



ACTWATCH RESEARCH BRIEF

Uganda outlet survey findings: 2010, 2011, 2013, 2015

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Background

The target for malaria case management in Uganda is to ensure that all suspected malaria cases receive parasitological diagnosis, by microscopy or rapid diagnostic test, followed by treatment with Artemether-Lumefantrine for confirmed cases.

MALARIA SITUATION IN UGANDA

The population of Uganda was 34.6 million in 2014, with an estimated growth of 3 percent¹. More than 90 percent of Uganda's population is at risk for malaria². Uganda has the third highest number of malaria infections caused by *P. falciparum* in sub-Saharan Africa³.

MALARIA PREVALENCE

Uganda experiences intense perennial malaria transmission across 95 percent of the country. This includes the entire Central region, and most of the Northern and Southern regions. The most recent Malaria Indicator Survey documents a 42 percent parasite prevalence rate among children under five in 2014, and an average of 1,600 infective bites per person per year⁴.

NATIONAL TREATMENT GUIDELINES

The 2010-2015 National Malaria Control Strategic Plan was reviewed by the Uganda National Malaria Control Program (NMCP) and revised as a six-year Uganda Malaria Reduction Strategic Plan (UMRSP) for 2014-2020.

Uganda has used the Artemisinin-based Combination Therapy (ACT) Artemether Lumefantrine (AL) as the first-line treatment for uncomplicated malaria since 2004, injectable artesunate as treatment for severe malaria, and rectal artesunate is indicated for pre-referral treatment for severe malaria. The UMRSP also recommends Sulfadoxine Pyrimethamine (SP) for IPTp (intermittent preventive treatment in pregnancy) for malaria.

GOALS OF THE UGANDA MALARIA REDUCTION STRATEGIC PLAN

The revised UMRSP 2014-2020 primary targets are to reduce malaria deaths to near zero, reduce malaria morbidity to 30 cases per 1,000 persons, and to reduce malaria parasite prevalence to less than 7 percent nationwide. The UMRSP objectives related to appropriate case management include:

1. At least 90 percent of all malaria cases receive prompt treatment according to national guidelines
2. At least 85 percent of the population practices correct malaria prevention and management measures (including confirmatory diagnosis and treatment with AL)

KEY INTERVENTIONS

The Affordable Medicines Facility-malaria pilot program, designed to provide subsidized ACT medicines to the public and private sectors, began in 2010, with the arrival of the first co-paid ACTs in Uganda in April of 2011. In 2013, this program transitioned to the Global Fund co-payment mechanism subsidy program, which was available to the private sector only. The new program was implemented in 2014; the subsidy for first-line buyers reduced from 95 percent to 50 percent for adult courses and 70 percent for child courses. In 2015, the subsidy returned to 70 percent for both package sizes.

Integrated community case management (ICCM) efforts have been executed using an expanded village health team (VHT) member program, using community volunteers to provide linkage to health services including diagnosis and treatment of pneumonia, malaria, diarrhea, and newborn care⁵.

To support efforts to increase availability of RDTs in Uganda, the Global Fund and UNITAID initiated the CARESTART campaign, together distributing 17 million RDTs to the public sector. UNITAID also provided an additional two million RDT kits to the private sector⁶.

In support of the change in severe malaria treatment guideline to IV/IM artesunate, UNITAID invested USD 17 million to accelerate the adoption. Working together with Clinton Health Access Initiative (CHAI) and Malaria Venture (MMV), additional vials of treatment will be distributed in Uganda⁷.

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MUSLIM



HEALTH

ACTwatch at a glance

~50

Number of outlet surveys implemented between 2008 and 2016

+200,000

Total number of outlets screened across all survey rounds

+250,000

Number of antimalarials audited in sub-Saharan Africa and the Greater Mekong sub Region to date

WHAT IS ACTWATCH?

ACTwatch is a multi-country research project implemented by Population Services International (PSI). Standardized tools and approaches are employed to provide comparable data across countries and over time. ACTwatch is designed to provide timely, relevant, and high quality antimalarial market intelligence, including information on ACTs and RDTs. The project was launched in 2008 with funding from the Bill and Melinda Gates Foundation (BMGF), and is currently funded through 2016 by the BMGF, UNITAID, and the Department of International Development (DFID). Research methods implemented include outlet and household surveys, quality of fever case management studies, supply chain studies, and key informant interviews.

GOAL

The goal of the ACTwatch project is to provide policymakers with evidence to inform and monitor national and global policy, strategy, and funding decisions for improving malaria case management and elimination efforts.

RELEVANCE

ACTwatch market monitoring in Uganda from 2008 to 2015 has

been implemented in the context of national strategies designed to improve coverage of appropriate malaria case management. These efforts include:

- Scale up of quality-assured ACTs in the public and private sectors through mechanisms including the Global Fund co-payment mechanism piloted under the AMFm. The initial AMFm pilot period was 2010-2011. Co-paid ACTs were delivered to first-line buyers in Uganda from 2011-2015.
- National efforts to improve availability of malaria blood testing and confirmatory testing prior to antimalarial treatment.
- Efforts to extend malaria blood testing and antimalarial treatment to community level through integrated community case management of malaria delivered through Village Health Team (VHT) members.

OUTLET SURVEYS

Outlet surveys are the core component of the ACTwatch project. The outlet surveys in Uganda were designed to monitor key antimalarial market indicators at the national level and within urban/rural domains.

This summary report presents trends from the most recent outlet surveys conducted in 2010, 2011, 2013 and 2015.

What questions are answered by the outlet survey?



What types of outlets in the public and private sectors are distributing antimalarials and providing malaria blood testing?



What types of antimalarials and RDTs are available and distributed by public and private sector?



What proportion of public and private sector antimalarial medicine outlets are stocking: 1) quality-assured ACT; 2) non quality-assured ACT; and 3) malaria blood testing?



What is the antimalarial market share of quality-assured ACT relative to the market share for other types of antimalarials?



What is the consumer price for antimalarial medicines and malaria blood testing among private sector outlets?

The ACTwatch Countries, 2016



Methods

ACTwatch implements standardized methods and questionnaires that allow for comparisons between countries and survey rounds. A full census of all outlets providing malaria care and a full audit of all available antimalarials provides a complete picture of the antimalarial market.

HOW IS THE SAMPLING CONDUCTED?

A nationally representative sample of outlets providing antimalarials to consumers was selected. In Uganda, a probability proportional to size approach was used to select sub-counties within each stratum (urban and rural areas), with cluster population serving as the measure of size. Sub-counties were the primary sampling unit, or cluster.

WHAT TYPES OF OUTLETS ARE SAMPLED?

The main types of outlets sampled include public and private not for-profit facilities, community health workers, private for-profit facilities, pharmacies, and drug stores. General retailers were included in earlier rounds of the outlet surveys. However, given that they were found to not stock antimalarial medicines, they were excluded from the 2015 study.

HOW ARE THE OUTLETS IDENTIFIED?

The ACTwatch outlet survey includes all outlets with the potential to sell antimalarial medicines. As many of these outlets may be unregistered, mobile or recently opened, official listings of these shops and their locations are not typically available. A census approach was therefore implemented, supported by the use of key informant interviews with local officials, local maps, and lists of registered outlets where available.

WHAT IS AN OUTLET CENSUS?

This involves a team of data collectors moving systematically through a defined area in order to identify all outlets that have the potential to sell or distribute antimalarials.

WHAT HAPPENS AFTER AN OUTLET IS IDENTIFIED?

The outlet is screened for availability of malaria medicines or diagnostic testing. Outlets are included in the survey if they have antimalarials or malaria diagnostic tests in stock at the time of survey or in the previous 3 months. Permission to conduct the interview is obtained from the main provider.



HOW IS INFORMATION ON ANTIMALARIALS AND RDTs CAPTURED?

Among outlets with antimalarials or/and malaria tests in stock, a full audit of the antimalarials and diagnostic tests is conducted. Information is recorded for each unique antimalarial and RDTs identified in the outlet.

WHAT INFORMATION IS RECORDED ON THE AUDITS?

An audit sheet is completed for each unique antimalarial and RDT in stock. The audit sheet captures product information from the product package including the brand name, the manufacturer, country of manufacturer, formulation and strength. The audit sheet also captures information from the provider including the amount sold in the last seven days and the retail price. If a particular product is available in multiple package sizes, strengths, or formulations, an audit sheet is completed for each unique product.

Comprehensive product information and provider reports on amount distributed and retail price allow for calculating estimates of antimalarial availability, price, and relative market share.



Sample

Antimalarial outlet types

1 in 2

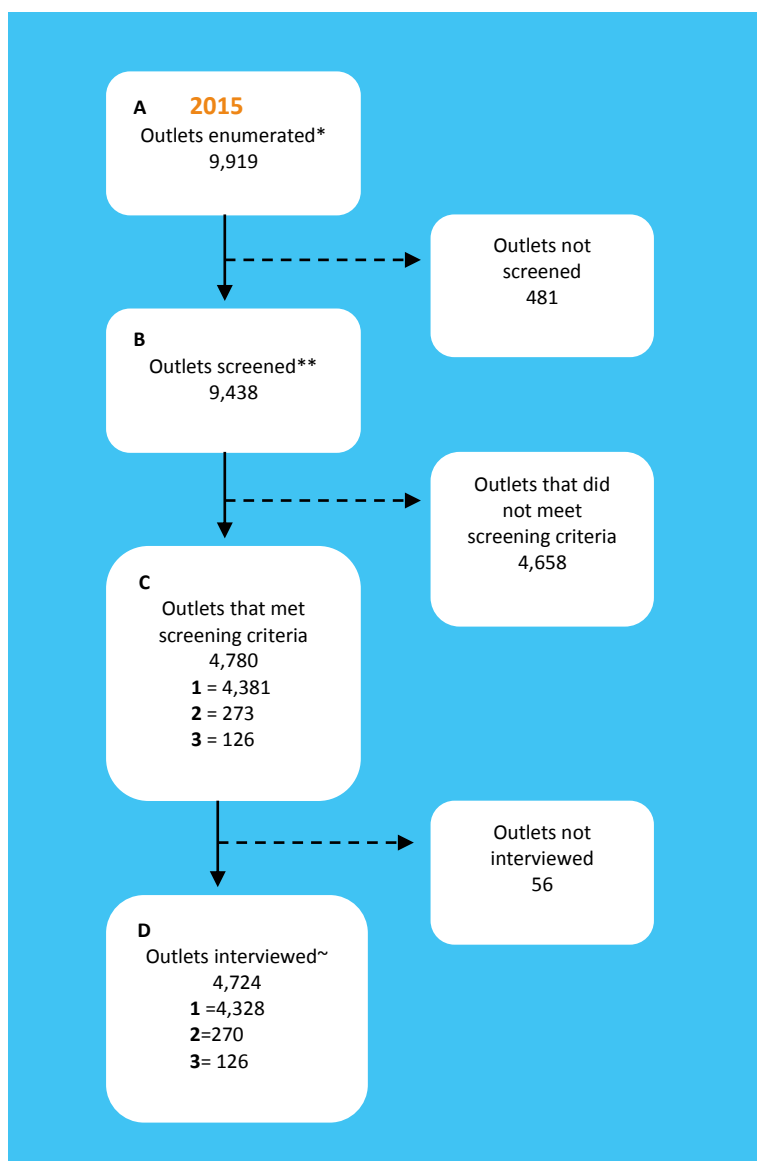
Number of outlets that met the screening criteria in 2015

HOW MANY OUTLETS WERE INCLUDED IN THE SAMPLE AND SCREENED?

In 2015, nearly 10,000 outlets were enumerated (i.e. identified as outlets with potential to sell or distribute antimalarials). Of these, 95 percent were screened for antimalarial availability. Among those that were eligible, all but 56 were interviewed.

Notes:

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





pace

Market composition

+50%

The market composition accounted for by the private sector across survey rounds.

WHAT IS ANTIMALARIAL MARKET COMPOSITION?

Antimalarial market composition is the outlet type distribution among all outlets that were found to have at least one antimalarial in stock on the day of survey. The pie charts illustrate the distribution of these antimalarial-stocking outlet types according to the public and private sector, by each outlet category.

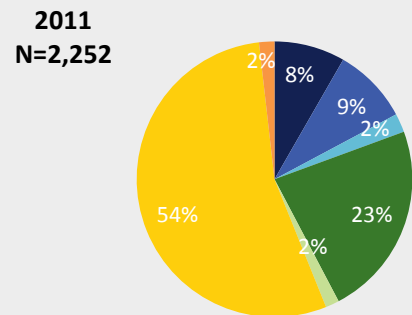
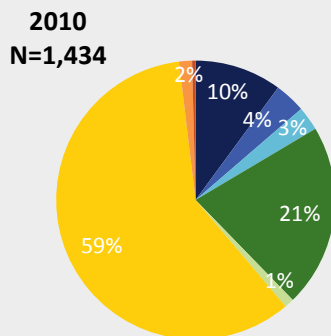
TRENDS IN ANTIMALARIAL MARKET COMPOSITION

The private sector has accounted for more than 50 percent of antimalarial-stocking outlets at each survey round. The majority of these outlets have been drug stores.

In 2010, CHWs represented 4 percent of the antimalarial market composition, increasing to 9 percent in 2011, 36 percent in 2013, and 25 percent in 2015.

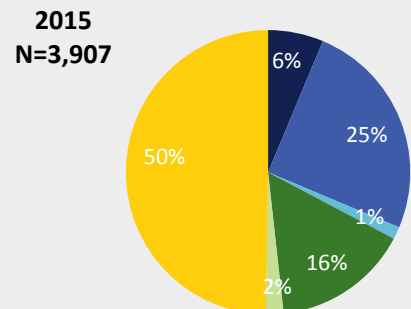
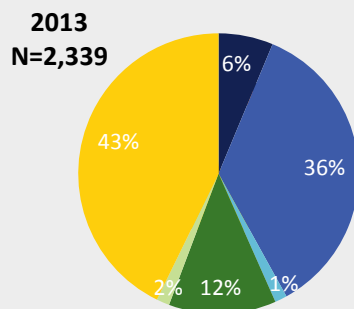
MARKET COMPOSITION, BY OUTLET TYPE IN 2010, 2011

- Public Health Facility
- Community Health Worker
- Private Not For-Profit Facility
- Private For-Profit Facility
- Pharmacy
- Drug Store
- General Retailer
- Itinerant Vendor



MARKET COMPOSITION, BY OUTLET TYPE IN 2013, 2015

- Public Health Facility
- Community Health Worker
- Private Not For-Profit Facility
- Private For-Profit Facility
- Pharmacy
- Drug Store
- General Retailer
- Itinerant Vendor





Trust.

THE REPUBLIC OF UGANDA
Ministry of Health

pace

Interventions for Health Impact



Support **VHT** Global Fund
Ow'ebiyobulamu
ku kyalo



Antimalarial availability

Availability of antimalarials by outlet type

ANTIMALARIAL AVAILABILITY AMONG SCREENED OUTLETS

The census approach involved a search for all outlets that had the potential to sell antimalarial medicines in each selected area. This graph shows the percentage of outlets that were found to have at least one antimalarial in stock on the day of the survey, among all outlets that were screened across the three survey rounds.

In public health facilities, availability of antimalarials on the day of the survey in remained high over time (greater than 97 percent). Private not for-profit facilities also maintained high readiness for malaria treatment, at above 90 percent availability in each survey round. Availability of antimalarials among community health workers was below 20 percent in each survey round.

The private sector also had high availability of antimalarials in private for-profit facilities, pharmacies,



Photo credit: PSI

and drug stores. Each of these outlet types had above 88 percent availability in each survey round. General retailers did not regularly stock antimalarials.

*Note: In 2010, 2011, and 2013, general retail outlets were screened for antimalarial availability. Thousands of retail outlets were included during each round, but very few were stocking antimalarials. As such, in 2015, general retailers were not included in the study. For this reason, availability among all private outlets in 2015 is much higher than in previous years (due to exclusion of general retailers from the study).

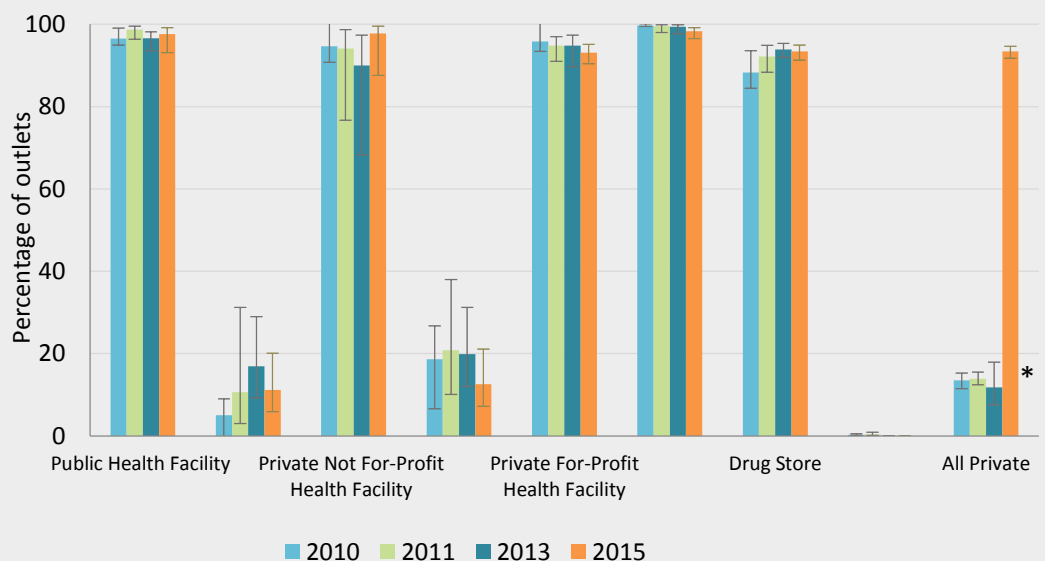
~100%

Availability of antimalarials in public health facilities in each survey round

~90%

Availability of antimalarials in private sector outlets other than general retailers

AVAILABILITY OF ANTIMALARIALS BY SCREENED OUTLETS OVER TIME



Types of antimalarials available

WHAT TYPES OF ANTIMALARIALS ARE STOCKED?

There are a number of antimalarials types dispensed by outlets in Uganda. These include quality-assured ACTs (QA ACT), QA ACT with a 'green leaf' logo, non quality-assured ACTs (non QA ACT), and other non-artemisinin therapies including Sulfadoxine-Pyrimethamine (SP).

QUALITY-ASSURED VERSUS NON-QUALITY-ASSURED ACT

Quality-assured ACTs are ACTs that comply with the Global Fund's Quality Assurance Policy and appear in the Global Fund's indicative list of antimalarials, or that previously had C-status in an earlier Global Fund quality assurance policy. Quality-assured ACTs also include those ACTs that had been granted regulatory approval by the European Medicines Agency – specifically Eurartesim® and Pyramax®.

Non quality-assured ACTs are all ACTs that do not have approval from a stringent regulatory authority, and do not have WHO Good Manufacturing Practices (GMP).

ACTs with the 'green leaf' logo are those that are distributed as a part of the Global Fund co-payment funding mechanism, a continuation of the Affordable Medicines Facility-malaria (AMFm) pilot. These ACTs are co-paid and available to first-line buyers at a subsidized cost. They are distinguishable from other ACTs by a specified logo on the packaging. Uganda was a participant country in the AMFm



pilot program beginning in 2010, and continues with Global Fund support through 2016.

NON-ARTEMISININ THERAPIES

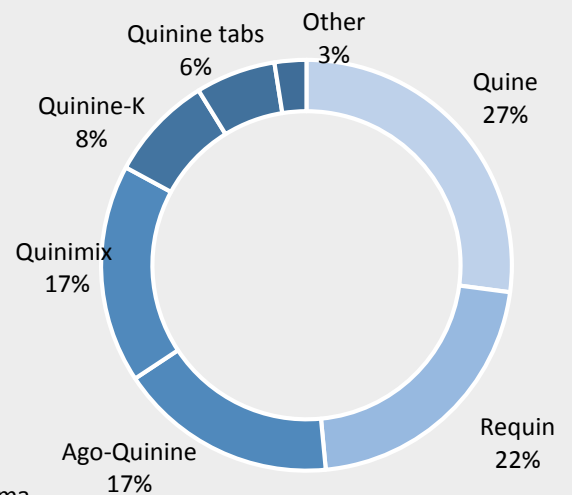
Oral quinine was the most commonly found non-artemisinin therapy, available in both tablets and syrups. Approximately 80% of audited syrups were manufactured in Uganda, and 18% in India. Among tablets, nearly 70% were manufactured in Uganda and 30% in India. In the public sector, most oral quinine products audited were tablet formulation. Common brands available in the public sector included Requin-FC tablets (Rene Industries), Ago tablets (Agog Pharma) and Quinimix syrup (Medipharm Industries). In the private sector, about half of audited oral quinine products were syrups (53%) and half were tablets (47%). Private sector oral quinine products are summarized in the box below.

Nearly all of the SP products audited in the public and private sectors were manufactured in Uganda, and were tablet formulation. In the public sector, most SP products audited were available in tins of 1,000 tablets. In the private sector, the majority of SP products audited were available in 3 or 10-tablet packages. Common SP products found in the private sector are depicted in the chart below. In the public sector, more than 70% of SP products audited had the brand name of Kamsidar and were manufactured by Kampala Pharmaceutical Industries.

TYPES OF ORAL QUININE FOUND IN THE PRIVATE SECTOR IN 2015



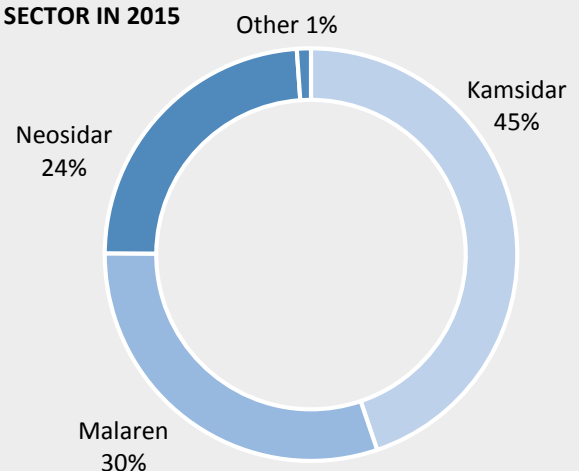
Common manufacturers of oral quinine included Kampala Pharma Industries, Rene Industries, Agog Pharma, Medipharm, and Lincoln Pharma



TYPES OF SULFADOXINE-PYRIMETHAMINE FOUND IN THE PRIVATE SECTOR IN 2015



Common manufacturers of SP therapies included Kampala Pharma Industries and Rene Industries



Availability of quality-assured ACTs

QUALITY-ASSURED ACT

Availability of quality-assured ACTs has increased in each public sector outlet type across each survey round. Among public health facilities, availability in 2015 was 96 percent, up from 87 percent in 2010. Availability in CHWs also increased, from 40 percent in 2010 to nearly 100 percent in 2015. Private not-for-profit facilities also saw increases: from 46 percent in 2010 to 96 percent in 2015.

In the private sector, availability of QA ACTs saw considerable increases from 11 percent in 2010 to 63 percent in 2011 during the AMFm pilot program, and continued increases to 79 percent in 2013 and 77 in 2015. Drug stores saw the largest gains in QA ACT availability, increasing from 10 percent in 2010 to over 77 percent in 2015. Pharmacies also increased their QA ACT availability from 64 percent in 2010 to 97 percent in 2015.

ACT WITH THE 'GREEN LEAF' LOGO

Availability of subsidized QA ACTs in public health facilities hit its peak in 2011, at 83 percent of facilities, but decreased to 41 percent in 2013, and finally 11 percent in 2015. Availability among CHWs peaked in 2013 at 65 percent in 2013, decreasing to 21 percent in 2015. Private not-for-profit facilities did not see changes in their availability, with roughly 40 percent of these facilities having subsidized QA ACT in stock in 2011 and 2015.

The private sector maintained high availability of 'green leaf' logo QA ACTs at each survey round. Approximately 72 percent of private for-profit facilities had these subsidized QA ACTs in stock in 2011 and 2015. Pharmacies had availability over 90 percent at each survey round since 2011, and drug stores had increasing availability from 55 percent in 2011 to 73 percent in 2015 from 55 percent in 2011 to 73 percent in 2015.

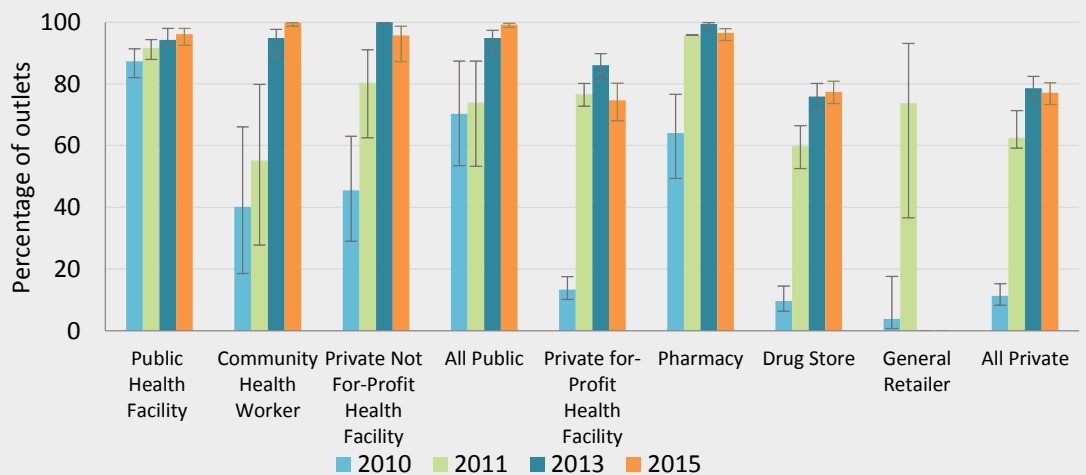
~100%

Availability of QA ACT in public health facilities in 2015

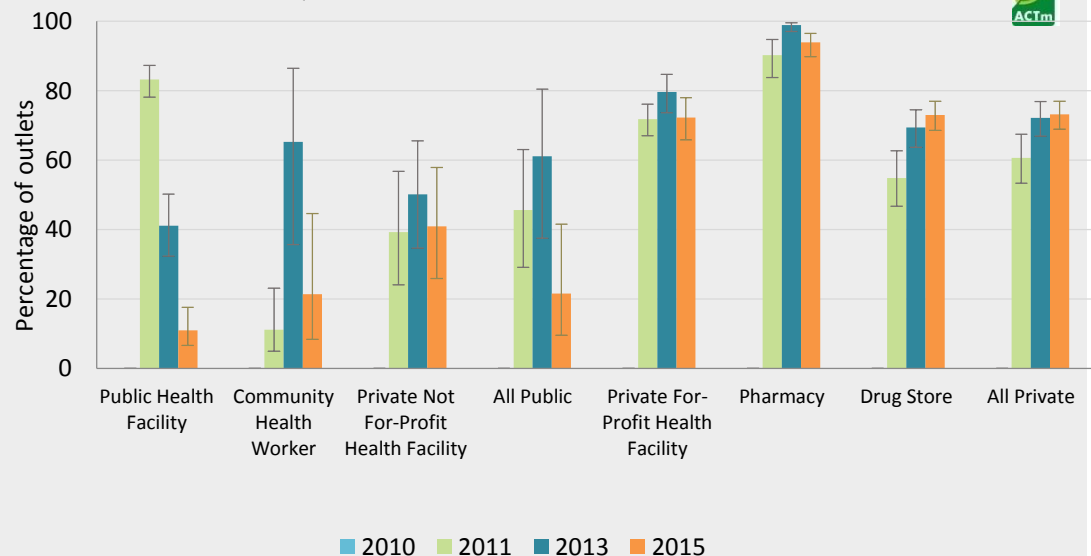
+75%

Availability of QA ACT in public health facilities in 2015

AVAILABILITY OF QA ACT BY OUTLET TYPE ACROSS SURVEY ROUND



AVAILABILITY OF QA ACT WITH 'GREEN LEAF' LOGO ACROSS SURVEY ROUND



Availability of non-quality assured ACTs and SP

AVAILABILITY OF NON QUALITY-ASSURED ACT

Availability of non-quality assured ACTs has decreased in each public sector outlet type across each survey round, and has remained low in recent survey rounds.

In the private sector, nearly all pharmacies stocked non QA ACT in all survey rounds. Availability in private for-profit facilities dropped slightly from 72 percent in 2010 to 49 percent in 2015, as did availability in drug stores, which dropped from 45 percent in 2010 to 33 percent in 2015.

AVAILABILITY OF SP

Availability of SP in the public sector has seen little change across survey rounds. Availability in public health facilities has remained high over time (>80%). Availability in private not for-profit facilities remained steady from 2010 to 2015 (~70%).

SP availability has also remained similar over time in the private sector. In 2015, half of antimalarial-stocking outlets had SP in stock. Availability was slightly higher in pharmacies, with 84 percent stocking SP in 2015, but was on par in private for-profit facilities at 52 percent and drug stores at 49 percent in 2015.

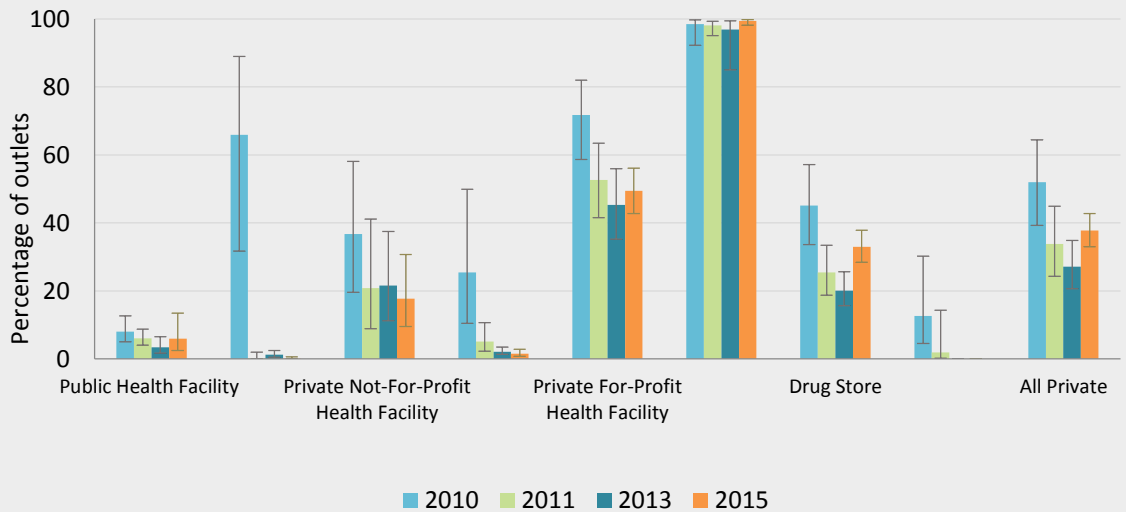
~100%

Percent of pharmacies that had non QA ACT in stock at each survey round

1 in 3

Antimalarial-stocking private sector outlets had non QA ACTs in stock

AVAILABILITY OF NON QA ACTS BY OUTLET TYPE ACROSS SURVEY ROUND



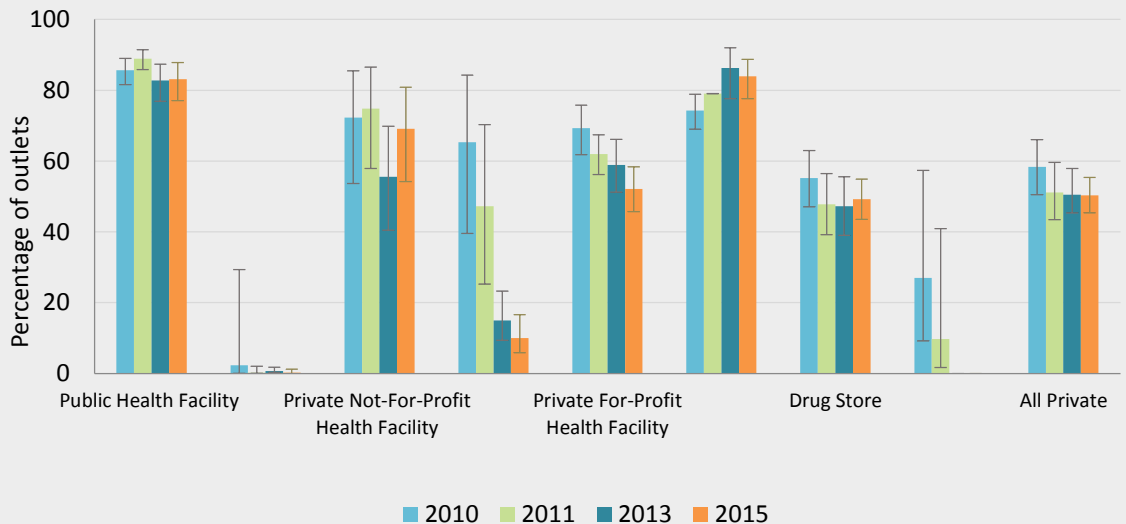
>80%

Percent of public health facilities stocking SP in all survey rounds

~50%

Percent of private sector outlets stocking SP in all survey rounds

AVAILABILITY OF SP BY OUTLET TYPE ACROSS SURVEY ROUND



Antimalarial market share

Role of the public and private sector

WHAT IS ANTIMALARIAL MARKET SHARE?

Market share of antimalarials, or the relative public and private sector distribution for all antimalarials, is estimated using the reported distribution of each antimalarial dispensed to individual customers during the week preceding the survey.

HOW HAS THE MARKET SHARE CHANGED OVER TIME?

The public sector held the larger antimalarial market share in 2010, distributing 60 percent of antimalarials in that survey round. Over time, the private sector market share has grown, and had accounted for 54 percent of the antimalarial market in 2015.

The types of antimalarials distributed by the public sector has changed little over time. The private sector has accounted for

more than half of the antimalarial market share at national level in 2011.

Market share for the QA ACT increased from 40 percent in 2010 to 57 percent in 2011 during the AMFm pilot period, and remained high in 2013 (55 percent) and 2015 (59 percent). The market share for QA ACT with the 'green leaf' logo was 43 percent in 2011 and decreased with the continuation of the mechanism in the private sector only, to 26 percent in 2013 and 34 percent in 2015. Market share for non-QA ACT has remained around 10 percent over time. Market share for non-artemisinin therapies, including SP, has declined over time to 29 percent in 2015 and SP accounted for 20 percent of the antimalarial market share that year.

WHAT WAS THE MARKET SHARE IN 2015?

The private sector market share in 2015 is comprised largely of drug stores (31 percent), followed by private for-profit health facilities at 14 percent and pharmacies at 9 percent. Antimalarial market share is equitable across outlet type.

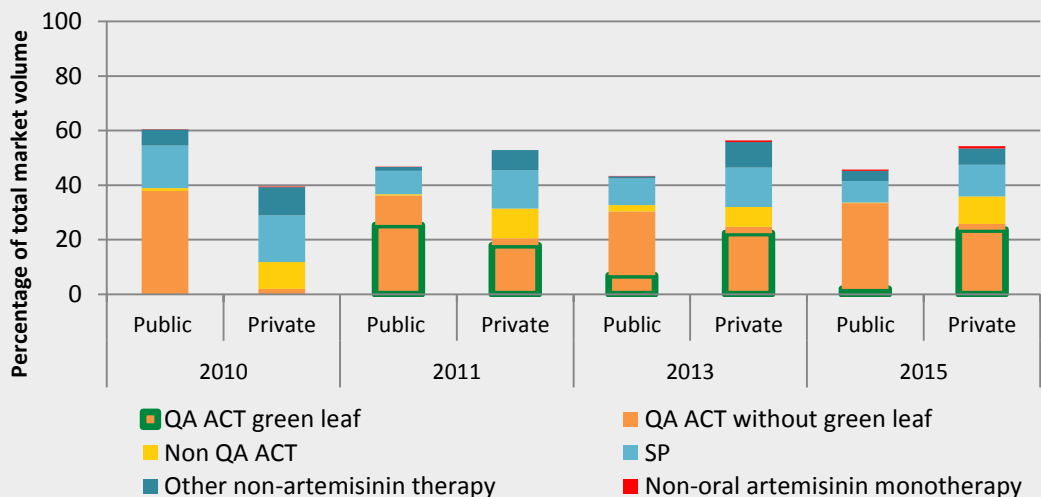
>50%

Antimalarial market share for the private sector in 2011, 2013 and 2015

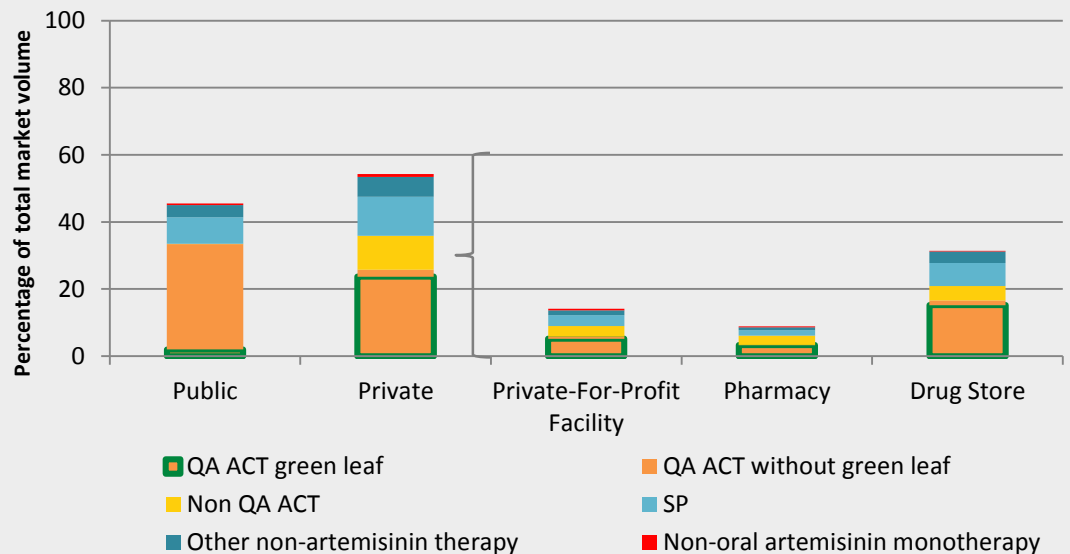
~60%

Antimalarial market share for QA ACT in 2015, an increase from 40% in 2010

PUBLIC AND PRIVATE SECTOR ANTIMALARIAL MARKET SHARE, 2010-2015



PUBLIC AND PRIVATE SECTOR ANTIMALARIAL MARKET SHARE, 2015



1 in 3

Number of antimalarials distributed by drug stores

30%

Antimalarial market share for 'green leaf' QA ACTs in 2015

Private sector price

Price of antimalarials by AETD

HOW IS PRICE CALCULATED?

Antimalarial price is calculated using the median price of an adult equivalent treatment dose for tablet formulations of each antimalarial type. An adult equivalent treatment dose (AETD) is the number of milligrams of an antimalarial drug required to treat an adult weighing 60 kilograms. However, it should be noted that the price for one AETD is not necessarily the price that consumers commonly pay for a given antimalarial, particularly when less than a full adult course is purchased. Purchasing less than a full course may be particularly common for quinine tablets.

HOW DID ANTIMALARIAL PRICE VARY BY DRUG TYPE?

The price of QA ACT has reduced over time by roughly 30 percent from 2010 to 2011. Prices in the 2011 survey round were similar to those in 2013, and costs dropped again in 2015. The overall change in price of one AETD of QA ACT was a decrease of nearly 50 percent. In 2015, that price was still more than 3 times as expensive as SP.



HOW DID ANTIMALARIAL PRICE VARY OVER TIME?

The median private sector price for one adult equivalent treatment dose (AETD) of QA ACT has decreased steadily over time. However, even the lowest price of QA ACT, at \$1.48 in 2015 was still more than three times as expensive as a dose of SP at \$0.44. The price of SP also decreased slightly over time, from \$0.70 in 2010 to \$0.44 in 2015. The price of Non-QA ACT decreased slightly since 2013, and was twice as expensive as QA ACT in 2015.

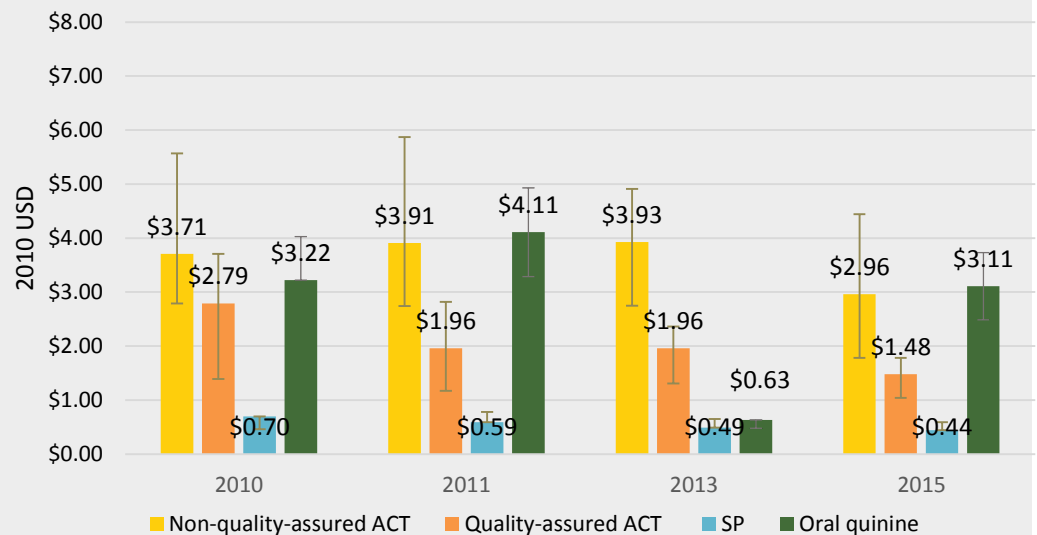
~2

The number of QA ACT AETDs that can be purchased in 2015 for the cost of one full course in 2010

3.3

The number of SP AETDs that could be purchased for the same price as 1 QA ACT AETD in 2015

PRIVATE SECTOR MEDIAN PRICE OF ANTIMALARIAL AETD, 2010-2015, IN 2010 USD





Malaria blood testing availability

Outlet types that offer malaria blood testing

HOW DID MALARIA BLOOD TESTING AVAILABILITY VARY

In 2010, only 35 percent of public health facilities had blood testing available. In 2015, nearly all (95 percent) of these facilities had testing available. Among CHWs, blood testing availability increased from 12 percent in 2010 to 58 percent in 2015.

While availability of malaria diagnostic testing was lower in the private sector, these outlet types did see increases: 70 percent of private for-profit facilities had

blood testing available in 2015 compared to 47 percent in 2010. Availability in pharmacies increased from 24 percent to 51 percent, and in drug stores from 4 percent in 2010 to 21 percent in 2015.

Availability of RDTs particularly has seen considerable increases in all outlet types across survey rounds. Public health facility availability of RDTs increased from 4 percent in 2010 to 82 percent in 2015, while private not-for-profit facility availability increased from 9 percent to 87 percent. The private sector also saw increases in RDTs: from 10 percent in 2010 to 48 percent in 2015 in private for-profit facilities, and from 2 percent to 20 percent in drug stores.

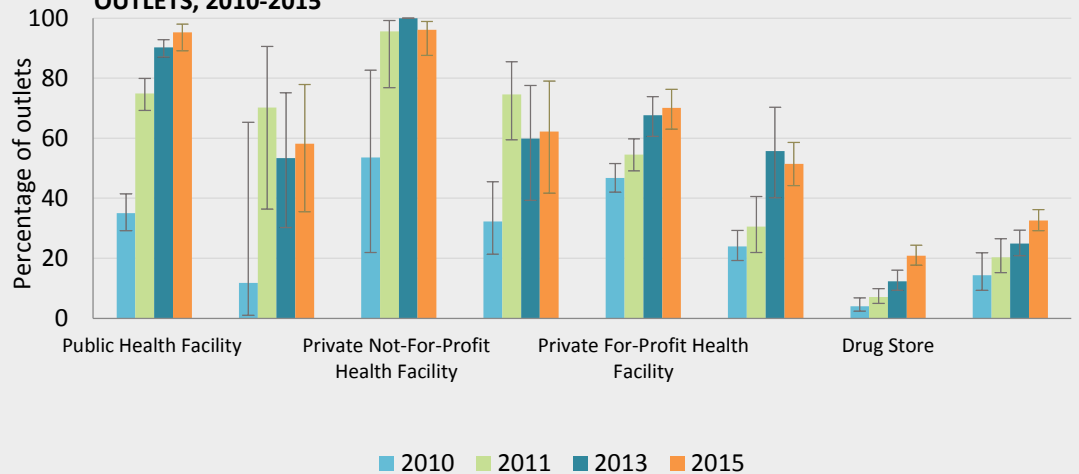
~100

Percentage availability of malaria blood testing in public health facilities in 2015

1 in 3

Number of antimalarial-stocking private sector outlets with malaria testing available in 2015

AVAILABILITY OF MALARIA DIAGNOSTIC TESTING AMONG ANTIMALARIAL-STOCKING OUTLETS, 2010-2015



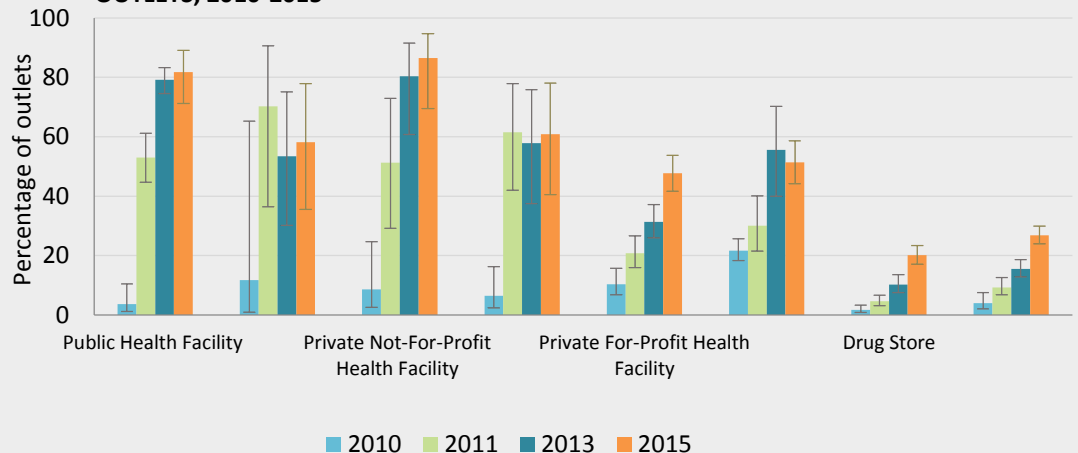
↑78

Percentage point increase in RDT availability in public health facilities from 2010 to 2015

>50%

Availability of RDTs among community health workers in 2015

AVAILABILITY OF RAPID DIAGNOSTIC TESTS AMONG ANTIMALARIAL-STOCKING OUTLETS, 2010-2015



Malaria blood testing price & market share

HOW DID MALARIA BLOOD TESTING PRICE COMPARE TO TREATMENT PRICE?

The median private sector price for malaria RDT testing for a child was twice as expensive as the cost of pre-packaged QA AL treatment for a child. However, for adults, the median price for malaria RDT testing was considerably cheaper compared to the price of pre-packaged QA AL treatment for adults. Where testing is cheaper than treatment, as is the case with adults, a financial incentive exists to adhere to national policy guidelines. However, since treatment for a child is much cheaper than RDT testing for a child, there may be a financial incentive to treat without testing pediatric cases.

HOW DOES MALARIA BLOOD TESTING AVAILABILITY COMPARE TO MALARIA TREATMENT AVAILABILITY?

Nearly three quarters of all malaria blood tests were performed by the public sector (71 percent). The majority of these (70 percent) were performed using RDTs. Private for-profit facilities accounted for the majority of malaria blood tests performed by the private sector (22 percent of all tests performed, and 76 percent of all tests performed in the private sector).

The high distribution of malaria blood tests in the public sector compared to the private sector corresponds to lower distribution of antimalarials in the public sector compared to the private sector.

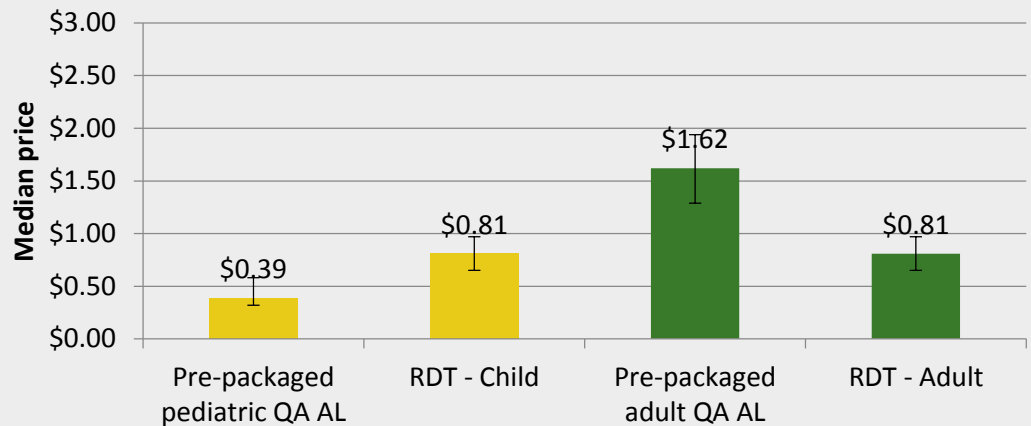
2

The number of pre-packaged pediatric QA AL packets that can be purchased for the cost of one pediatric diagnostic test

2

The number of adults RDTs that can be purchased for the cost of one pre-packaged adult QA AL

PRIVATE SECTOR MEDIAN PRICE OF RDTs AND PRE-PACKAGED QA AL, 2015



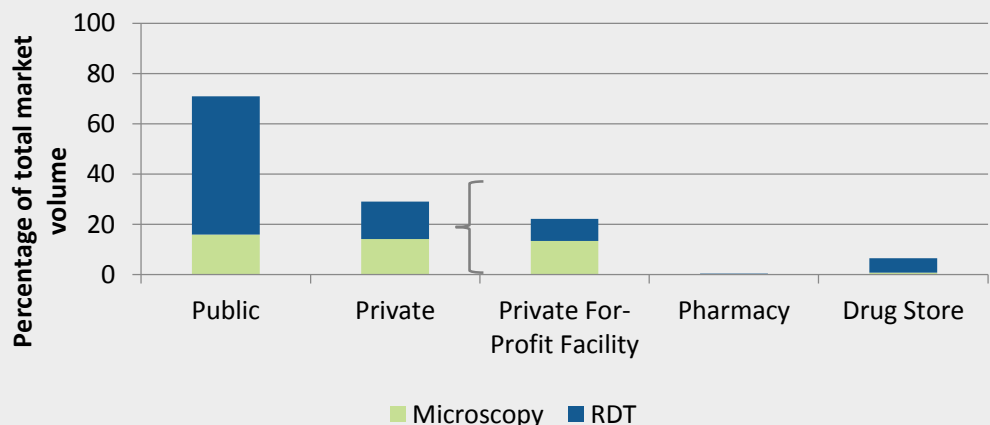
2 in 3

Number of malaria blood tests performed in public sector outlets

70%

Percent of malaria blood tests performed that were RDTs

MALARIA BLOOD TESTING MARKET SHARE, 2015



Urban and rural comparisons

Differences in availability and market share

ARE THERE DIFFERENCES IN OUTLET TYPES ACROSS URBAN AND RURAL AREAS?

In 2015, the private sector had a larger part of the market composition in urban areas, at 87 percent, than rural areas, at 62 percent. Private for-profit facilities, at 30 percent, were a common option for malaria treatment in urban areas. In rural areas, community health workers accounted for 31 percent of all antimalarial-stocking outlets.

ARE THERE DIFFERENCES IN MARKET SHARE ACROSS URBAN AND RURAL AREAS?

The private sector distributed 72 percent of the antimalarials in urban areas, and 43 percent in rural areas. QA ACT market share was higher in rural (63 percent) versus urban areas (54 percent) and non QA ACT market share was higher in urban (17 percent) versus rural areas (6 percent). SP market share was about 20 percent in both urban and rural areas, with more of the SP distribution occurring in the public sector in rural areas (10 percent) as compared to urban areas (5 percent).

ARE THERE DIFFERENCES IN ANTIMALARIAL AVAILABILITY ACROSS URBAN AND RURAL AREAS?

No urban or rural differences were found in the availability of quality-assured ACT in the public sector in 2015 (Figure 1). In the private sector, QA ACT availability was higher in urban (84 percent) versus rural areas (74 percent). Non-quality assured ACTs were more commonly found in urban versus rural areas (Figure 2). In the private sector, more than half (56 percent) of antimalarial-stocking outlets in urban areas had non-QA ACTs in stock as compared with 29 percent in rural areas. Availability of the firstline recommended treatment for severe malaria, injectable artesunate, was higher among urban public health facilities, private not for-profit facilities, and private for-profit facilities than rural outlets (Figure 3).

ARE THERE DIFFERENCES IN DIAGNOSTIC AVAILABILITY ACROSS URBAN AND RURAL AREAS?

No significant urban and rural differences were found in the availability of malaria diagnostics, including rapid diagnostic tests. However, data trends did suggest slightly higher availability of malaria blood testing in urban areas for all outlet types except pharmacies. Pharmacies showed slightly higher availability of malaria diagnostic testing in rural areas compared to urban outlet locations.

72% vs. 43%

Percent of market share held by private outlets in urban versus rural areas

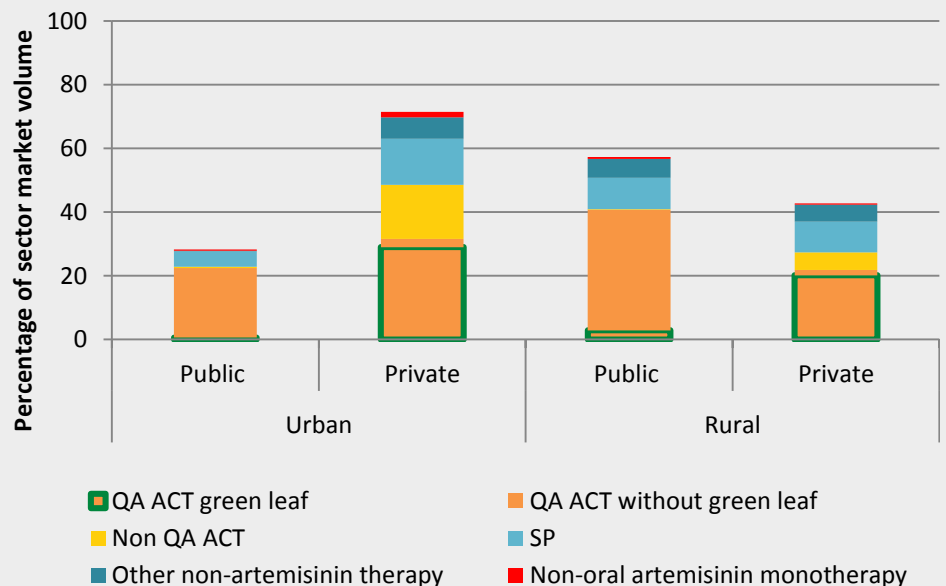
53% vs. 63%

Percent of antimalarials distributed that were QA ACT in urban versus rural areas

17% vs. 6%

Market share for Non QA ACT in urban versus rural areas.

ANTIMALARIAL MARKET SHARE, BY URBAN AND RURAL DOMAINS, 2015



84% vs 74%

Urban and rural differences in availability of QA ACTs

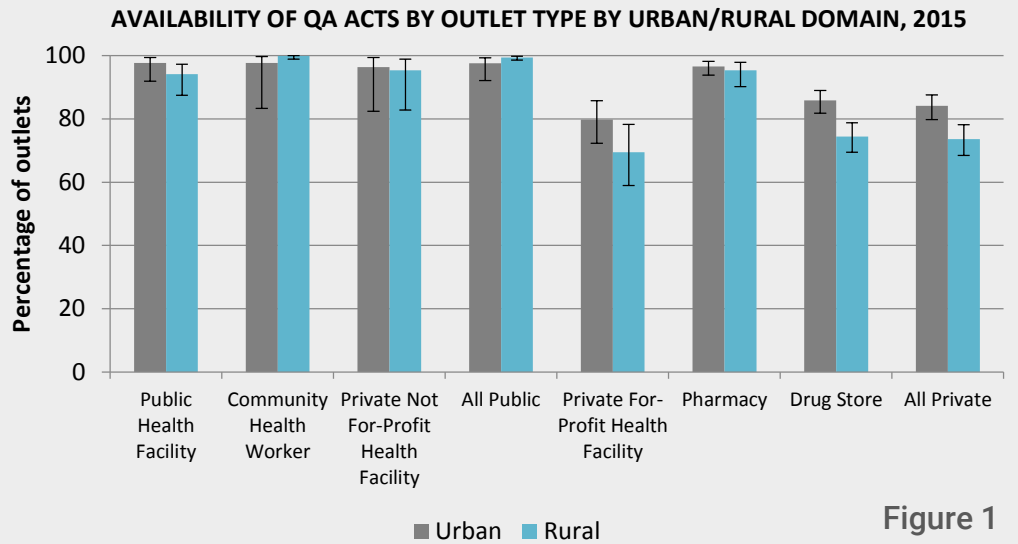


Figure 1

Urban

Availability of Non QA ACTs was higher among urban public health facilities, private for-profit facilities, and drug stores compared to rural locations

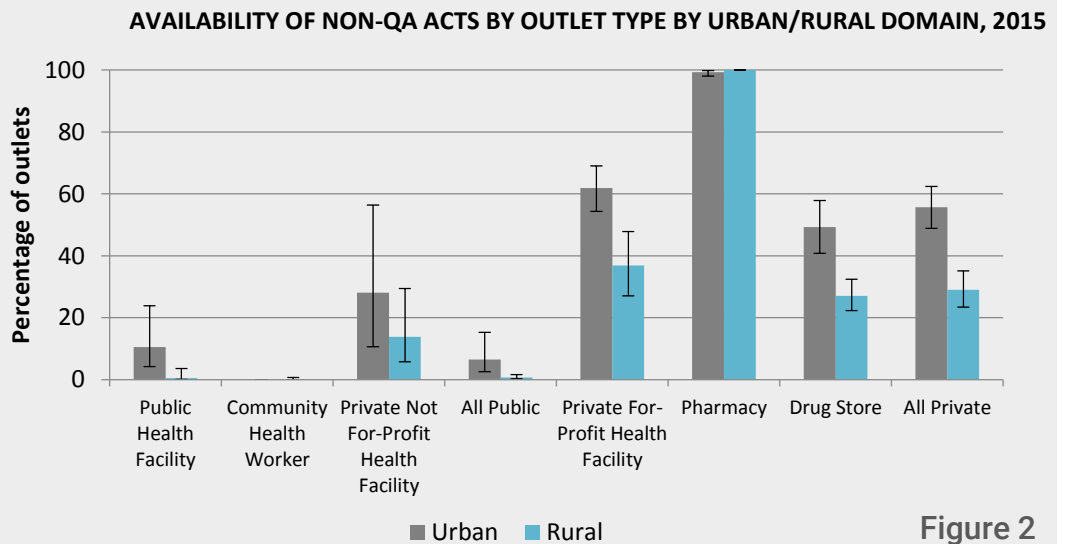


Figure 2

Urban

IV/IM artesunate was more commonly found in urban public health facilities and private not for-profit and for-profit facilities than rural locations

64% vs. 39%

Percentage of urban public health facilities that had severe malaria treatment available compared to rural locations

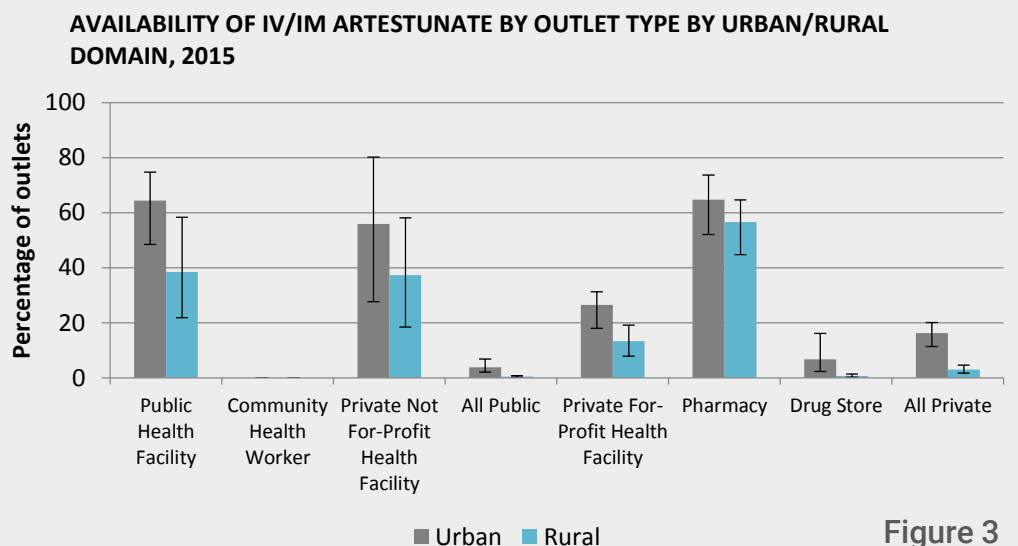


Figure 3

Summary

The success of recent strategies to improve malaria case management in Uganda can be seen in the increases in availability of quality-assured antimalarial medicines and malaria blood tests, especially in public sector outlets. Specific gains were seen in QA ACT availability and market share during the AMFm pilot period from 2010-2011, with further improvements in the private sector in 2013 and 2015. The majority of antimalarial-stocking outlets had QA ACT, and about half of medicines distributed in the private sector in 2015 were QA ACT. However, gaps exist in availability of malaria testing, and the availability and price of non-artemisinin therapies including SP and quinine may be barriers to appropriate treatment.

There is high readiness among public health facilities to provide appropriate malaria case management for febrile patients in Uganda. At the time of the 2015 national outlet survey, 96 percent of public health facilities had quality-assured ACT in stock and 95 percent had malaria diagnostics. Progress has been made in both of these indicators since the baseline outlet survey in 2010, when 87 percent of public facilities had QA ACT in stock, and only 35 percent offered malaria blood testing.

With the transition of the AMFm program to the co-payment mechanism subsidy, availability of subsidized 'green leaf' logo QA ACTs declined in public health facilities from 83 percent in 2011 to 11 percent in 2015. However, stocks of subsidized QA ACTs were maintained or increased in the private sector after the transition: private for-profit availability stayed flat at 72 percent, availability in pharmacies increased from 90 percent in 2011 to 94 percent in 2015, and availability increased in drug stores from 55 percent to 73 percent.

In response to efforts to scale up access to the first-line recommended treatment for severe malaria, availability of IV/IM artemunate has seen significant increases from prior survey years to 2015. Availability among public health facilities increased from 4 percent in 2013 to 53 percent in 2015, and in private not for-profit facilities from 7 percent to 42 percent. Availability also increased in the private sector, particularly among pharmacies who had the highest availability at 64 percent in 2015, up from 28 percent in 2011.

In addition to first line recommended treatments for uncomplicated and severe malaria, antimalarial-stocking outlets in Uganda also

carried other non-artemisinin therapies including oral quinine and SP.

Availability of oral quinine was highest in the private sector, where 78 percent of all private outlet types had it in stock at the time of the 2015 survey. Over 60 percent of public health facilities, and over 80 percent of private not for-profit facilities had oral quinine available in the last survey round.

Readiness for IPTp in the public sector has also remained high: in 2015, 83 percent of public health facilities were stocking SP, down only slightly from 86 percent availability in 2010.

Although the public sector is well prepared to manage febrile patients, offering high availability of malaria blood testing and treatment, the private sector had just over half of the antimalarial market share in 2015. Drug stores distributed 31 percent of all antimalarials in Uganda in 2015. Private for-profit facilities accounted for 14 percent of all antimalarial distribution, and pharmacies for 9 percent.

However, drug stores, with the largest antimalarial market share, had the lowest availability of malaria diagnostic tests. This presents a challenge to appropriate malaria case management and to adherence to the national guidelines regarding treating after testing.

In addition to availability, price also drives access to appropriate treatment for malaria. The AMFm program and following co-payment mechanism subsidy succeeded in lowering the cost of quality assured ACT in the private sector by nearly half from 2010 to 2015. However, the price of SP has also seen declines. In 2010, one AETD of quality-assured ACT was four times more expensive than one AETD of SP.

In 2015, the price of SP reduced to one third the cost of QA ACT. Encouragingly, retailers are dispensing more QA ACT than they are SP, but this will be an important area to monitor to ensure that all malaria cases are confirmed and treated according to national policy.

Considerable progress has been made against the Uganda Malaria Reduction Strategy Plan 2014-2020. Increasing availability of first-line treatment of malaria has reached nearly universal access in the public sector. Targets to increase access to malaria diagnostics have also been achieved in both sectors, reaching 95 percent availability among public health facilities in 2015.

Opportunities exist to address the low availability of confirmatory testing in the private outlet types that have the largest antimalarial market share, and to remove non QA ACTs and non-artemisinin therapies from the market. The low cost of these medicines also needs to be monitored, as the higher price of quality-assured medicines may be a barrier to access in the private sector.

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Photo credit: PSI

ACTwatch is a multi-country research project designed to provide timely, relevant, and high quality antimalarial market evidence. Launched in 2008 with funding from the Bill and Melinda Gates Foundation, it is currently implemented in 13 countries with additional funding from UNITAID and the DFID. Standardized tools and approaches are employed to provide comparable data across countries and over time.

Project achievements include the implementation of over 40 outlet surveys, most of them nationally representative of the public and private sector, a number of peer reviewed publications, and a repository of antimalarial medicines and rapid diagnostic tests on the website (www.actwatch.info). The project has informed malaria control and elimination strategies and priorities for national control programs and their partners.

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