality-assured ACTs if the brand name, generic name, strength, manufacturer and country of manufacturer matched one of the entries in Table 9.2 (below).

For the stock-out indicator, a prompt card showing photographs of the ACTs classified as quality-assured was used so the interviewer and respondent could identify QAACTs in stock during the survey visit or in stock in the previous 4 weeks. Photographs of QAACTs used for social marketing/subsidy programme were not included in the prompt card, unless the country in which data collection took place had a social marketing or subsidy programme which used a QAACT. In addition, two QAACTs appearing on the list in Table 9.2 (Artecospe and Artequin 600/1500) were not included in the prompt card, because the Independent Evaluator was not notified about the existence of these QAACT in time for data collection.

²⁵ Refer to <http://www.theglobalfund.org/en/procurement/quality/pharmaceutical/#General> for the most up to date list.

Table 8.4. 1: List of Quality Assured ACTs for availability, price and market share indicators							
Brand Name	Generic Name	Strength	Manufacturer	Country of manufacture	Package Size (tablets per pack)	FDC	Notes
ACT WITH A LEAF 4 MONTHS TO <3 YEARS	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	6 or 30	Yes	Repackaged by PSI for distribution in Uganda
ACT WITH A LEAF 3 YEARS TO <7 YEARS	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	12 or 60	Yes	Repackaged by PSI for distribution in Uganda
ACT WITH A LEAF 7 YEARS TO <12 YEARS	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	18 or 90	Yes	Repackaged by PSI for distribution in Uganda
ACT WITH A LEAF 12 YEARS AND ABOVE	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	24 or 120	Yes	Repackaged by PSI for distribution in Uganda
ACTIPAL	ARTESUNATE + AMODIAQUINE	25mg + 67.5mg	SANOFI AVENTIS or MAPHAR	Morocco	3	Yes	C-status product. Repackaged by PSI for distribution in Madagascar
ACTIPAL	ARTESUNATE + AMODIAQUINE	50mg + 135mg	SANOFI AVENTIS or MAPHAR	Morocco	3	Yes	C-status product. Repackaged by PSI for distribution in Madagascar
ACTIPAL	ARTESUNATE + AMODIAQUINE	50mg + 153mg	STRIDES ARCO LABS	India	6	No	C-status product. Repackaged by PSI for distribution in Madagascar
ARTEQUIN 600/1500	ARTESUNATE + MEFLOQUINE	200mg + 250mg	MEPHA	Switzerland	9	No	Not included on the prompt card used for the stock-out indicator
ARSUAMOON 1-6 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 150mg	GUILIN PHARMACEUTICAL CO. LTD	China	6 or 150	No	
ARSUAMOON 7-13 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 150mg	GUILIN PHARMACEUTICAL CO. LTD	China	12 or 300	No	
ARSUAMOON ADULTS	ARTESUNATE + AMODIAQUINE	50mg + 150mg	GUILIN PHARMACEUTICAL CO. LTD	China	24 or 600	No	
ARTEFAN 20/120 5-14KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	AJANTA PHARMA LTD	India	6 or 180	Yes	
ARTEFAN 20/120 15-24KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	AJANTA PHARMA LTD	India	12 or 360	Yes	
ARTEFAN 20/120 25-34KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	AJANTA PHARMA LTD	India	18 or 540	Yes	

ARTEFAN 20/120 35+ KG ADULTS	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	AJANTA PHARMA LTD	India	24 or 720	Yes	
ARTEMETHER + LUMEFANTRINE <3 YEARS	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	IPCA LABORATORIES LTD	India	6, 60 or 180	Yes	
ARTEMETHER + LUMEFANTRINE 3-8 YEARS	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	IPCA LABORATORIES LTD	India	12,120, or 360	Yes	
ARTEMETHER + LUMEFANTRINE 9-14 YEARS	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	IPCA LABORATORIES LTD	India	18, 180, or 540	Yes	
ARTEMETHER + LUMEFANTRINE >14 YEARS	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	IPCA LABORATORIES LTD	India	24, 240, or 720	Yes	
ARTESUNATE + AMODIAQUINE CHILD 1-6 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 153mg	IPCA LABORATORIES LTD	India	6 or 60	No	
ARTESUNATE + AMODIAQUINE JUNIOR 7-13 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 153mg	IPCA LABORATORIES LTD	India	12 or 120	No	
ARTESUNATE + AMODIAQUINE ADULT	ARTESUNATE + AMODIAQUINE	50mg + 153mg	IPCA LABORATORIES LTD	India	24 or 240	No	
ARTECOSPE	ARTESUNATE + SULFADOXINE + PYRIMETHAMINE	50mg + 500mg + 25mg	GUILIN PHARMACEUTICAL CO. LTD	China	8	No	Not included on the prompt card used for the stock-out indicator
COARSUCAM INFANT 2-11 MONTHS	ARTESUNATE + AMODIAQUINE	25mg + 67.5mg	SANOFI AVENTIS or MAPHAR	Morocco	3 or 75	Yes	
COARSUCAM TODDLER 1-5 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 135mg	SANOFI AVENTIS or MAPHAR	Morocco	3 or 75	Yes	
COARSUCAM CHILD 6-13 YEARS	ARTESUNATE + AMODIAQUINE	100mg + 270mg	SANOFI AVENTIS or MAPHAR	Morocco	3 or 75	Yes	
COARSUCAM ADULT +14 YEARS	ARTESUNATE + AMODIAQUINE	100mg + 270mg	SANOFI AVENTIS or MAPHAR	Morocco	6 or 150	Yes	
COARTEM 20/120 5-15 KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	6, 30 or 180	Yes	

COARTEM 20/120 15-25 KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	12, 60 or 360	Yes	
COARTEM 20/120 25-35 KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	18, 90 or 540	Yes	
COARTEM 20/120	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	6, 24, 216, 720	Yes	
COARTEM DISPERSIBLE 5-15KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	USA	6 or 180	Yes	
COARTEM DISPERSIBLE 15-25KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	USA	12 or 360	Yes	
COARTEM DISPERSIBLE 25-35KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	USA	18 or 540	Yes	
COARTEM DISPERSIBLE	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	USA	6 or 216	Yes	
COARTEM E FIXE 5-15KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	6	Yes	Distributed by MENTOR in Angola
COARTEM E FIXE 15-25KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	12	Yes	Distributed by MENTOR in Angola
COARTEM E FIXE DISPERSIBLE 5-15KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	6	Yes	Distributed by MENTOR in Angola
COARTEM E FIXE DISPERSIBLE 15-25KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	12	Yes	Distributed by MENTOR in Angola
DAWA MSETO YA MALARIA ALU	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	6, 12, 18, 24	Yes	Repackaged by PSI for distribution in TZ
FALCIMON KIT YOUNG CHILDREN UP TO 6 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 153mg	CIPLA PHARMA LTD	India	6	No	
FALCIMON KIT CHILDREN 7-13 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 153mg	CIPLA PHARMA LTD	India	12	No	
FALCIMON KIT ADULTS	ARTESUNATE + AMODIAQUINE	50mg + 153mg	CIPLA PHARMA LTD	India	24	No	
LA COARTEM	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	6, 12	Yes	Repackaged by PSI for distribution in Malawi
LARIMAL CHILD 1-6 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 153mg	IPCA LABORATORIES LTD	India	6	No	
LARIMAL JUNIOR 7-13 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 153mg	IPCA LABORATORIES LTD	India	12	No	

LARIMAL ADULT 14+ YEARS	ARTESUNATE + AMODIAQUINE	50mg + 153mg	IPCA LABORATORIES LTD	India	24	No	
LUMERAX	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	IPCA LABORATORIES LTD	India	24	Yes	
LUMARTEM 5KG TO <15KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	CIPLA PHARMA LTD	India	6 or 180	Yes	
LUMARTEM 15 TO <25KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	CIPLA PHARMA LTD	India	12 or 360	Yes	
LUMARTEM 25 TO <35KG	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	CIPLA PHARMA LTD	India	18 or 540	Yes	
LUMARTEM 35KG AND ABOVE	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	CIPLA PHARMA LTD	India	24 or 720	Yes	
LUMARTEM FORTE	ARTEMETHER + LUMEFANTRINE	40mg + 240mg	CIPLA PHARMA LTD	India	6 or 12	Yes	
LUMET FORTE	ARTEMETHER + LUMEFANTRINE	40mg + 240mg	CIPLA PHARMA LTD	India	3 or 6	Yes	
MALARIKIT	ARTESUNATE + AMODIAQUINE	50mg + 153mg	IPCA LABORATORIES LTD	India	6	No	Repackaged by PSI for distribution in Sudan
MALARPACK COARTEM	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	6, 12	Yes	Repackaged by PSI for distribution in Myanmar
PRIMO	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	6 or 12	Yes	Repackaged by PSI for distribution in Rwanda
SERENA DOSE ENFANTS 1-5 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 153mg	CIPLA PHARMA LTD	India	6	Yes	Repackaged by PSI/Manufacturer for distribution in DRC
TIBAMAL	ARTEMETHER + LUMEFANTRINE	20mg + 120mg	NOVARTIS PHARMA AG	China or USA	6 or 12	Yes	Repackaged by manufacturer for distribution in Kenya
WINTHROP INFANT 2-11 MONTHS	ARTESUNATE + AMODIAQUINE	25mg + 67.5mg	SANOFI AVENTIS or MAPHAR	Morocco	3 or 75	Yes	
WINTHROP TODDLER 1-5 YEARS	ARTESUNATE + AMODIAQUINE	50mg + 135mg	SANOFI AVENTIS or MAPHAR	Morocco	3 or 75	Yes	
WINTHROP CHILD 6-13 YEARS	ARTESUNATE + AMODIAQUINE	100mg + 270mg	SANOFI AVENTIS or MAPHAR	Morocco	3 or 75	Yes	
WINTHROP ADULT +14 YEARS	ARTESUNATE + AMODIAQUINE	100mg + 270mg	SANOFI AVENTIS or MAPHAR	Morocco	6 or 150	Yes	

8.5 Final sample

Table 8.5. 1: List of clusters/localities sampled and their population, Nigeria, 2009

State	Local Government Area	Locality	Population	Urban or Rural	Censused locality or booster sample
North-west					
SOKOTO	SABON BIRNI	Magajin Dawaki	18,509	R	Census
ZAMFARA	BUNGUDU	Bungudu	18,188	R	Census
ZAMFARA	KAURA NAMODA	Kaura Namoda	63,961	U	Census
KEBBI	AUGIE	Birnin Tudu	3,744	R	Census
KEBBI	WASAGU DANKO	Tudun Wada	1,967	R	Census
KADUNA	KAURA	Biniki	1,596	R	Census
KADUNA	LERE	Saminaka	41,519	U	Census
KATSINA	DANJA	Zage Zage	2,373	R	Census
KATSINA	KATSINA	Katsina (Kofar Sauri)	16,800	U	Census
KATSINA	KUSADA	Mawashi (B)	1,661	R	Census
KANO	AJINGI	Ajingi (C/Gari)	13,351	R	Census
KANO	DALA	Dala (Kofar Mazugal)	95,929	U	Census
KANO	GARKO	Tumfafi	969	R	Census
KANO	KUMBOTSO	Ung Geza (Rafin Kuka)	4,040	R	Census
KANO	NASSARAWA	Giginyu	13,647	U	Census
KANO	TAKAI	Kachako	19,763	R	Census
JIGAWA	BIRNIN-KUDU	Birnin Kudu	37,608	U	Census
JIGAWA	HADEJIA	Makeran Yamma Fuska	928	R	Census
JIGAWA	SULE TANKA-KAR	Jikai	2,993	R	Census
KANO	DALA	Gwammaja	112,687	U	Booster
North-east					
BAUCHI	BAUCHI	Bauchi	206,536	U	Census
BAUCHI	GADE	Kurba	2,490	R	Census
BAUCHI	MISAU	Jabalyan Rijiya	566	R	Census
BAUCHI	TORO	Toro	7,610	R	Census
BAUCHI	ZAKI	Madufa	2,854	R	Census
GOMBE	AKKO	Garin Waziri & Others	1,602	R	Census
GOMBE	AKKO	Zange B. & Others	512	R	Census
GOMBE	GOMBE	Gombe	169,783	U	Census
YOBE	BADE	Gashua	69,719	U	Census
YOBE	NANGERE	Lemari & Others	871	R	Census
YOBE	YUSUFARI	Bulatura	1,988	R	Census
BORNO	KAGA	Ngamdu	8,682	R	Census
BORNO	KONDUGA	Yandandari Kura & Other	791	R	Census
BORNO	MAIDUGURI	Maiduguri	462,763	U	Census
BORNO	NGALA	Ngaiwa	395	R	Census
ADAMAWA	FUFORE	Bilachi	1,605	R	Census
ADAMAWA	MUBI SOUTH	Ngavahi	575	R	Census
TARABA	GASHAKA	Ada Gora Koti	285	R	Census
TARABA	ZING	Yakoko	1,638	R	Census

State	Local Government Area	Locality	Population	Urban or Rural	Censused locality or booster sample
<u>North-central</u>					
PLATEAU	BASSA	Amo Bisa (Amo-Katako)	512	R	Census
PLATEAU	JOS SOUTH	Jos	120,546	U	Census
PLATEAU	SHENDAM	Lakushi	2,131	R	Census
BENUE	GBOKO	Gboko	101,405	U	Census
BENUE	GBOKO	Mbaakom	1,457	R	Census
BENUE	KONSHISHA	Korinya	5,272	R	Census
BENUE	KWANDE	Mbakim	1,230	R	Census
NASARAWA	KOKONA	Moroa	1,740	R	Census
FCT	AMAC	Orozo	1,402	R	Census
NIGER	GBAKO	Gbadafu	966	R	Census
NIGER	LAVUN	Kutigi	30,617	U	Census
NIGER	MAGAMA	Ibeto	7,160	R	Census
NIGER	SHIRORO	Jiko	680	R	Census
KOGI	ADAVI	Ogaminana	55,053	U	Census
KOGI	BASSA	Oguma	288	R	Census
KOGI	OLAMABORO	Mabenyi-Efoko	568	R	Census
KWARA	BARUTEN	Gaa Kotoru & Others	444	R	Census
KWARA	ILORIN SOUTH	Ilorin	143,723	U	Census
KWARA	MORO	Jebba	19,341	U	Census
KWARA	ILORIN WEST	Sabo Oke	276,753	U	Booster
<u>South-west</u>					
OYO	IBADAN NORTH EAST	Iwo Road (Idi Ape)	26,643	U	Census
OYO	IBADAN SOUTH WEST	Molete	10,902	U	Census
OYO	IBARAPA Central	Iberekodo	4,610	R	Census
OYO	ISEYIN	Iseyin	79,838	U	Census
OSUN	BORIPÉ	Aagba	9,095	R	Census
OSUN	OROLU	Ifon Osun	62,815	U	Census
OGUN	EGBADO SOUTH	Ilaro	38,924	U	Census
OGUN	OBAFEMI/OWODE	Sodeke & Others	265	R	Census
OGUN	SAGAMU	Sagamu	127,512	U	Census
LAGOS	ALIMOSHO	Oke Odo	26,225	U	Census
LAGOS	AMUWO ODOFIN	Kirikiri	20,360	U	Census
LAGOS	IKEJA	Onigbongbo	112,343	U	Census
LAGOS	LAGOS-ISLAND	Lagos Island	165,996	U	Census
LAGOS	OJO	Itire-Ilogbo	4,942	U	Census
LAGOS	SURULERE	Surulere	142,371	U	Census
ONDO	AKOKO SOUTH WEST	Oka Akoko	44,309	U	Census
ONDO	ILAJE	Obe Uji & Others	883	R	Census
EKITI	ADO EKITI	Ado-Ekiti	127,578	U	Census
EKITI	EKITI WEST	Ajagemo Camp li & Other	659	R	Census
LAGOS	SHOMOLU	Bariga	90,839	U	Booster

State	Local Government Area	Locality	Population	Urban or Rural	Censused locality or booster sample
South-south					
EDO	EGOR	Benin City	216,061	U	Census
EDO	ESAN SOUTH EAST	Ugboha	7,797	R	Census
EDO	OWAN EAST	Ikhin	3,429	R	Census
DELTA	BURUTU	Tuomo	8,498	R	Census
DELTA	OSHIMILI NORTH	Oko-Anala	956	R	Census
DELTA	SAPELE	Sapele	109,576	U	Census
BAYELSA	SOUTHERN IJAW	Apoi	807	R	Census
RIVERS	ASARI-TORU	Ifoko	4,081	R	Census
RIVERS	DEGEMA	Tombia	15,907	U	Census
RIVERS	IKWERE	Uborum/Umudiala Apani	1,946	R	Census
RIVERS	OKRIKA	George – Ama	5,360	R	Census
AKWA AIBOM	ORUK-ANAM	Etok Nkwo Inen Clan	161	R	Census
AKWA AIBOM	IBESIKPO ASUTAN	Ndiikpo Atang	2,004	R	Census
AKWA AIBOM	NSIT IBOM	Afia Nsit Urua Nko	4,006	R	Census
AKWA AIBOM	UYO	Anua Offot	5378	R	Census
AKWA AIBOM	UYO	Uyo Offot	197,156	U	Census
CROSS-RIVER	BEKWARA	Ububa-Iye	1,062	R	Census
CROSS-RIVER	CALABAR SOUTH	Calabar	305,717	U	Census
CROSS-RIVER	OBUDU	Okworogung- Utugwang South	2,341	R	Census
DELTA	SAPELE	Ikirigwe	109,576	U	Booster
South-east					
ABIA	ABA SOUTH	Aba (Eziukwu -Aba)	413,852	U	Census
ABIA	BENDE	Amaekpu Item	3,004	R	Census
ABIA	OBIOMA-NGWA	Umuiroma	819	R	Census
EBONYI	IKWO	Ndufu Amagu	14,469	R	Census
EBONYI	IZZI	Ezza-Inyimagu	42,045	U	Census
EBONYI	OHAOZARA	Amata Ugwulangwu	2,410	R	Census
ENUGU	ENUGU EAST	Enugu	83,921	U	Census
ENUGU	IGBO-ETITI	Ohodo	12,650	R	Census
ENUGU	ANINRI	Oduma	36,063	U	Census
ENUGU	NKANU EAST	Akpawfu	6,405	R	Census
ANAMBRA	AGUATA	Awarasi Uga	44,048	U	Census
ANAMBRA	AYAMELUM	Ifite-Ogwari	13,388	R	Census
ANAMBRA	NNEWI NORTH	Uruagu Nnewi	121,063	U	Census
ANAMBRA	NNEWI SOUTH	Azigbo	5,418	R	Census
ANAMBRA	ORUMBA NORTH	Ufuma	24,202	U	Census
IMO	IDEATO NORTH	Ozuomee	12,588	R	Census
IMO	IHITTE/UBOMA	Umuoma	563	R	Census
IMO	ISIALA-MBANO	Umunachi Osuama	2,258	R	Census
IMO	ORU EAST	Umuezukwu Eziawo	2,177	R	Census
ANAMBRA	NNEWI NORTH	Otolo Nnewi	121,063	U	Booster

8.6 Survey team

Table 8.6. 1: List of staff members involved in the survey, Nigeria, 2009

Supervisors

Mohammed Kassim
Nakoto Danlami
Mohammed B. Yusuf
Abubakar Ibrahim A.
Esther N. Useni
Ayodele Titilayo
Rev Tonye Ayamah
Agubata Obiageli
Akinpelu Abiodun
Bunmi Adedokun
Laurette Omale
Nnene Orji
Esien kokoete
Imoh Akpan
Daniel Akinyemi
Sunday Omosor

Interviewers

Abdoolmumin Yarima
Kure Yabo
Hauwa Kure
Charity Y. Usman
Patience Stephen
Njien Barbra Jugo
Wulnan Shadrach
Lilian Nakoto
Lami Sati
Blessing Paul Davo
Late Mark Shaset
Alfred Ejirow
Tijani Garba
Helen Igbhebo
John Akanya N
Leawat Jesse James
Auwal Pam Mohammed
Gladys N. Wilson
Olajide Yemi
Abdullah Abubakar
Deborah Samaila
Hassan Yusuf
Lawrence David Ugah
Mutallab Musa Ahmed
Momoh Faruk
Oyetunde Timothy
Bala Usman
Alexander Hamidu
Idemoh Barbara
Emmanuel Fatoyinbo
Katung M. Kwasu
David Emmanuel Akpan
Tete Ayuba
Gyang Alice Peter

Quality Controllers

Millicent Shaset
Musa A. Abubakar
Yemisi Ogundare
Kanbar Labar
Kolawole Fashoyin
Blessing Nzene

Ibrahim Hauwa L.
Leonard Lepdung
Adiele Ikechi
Ajiboye Raimot Adenike
Oluwakemi Oyekunbi
Ajeniya Ibukun
Oguniran Abiola
Idowu Abiola Abidemi
Raji Ajibola O.
Adedokun Oluwaseun
Bello Oyebisi
Adebayo Opeyemi
Adebisi Adefolakemi
Omotosho Idowu Omotola
Ebiem Patience
John Okere
Obinna Eze
Damain Imariagbe
Ijeoma Chukwumezie
Godspower Seribo
Betty Bellior
Udoh Ogbonnaya
Medo Ntekpere
Robert Daniel
George Uzoaga
Sam Nwoke Ucheonwu
Anu Rotimi
Late Maryam Mohammed
Mercy Ujuju
Ify Nzene
Adibe Cynthia
Nwodu Valentine
Orji Victor Dimgba
John Ijekpa

8.7 Description of outlet types visited for this survey

Public Health Facilities	N	Description
University teaching hospital / Federal Medical Centre	29	<p>These tertiary level public health facilities are designated as referral hospitals for the State. They have specialized clinics with qualified personnel.</p> <p>Federal Medical Centres (FMCs) are headed by a Chief Medical Director appointed by Federal Government, funded by and reporting to the Federal Government. They conduct postgraduate training of health providers including doctors and nurses. Unlike university teaching hospitals, FMCs are not attached to any specific university or medical school.</p> <p>By definition, university teaching hospitals are linked to a university or medical school. They are headed by a Chief Medical Director, and regulated by the Medical and Dental Council. Some teaching hospitals are privately owned and the distinction between government-owned and private-owned facilities has made during the survey.</p>
General / Specialist hospital	24	<p>These secondary public health facilities are funded by and report to State governments.</p> <p>General hospitals typically serve urban or peri-urban areas with a catchment area covering 200,000 to 300,000 people. They are headed by a Medical Superintendent, and have facilities for diagnosis, in-patient admission, and surgery. They include pharmacy section(s), dispensary unit(s), an ambulance, and a few residential houses for staff on emergency duties. General hospitals may host internships for doctors under supervision, but do not perform postgraduate training.</p>
Primary Health Care Centre (PHCC)	202	<p>These primary health facilities are managed and operated at the local government area level.</p> <p>They are the smallest of all government-owned health facilities and offer fewer services than those found at tertiary and secondary level facilities. Health centres are located in both urban and rural settings, and have a typical catchment area covering 10,000 to 30,000 people.</p> <p>They are usually manned by one or two nurses with some community health extension workers and a few auxiliary staff. However, some are operated by doctors, while others have doctors that periodically visit to make major decisions or run specialist clinics. Services provided include community IMCI; family planning; focuses ANC; routine immunization; and PMTCT.</p>

Private, not-for-profit facilities	N	Description
Non-Governmental Organization (NGO) Hospital / Health Centre	11	These health facilities operate at different levels of the health system, depending on their size. They are funded and supported by non-governmental organizations and provide medical consultations, diagnoses, and prescription medicines at a nominal cost.

Community health workers	N	Description
Community Health Extension Worker	19	This cadre of trained health worker is found mostly at the primary health care level and provides services directly to the communities in which they work. While most of them are attached to government facilities, some of them operate at privately owned outlets, such as PPMVs, or from their residential homes.

Pharmacy	N	Description
Pharmacy	409	<p>These outlets are registered by the Pharmacy Council of Nigeria and are authorized to sell all classes of medicines, including prescription medicines. They usually employ nurses and intern pharmacists.</p> <p>Pharmacies are highly regulated by the National Agency for Food and Drug Administration and Control (NAFDAC). They are privately owned, either by registered pharmacists or individuals who employ the services of a registered pharmacist. In Nigeria, pharmacies are overwhelmingly located in urban areas in commercial zones.</p>

Drug Store	N	Description
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Propriety patent medicine vendors / Drug Store	1,031	<p>These are small to medium sized outlets, equivalent to <i>drug shops</i> in other <i>ACTwatch</i> countries. PPMVs may be registered by the Directorate of Pharmaceutical Services (DPS), but the majority of them are not registered.</p> <p>They are legally allowed to sell over the counter (OTC) medicines, however a number of them also illegally stock prescription medicines. (In 2006, NAFDAC de-classified ACTs from prescription-only to OTC; hence ACTs are legally available at PPMVs.) Some operate without a license, especially at the village level or remote areas.</p> <p>PPMVVs are ubiquitous across Nigeria and, given the lack of pharmacies in rural settings, serve as accessible medicine outlets for consumers. Staff typically have little or no training in health service delivery, although a small proportion of PPMVs are owned by nurses or other health workers, such as community health extension workers.</p>
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Private-for-profit	N	Description
Private hospitals / clinics	405	These are non-governmental health facilities. Just as with public health facilities, private hospitals and clinics are classified in terms of their capacity— tertiary, secondary, or primary. For this study, all three levels have been grouped into one category. Hence, they can range from offering comprehensive health services to being limited in scope. Likewise, staff range in qualification and number. There is usually a dispensing section, but in some cases, the doctors may dispense medications themselves.

Retail stores	N	Description
Supermarket / Minimarket / Provision store	3,305	Small businesses which sell household products, food, and beverages. These stores may also sell medicines, usually antipyretics. They are unlicensed.

8.8 Sampling weights

Sampling weights are needed to analyze the survey data if PPS cluster sampling is applied. Otherwise, bias may be introduced in the calculated statistics if the sub-districts/communes are very different in size. If a complete sampling frame is available for applying PPS sampling, with the measure of size being the population, sampling weights are easy to calculate. Assuming that the distribution of the outlets is proportional to the population within each sampling stratum and that a Booster Sample is applied, then for all the outlets enumerated in the selected sub-district not including the public health facilities and the Part One pharmacies (there is a separate weighting procedure for these weights shown later), sampling weight is the inverse of the selection probability of the selected sub-district, calculated as:

$$W_{hi} = \frac{\sum M_{hi}}{n_h M_{hi}}$$

where

W_{hi} = the sampling weight for the i^{th} selected sub-district/commune of stratum h ,

$\sum M_{hi}$ = the total number of population (or total number of households) in the stratum h

n_h = the number of sub-districts/communes selected in stratum h , and

M_{hi} = the number of population (or number of households) in the i^{th} selected sub-district/commune of stratum h

If no explicit stratification is used in the sample selection, then $h=1$.

The sampling weight for all the public health facilities and Part One pharmacies, which are included in the sample from the entire district including the ones in the selected sub-district, is calculated similarly but with the above parameters replaced by district level characteristics:

$$W_{hj}^* = \frac{\sum M_{hj}^*}{n_h^* M_{hj}^*}$$

where

W_{hj}^* = the sampling weight for the j^{th} selected district (a district is selected if one or more of its sub-districts are selected in the sample) of stratum h ,

$\sum M_{hj}^*$ = the total number of population (or total number of households) in stratum h

n_h^* = the number of districts selected in stratum h , and

M_{hj}^* = the number of population (or number of households) in the j^{th} selected district of stratum h

With the above calculated district level weights (posterior weights because there is no direct selection of districts in the sampling procedure), a Booster Sample outlet should be counted only once in the data analysis even if two or more sub-districts/communes are selected from the same district.

The above calculated sampling weights are cluster-wide weights. This means that all the outlets interviewed in the same sub-district/commune share the same sampling weight, for both public health facilities and Part One pharmacies and all other facilities.

8.9 Assumptions for calculating Adult-Equivalent Treatment Doses (AETDs)

Introduction

Antimalarial medicines are manufactured in a variety of active pharmaceutical ingredients, dosage forms, strengths and package sizes. To analyze prices and volumes across products with different characteristics, they are standardized using the AETD. Indicators based on price and volume data, namely market share and antimalarial prices, are presented in terms of AETDs.

Assumptions for calculating AETDs

One AETD is defined as the number of milligrams (mg) of an antimalarial drug required to treat a 60 kilogram (kg) adult. For each antimalarial medicine category, the number of mg in one AETD is set to what was recommended in the treatment guidelines for uncomplicated malarial in areas of low drug resistance issued by the WHO. Where WHO treatment guidelines did not exist, AETDs were based on peer reviewed research, or the product manufacturer's recommended treatment course for a 60kg adult. A list of AETDs by antimalarial category prepared by PSI for the *ACTwatch* project was reviewed and updated by the Independent Evaluator in April 2010. Refer to Table 9.9.1 for the list used for the baseline report.

Additional assumptions

- 1) For combination therapies, which have two or more active antimalarial ingredient packaged together (either co-formulated or co-blistered) the AETD is based on the total amount of one of the active ingredients. For ACTs, the artemisinin derivative was used as the basis of the AETD.
- 2) Co-blistered combinations are assumed to be in a 1:1 ratio of tablets, with the following exceptions:
 - Amodiaquine + Sulfadoxine + Pyrimethamine manufactured under the brand name Dualkin;
 - Artesunate + Amodiaquine manufactured under the brand names Amonate Junior and Amonate Adult;
 - Artesunate + Mefloquine manufactured under the brand names Artequin 600/1500, Artequin 300/750, A + M1, A + M2, A + M3, A + M4, A + M5, Malarine for Adults, Malarine for Teenagers, and Malarine for Children;
 - Artesunate + Sulfadoxine + Pyrimethamine manufactured under the brand names SulamonPlus 500, Malosunat, Amalar, Artescope, Farenax, Artidox, Artedar, Asunatedenk 100, Asunatedenk 200, Co-arinate, Arte-Plus.
- 3) Sulfamethoxypyrazine-pyrimethamine is assumed to have the same full adult treatment dose as Sulfadoxine-pyrimethamine.
- 4) Artequick lacking strength information is assumed to contain Artemisinin 62.4mg and Piperaquine phosphate 375mg.

Methods for calculating price and market share indicators

Information collected on the medicine's 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. Next, the number of AETDs in a unit was calculated.²⁶ For monotherapies, the number of AETDs in the unit was calculated by dividing the total amount of the active ingredient contained in the unit, by the AETD (ie. by the total number of mg required to treat a 60kg adult). For combination therapies, the number of AETDs in the unit was calculated by dividing the total amount of the active ingredient that was used as the basis for the AETD by the AETD.

Calculating price indicators

Pricing indicators (Indicators 2.1-2.4) are presented in terms of the cost to patients for one AETD. For each antimalarial audited, the cost to patients for one unit was computed based on the retail selling price reported by the respondent for that product. This was then divided by the number of AETDs in the unit to get the cost to patients for one AETD. (An exception is the pediatric price indicator for quality assured ACT (Indicator 2.1) where AETDs were not used. Rather the price for a 2 year old child was calculated including only pediatric formulations whose age (weight) range includes a 2 year old (10kg) child.)

Calculating market share

For each antimalarial audited, the number of AETDs sold over the past 7 days was calculated by multiplying the number of units sold as reported by the respondent by the number of AETDs in the unit.

Market share was then calculated by summing this for all antimalarials audited belonging to a particular category, which was then divided by the sum of AETDs of all antimalarials sold.

Market share was calculated by dividing the number of AETDs of a particular antimalarial category sold by the total number of AETDs of all antimalarials sold. In cases where outlets stocked antimalarials, but some or all sales volumes were missing, we did not impute for missing values.

²⁶ The unit depends on the antimalarial medicine's dosage form. For antimalarials in tablet, suppository or granule dosage form, the unit is the package. For antimalarials in injectable dosage form, the unit is the ampoule. For antimalarials in syrup or suspension dosage form, the unit is the bottle.

Table 8.9.1: AETD Calculation details by antimalarial type				
Antimalarial Category	Dose used for calculating 1 AETD (mg required to treat a 60kg adult)	Generic product used for AETD mg dose value	Notes	Source
Amodiaquine	1800mg			WHO Model Formulary, 2008
Amodiaquine-Sulfadoxine-Pyrimethamine	1800mg	Amodiaquine	Info available only for Amodiaquine (not the combination)	WHO Model Formulary, 2008
Atovaquone-Proguanil	3000mg	Atovaquone		WHO Guidelines for the treatment of malaria 2 nd edition, 2010
Chloroquine	1500mg		Info available for P.vivax malaria	WHO Guidelines for the treatment of malaria 2 nd edition, 2010
Chloroquine-Sulfadoxine-Pyrimethamine	1500mg	Chloroquine	Info available for P.vivax malaria Info only available for Chloroquine (not the combination)	WHO Guidelines for the treatment of malaria 2 nd edition, 2010
Chlorproguanil-Dapsone	360mg	Chlorproguanil		Manufacturer Guidelines (<i>LapDap – GSK</i>)
Halofantrine	1500mg or 1398mg		1500mg is for halofantrine hydrochloride, as the strength is normally reported in this manner. The total dose for halofantrine base is 1398 mg.	Manufacturer Guidelines (<i>Halfan – GSK</i>)
Hydroxychloroquine	1500mg		One tablet of 200mg hydroxychloroquine sulfate is equivalent to 155mg base.	Manufacturer Guidelines (<i>Plaquenil – Sanofi Aventis</i>)
Mefloquine	900mg			WHO Model Formulary, 2008
Mefloquine-Sulfadoxine-Pyrimethamine	900mg	Mefloquine	Info only available for Mefloquine (not the combination)	WHO Model Formulary, 2008
Primaquine	45mg		This dose is for the gametocytocidal treatment of P. falciparum.	WHO Guidelines for the treatment of malaria 2 nd edition, 2010

Quinacrine	2100mg		Recommendations for malaria treatment are very dated. This value is the treatment regimen for giardiasis, which has also been used in the treatment for malaria. The Gardner & Hill article specifies dosing is usually 100 mg three times a day over 5 to 7 days for adults.	Gardner, T. B. and Hill, D. R. 2001. Treatment of Giardiasis. Clinical Microbiology Reviews. 14(1): 114-128 http://cmr.asm.org/cgi/content/full/14/1/114#T2
Quinimax	10500mg			Manufacturer Guidelines (<i>Quinimax – Sanofi Aventis</i>)
Quinine	12600mg or 10408mg		12600mg is for quinine sulfate, a salt, as quinine strengths are normally reported for salts. The equivalent dose for quinine base is 10408mg for a 60kg adult. Both dosages are based on treatment lasting 7 days.	WHO Model Formulary, 2008
Quinine-Sulfadoxine-Pyrimethamine	12600mg or 10408mg	Quinine	12600mg is for quinine sulfate, a salt, as quinine strengths are normally reported for salts. The equivalent dose for quinine base is 10408mg for a 60kg adult. Both dosages are based on treatment lasting 7 days. Info available only for Quinine (not the combination)	WHO Model Formulary, 2008
Sulfadoxine-Pyrimethamine	1500mg	Sulfadoxine		WHO Model Formulary, 2008
Arteether	1050mg		1050mg is for 7 days of treatment	WHO Use of Antimalarials, 2001
Artemether	960mg			WHO Use of Antimalarials, 2001
Artesunate	960mg			WHO Use of Antimalarials, 2001
Dihydroartemisinin	480mg			Manufacturer Guidelines (<i>Cotecxin – Holleypharm; MALUether – Euromed</i>)
Artemether-Lumefantrine	480mg	Artemether		WHO Guidelines for the treatment of malaria 2 nd edition, 2010

Artemisinin-Naphthoquine	2400mg	Artemisinin	<p>Manufacturer Guidelines for this product are 1000mg Artemisinin in a single dose. According to WHO Guidelines for the treatment of malaria 2nd edition, a three day course for ACTs is recommended.</p> <p>This treatment dose used is based upon the WHO Artemisinin-MQ recommendation 20 mg/kg in a divided loading dose on the first day, followed by 10 mg/kg once a day for two more days, plus mefloquine (15-25 mg of base per kg) as a single or split dose on the second and/or third day.</p>	WHO Use of Antimalarials, 2001
Artemisinin-Piperaquine	576mg	Artemisinin		<p>Krudsood, S. et al. 2007. Dose ranging studies of new artemisinin-piperaquine fixed combinations compared to standard regimens of artemisinin combination therapies for acute uncomplicated falciparum malaria. The Southeast Asian Journal of Tropical Medicine and Public Health. 38(6): 971-8. http://www.ncbi.nlm.nih.gov/pubmed/18613536</p>
Artemisinin-Piperaquine-Primaquine	576mg	Artemisinin		<p>Tangpukdee, N. et al. 2008. Efficacy of <i>Artequick</i> versus artesunate-mefloquine in the treatment of acute uncomplicated falciparum malaria in Thailand. The Southeast Asian Journal of Tropical Medicine and Public Health. 39(1): 1-8 http://imsear.hellis.org/handle/123456789/33676</p>
Artesunate-Amodiaquine	600mg	Artesunate		WHO Guidelines for the treatment of malaria 2 nd edition, 2010

Artesunate-Halo fantrine	600mg	Artesunate	Relatively uncommon combination. Dosing information is difficult to find and the value here is based on the Artesunate-Amodiaquine, Artesunate-SP, and Artesunate-Mefloquine values.	-
Artesunate-Lumefantrine	600mg	Artesunate	Relatively uncommon combination. Dosing information is difficult to find and the value here is based on the Artesunate-Amodiaquine, Artesunate-SP, and Artesunate-Mefloquine values.	-
Artesunate-Mefloquine	600mg	Artesunate		WHO Guidelines for the treatment of malaria 2 nd edition, 2010
Artesunate-Piperaquine	600mg	Artesunate	Relatively uncommon combination. Dosing information is difficult to find and the value here is based on the Artesunate-Amodiaquine, Artesunate-SP, and Artesunate-Mefloquine values.	-
Artesunate-Pyronaridine	600mg	Artesunate	Relatively uncommon combination. Dosing information is difficult to find and the value here is based on the Artesunate-Amodiaquine, Artesunate-SP, and Artesunate-Mefloquine values.	-
Artesunate-Sulfadoxine-Pyrimethamine	600mg	Artesunate		WHO Guidelines for the treatment of malaria 2 nd edition, 2010
Dihydroartemisinin-Amodiaquine	360mg	Dihydroartemisinin	Relatively uncommon combination. Dosing information is difficult to find and the value here is based on the most common Dihydroartemisinin-combinations with sources listed below.	-

Dihydroartemisinin-Halofantrine	360mg	Dihydroartemisinin	Relatively uncommon combination. Dosing information is difficult to find and the value here is based on the most common Dihydroartemisinin-combinations with sources listed below.	-
Dihydroartemisinin-Lumefantrine	360mg	Dihydroartemisinin	Relatively uncommon combination. Dosing information is difficult to find and the value here is based on the most common Dihydroartemisinin-combinations with sources listed below.	-
Dihydroartemisinin-Mefloquine	360mg	Dihydroartemisinin		Manufacturer Guidelines (Mefloquin – Adams Pharma)
Dihydroartemisinin-Piperaquine	360mg	Dihydroartemisinin		WHO Guidelines for the treatment of malaria 2 nd edition, 2010
Dihydroartemisinin-Piperaquine-Trimethoprim	256mg	Dihydroartemisinin		Manufacturer Guidelines (Artemix – Medicare Pharma; Artemix – Ctongho)
Dihydroartemisinin-Pyronaridine	360mg	Dihydroartemisinin	Relatively uncommon combination. Dosing information is difficult to find and the value here is based on the most common Dihydroartemisinin-combinations with sources listed below.	-
Dihydroartemisinin-Sulfadoxine-Pyrimethamine	360mg	Dihydroartemisinin		Manufacturer Guidelines (Dalsin – Adams Pharma)

8.10 Nationally registered ACTs

The following ACTs were registered with NAFDAC at the time of data collection for this study.

Active ingredients	Strength	Formulation	Brand Name	Manufacturer	Country of Manufacture
Amodiaquine / Dihydroartemisinin	135mg/60mg	Tablet	Amosinin	Adams Pharm	China
Amodiaquine / Dihydroartemisinin	270mg/120mg	Tablet	Amosinin	Adams Pharm	China
Artemether / Lumefantrine	15mg/90mg	Powder	Co-Artesiane	MPF BV	Netherland
Artemether / Lumefantrine	20mg/120mg	Tablet	Coartem (All weights)	Novartis	Switzerland
Artemether / Lumefantrine	40mg/240mg	Tablet	Tamether	Jiangsu Yixing	China
Artesunate / Amodiaquine	50mg/153mg	Tablet	Arsucam (under 7 years)	Sanofi	Morocco
Artesunate / Amodiaquine	50mg/153mg	Tablet	Arsucam (7-13 years)	Sanofi	Morocco
Artesunate / Amodiaquine	50mg/153mg	Tablet	Arsucam (After 13 years)	Sanofi	Morocco
Artesunate / Amodiaquine	50mg/153.1mg	Tablet	Arsuamoon	Guilin	China
Artesunate / Amodiaquine	50mg/153.1mg	Tablet	Larimal (Child Kit)	Ipca Pharma	India
Artesunate / Amodiaquine	50mg/153.1mg	Tablet	Larimal (Kid Kit)	Ipca Pharma	India
Artesunate / Amodiaquine	50mg/153.1mg	Tablet	Larimal (Adult)	Ipca Pharma	India
Artesunate / Amodiaquine	50mg/200mg	Tablet	DART (Child and Adult)	Swipha	Nigeria
Artesunate / Amodiaquine	50mg/200mg	Tablet	Quinsunat	Mekophar Chem Pharm	Vietnam
Artesunate / Amodiaquine	100mg/300mg	Tablet	Camosunate Plus (Adult)	Adams Pharma	China
Artesunate / Amodiaquine	100mg/300mg	Tablet	Gsunate Kit	GVS-India/ Greenlife-Nigeria	India
Artesunate / Amodiaquine	100mg/400mg	Tablet	Malact	May and Baker	Nigeria
Artesunate / Amodiaquine	25mg/75mg	Granules	Camosunate (Pediatric)	Adams Pharma	China
Artesunate / Amodiaquine	50mg/150mg	Granules	Camosunate (Children)	Adams Pharma	China
Artesunate / Amodiaquine	Unknown	Tablet	Amodarte	Medicamen Biotech	India
Artesunate / Amodiaquine	50mg/150.8mg	Tablet	Efonrex	Bond Chemicals	Nigeria
Artesunate / Amodiaquine	Unknown	Tablet	Farinax	Swipha	Nigeria
Artesunate / Mefloquine	100mg/125mg	Tablet	Artequin	Mepha	Switzerland
Artesunate / Mefloquine	200mg/250mg	Caplets	Arfloquin	Mekophar Chem Pharm	Vietnam
Artesunate / Mefloquine	200mg/250mg	Tablet	Arsugin M	Vapicare Pharm	India
Artesunate / Mefloquine	200mg/250mg	Tablet	Artequin	Mepha	Switzerland
Artesunate / Mefloquine	200mg/250mg	Tablet	Amdin	Jiangsu Yixing	China

Continued on following page

Active ingredients	Strength	Formulation	Brand Name	Manufacturer	Country of Manufacture
Artesunate / Sulphadoxine / Pyrimethamine	50mg/500mg/ 25mg	Tablet	Artecospé	Guilin	China
Artesunate / Sulphamethoxypyrazine / Pyrimethamine	200mg/500mg/ 25mg	Tablet	Co-arinate	Dafra	Brussels
Artesunate / Sulphadoxine / Pyrimethamine	200mg/500mg/ 25mg	Tablet	Farenax	Swipha	Nigeria
Dihydroartemisinin / Piperaquine Phosphate	30mg/25mg	Tablet	Waipa	Kunimed Pharmachem	Nigeria
Dihydroartemisinin / Piperaquine Phosphate	40mg/320mg	Capsules	Combimal	Kunming Pharma	China
Dihydroartemisinin / Piperaquine Phosphate	40mg/320mg	Granules	Combimal	Adams Pharm	China
Dihydroartemisinin / Piperaquine / Trimethoprim	32mg/320mg/ 90mg	Tablet	Artecom	Tonghe Pharm	China
Dihydroartemisinin / Piperaquine Phosphate / Trimethoprim	32mg/320mg/ 90mg	Tablet	Axcin	Jiangsu Yixing	China

8.11 Additional table, market share by outlet category

Table 8.11.1: Market share, by outlet type											
	Public Health Facility	Community Health Worker	Private not-for-profit HF	TOTAL Public / Not for profit	Private for-profit HF	Pharmacy	Drug Store	General retailer	Itinerant drug vendor	TOTAL Private	TOTAL
Each antimalarial category as a proportion of the total volume of AETDs sold or distributed within that outlet category in the past week ²⁷ :	%	%	%	%	%	%	%	%	%	%	%
Any ACT	13.6	49.2	61.4	18.3	17.6	30.7	6.8	4.0	0	7.0	7.7
Quality Assured ACT (QAACT)	6.4	49.2	33.8	9.7	2.5	3.7	2.2	0.8	0	2.1	2.4
First-line (FAACT)	6.4	49.2	33.8	9.7	2.5	3.7	2.2	0.8	0	2.1	2.4
Non first-line (NAACT)	0	0	0	0	0	<0.1	<0.1	0	0	<0.1	<0.1
Non-quality Assured ACT	7.2	0	27.6	8.6	15.1	27.0	4.6	3.2	0	4.9	5.2
Other ACT Classifications											
Nationally registered ACT	12.1	49.2	61.3	16.9	12.0	23.5	5.6	2.6	0	5.7	6.3
Any non-artemisinin therapy	84.7	50.8	37.7	80.1	74.8	56.7	84.8	91.5	97.3	84.7	83.9
Chloroquine	37.4	27.0	10.0	35.0	38.6	17.6	34.4	15.3	5.9	33.2	34.7
Sulfadoxine-pyrimethamine (SP)	45.7	22.6	26.7	43.6	34.4	36.5	49.4	74.4	91.4	50.4	48.1
Second-line treatment (Quinine)	0.7	1.2	0.9	0.7	0.6	0.3	0.2	<0.1	0	0.2	0.2
Any artemisinin monotherapy	1.7	0.1	0.9	1.6	7.6	12.6	8.5	4.5	2.8	8.3	8.5
Oral artemisinin monotherapy	0.6	0.1	0.5	0.5	7.0	12.2	8.1	4.5	2.8	8.0	8.1
Non oral artemisinin monotherapy	1.2	0	0.4	1.1	0.6	0.4	0.4	0	0	0.4	0.4

²⁷ Any ACT subgroups are not mutually exclusive: Any ACT subdivides fully into QAACTs and Non-quality Assured ACT; QAACTs decompose fully into FAACTs and NAACTs; nationally registered ACTs are either QAACTs or non-QAACTs. Row and column totals exhibit minor rounding errors.

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