Evidence for Malaria Medicines Policy

ACTwatch Study Reference Document
Cambodia
2009, 2011, 2013 and 2015

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Contact

Dr. Megan Littrell
ACTwatch Principal Investigator
PSI | 1120 19th St NW Suit 600
Washington DC 20036
mlittrell@psi.org

Claire Stokes
PSK Country Representative
PSK | No. 29, Street 334, Boeung Keng Kang I
Chamcar Mon, Phnom Penh, Cambodia
cstokes@psk.org.kh

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PSK
Claire Stokes
Abigail Pratt
Dianna Long
Sochea Phok
Mean Phou
Pisidh Voe

Cambodia NMCP
Dr. Huy Rekol
Dr. Lek Dysoley
Dr. Siv Sovannaroth
Dr. Teng Poly

ACTwatch Team
Andrew Andrada
Erick Auko
Dr. Katie Bates
Dr. Desmond Chavasse
Kevin Duff
Keith Esch
Anna Fulton
Tarryn Haslam
Catherine Hurley
Dr. Beth Kangwana
Gloria Kigo
Dr. Megan Littrell
Dr. Kathryn O'Connell
Julius Ngigi
Ricki Orford
Stephen Poyer
Dr. Justin Rahariniaina
Christina Riley
Dr. Andria Rusk
Julianna Smith
Kate Thanel
Rachel Thompson
Cynthia Whitman

Fieldwork Team
Bodany Kimsean
Bopha Ke
Borin Phuong
Brasith Iv Kham
Chamnab Ao
Chamreunodam Phok
Chankhanha Sim
Chanlita Eng
Chanra Pech
Dano Morn
Dany Han
Darith Neat
Davuon Khun
Hay Dano lmut
Keoratha Chheng
Khuoch Koch
Koemtin San
Kosal Ouch
Kunthea Tay
Kuntheavy Mao
Lim Sun
Linda Oun
Minea Leng
Narath Eng
Narith Chan
Navann Hay
Phalnida Em
Phirum Nheb
Physophea Tath
Physopheak Tath
Piroath Sroun
Piseth Hoy
Rasmy Thorn
Rath Phat
Samnit Nou
Samoeurn Loeurng
San Chheun
Sarin Chim
Savattey Sok
Savoeurn Sambo
Seila Sok
Socheat Ly
Sodaneath Van
Sokcheath Koeng
Sokhan Chun
Sokhoeurn Chun
Sokhoun Seng
Sokhun Chea
Sonai Kaing
Sophea Chhoy
Sophoeun Min
Sorphea Chum
Sotheary Bun
Sovann Nhoueng
Sovannra Ngoun
Sovon Yeng
Sreymach Ung
Sreyroth Dieb
Tekngun Oeng
Theary Say
Thida Lay
Vanna Kong
Vanthy Soeng
Vattey Kriel
Veasna Ven
Vuth Yun

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Acronyms

ACT	Artemisinin combination therapy
AETD	Adult equivalent treatment dose
AMFm	Affordable Medicines Facility – malaria
ASAQ	Artesunate amodiaquine
ASMQ	Artesunate Mefloquine
BMGF	The Bill and Melinda Gates Foundation
CHW	Community Health Worker
DFID	Department for International Development
DHA-PPQ	Dihydroartemisinin piperaquine
EMA	European Medicines Agency
GFATM	Global Fund to Fight AIDS, TB, and Malaria
G6PD	Glucose-6-phosphate-deydrogenase deficiency
GMS	Greater Mekong Subregion
GPS	Global Positioning System
IV	Intravenous injection
IM	Intramuscular injection
Mg	Milligrams
kg	Kilogram
MMW	Mobile Malaria Worker
MEAF	Malaria Elimination Framework (for Cambodia)
MOH	Ministry of Health
n	Number
NGO	Non-governmental Organization
Oral AMT	Oral artemisinin monotherapy
PSI	Population Services International
PPS	Probability Proportional to Size
Pf	*Plasmodium falciparum*
Pv	*Plasmodium vivax*
QA ACT	Quality-assured artemisinin combination therapy
RDT	Rapid diagnostic test
USAID	United States Agency for International Development
VMW	Village Malaria Worker

Definitions

Survey Methods Definitions

Outlet	Any service delivery point or point of sale for commodities. Outlets are not restricted to stationary points of sale and may include mobile units or individuals.
Outlets eligible for inclusion in the study	Outlets were administered a full questionnaire if they met at least one of three inclusion criteria: (1) had one or more antimalarials in stock at the time of the survey visit; (2) reportedly had one or more antimalarials in stock in the previous three months; or (3) provide malaria blood testing (microscopy or rapid diagnostic tests) but do not provide antimalarial treatment. Outlets not providing services to the public (e.g. army and military clinics) were excluded from the study.
Cluster	The primary sampling unit, or cluster, for the outlet survey. It is an administrative unit 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 Cambodia, they were defined as *communes*.
Censused commune	A locality where field teams conducted a full census of all outlets with the potential to sell antimalarials.
Booster Sample	In 2009, 2011 and 2013 a booster sample was collected by extending the primary sampling unit to a higher administrative unit for sampling certain outlet types. This extension achieves a larger sample size for specific outlets, allowing for estimates among key outlet types. In the 2009, 2011 and 2013 surveys, a booster sample was collected for all public health facilities (referral hospitals, former district hospitals, health centers and health posts). The administrative unit for sampling these outlet types was extended beyond commune to the district level. No booster sample was employed in the 2015 survey.

Malaria Product Indicator Definitions

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

Artemisinin monotherapy	An antimalarial medicine that has a single active compound, where this active compound is artemisinin or one of its derivatives.
Oral artemisinin monotherapy	Artemisinin or one of its derivatives in a dosage form with an oral route of administration. These include tablets, suspensions, and syrups and exclude suppositories and injections.
Non-artemisinin therapy	An antimalarial medicine that does not contain artemisinin or any of its derivatives.
First-line treatment	The government recommended treatment for uncomplicated malaria. Cambodia's first-line treatment for uncomplicated *P. falciparum* and *P. vivax* malaria for adults is dihydroartemisinin piperaquine (DHA-PPQ) (40/320mg) or fixed-dose combination artesunate mefloquine (100/200mg).
Second-line treatment	The government recommended second-line treatment for uncomplicated malaria is quinine together with doxycycline or tetracycline for both *P. falciparum* and *P. vivax* malaria
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.
Severe malaria treatment	WHO recommends intravenous or intramuscular artesunate as first-line treatment in the management of severe *falciparum* malaria. If artesunate is not available, artemether in preference to quinine should be used for treating severe malaria cases. Rectal artesunate is suitable for pre-referral treatment in children under 6 years of age.[1]
Quality-assured Artemisinin-Based Combination Therapies (QA ACTs)	QA ACTs are ACTs that comply with the Global Fund to Fight AIDS, Tuberculosis and Malaria's Quality Assurance Policy. A QAACT is any ACT that appeared on the Global Fund's indicative list of antimalarials meeting the Global Fund's quality assurance policy prior to data collection (see http://www.theglobalfund.org/en/healthproducts/qualityassurance/) or that previously had C-status in an earlier Global Fund quality assurance policy and was used in a program supplying subsidized ACTs. QAACTs also include ACTs that have been granted regulatory approval by the European Medicines Agency (EMA) – specifically Eurartesim® and Pyramax®. At the time of the 2015 Cambodia ACTwatch outlet survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QA ACT) audited in Cambodia.

[1] World Health Organization. (2015). *Guidelines for the treatment of malaria, 3rd edition*. Geneva: WHO.

Introduction

In Cambodia, the 2015 outlet survey follows previous survey rounds conducted by ACTwatch in Cambodia in 2009, 2011 and 2013.

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

Project scale-up in the Greater Mekong sub-Region (GMS) in 2015 was designed to deliver key indicators for informing and monitoring strategies and policies for malaria elimination. ACTwatch antimalarial market monitoring in Cambodia from 2009 to present has been implemented in the context of strategies designed and implemented to improve coverage of appropriate case management and to address national malaria strategies which now focus on malaria elimination (see annex 2 for more information on the country context). According to Cambodia's Malaria Elimination Framework (MEAF), the overall goal of the plan is to reduce the incidence of malaria to less than 1 infection per 1000 people at risk in each operational district and eliminate Plasmodium falciparum including multidrug resistance by 2020. Specific objectives are:

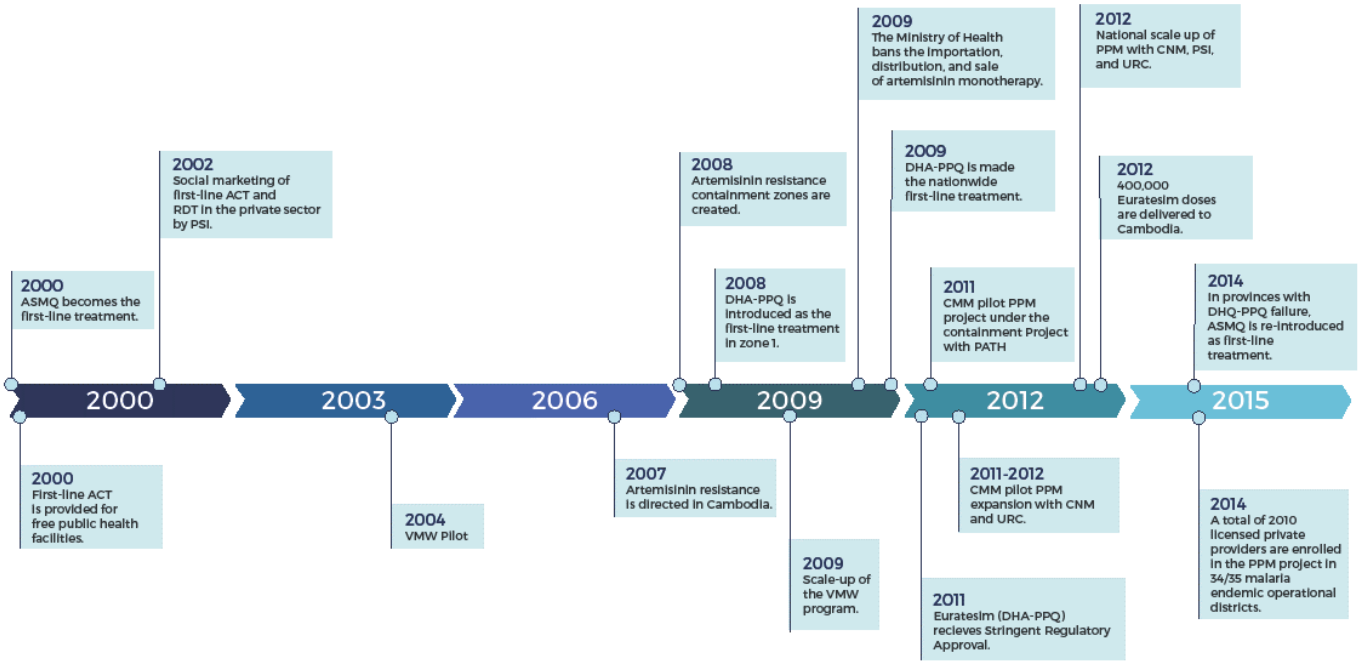
- Providing effective program management and coordination at all levels by 2017 to efficiently deliver a combination of targeted interventions for malaria elimination
- Achieve universal coverage of case management services by 2016 to ensure 100% parasitological diagnosis of all suspected cases and effective treatment of all confirmed cases
- Protect at least 90% of all populations at risk of malaria with an appropriate vector control intervention by 2017
- Enhance the surveillance system to detect, immediately notify, investigate, classify and respond to all cases and foci by 2017 to move toward malaria elimination
- Implementing comprehensive IEC/BCC approach that facilitates at least 90% of people seeking treatment for fever within 24 hours at a health facility or with a qualified care provider and at least 85% of at-risk population utilizing an appropriate protection tool by 2017

The 2015 outlet survey was the fourth round of ACTwatch outlet surveys conducted in Cambodia. This report presents trend lines with four data points: 2009, 2011, 2013, and 2015. Another outlet survey round is planned for 2016. Selected areas were in line with the 2014 WHO 2-tier stratification system for addressing drug resistance. ACTwatch areas were selected from either Tier 1 (areas prioritized for immediate response to contain resistance or eliminate malaria) or Tier 2 (areas targeted for intensified malaria control to reduce transmission and/or limit the risk of emergence or spread of resistant parasites). These surveys are designed to monitor key antimalarial market indicators at national level and within Tier 1/Tier 2 domains. ACTwatch outlet survey findings can inform ongoing monitoring, evaluation, and adjustment to policy, strategy, and funding decisions to strengthen malaria case management.

Report notes

- This document is a complete reference for the 2015 outlet survey and includes key indicators from 2009, 2011, and 2013. Please see annexes for information about the study context, design, implementation and data analysis.
- Grey text for data appearing in report tables indicates that the estimate provided was derived from a small sample size. Specifically, grey text is used to indicate point estimates derived from a number (n) of less than 50 and median prices derived from an n of less than 5.
- All results are rounded to one decimal point. Market composition and market share totals may not always sum to 100% due to rounding.
- Malaria testing and treatment prices are reported in US dollars. Price information is captured in local currency and converted to US dollars based on exchange rates available from www.oanda.com using the historical exchange rates tool. The average exchange rate over the entire data collection period is used for converting local currency captured during data collection to US dollars.

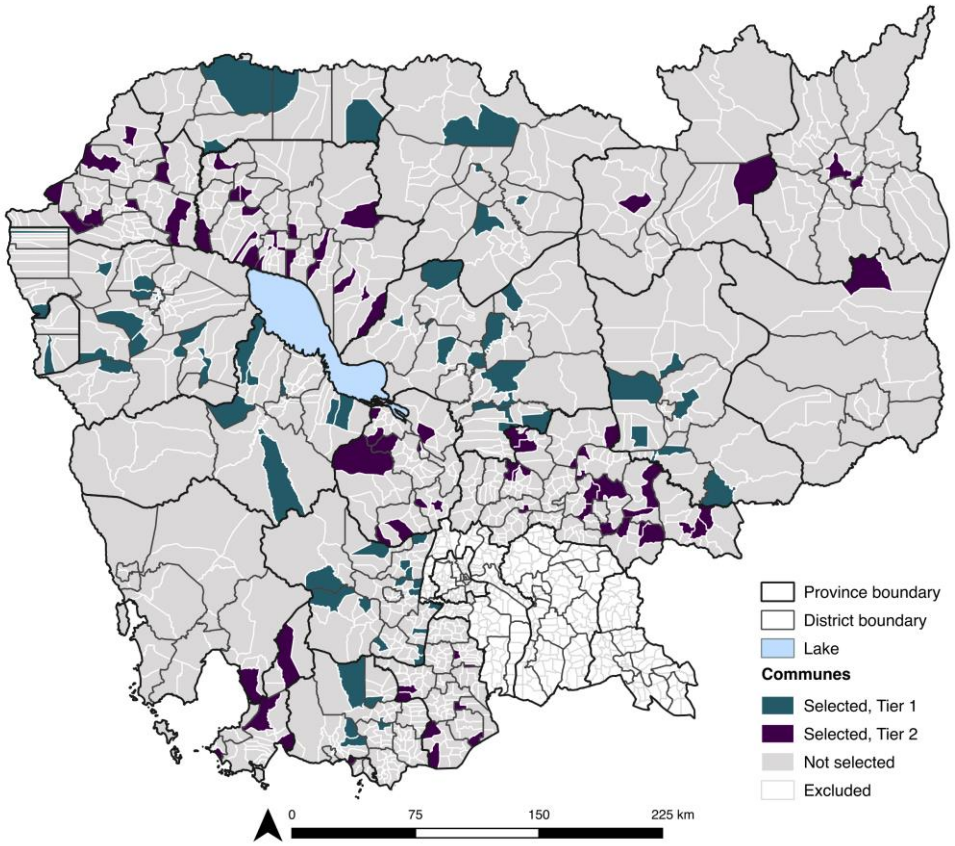
Figure 1: Timeline of Key Events and Policies in Cambodia



Summary of Methods and Data Collection

A representative antimalarial outlet survey was conducted at a national a national level in Cambodia between 17 August and 1 October, 2015. A full description of research design and methods is provided in Annex 3. Briefly, a representative sample of communes was selected from Tier 1 and Tier 2 domains (see sampled communes in Annex 4). Within selected clusters, a census of all outlets with the potential to sell or distribute antimalarials and/or provide malaria blood testing was completed.

Figure 2: Map of the selected areas, Cambodia 2015

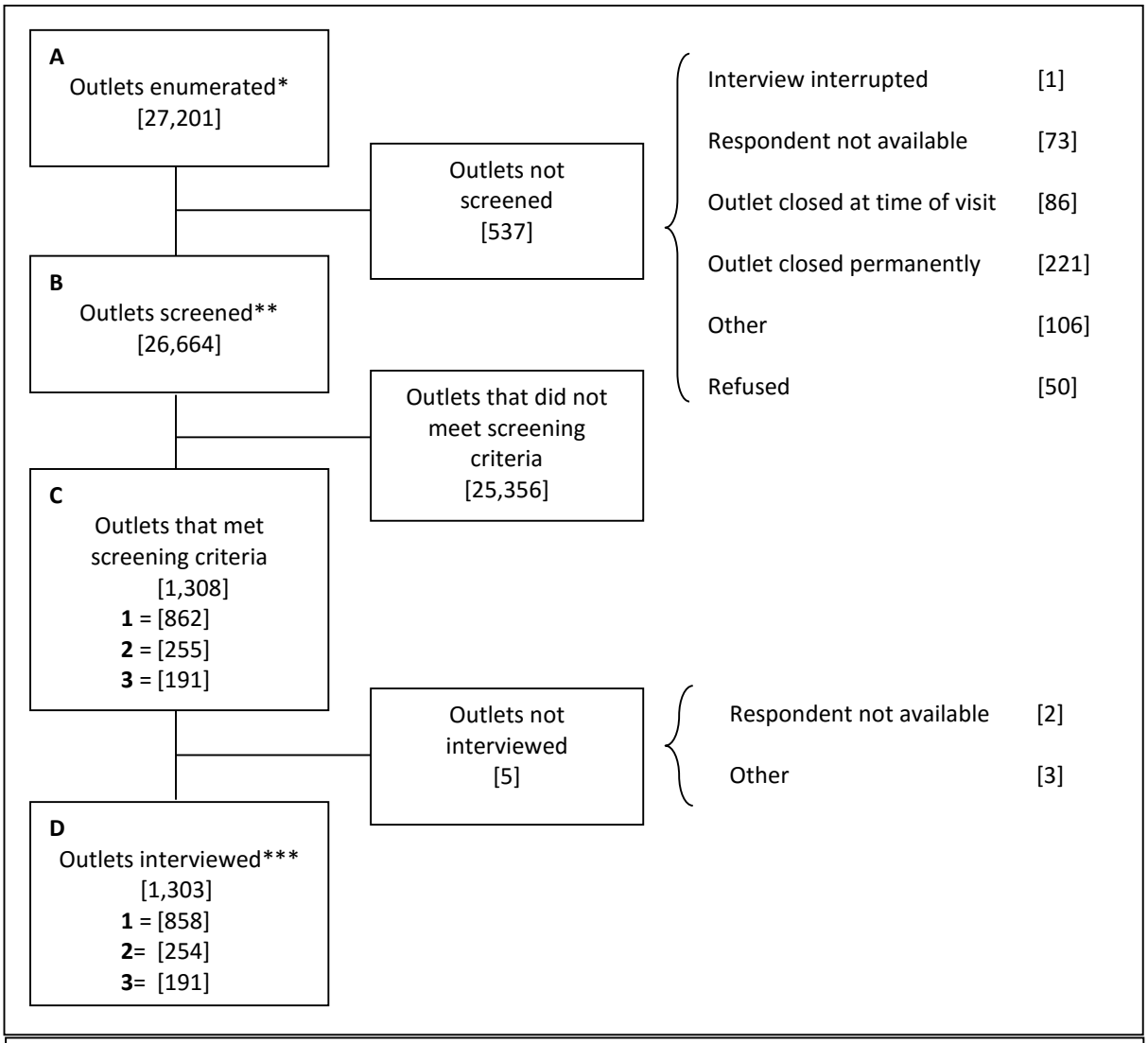


Outlets were screened to determine eligibility. Outlets eligible for the survey met at least one of three criteria: 1) one or more antimalarials were in stock on the day of the survey; 2) one or more antimalarials were in stock in the three months preceding the survey; and/or 3) malaria blood testing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

A structured questionnaire was used to complete an audit of all antimalarials and RDTs as well as a provider interview (see Annex 6). See Annex 7 and Annex 8 for detailed summaries of antimalarials and RDTs audited. Where oral artemisinin monotherapy (oral AMT) such as artesunate tablets was found, additional questions were administered to gather information about the oral AMT in stock including the supplier. The survey protocol stipulated that the research team were to visit the named supplier of oral AMT and screen for availability of oral artemisinin monotherapy (AMT) and other antimalarials. A product audit was to be completed as well as a provider interview.

Data were collected using Android phones. All data cleaning and analysis was performed using Stata 13.1 (©StataCorp, College Station, TX). Data were weighted to account for variation in probability of outlet selection (see Annex 9), and standard error calculation reflected clustering of outlets at the commune level. Standard indicators were constructed according to definitions applied across ACTwatch project countries (see Annex 10).

Figure 3: Survey flow diagram, Cambodia, 2015



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

Summary of Key Findings

Table S1: Key results, by outlet type - 2015

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit[1]**	Private For-Profit Health Facility	Pharmacy	Drug Store	Itinerant Drug Vendor	**ALL Private[2]**	**ALL Outlets[3]**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Readiness for malaria case management ***Proportion of all screened outlets outlets* with*:**	N=173	N=430	N=604	N=668	N=290	N=338	N=924	N=26,060	N=26,664
Availability of malaria blood testing	82.3 (74.9, 87.8)	87.2 (82.7, 90.6)	85.9 (82.1, 89.0)	45.4 (39.3, 51.6)	30.1 (22.6, 38.9)	10.8 (6.8, 16.9)	20.3 (16.3, 25.0)	2.3 (2.0, 2.7)	4.7 (4.1, 5.4)
Availability of national first-line ACT for *Pf* and *Pv* (Dihydroartemisinin piperaquine [DHA-PPQ] and / or fixed-dose Artesunate Mefloquine [ASMQ]) β	76.5 (67.8, 83.5)	74.1 (66.2, 80.7)	74.7 (68.3, 80.1)	27.9 (23.1, 33.2)	17.5 (12.1, 24.7)	3.1 (1.6, 6.1)	9.5 (6.9, 13.0)	1.3 (1.0, 1.5)	3.3 (2.9, 3.9)
Availability of first-line ACT and malaria blood testing	75.9 (67.1, 82.9)	67.7 (60.2, 74.3)	69.7 (63.6, 75.1)	24.9 (20.3, 30.1)	13.7 (8.8, 20.9)	1.5 (0.7, 3.6)	7.7 (5.3, 11.1)	1.1 (0.8, 1.3)	3.0 (2.6, 3.5)
Availability of first-line ACT, blood testing not available	0.7 (0.2, 2.4)	6.4 (4.1, 9.9)	5.0 (3.2, 7.6)	3.0 (1.9, 4.7)	3.8 (2.2, 6.5)	1.6 (0.6, 4.5)	1.8 (1.1, 3.0)	0.2 (0.2, 0.3)	0.3 (0.3, 0.4)
Availability of national first-line severe malaria treatment (artesunate IV/IM)	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.1 (0.0, 0.6)	<0.1 (0.0, <0.1)	<0.1 (0.0, <0.1)
Readiness for malaria case management ***Proportion of antimalarial-stocking outlets Ψ with:***	N=137	N=330	N=467	N=186	N=45	N=22	N=109	N=391	N=858
Availability of malaria blood testing	98.8 (96.5, 99.6)	91.4 (86.8, 94.5)	93.3 (89.9, 95.6)	87.2 (80.7, 91.7)	74.8 (58.6, 86.2)	41.6 (22.0, 64.2)	72.3 (62.6, 80.3)	71.0 (63.8, 77.2)	83.3 (79.5, 86.5)
Availability of national first-line ACT for *Pf* and *Pv* (DHA-PPQ and / or fixed-dose ASMQ)	98.2 (95.4, 99.3)	99.7 (98.1, 99.9)	99.3 (98.3, 99.7)	90.0 (82.5, 94.5)	85.6 (74.3, 92.4)	47.9 (27.8, 68.6)	62.8 (51.7, 72.7)	70.9 (63.1, 77.6)	86.6 (82.5, 89.8)
Availability of first-line ACT and malaria blood testing	97.3 (94.3, 98.8)	91.1 (86.6, 94.1)	92.7 (89.3, 95.0)	80.4 (72.6, 86.3)	67.1 (52.5, 79.0)	23.6 (10.0, 46.1)	50.8 (40.2, 61.3)	59.4 (51.9, 66.6)	77.8 (73.8, 81.4)
Availability of first-line ACT, blood testing not available	0.9 (0.2, 3.1)	8.6 (5.5, 13.2)	6.6 (4.3, 10.0)	9.6 (6.1, 15.0)	18.5 (10.5, 30.5)	24.3 (9.4, 49.9)	12.0 (7.0, 19.9)	11.5 (8.4, 15.4)	8.8 (6.8, 11.2)
Availability of national first-line severe malaria treatment (artesunate IV/IM)	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.7 (0.1, 4.0)	0.2 (0.0, 1.3)	0.1 (0.0, 0.6)
Private sector readiness and engagement				N=315	N=95	N=46	N=235	N=730	
Reportedly have a trained provider, receive supervision, have national first-line treatment for *Pf* and *Pv* in stock, and provide malaria blood testing (RDT or microscopy)	n/a	n/a	n/a	10.5 (7.6, 14.4)	6.2 (1.8, 18.7)	2.7 (0.7, 9.7)	0.4 (0.1, 2.4)	5.2 (3.5, 7.6)	n/a
				N=314	N=95	N=46	N=235	N=729	
Reportedly have a trained provider, receive supervision, have national first-line treatment for *Pf* and *Pv* in stock, provide malaria blood testing (RDT or microscopy), keep records on numbers of patients	n/a	n/a	n/a	9.9 (7.0, 13.7)	5.2 (1.3, 18.9)	1.5 (0.2, 8.7)	0.4 (0.1, 2.4)	4.7 (3.1, 7.1)	n/a

Table S1: Key results, by outlet type - 2015

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit[1]**	Private For-Profit Health Facility	Pharmacy	Drug Store	Itinerant Drug Vendor	**ALL Private[2]**	**ALL Outlets[3]**
tested/treatment for malaria, and report these numbers to a government or non-governmental organization.									
Oral artemisinin monotherapy									
Availability among all screened outlets*	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 (0.0, <0.1)	0.0 (0.0, <0.1) Ω
Availability among antimalarial-stocking outlets	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.2 (0.0, 1.2)	0.1 (0.0, 0.6)
Recent availability among all screened outlets*: Reportedly available in the past 3 months, not available on the day of the survey	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Antimalarial market share within outlet/sector type	%	%	%	%	%	%	%	%	%
% National first-line ACT for *Pf/Pv* market share ^	98.1	100.0	98.8	90.7	96.8	100.0	91.9	90.8	94.2
Private sector price				Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)	Median [IQR] (N)
Median price for one first-line ACT Adult Equivalent Treatment Does (AETD)	n/a	n/a	n/a	$2.24 [1.34-3.73](224)	$1.24 [0.99-1.99](41)	$2.24 [1.24-4.97] (9)	$2.49 [1.49-3.73](69)	$2.24 [1.24-3.73](344)	n/a
Median price for malaria microscopy #	n/a	n/a	n/a	$1.24 [0.75-1.24] (73)	$0.99 [0.75-1.24] (6)	$0.75 [0.50-0.99] (3)	$1.24 [1.24-1.24] (13)	$1.24 [0.75-1.24] (95)	n/a
Median price for an RDT #	n/a	n/a	n/a	$0.99 [0.75-1.24] (297)	$0.75 [0.50-0.99] (57)	$0.75 [0.75-1.24] (32)	$0.99 [0.75-1.24] (156)	$0.99 [0.75-1.24] (542)	n/a

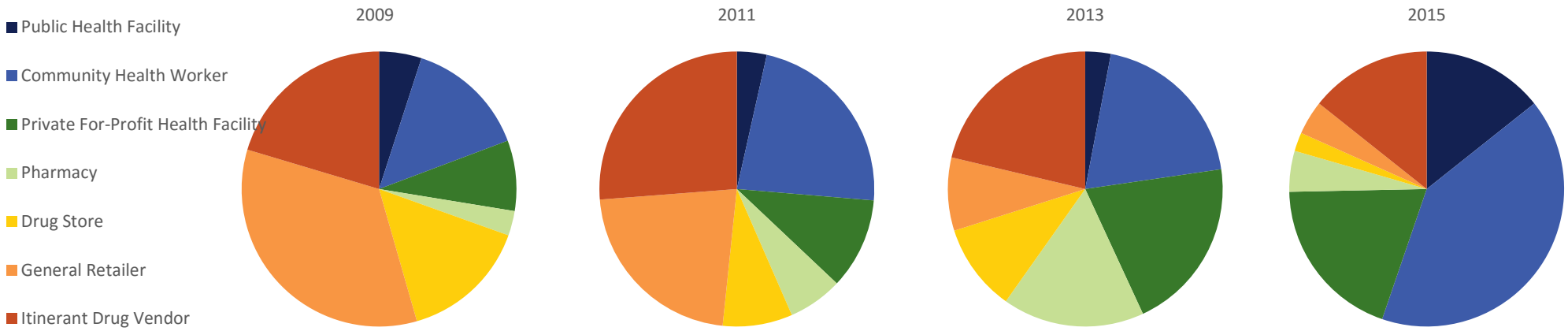
1 Inclusive of 1 screened / 0 antimalarial-stocking not-for-profit health facilities.
2 Inclusive of 23,840 screened / 29 antimalarial-stocking general retail outlets.
3 Inclusive of private not-for-profit health facilities and general retail outlets.
* The denominator includes 34 outlets that met screening criteria for a full interview but did not complete the interview (were not interviewed or completed a partial interview).
β No fixed-dose combination artesunate mefloquine (ASMQ) was audited during the 2015 Cambodia ACTwatch outlet survey.
Ω 1 oral artemisinin monotherapy product was audited at a general retailer.
Ψ Outlets with at least one antimalarial in stock on the day of the survey.
^ Percent market volume (adult equivalent treatment dosages sold/distributed in the previous week) accounted for by national first-line ACT (dihydroartemisinin piperaquine or fixed-dose-combination artesunate mefloquine) sale/distribution within distribution by the outlet/sector. No fixed-dose combination artesunate mefloquine was sold/distributed in the previous week.
# Price inclusive of consultation / service fees for an adult.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Antimalarial Availability

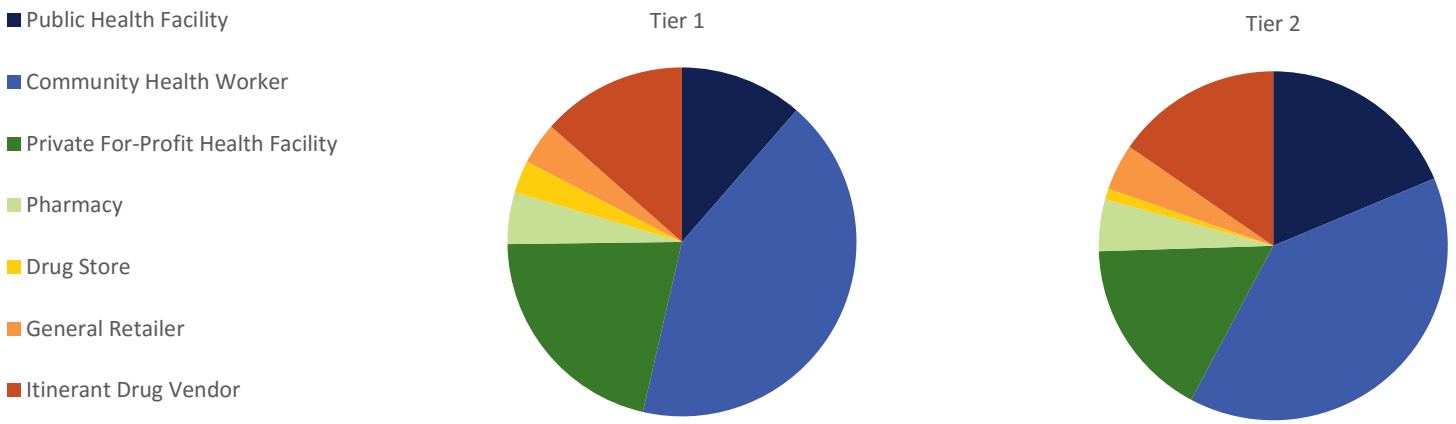
Figure 4. Antimalarial market composition: outlet type distribution, 2009, 2011, 2013, 2015

Among all outlets with at least one antimalarial in stock



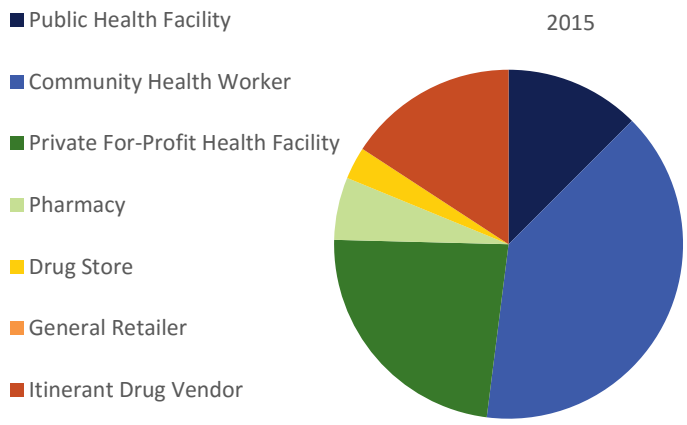
Antimalarial market composition changed at national level in Cambodia over time. Between 2009 to 2013 the majority of antimalarial-stocking outlets were private sector outlets across survey rounds. However, by 2015 more than half of the antimalarial-stocking outlets were public health facilities (14%) and CHW (41%), illustrating an increasing contribution from the public sector. Private sector market contribution shifted overtime towards a declining contribution from informal unregulated private outlet types (drug stores, general retailers, and itinerant drug vendors). In both 2013 and 2015, private for-profit facilities accounted for 20% of all antimalarial-stocking outlets visited, reflecting an overall increase over time.

Figure 5. Antimalarial market composition: outlet type distribution, by national malaria burden stratification, 2015,
Among all outlets with at least one antimalarial in stock



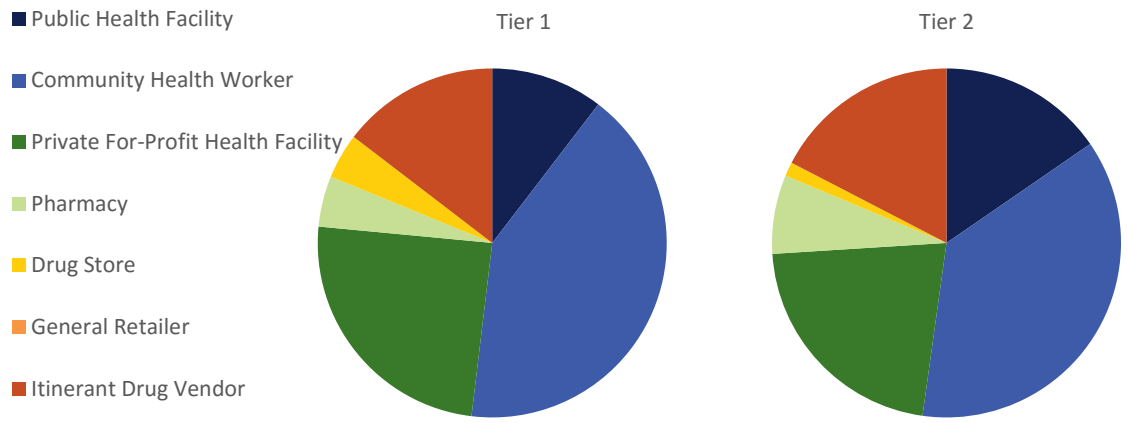
Antimalarial market composition was similar across research domains in 2015, though in Tier 2 the public health facility market composition was greater than Tier 1 (19% versus 11%, respectively).

Figure 6. Malaria blood testing market composition: outlet type distribution, 2015
Among all outlets with at least one malaria diagnostic test in stock



Blood testing market composition shows that the majority of outlets with malaria blood testing in stock were public sector outlets, and mainly comprised of community health workers (40%). Private sector market contribution was largest for private for-profit facilities (23%) and itinerant drug vendors (16%).

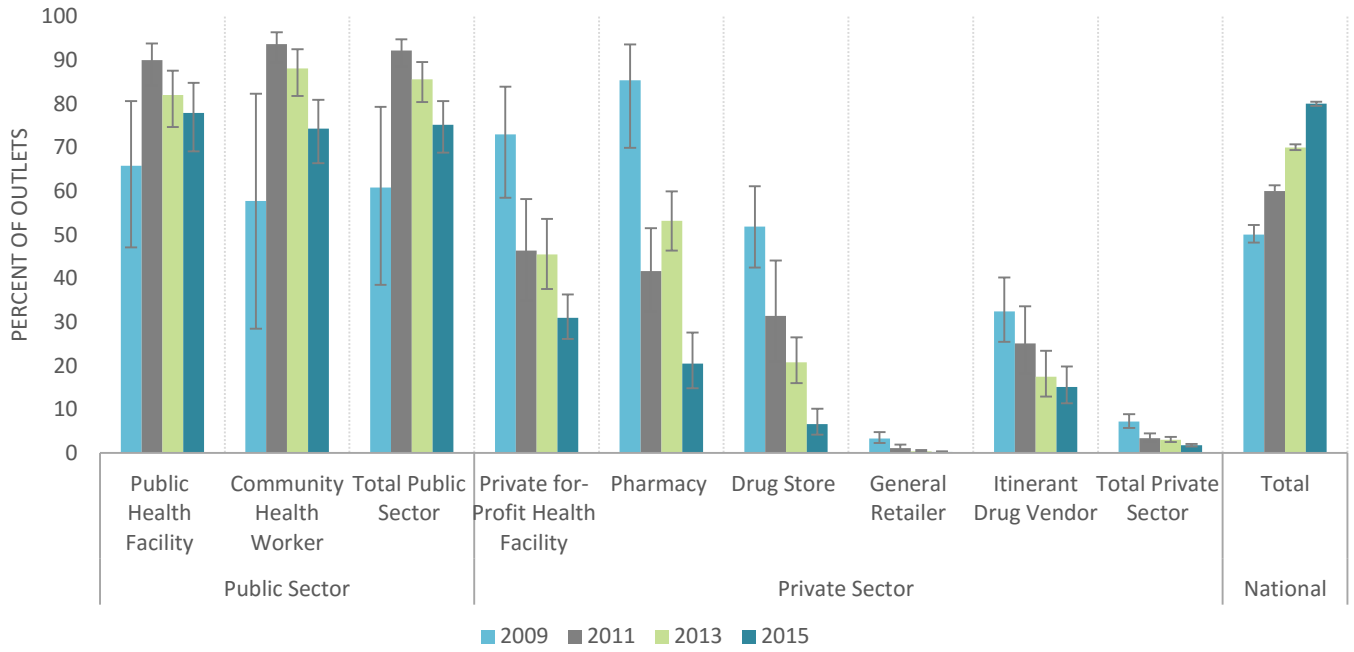
Figure 7. Malaria blood testing market composition: outlet type distribution, by national malaria burden stratification, 2015
Among all outlets with at least one malaria diagnostic test in stock



Blood testing market composition was similar across domains.

Figure 8. Percentage of outlets with at least one antimalarial in stock on the day of the survey by outlet type, 2009, 2011, 2013, 2015

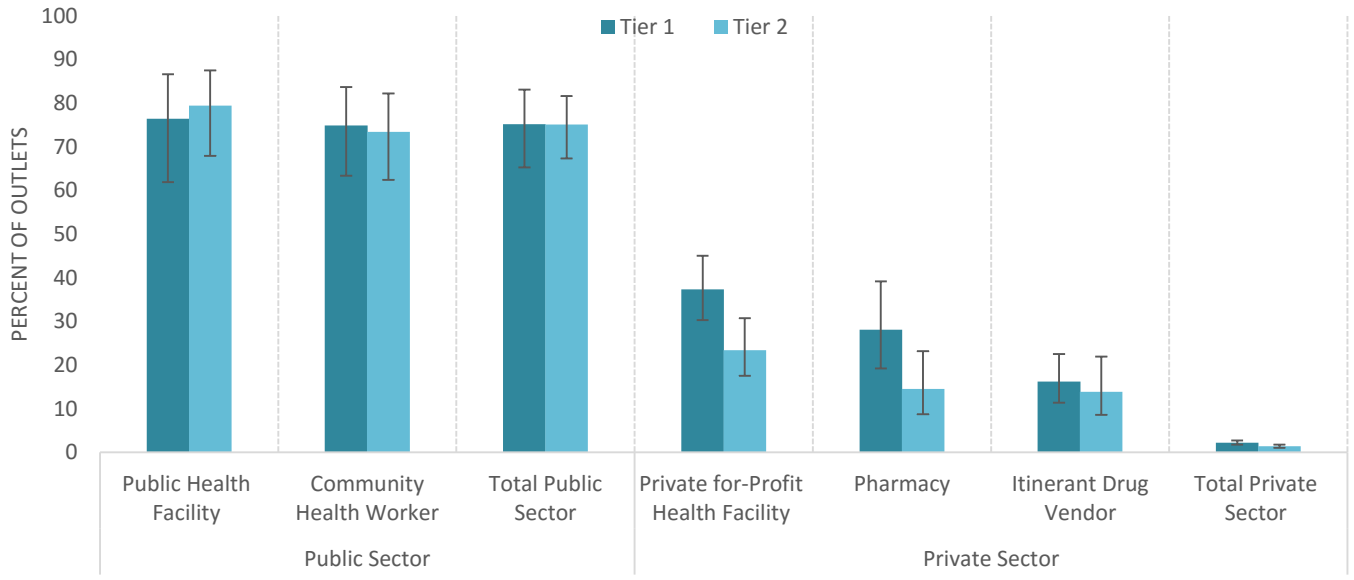
Among all screened outlets, across survey round



The percentage of public health facilities and CHWs with at least one antimalarial in stock on the day of the survey increased between 2009 and 2011. Slight declines were observed between 2013 and 2015 but availability remained relatively high in 2015 (public health facilities, 78%; CHWs, 74%). Private sector stocking of antimalarials declined over time and remained very low in 2015. In 2015, one in three private for-profit facilities and one in five pharmacies had an antimalarial in stock.

Figure 9. Percentage of outlets with at least one antimalarial in stock on the day of the survey by outlet type, across national malaria burden stratification, 2015

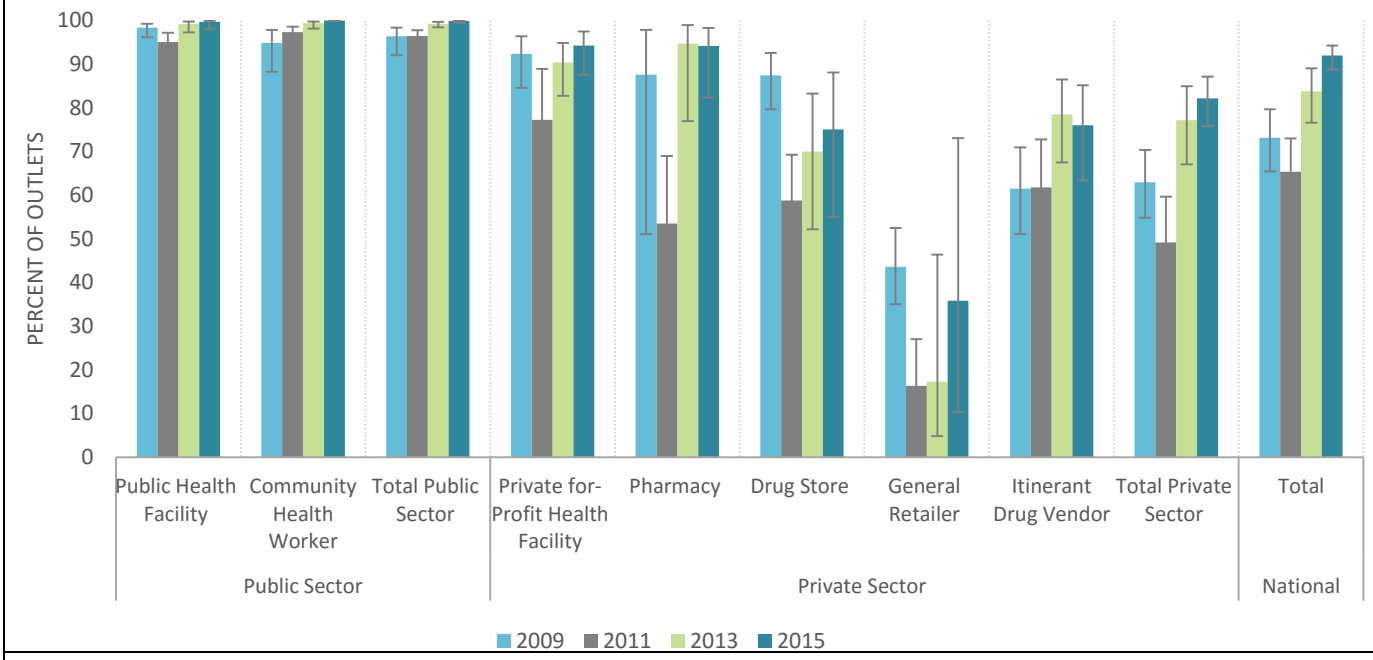
Among all screened outlets, 2015



The percentage of public health facilities and CHWs with at least one antimalarial in stock on the day of the survey was high and mostly similar across research domains. Antimalarial availability among private for-profit health facilities and pharmacies was slightly higher in Tier 1 as compared with Tier 2.

Figure 10: Percentage of antimalarial-stocking outlets with any ACT in stock on the day of the survey by outlet type, 2009, 2011, 2013, 2015

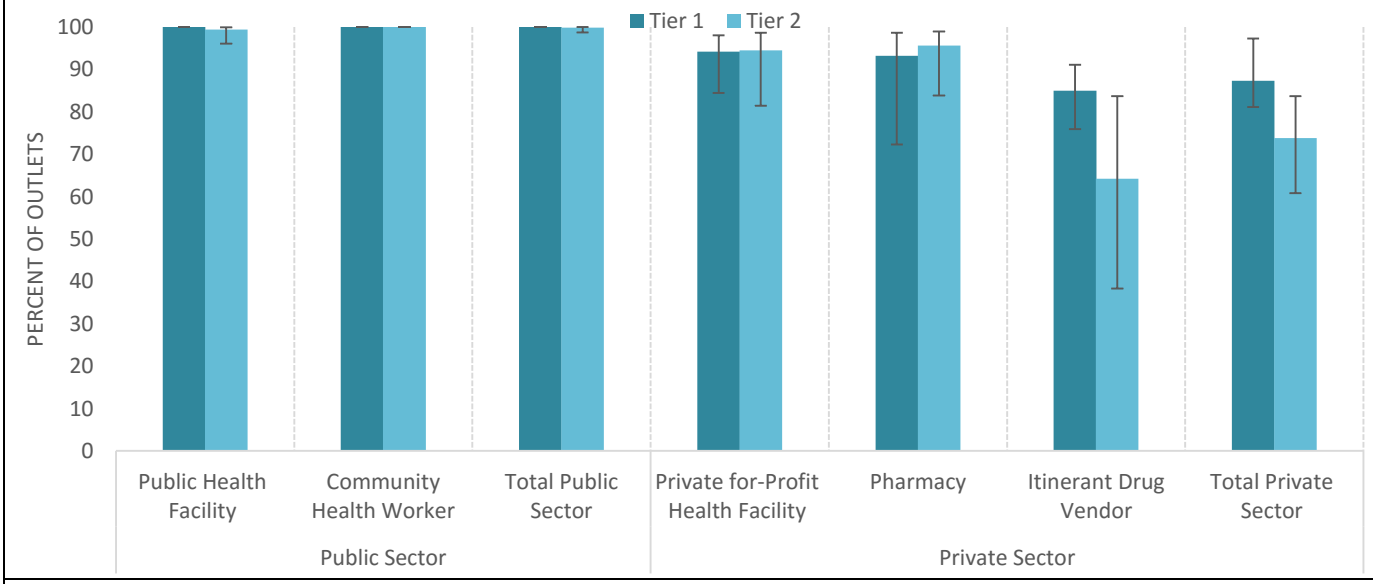
Among all outlets with at least one antimalarial in stock, across survey round



The percentage of antimalarial-stocking public health facilities and CHWs with at least one ACT in stock on the day of the survey remained higher than 95% over time. ACT availability in the private sector was somewhat variable over time and across outlet types, though between 2013 and 2015 results were generally similar, with the exception of general retailers. In 2015, most antimalarial-stocking private health facilities (94%), pharmacies (94%), drug stores (75%) and itinerant drug vendors (76%) had ACT in stock. ACT availability was lower among general retailers (36%).

Figure 11. Percentage of outlets with any ACT in stock on the day of the survey by outlet type, across national malaria burden stratification, 2015

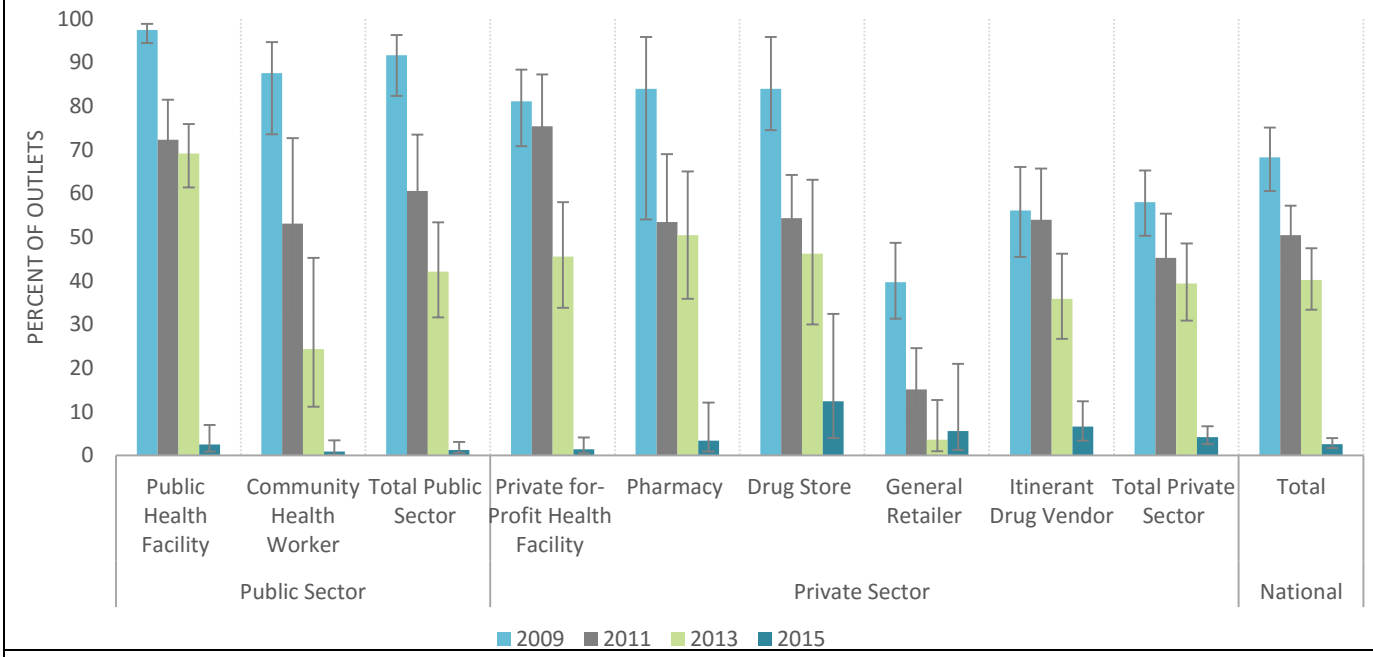
Among all outlets with at least one antimalarial in stock, across domain



The percentage of antimalarial-stocking outlets with at least one ACT in stock on the day of the survey was similar among public and private outlets across research domains, with the exception of higher ACT availability among itinerant drug vendors in Tier 1 (85%) as compared with Tier 2 (64%).

Figure 12: Percentage of antimalarial-stocking outlets with ASMQ in stock on the day of the survey by outlet type, 2009, 2011, 2013, 2015

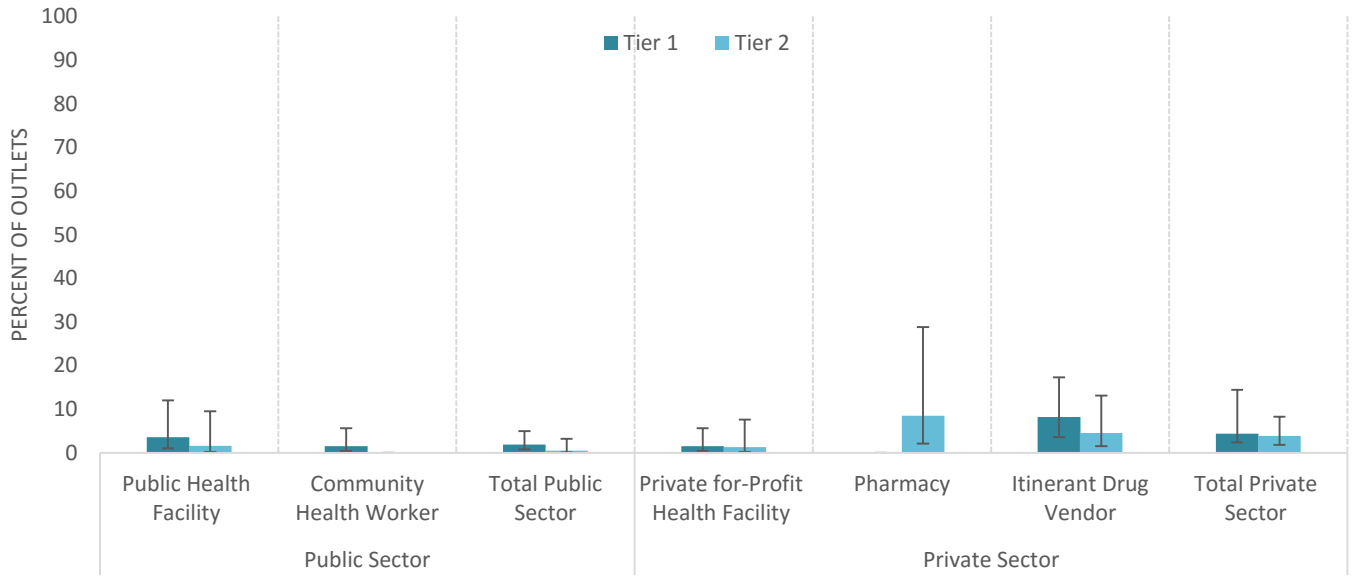
Among all outlets with at least one antimalarial in stock, across survey round



The percentage of antimalarial-stocking public health facilities and CHWs with the ACT ASMQ in stock on the day of the survey decreased between 2009 and 2015. In 2015, less than 5% of the public sector outlets stocked any ASMQ. ASMQ availability among all antimalarial-stocking private outlets also decreased over time, and was less than 5% in the private sector. None of the ASMQ audited in the 2015 survey was fixed-dose combination.

Figure 13: Percentage of antimalarial-stocking outlets with ASMQ in stock on the day of the survey, by outlet type, across national malaria burden stratification, 2015

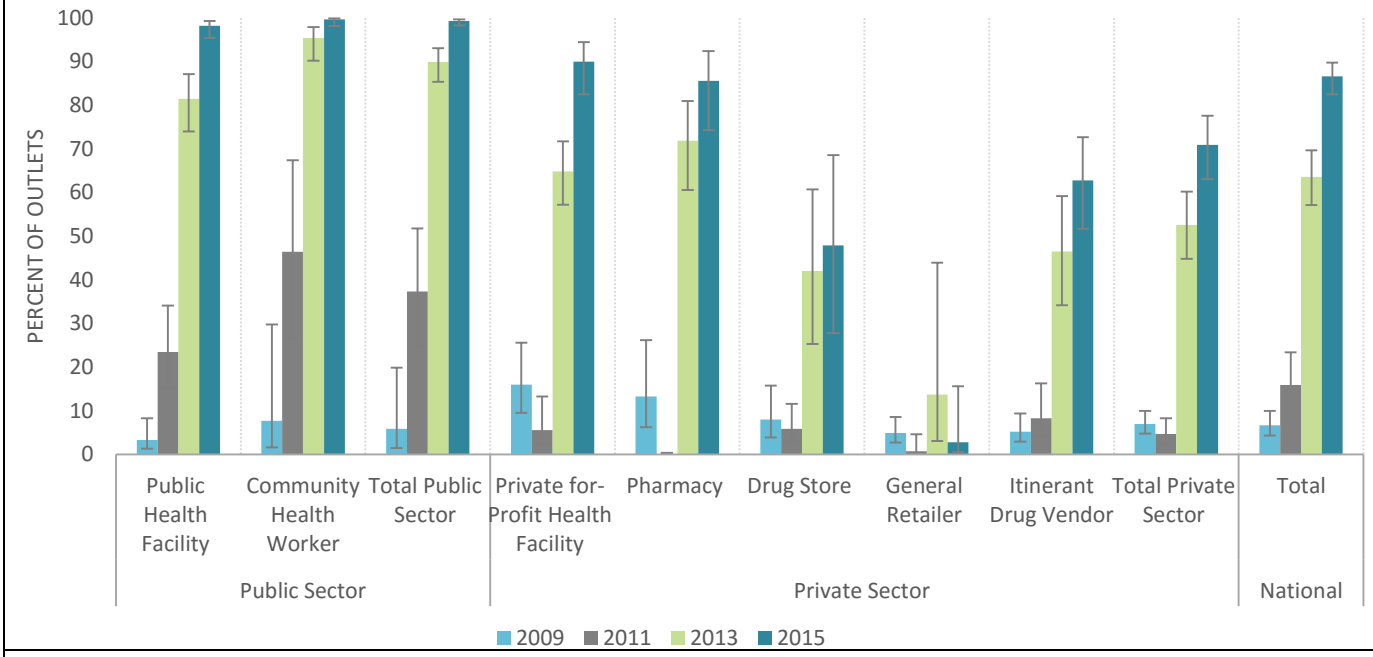
Among all outlets with at least one antimalarial in stock, across domain



In 2015, the percentage of antimalarial-stocking outlets with ASMQ in stock was very low. Few differences were observed between the research domains.

Figure 14: Percentage of antimalarial-stocking outlets with DHA-PPQ in stock on the day of the survey, by outlet type, 2009, 2011, 2013, 2015

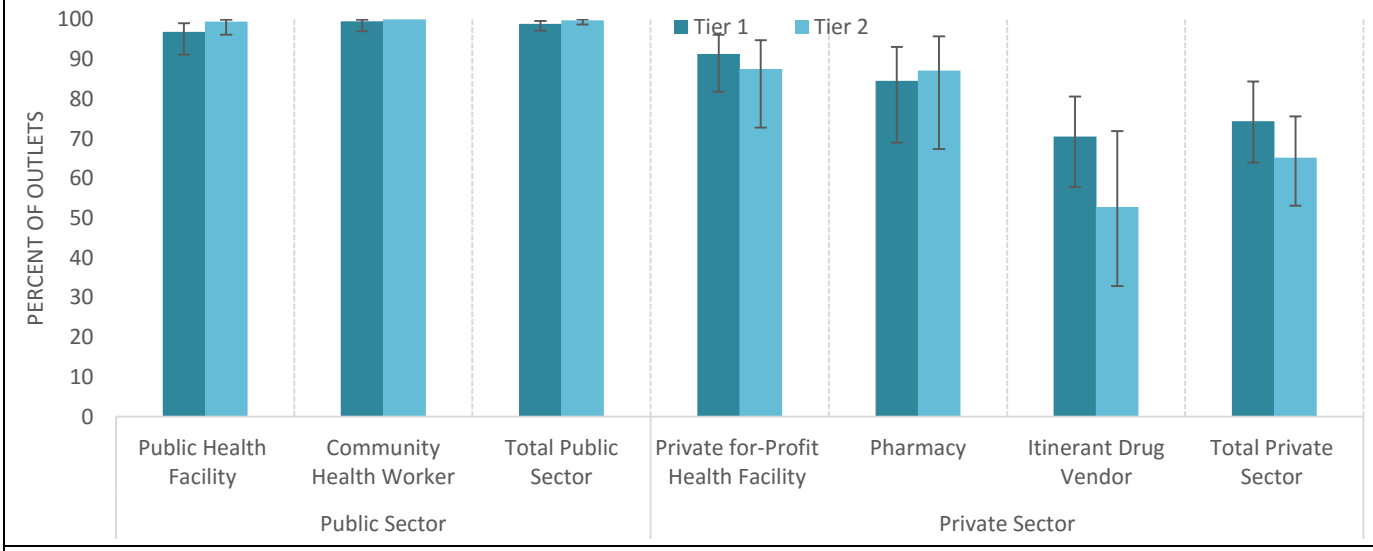
Among all outlets with at least one antimalarial in stock, across survey round



DHA-PPQ was introduced as the first-line treatment for uncomplicated malaria in 2010. The percentage of antimalarial-stocking outlets with the first-line ACT DHA-PPQ in stock on the day of the survey generally increased across survey rounds (the exception being general retailers in 2015). In 2015, most antimalarial-stocking public health facilities (98%), CHWs (99.7%), private health facilities (90%), and pharmacies (86%) had DHA-PPQ in stock. Availability was lower among drug stores (48%), general retailers (3%), and itinerant drug vendors (63%).

Figure 15: Percentage of antimalarial-stocking outlets with DHA-PPQ in stock on the day of the survey by outlet type, across national malaria burden stratification, 2015

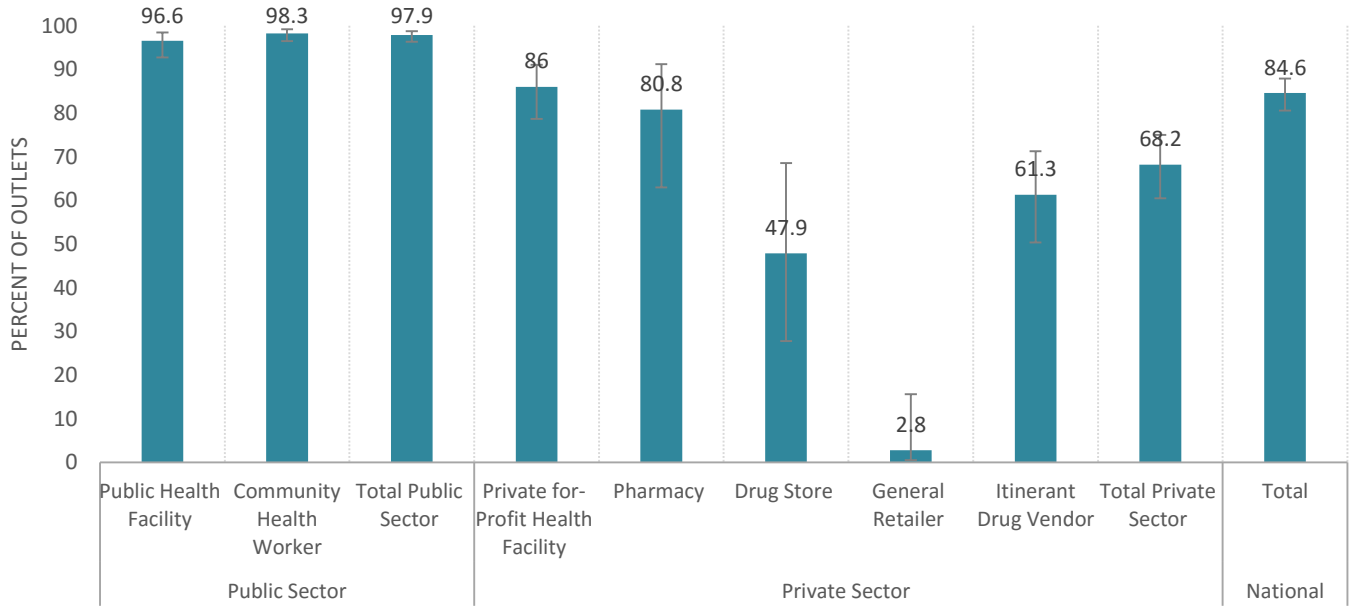
Among all outlets with at least one antimalarial in stock, across domain



The percentage of antimalarial-stocking outlets with at least one DHA-PPQ in stock on the day of the survey was similar among public and private outlets across research domains, with the exception of higher DHA-PPQ availability among itinerant drug vendors in Tier 1 (71%) as compared with Tier 2 (53%).

Figure 16: Percentage of antimalarial-stocking outlets with quality-assured ACT in stock on the day of the survey by outlet type, 2015

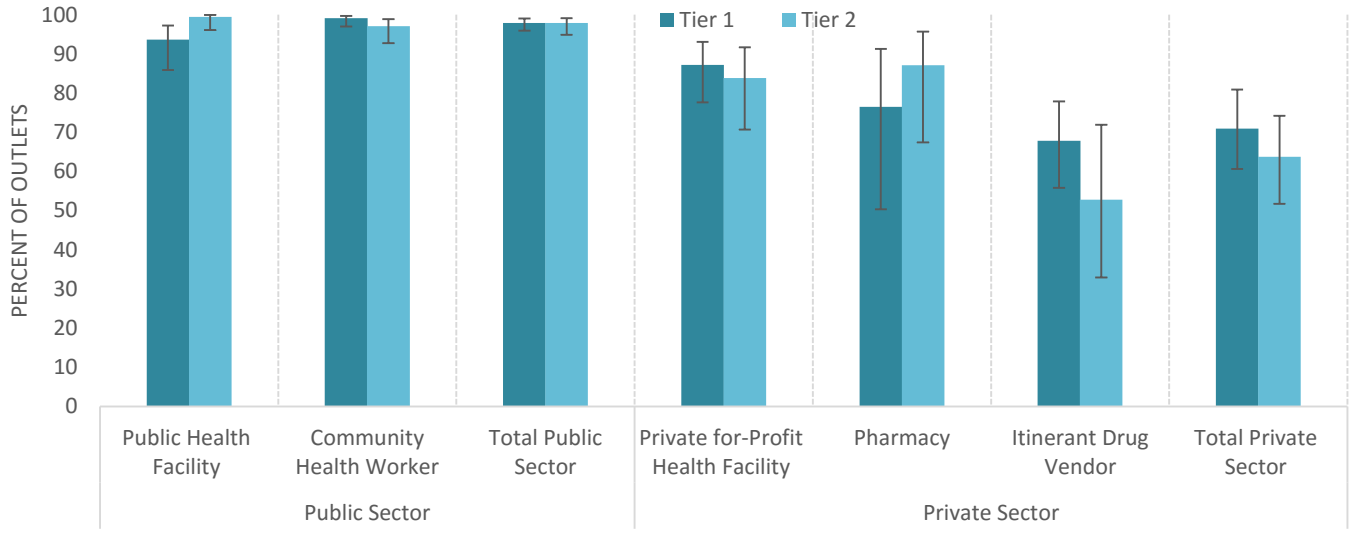
Among all outlets with at least one antimalarial in stock



Quality-assured ACT availability in 2015 was high in the public sector with almost 100% of antimalarial-stocking public health facilities and CHWs stocking this antimalarial. In the private sector, quality-assured ACT availability among the antimalarial-stocking outlets was more variable. Over 85% of private for-profit facilities and 81% of pharmacies had quality-assured ACT. Availability was lower among drug stores (48%), general retailers (2.8%), and itinerant drug vendors (61%). The quality-assured ACT was DHA-PPQ branded as Eurartesim®, which received quality-assurance status in late 2012.

Figure 17: Percentage of antimalarial-stocking outlets with quality-assured ACT in stock on the day of the survey by outlet type, across national malaria burden stratification, 2015

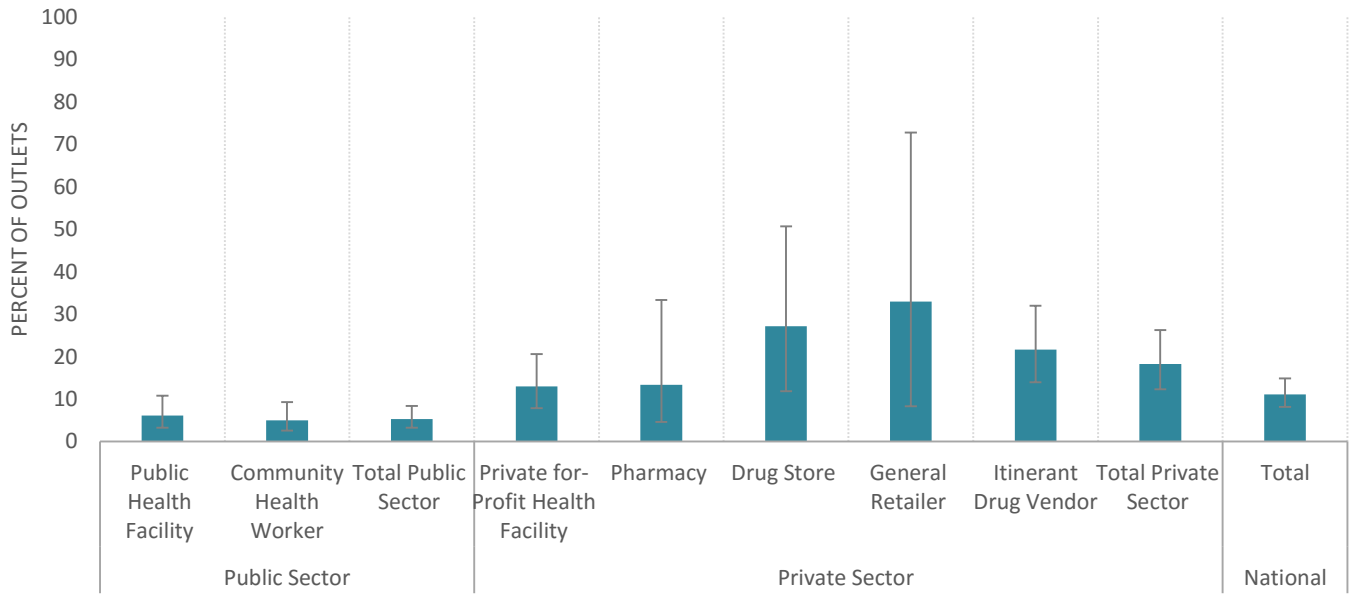
Among all outlets with at least one antimalarial in stock, across domain



The percentage of antimalarial-stocking outlets with at least one quality-assured ACT in stock on the day of the survey was similar among public and private outlets across research domains, with the exception of higher availability among itinerant drug vendors in Tier 1 (68%) as compared with Tier 2 (53%).

Figure 18: Percentage of antimalarial-stocking outlets with non-quality assured ACT in stock on the day of the survey by outlet type, 2015

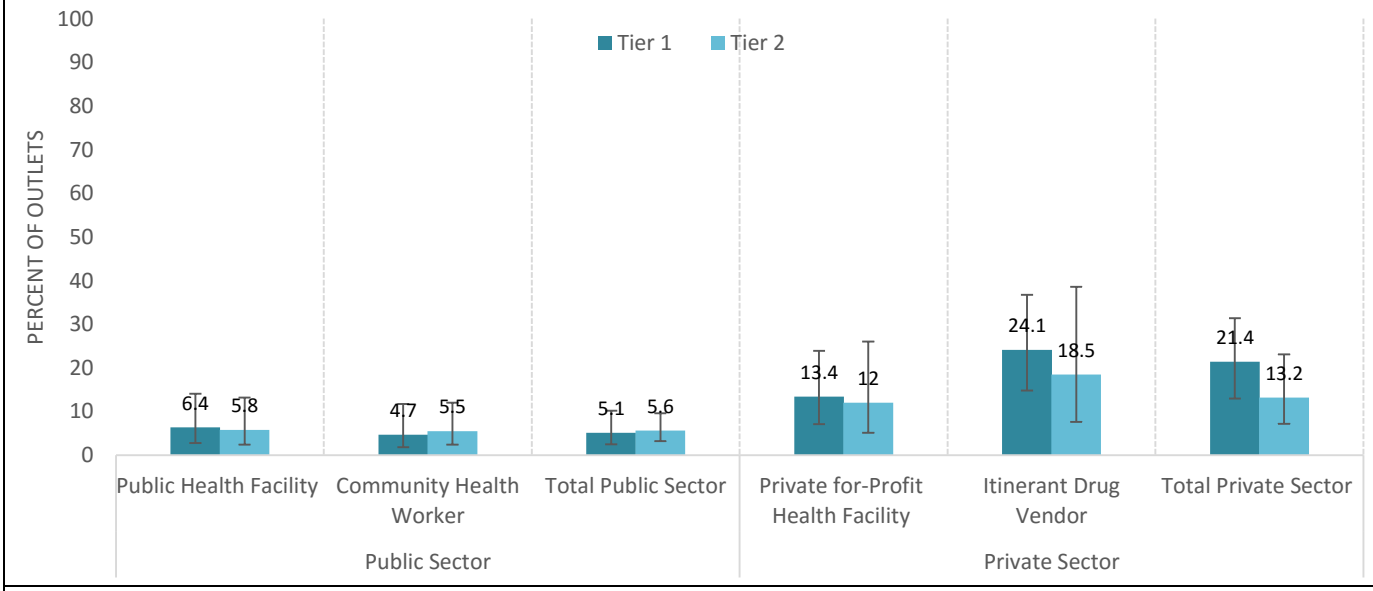
Among all outlets with at least one antimalarial in stock



In 2015, non-quality assured ACT was rarely available in the public sector (<5%). In the private sector, general retailers (33%), drug stores (27%), and itinerant drug vendors (22%) were most likely to stock non-quality assured ACT.

Figure 19: Percentage of antimalarial-stocking outlets with non-quality assured ACT in stock on the day of the survey by outlet type, across national malaria burden stratification, 2015

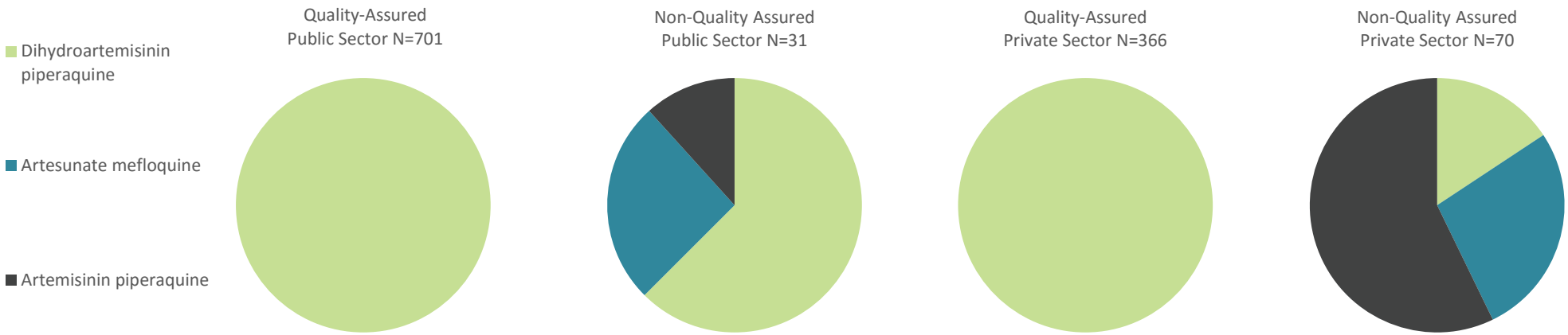
Among all outlets with at least one antimalarial in stock, across domain



The percentage of antimalarial-stocking outlets with at least one non-quality assured ACT in stock on the day of the survey was similar among public and private outlets across research domains.

Figure 20: Types of quality-assured ACT and non-quality-assured ACT audited among public and private sector outlets, 2015

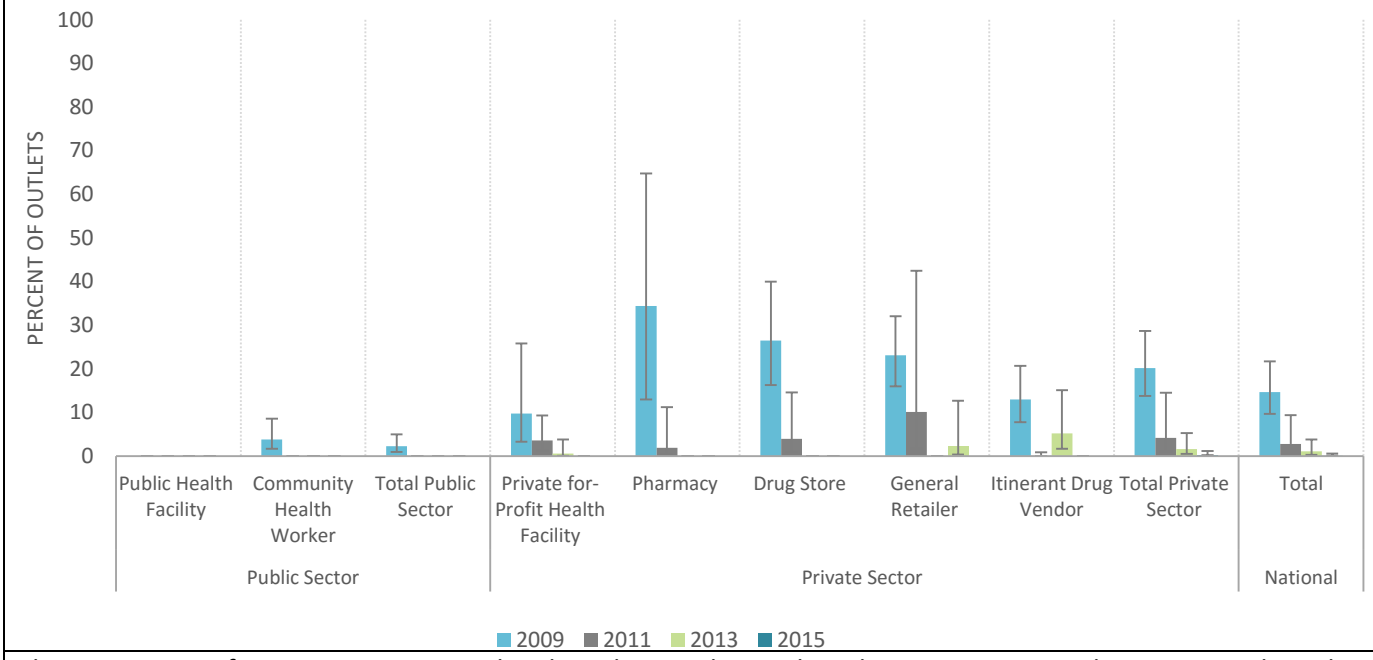
Among all ACT medicines audited, across sector, 2015



All of the quality-assured ACTs available in the public and private sector were DHA-PPQ tablets, branded as Eurartesim®. The most common non-quality assured ACT available in the public sector included Duo-cotecxin (N=15), A+M (N=6), Artequick (N=5), which do not appear on the WHO list of prequalified medicines for malaria. The most common non-quality-assured ACTs available in the private sector included Artequick (N=31) and Malarine (N=21).

Figure 21. Percentage of antimalarial-stocking outlets with oral artemisinin monotherapy in stock on the day of survey by outlet type, 2009, 2011, 2013, 2015

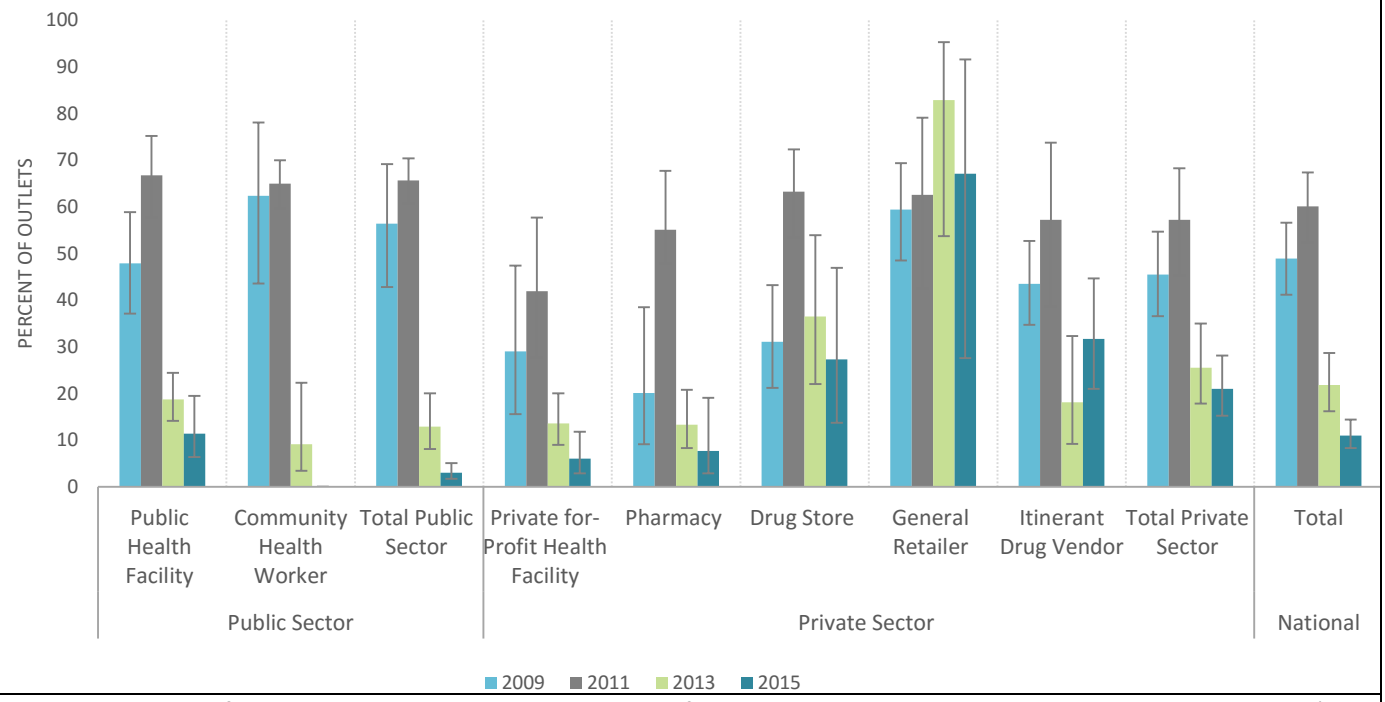
Among all outlets with at least one antimalarial in stock, across survey round



The percentage of private sector antimalarial-stocking outlets with oral artemisinin monotherapy in stock on the day of the survey decreased over time. In 2015, availability was limited to 2.3% among general retailers. Only 1 package was audited in the 2015 survey.

Figure 22: Percentage of antimalarial-stocking outlets with non-artemisinin therapy in stock on the day of the survey by outlet type, 2009, 2011, 2013, 2015

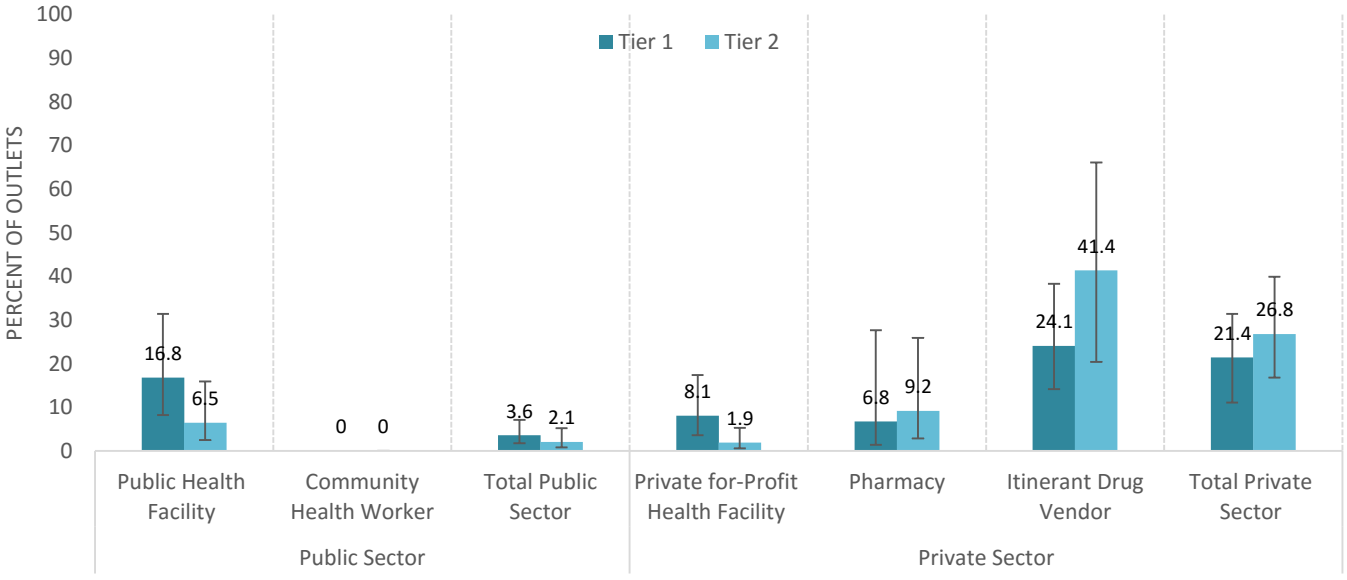
Among all outlets with at least one antimalarial in stock



The percentage of antimalarial-stocking public health facilities and CHWs with non-artemisinin therapy (e.g. chloroquine, quinine, mefloquine) in stock on the day of the survey decreased between 2011 and 2015 to 11% and 0% respectively. Availability of non-artemisinin therapy within private sector outlets was low in 2015 with the exception of antimalarial-stocking drug stores (27%), general retailers (67%), and itinerant drug vendors (32%).

Figure 23: Percentage of antimalarial-stocking outlets with non-artemisinin therapy in stock on the day of the survey by outlet type, across national malaria burden stratification, 2015

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



Non-artemisinin monotherapy was available in 17% of public health facilities in Tier 1 as compared to 7% in Tier 2. This antimalarial class was not available among CHWs. In the private sector, availability was low among antimalarial-stocking facilities across domains, with the exception of itinerant drug vendors; most antimalarial-stocking itinerant drug vendors had non-artemisinin monotherapy in stock in Tier 2 (41%) as compared to Tier 1 (24%).

Figure 24: Percentage of antimalarial-stocking outlets with treatment for severe malaria in stock on the day of the survey by outlet type, 2009, 2011, 2013, 2015

Among all outlets with at least one antimalarial in stock

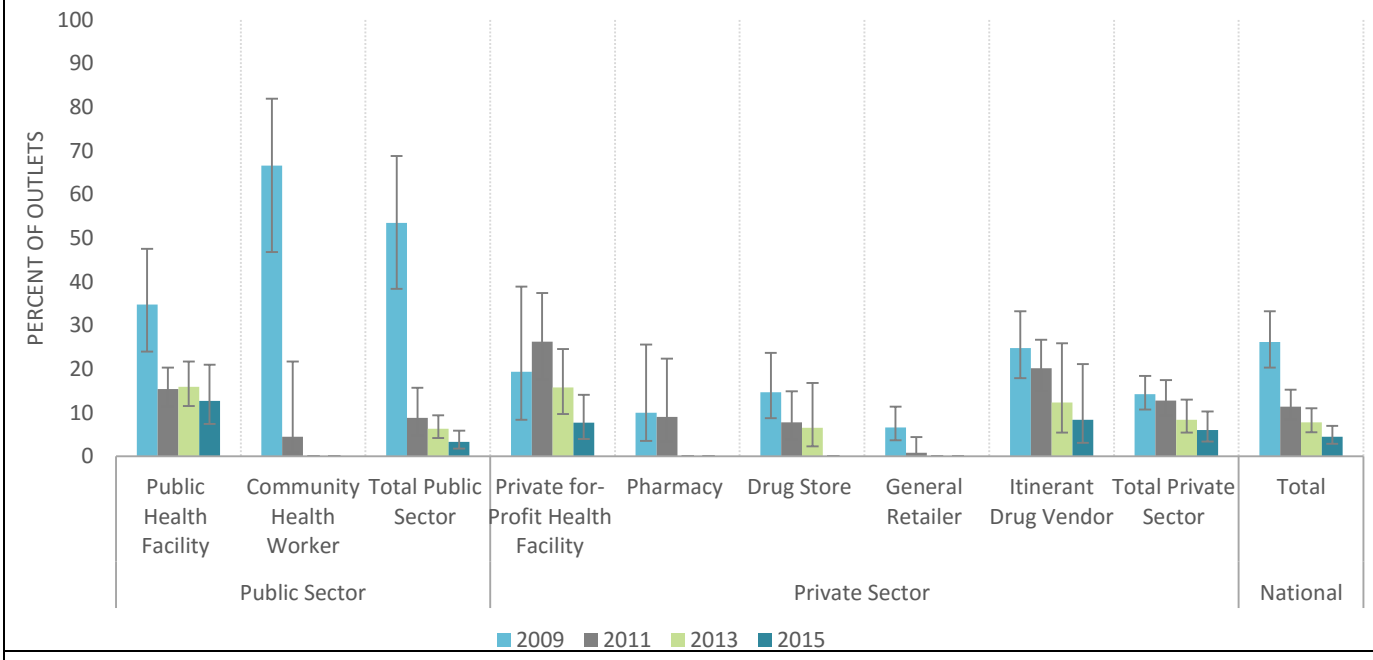


Figure 25: Percentage of antimalarial-stocking outlets with treatment for severe malaria in stock on the day of the survey by outlet type, across national malaria burden stratification, 2015

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

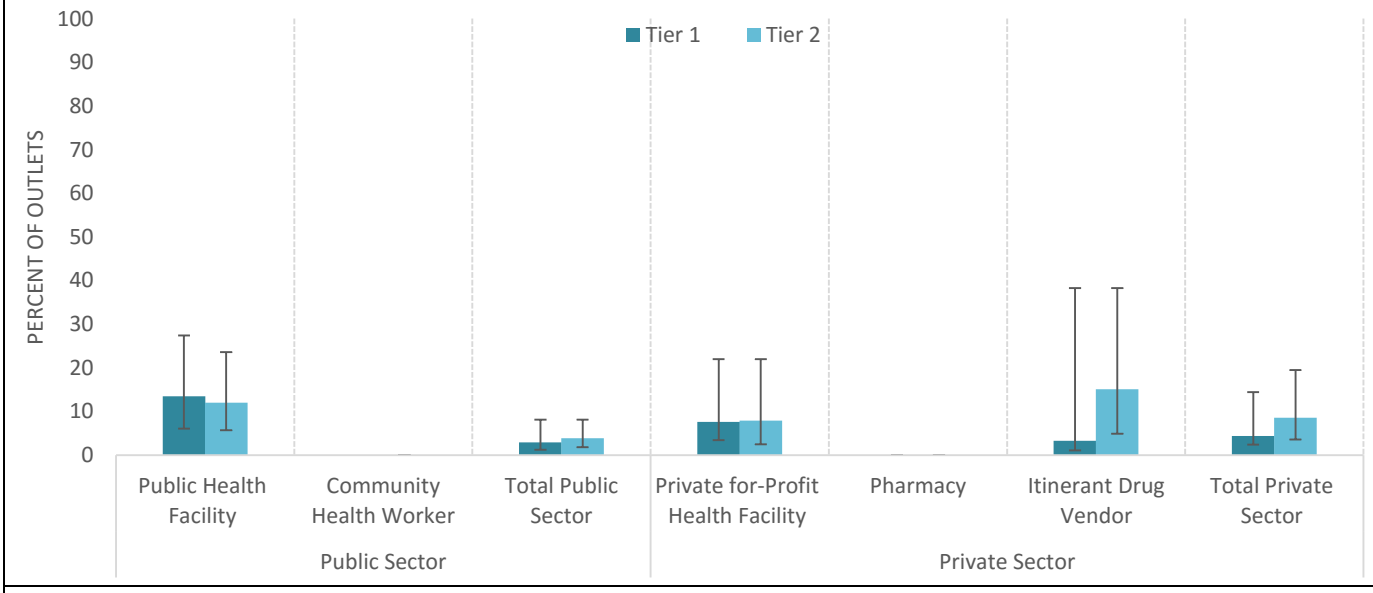
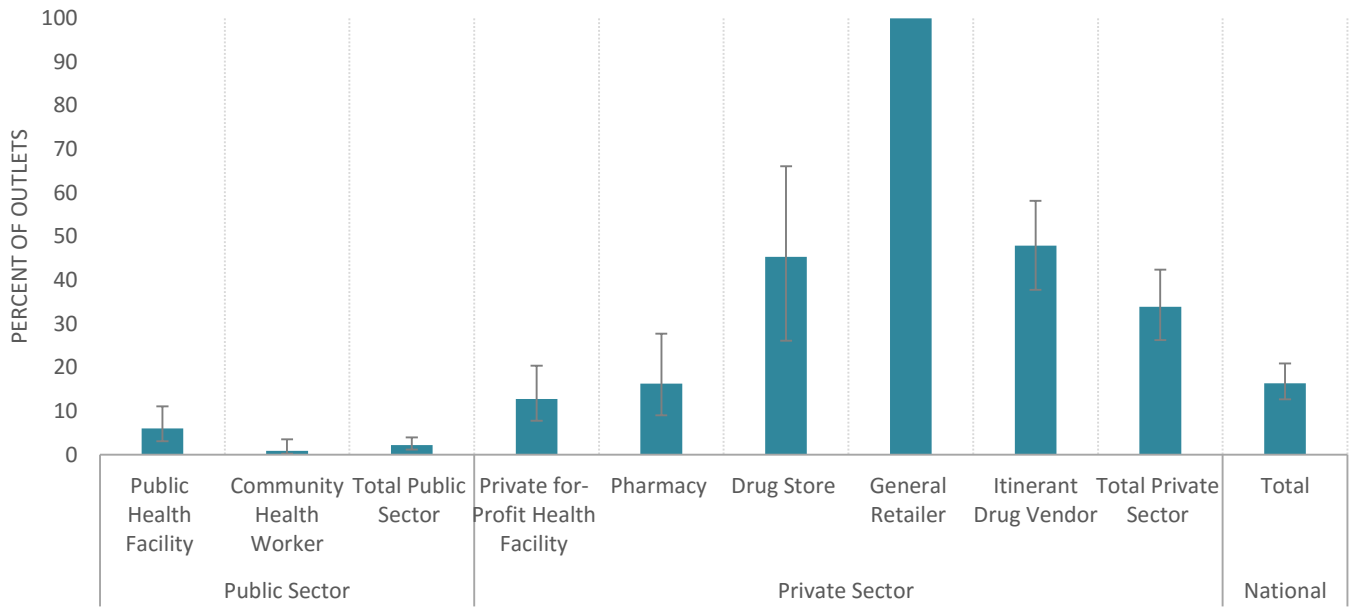


Figure 26: Percentage of any antimalarial that is not in the national treatment guidelines in stock on the day of the survey by outlet type, 2015

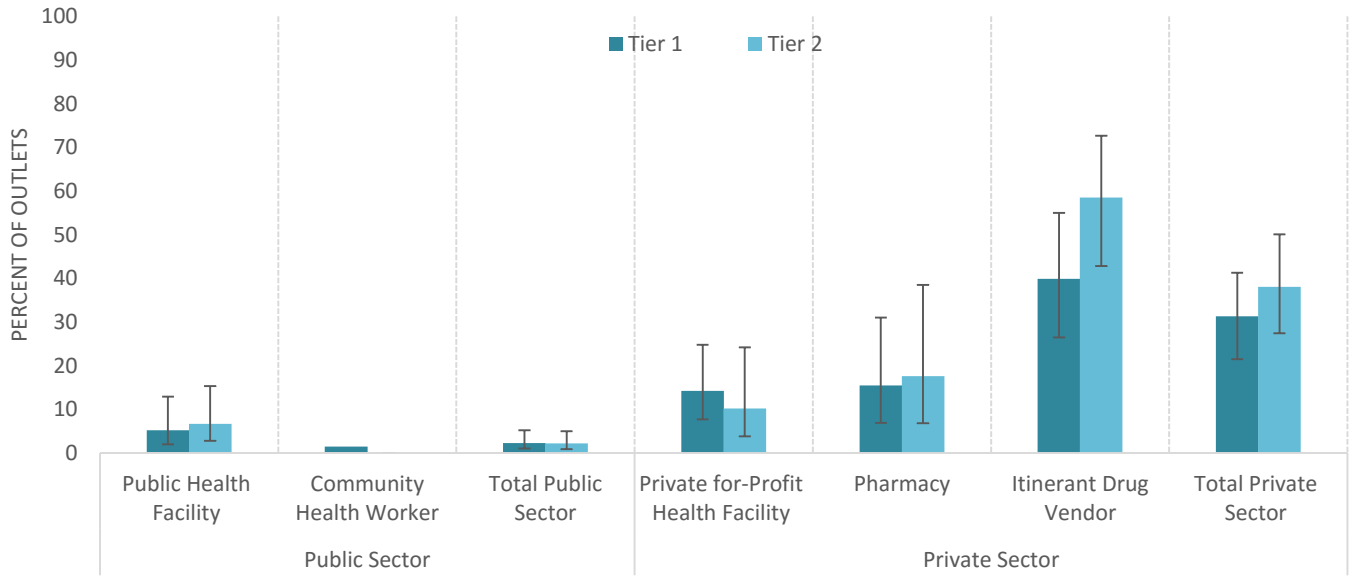
Among all outlets with at least one antimalarial in stock



In the public sector, very few outlets (<2%) had an antimalarial that was not on the national treatment guidelines. In the private sector, the results were more variable. Antimalarials that were not on the national treatment guidelines were available in 100% of antimalarial stocking general retailers, 48% of itinerant drug vendors, and 46% of drug stores.

Figure 27: Percentage of any antimalarial that is not in the national treatment guidelines in stock on the day of the survey by outlet type, across national malaria burden stratification, 2015

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

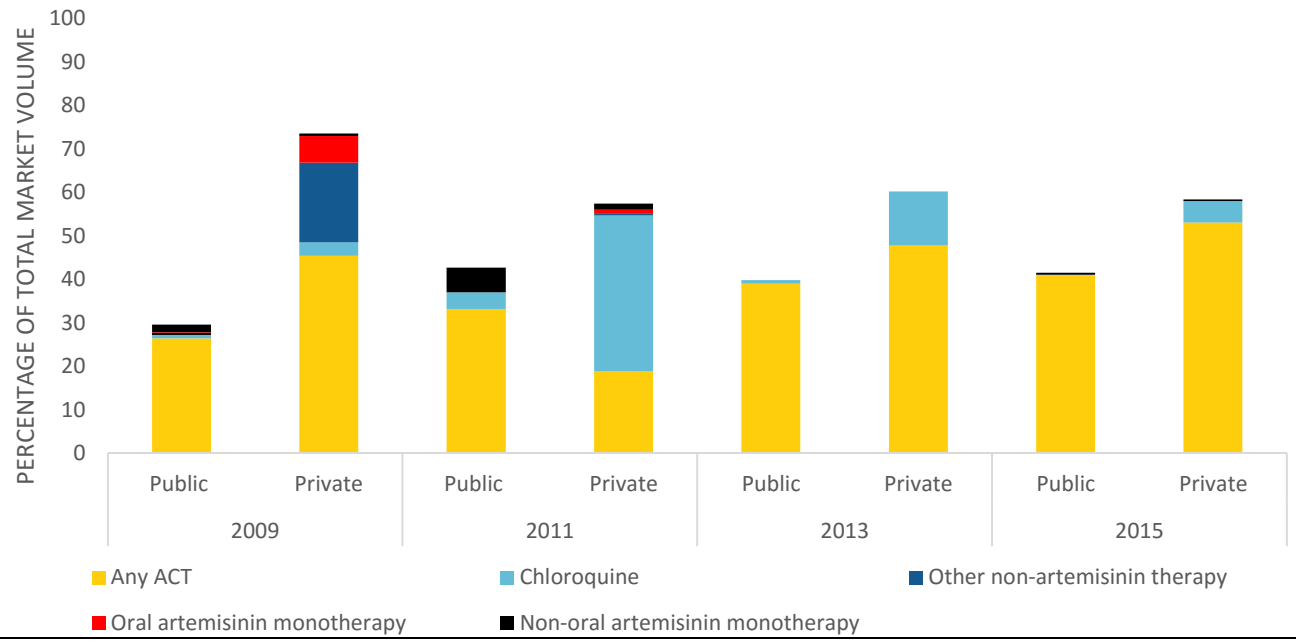


Availability of antimalarials that were not on the national treatment guidelines was similar across research domains.

Antimalarial Market Share

Figure 28: Antimalarial market share, 2009-2015

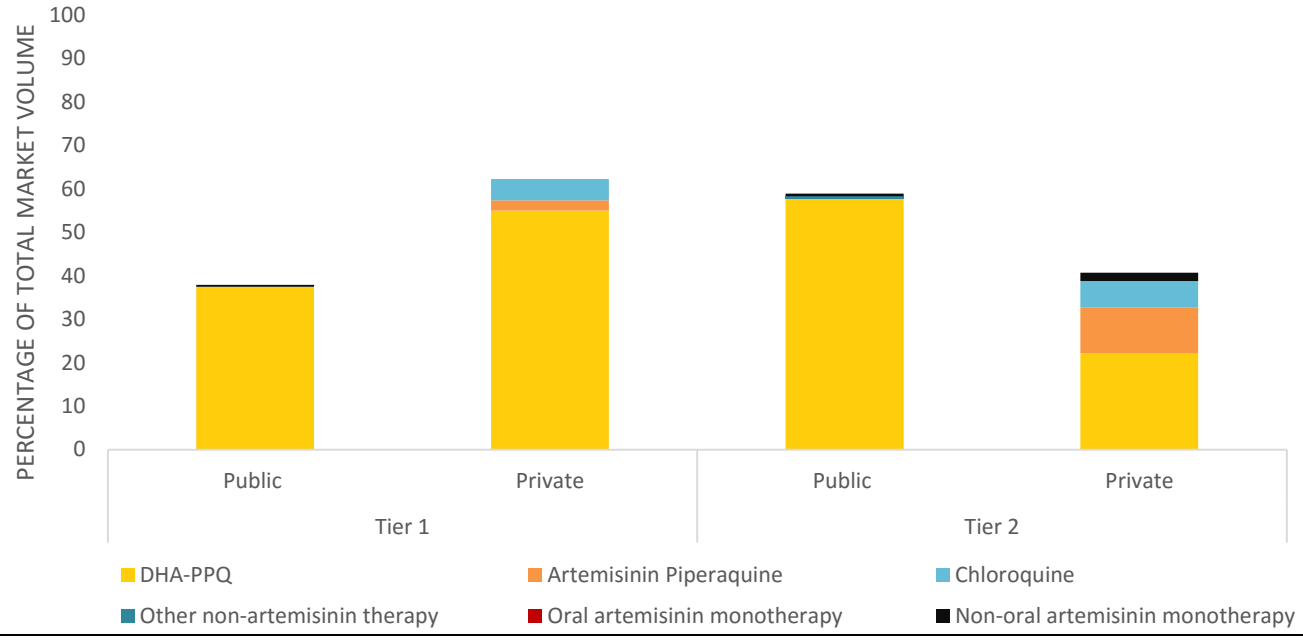
Relative market volume (sale/distribution) of antimalarial AETDs, by sector and antimalarial class



At the national level, public sector antimalarial market share increased over time from 30% in 2009 to 41% in 2015. ACT relative market share decreased between 2009 (72%) and 2011 (52%), and increased to 87% in 2013 and 94% in 2015. Oral artemisinin monotherapy accounted for 6% of total antimalarial market volume in 2009 and 1% in 2011, but was no longer reportedly sold/distributed in 2013 and 2015. Chloroquine was only sold/distributed in the private sector in 2015 and comprised 5% of the market share.

Figure 29: Antimalarial market share across national malaria burden stratification, 2015

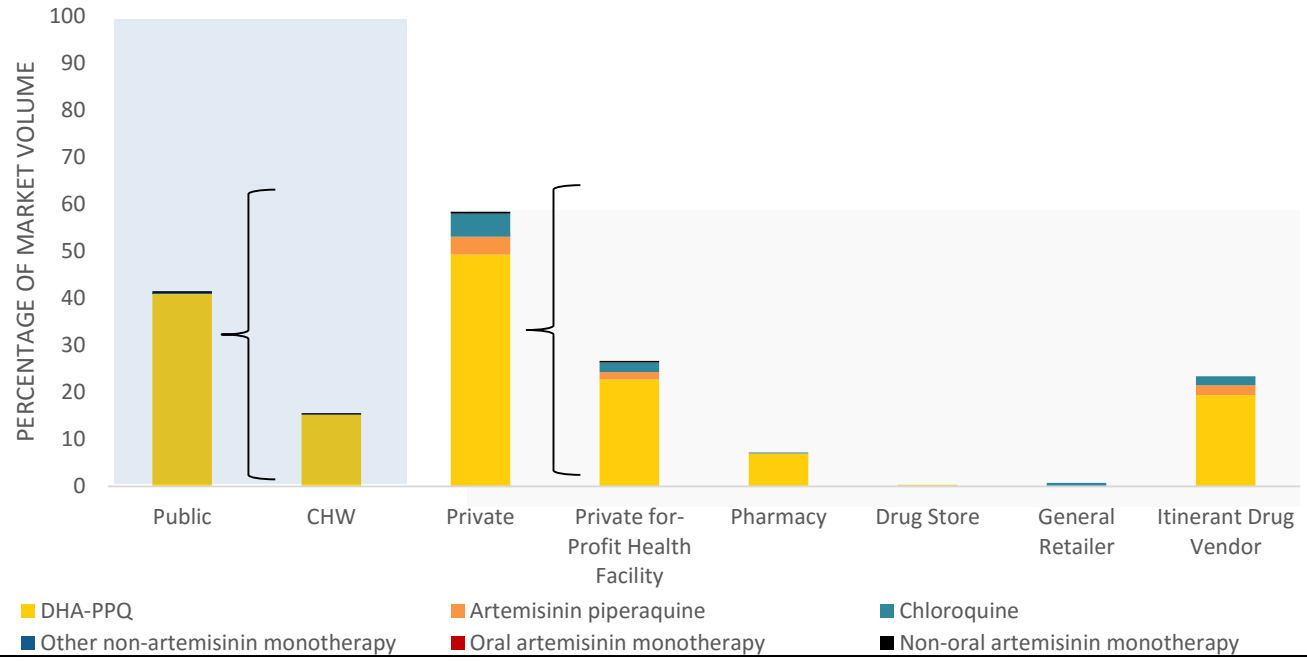
Relative market volume (sale/distribution) of antimalarial AETDs, by sector and antimalarial class, by domain



Public sector market share differed slightly across research domains, ranging from 37.8% in Tier 1 to 59% in Tier 2. Of the ACT distributed, almost all of this was quality-assured Eurartesim®. The non-artemisinin therapy distributed in the private sector across both domains was mostly chloroquine, and only chloroquine was distributed in the private sector. In Tier 2, 0.3% of the market share was ASMQ (data not shown).

Figure 30: Antimalarial market share, 2015

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

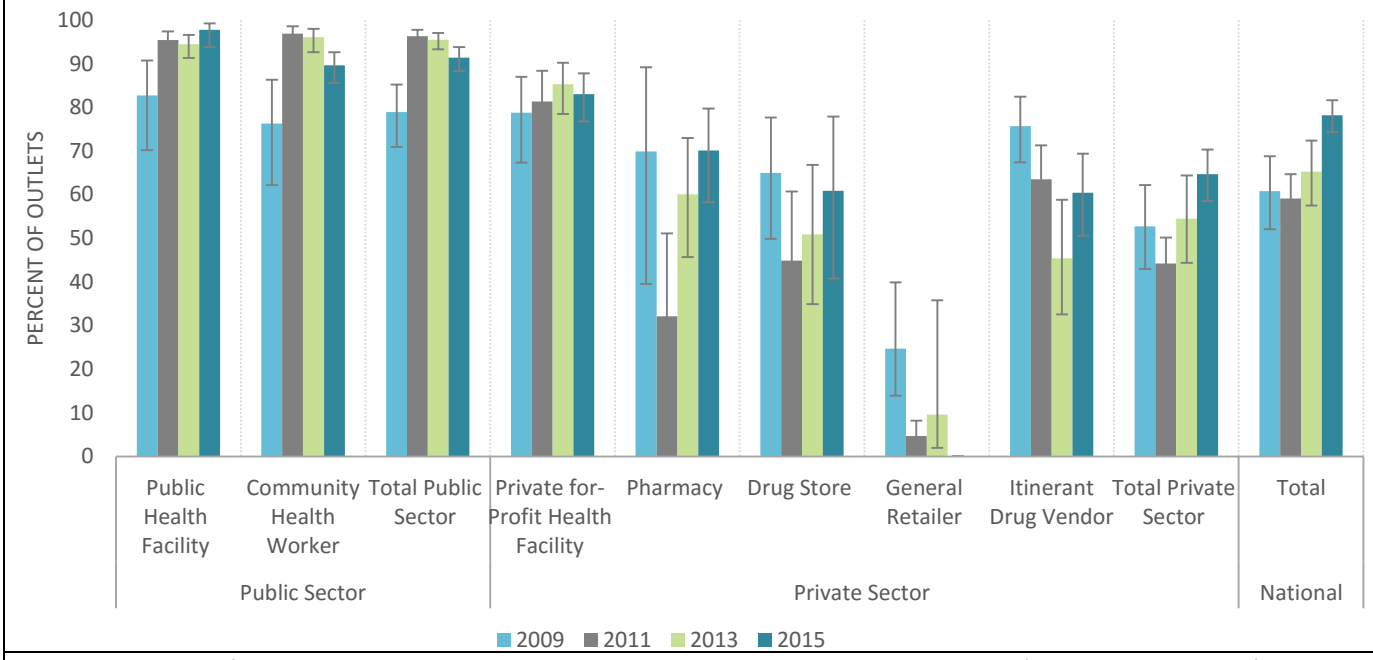


At national level, 59% of all antimalarials sold or distributed in the week preceding the survey were sold/distributed through private sector outlets including private for-profit health facilities (27%), pharmacies (7%) and itinerant drug vendors (23%). The majority of antimalarials sold/distributed in the private sector were ACTs including DHA-PPQ (49%) and artemisinin piperaquine (3.8%).

Malaria Blood Testing Availability

Figure 31: Percentage of antimalarial-stocking outlets with malaria blood testing available by outlet type, 2009, 2011, 2013, 2015

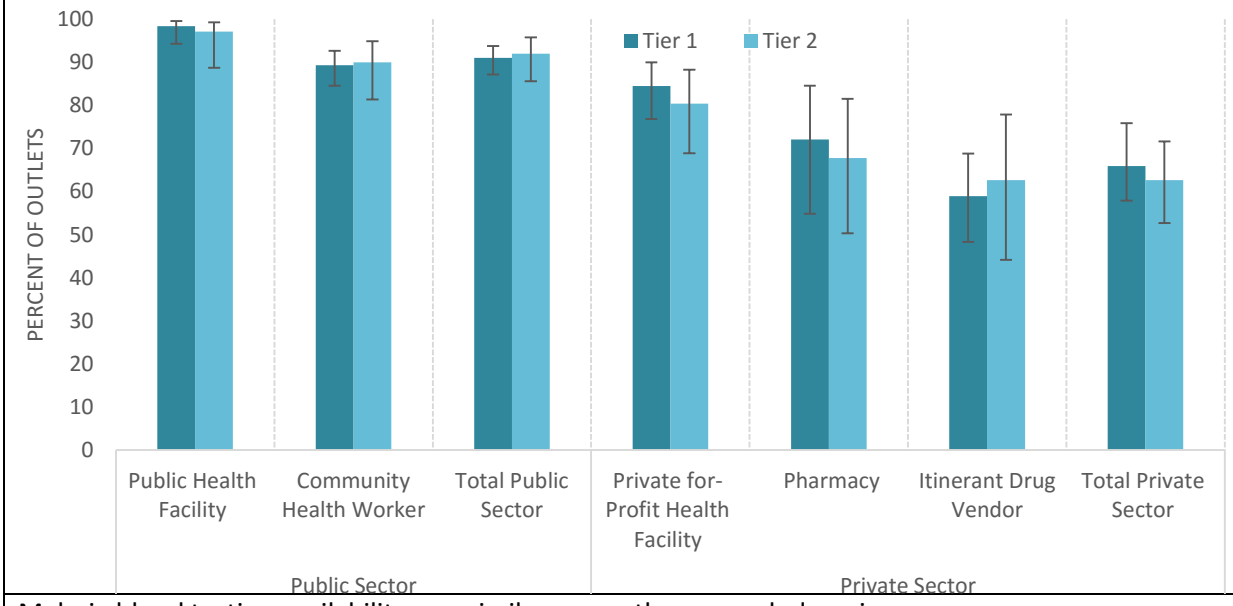
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months



The percentage of antimalarial-stocking outlets with malaria blood testing available (RDT or microscopy) remained high over time among the public sector. In 2015, over 90% of antimalarial-stocking public health facilities had malaria blood testing available. In 2015, over 80% of private for-profit facilities had blood testing available, 70% of pharmacies, 61% of drug stores and 60% of itinerant drug vendors. General retailers rarely had malaria diagnostic testing available.

Figure 32: Percentage of antimalarial-stocking outlets with malaria blood testing available across national malaria burden stratification, 2015

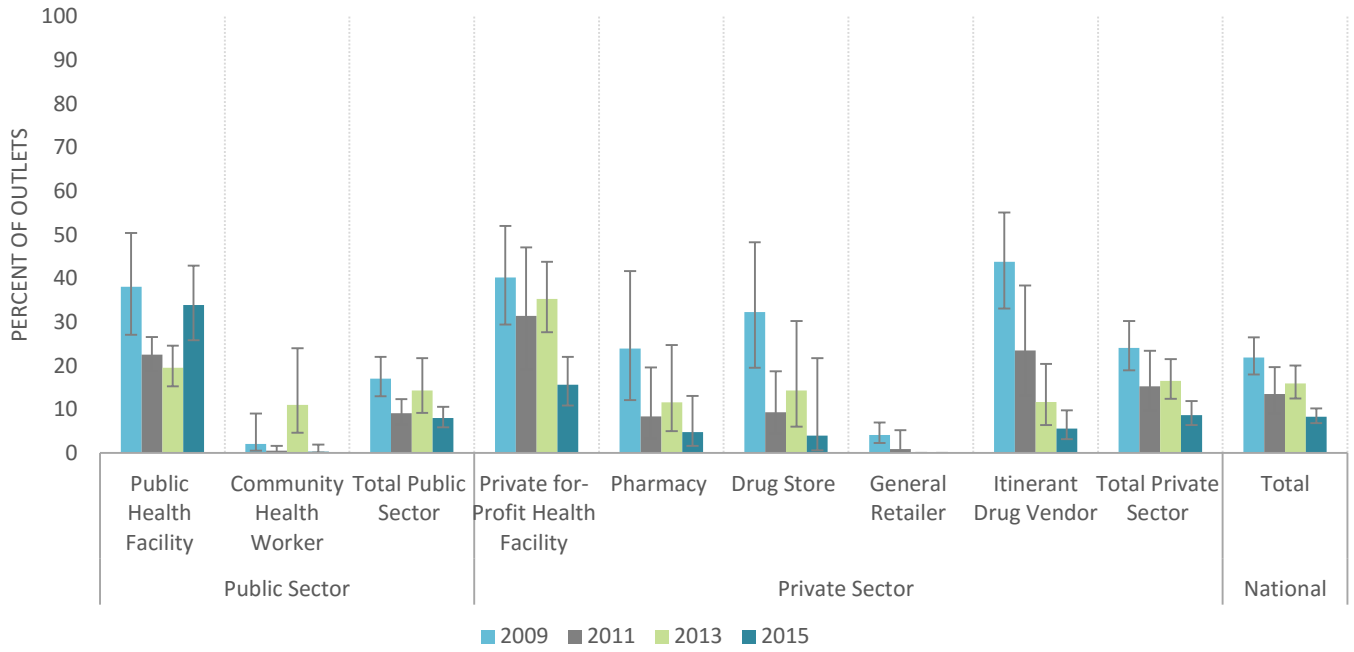
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months



Malaria blood testing availability was similar across the research domains.

Figure 33: Percentage of antimalarial-stocking outlets with malaria microscopy available

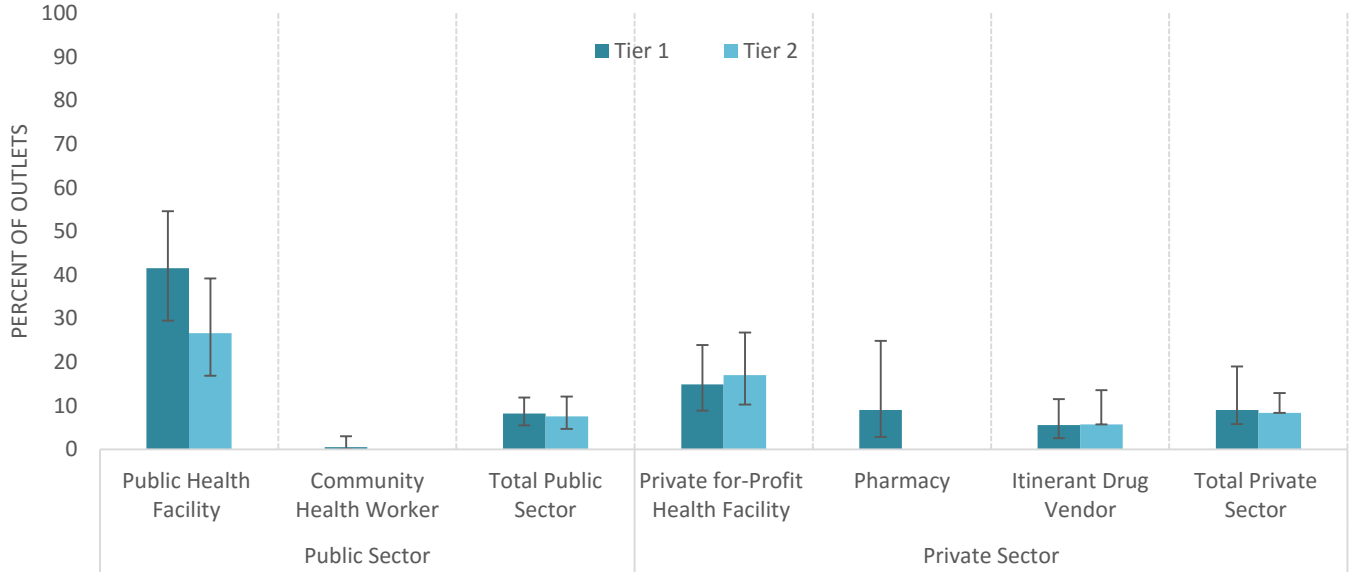
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months



Trends in the percentage of antimalarial-stocking outlets with malaria microscopy suggest an overall slight decline in availability between 2009 and 2015, with the exception of public health facilities. In 2015, microscopic testing was available in 34% of public health facilities and less than 10% of private outlets.

Figure 34: Percentage of antimalarial-stocking outlets with malaria microscopy available across national malaria burden stratification, 2015

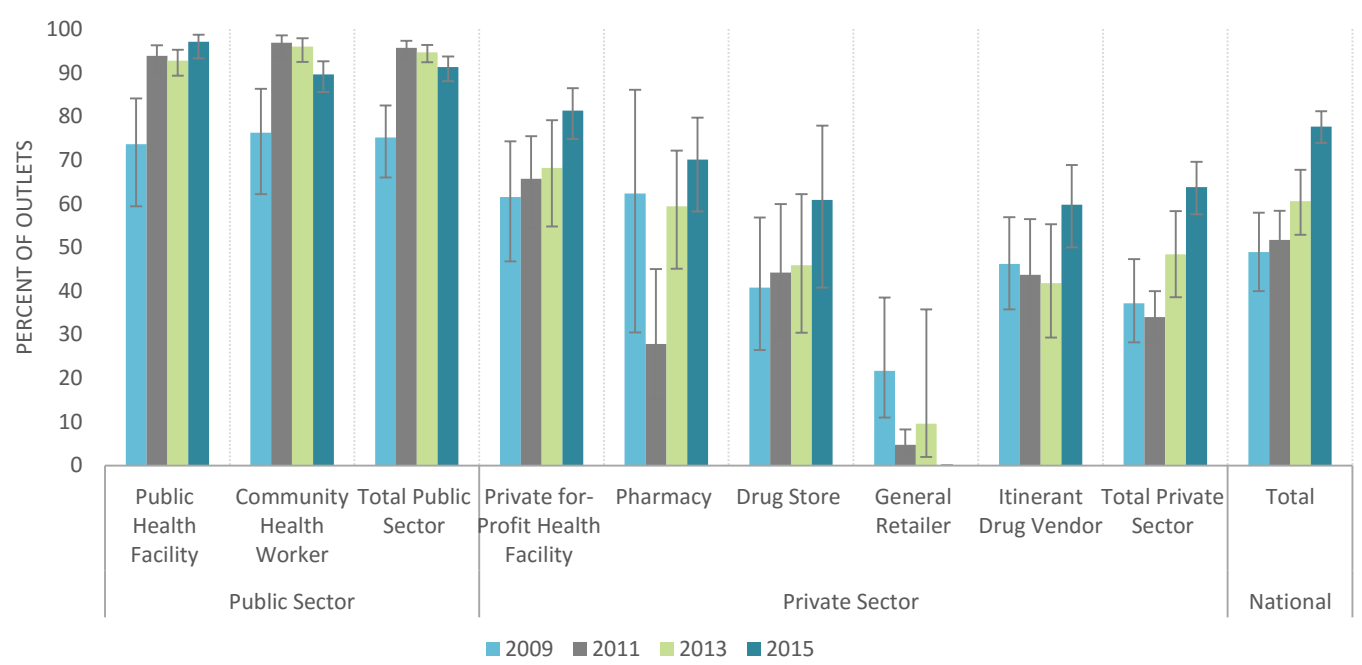
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months



Malaria microscopy was similar across the research domains, however malaria microscopy availability was slightly higher among public health facilities in Tier 1 (42%) as compared with Tier 2 (27%).

Figure 35: Percentage of antimalarial-stocking outlets with malaria RDTs, 2009, 2011, 2013, 2015

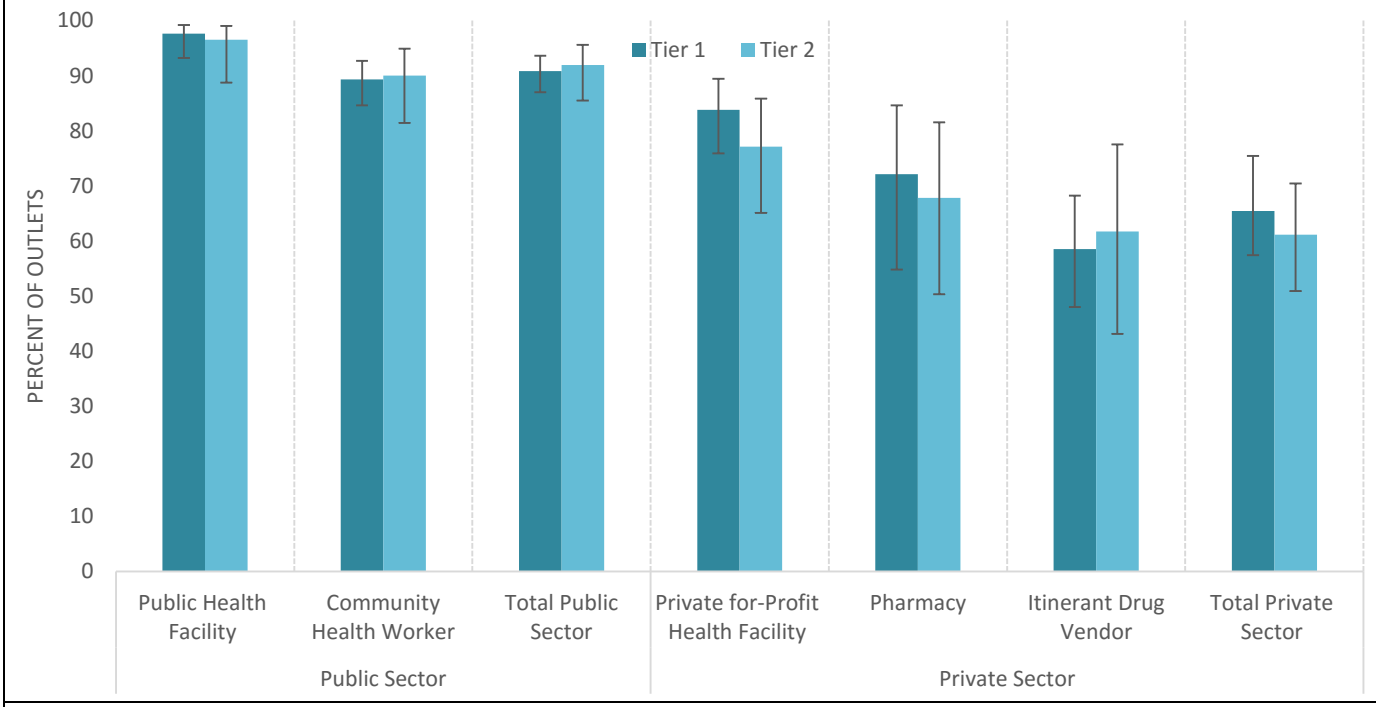
Among all outlets with at least one antimalarial in stock on the day of the survey or within the past three months



Availability of malaria RDTs increased over time among antimalarial-stocking public health facilities and in 2015, almost all of these facilities had RDTs in stock (97%). Availability of RDTs was 90% among CHW in 2015. RDT availability increases were observed among most private sector outlets. In 2015, RDT availability was high in private for-profit facilities (81%), and moderate in pharmacies (70%), drug stores (61%) and itinerant drug vendors (60%).

Figure 36: Percentage of antimalarial-stocking outlets with RDT available across national malaria burden stratification, 2015

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

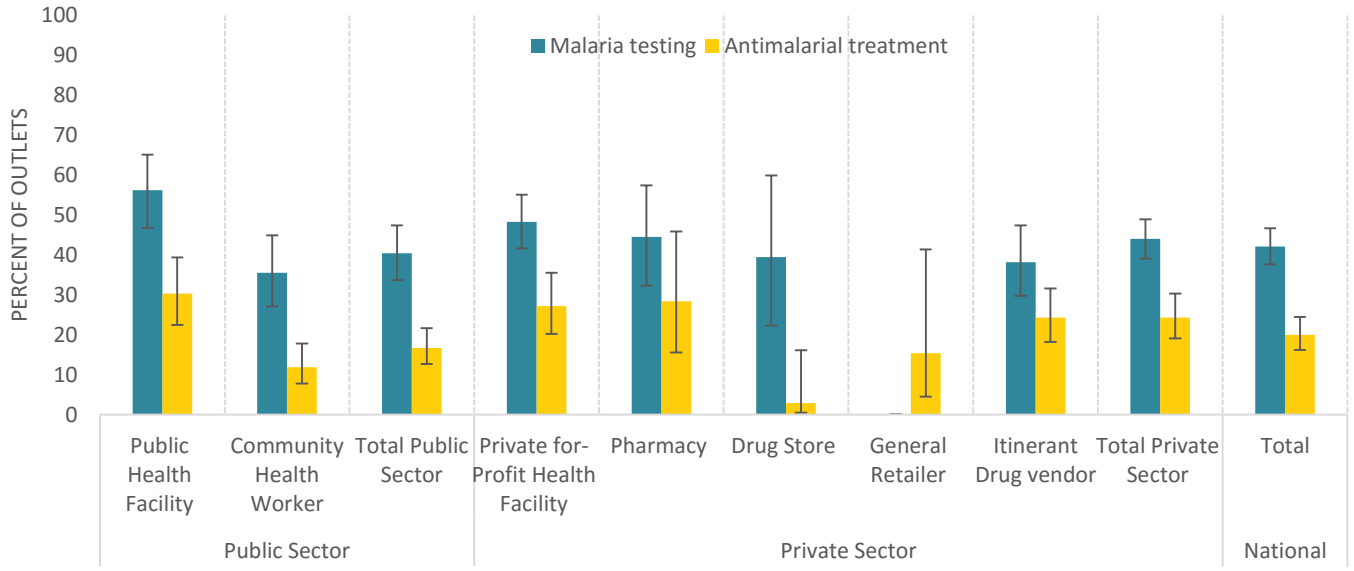


RDT availability was similar across the research domains.

Distribution and Sales of Antimalarials

Figure 37: Percentage of outlets with malaria blood testing available that sold or distributed malaria tests in the previous week, and percentage of antimalarial-stocking outlets that sold or distributed antimalarials in the previous week by outlet type, 2015

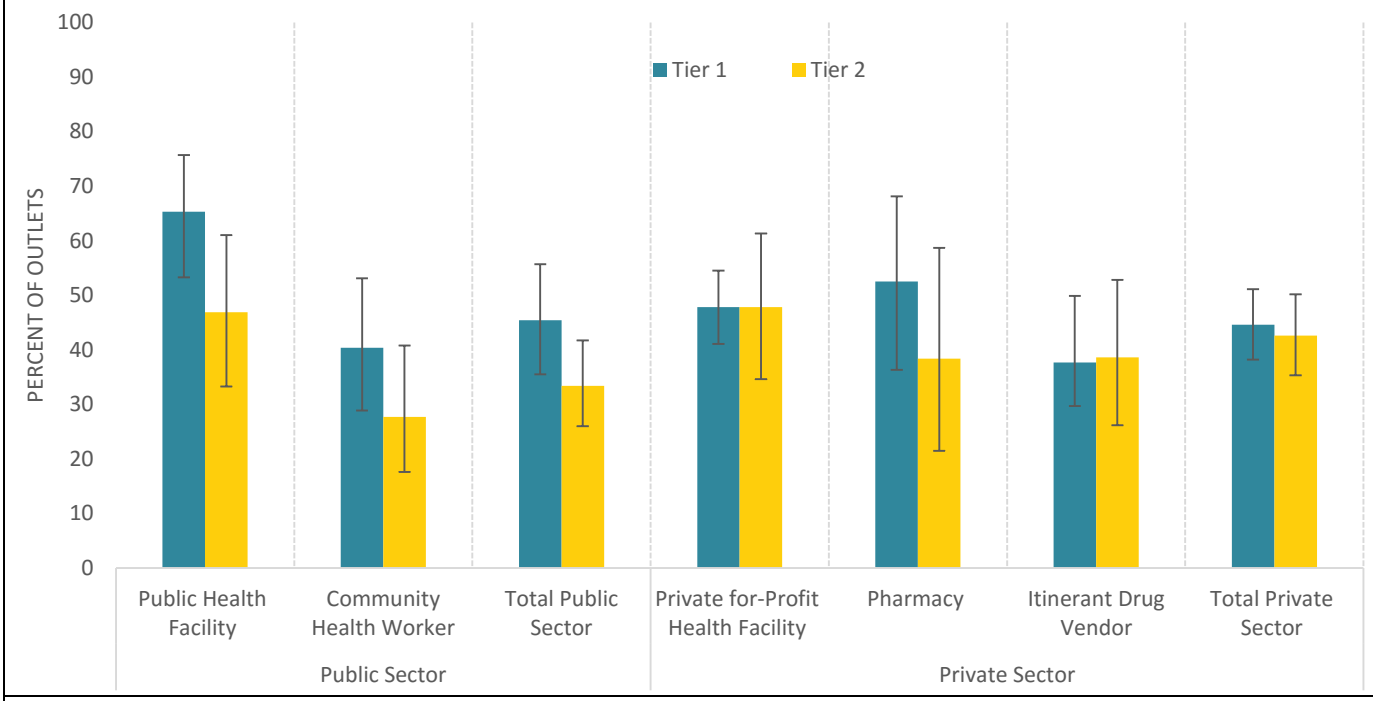
Among all outlets with at least one antimalarial or/and diagnostic test in stock on the day of the survey



Among outlets with a malaria test available, 56% of public health facilities and 36% of CHW distributed a test in the previous week. In the private sector, reported distribution was slightly lower. Almost half of the private for-profit facilities (48%), 45% of pharmacies, 40% of drug stores and 38% of itinerant drug vendors distributed a test in the previous week. With the exception of general retailers, outlets were more likely to distribute malaria tests than antimalarials. In the week prior to the survey, one in three public health facilities reported distributing an antimalarial and around one in four private sector outlets.

Figure 38: Percentage of outlets with malaria blood testing available that sold or distributed malaria tests in the previous week, across national malaria burden stratification 2015

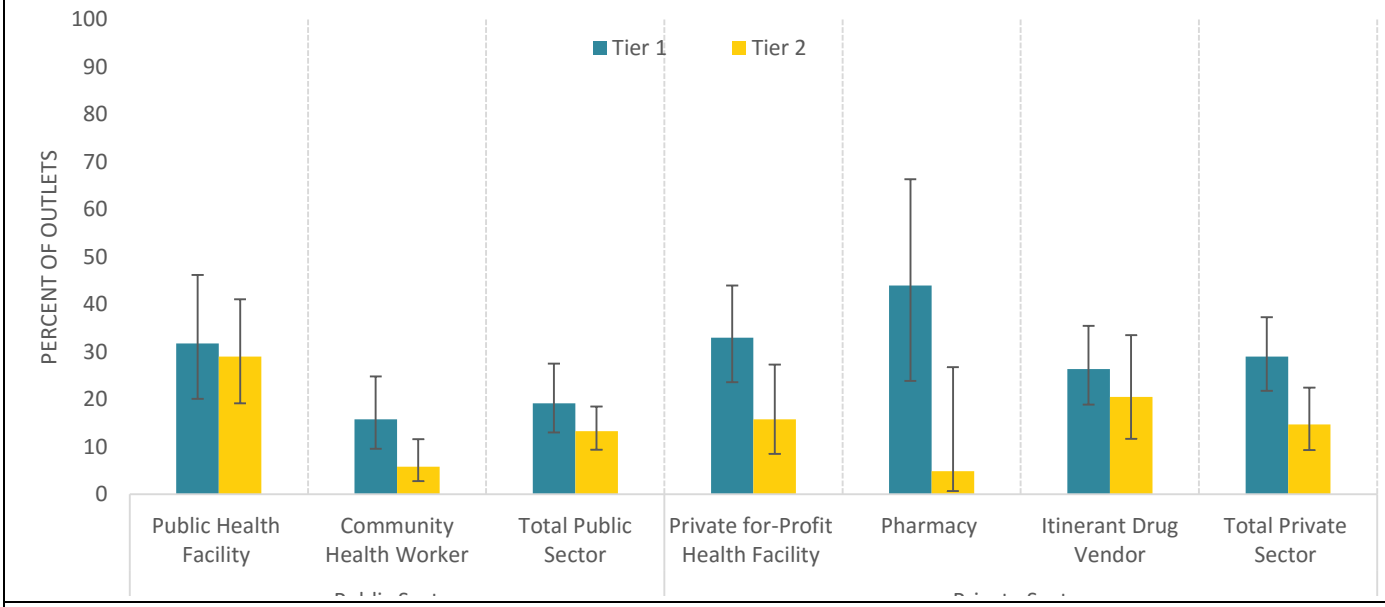
Among all outlets with at least one diagnostic test in stock on the day of the survey



Across research domains, 65% of public health facilities and 40% of CHW outlets in Tier 1 reportedly distributed a test in the previous week compared to 47% and 28% respectively in Tier 2. In the private sector, domain findings were similar with the exception of pharmacies, which were more likely to distribute a malaria test in Tier 1 (53%) as compared to Tier 2 (38%).

Figure 39: Percentage of antimalarial-stocking outlets that sold or distributed antimalarials in the previous week by outlet type, across national malaria burden stratification, 2015

Among all outlets with at least one antimalarial in stock on the day of the survey

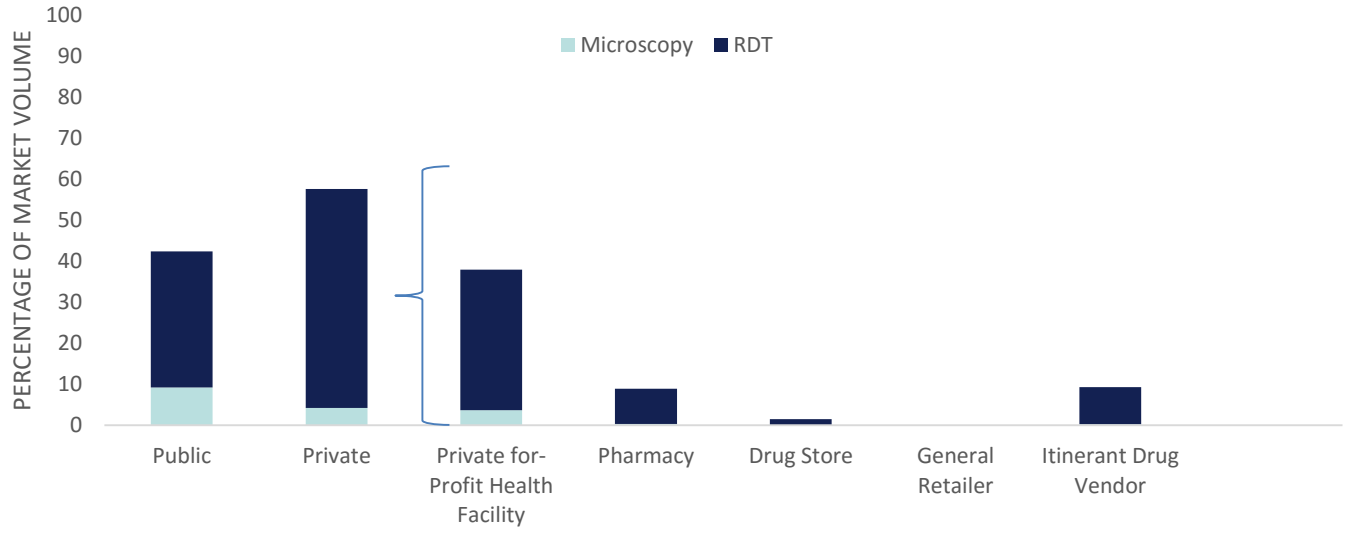


Across the research domains, percent of antimalarial-stocking outlets that sold or distributed antimalarials in the previous week was typically higher in Tier 1 than Tier 2, and most notable for CHW, private for-profit facilities and pharmacies.

Malaria Diagnostic Market Share

Figure 38: Malaria blood testing market share, 2015

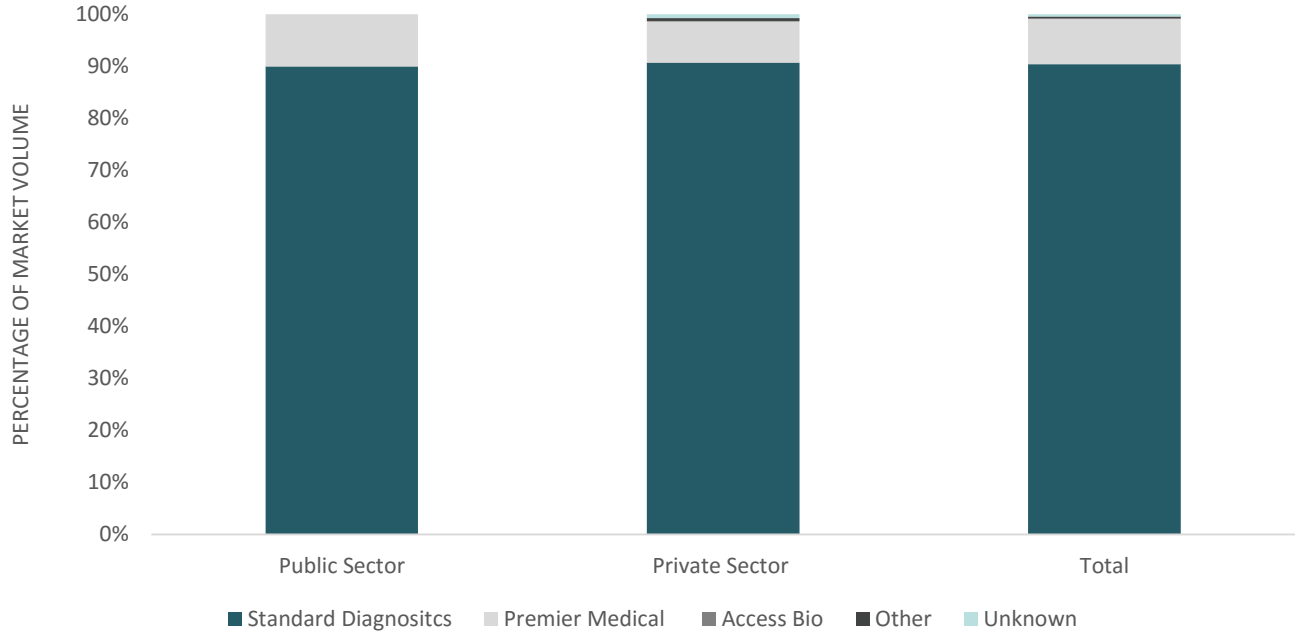
Relative market volume (sale/distribution) of malaria blood testing using RDTs and microscopy, by outlet type and type of test



The public sector accounted for 42% of all malaria blood tests performed at the national level, with most tests conducted in the private sector (58%). Across sectors, most blood tests performed in Cambodia were RDTs (87%).

Figure 39: Malaria RDT market share by manufacturer, across sector, 2015

Relative market volume (sale/distribution) of RDT according to different manufacturers, within the public sector, private sector, and total market

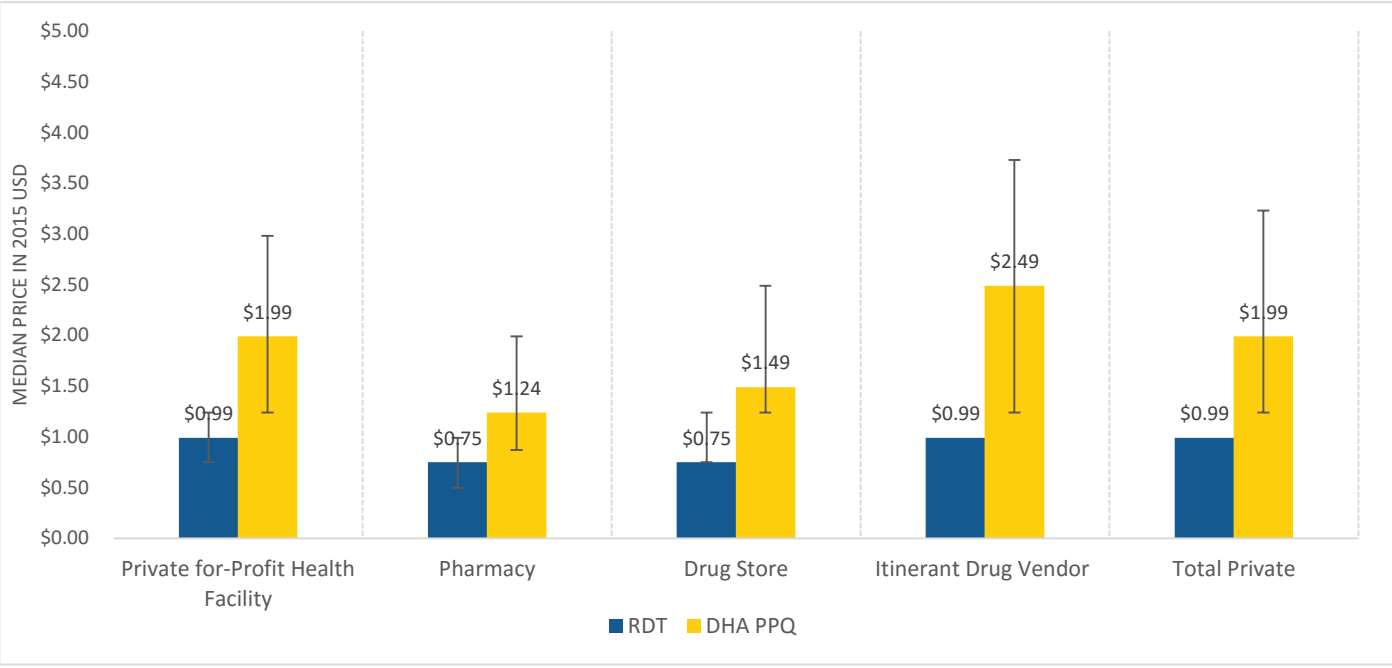


RDTs manufactured by Standard Diagnostics Inc. accounted for 90% of all RDTs performed within the public and private sector. Premier Medical Corporation LTD RDTs were distributed by 10% of the public and 8% of the private sector outlets.

ACT and Malaria Diagnostic Price

Figure 40: Median private sector consumer prices for malaria RDT testing for adults and DHA-PPQ for an adult (Eurartesim®), 2015

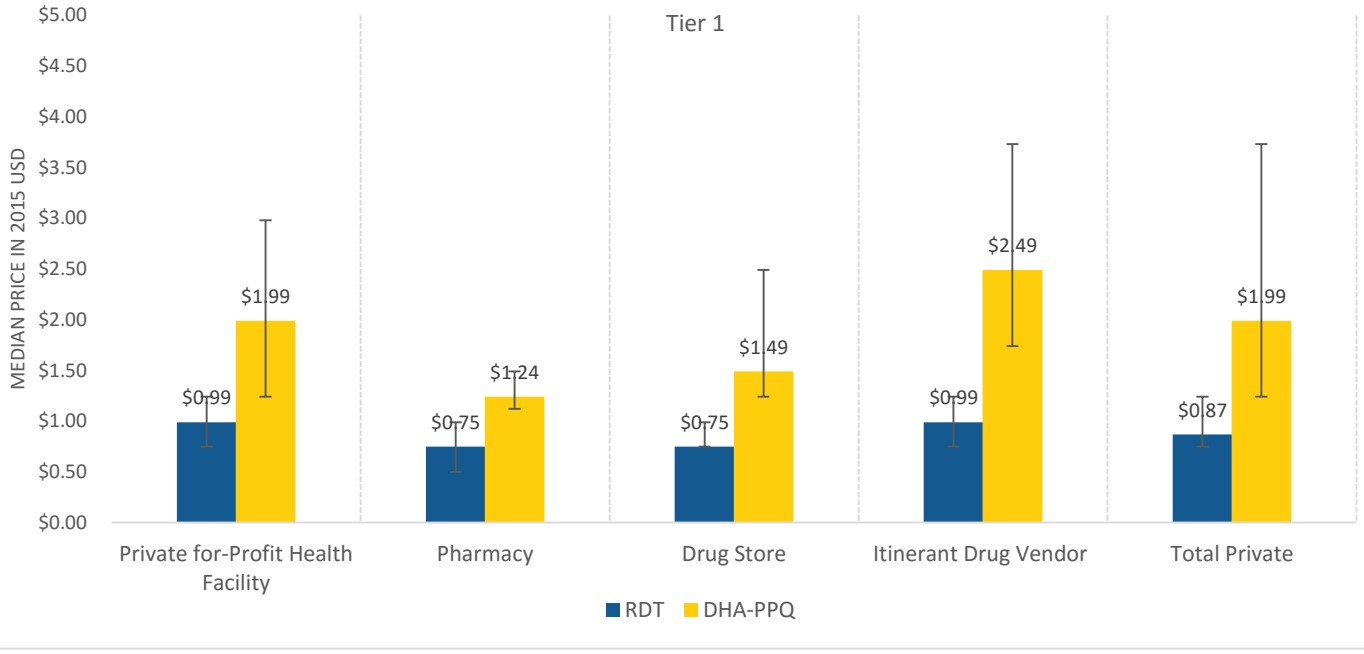
Among all RDTs and DHA-PPQ available within private for-profit health facilities, pharmacies, drug stores and itinerant drug vendors, in 2015 US dollars

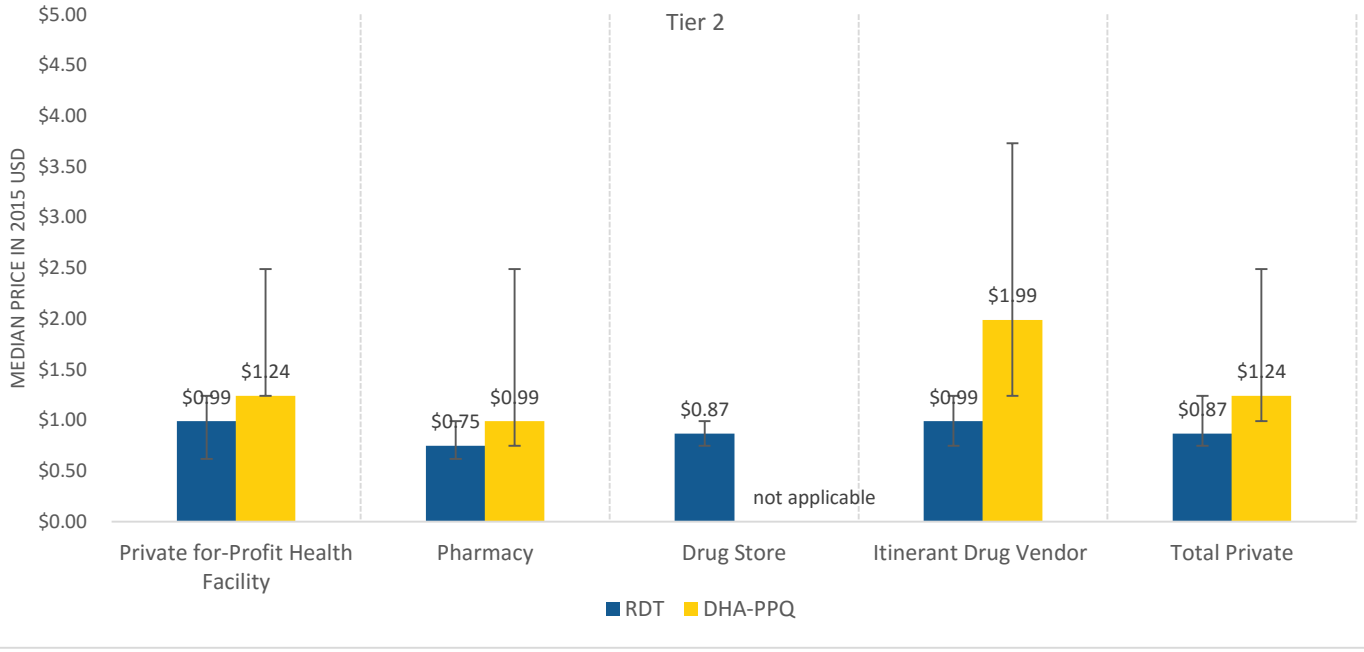


The median price of malaria RDT testing among private sector outlets in 2015 ranged between $0.75- $0.99. DHA-PPQ, the first-line treatment was more expensive than RDTs across all private sector outlet types. The median price of an AETD DHA-PPQ ranged from $1.24-$2.24.

Figure 41: Median private sector consumer prices for malaria RDT testing for adults and DHA-PPQ for an adult (Eurartesim®), across national malaria burden stratification, 2015

Among all RDTs and DHA-PPQ available within private for-profit health facilities, pharmacies, drug stores and itinerant drug vendors, by domain, in 2015 US dollars



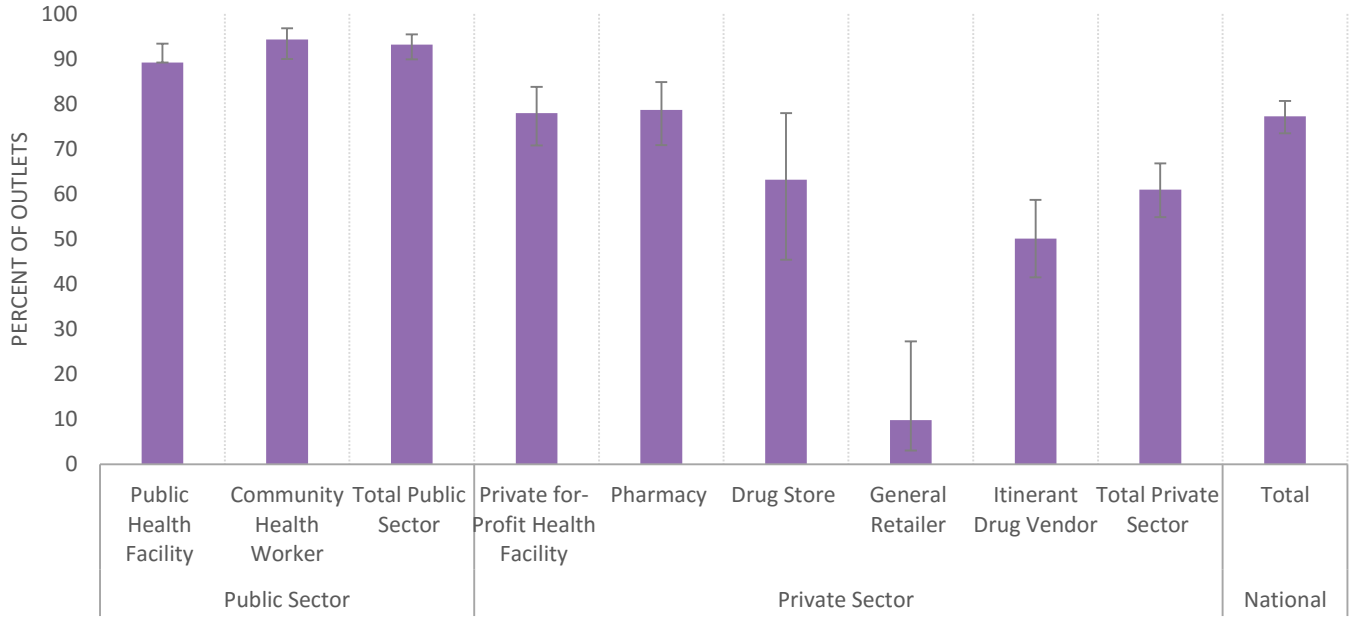


The median price of malaria RDT testing and AETD DHA-PPQ among private sector outlets was similar across domains, though in Tier 2 there is slightly less of a price differential between RDTs and DHA-PPQ among private for-profit facilities and pharmacies. No adult DHA-PPQ treatment was audited in drug stores in 2015 in Tier 2.

Provider Knowledge and Characteristics

Figure 42: Percentage of providers who correctly state the first-line treatment (DHA-PPQ or ASMQ FDC) for uncomplicated malaria, 2015

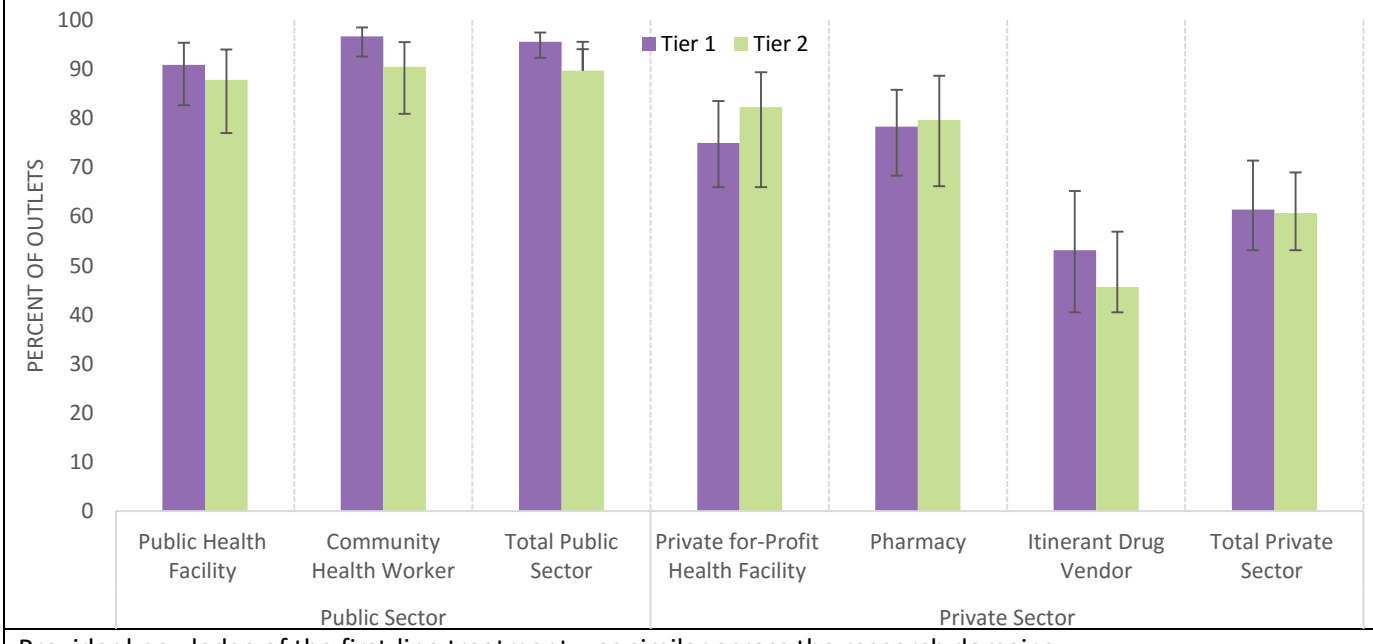
Among providers in outlets currently or stocking antimalarials in the past 3 months or malaria blood testing



Provider knowledge of the first-line treatment for uncomplicated malaria (either DHA-PPQ or ASMQ fixed-dose combination) was high among public health facilities (89%) and CHWs (94%), as well as among private for-profit facilities (78%) and pharmacies (79%). Provider knowledge was relatively lower among drug stores (63%), itinerant general retail outlets (10%) and drug vendors (50%). Most providers correctly stated the DHA-PPQ treatment. Less than 10% of providers across all outlets correctly cited ASMQ fixed-dose combination (data not shown).

Figure 43: Percentage of providers who correctly state the first-line treatment for uncomplicated malaria (DHA-PPQ or ASMQ FDC) across national malaria burden stratification, 2015

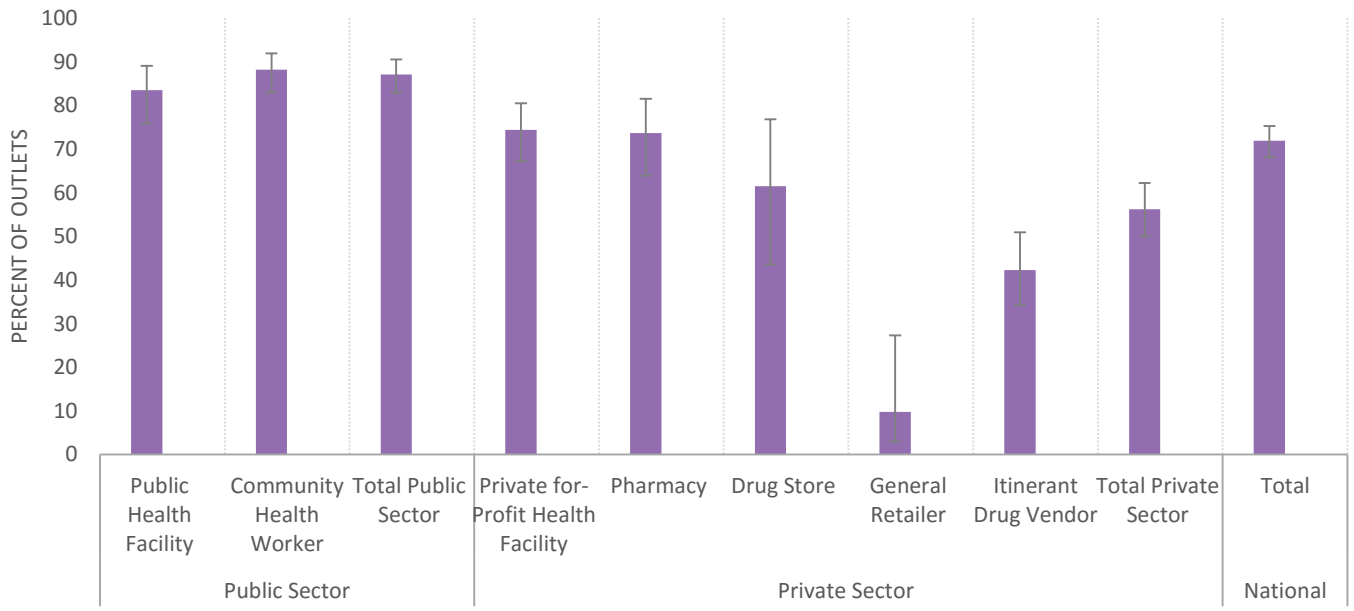
Among providers in outlets currently or stocking antimalarials in the past 3 months or malaria blood testing



Provider knowledge of the first-line treatment was similar across the research domains.

Figure 44: Percentage of providers who correctly state the first-line dosing regimen for uncomplicated malaria (DHA-PPQ or ASMQ FDC) for an adult, 2015

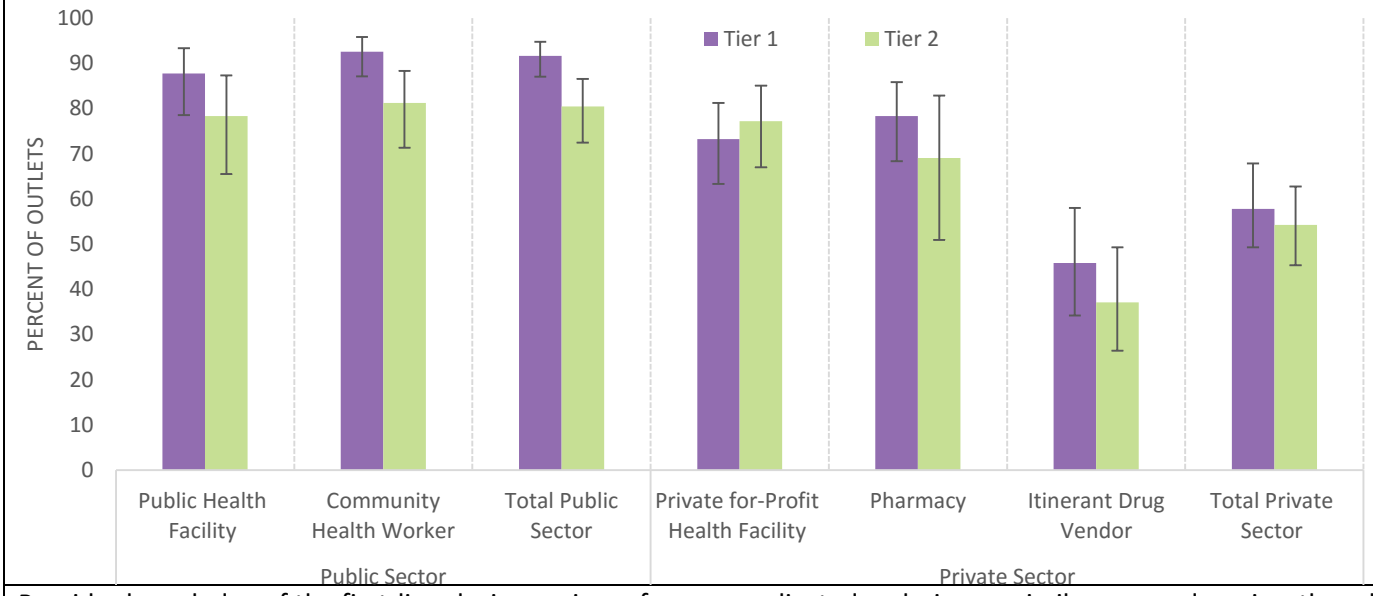
Among providers in outlets currently or stocking antimalarials in the past 3 months or malaria blood testing



Provider knowledge of the first-line dosing regimen for uncomplicated malaria was high among the public health sector (87%) in 2015. Almost three in four providers from private for-profit facility and pharmacies correctly stated the first-line dosing regimen. Provider knowledge was relatively lower among itinerant drug vendors (42%). It is noteworthy that providers were only able to state the dosing regimen for DHA-PPQ. None of the providers correctly stated this for ASMQ FDC.

Figure 45: Percentage of providers who correctly state the first-line dosing regimen for uncomplicated (DHA-PPQ or ASMQ FDC) malaria, across national malaria burden stratification, 2015

Among providers in outlets currently or stocking antimalarials in the past 3 months or malaria blood testing

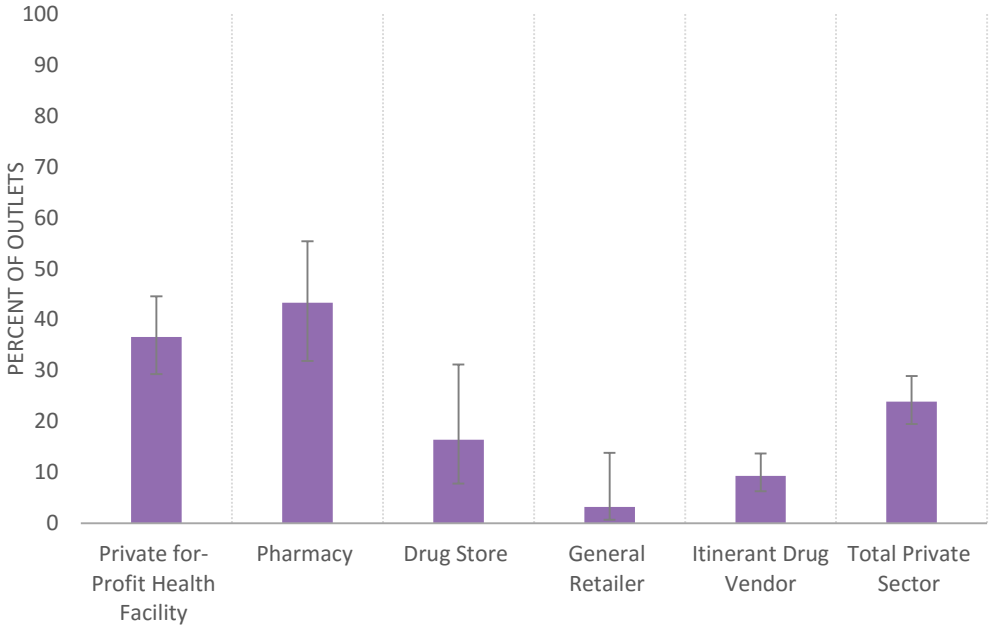


Provider knowledge of the first-line dosing regimen for uncomplicated malaria was similar across domains, though in most cases knowledge was slightly higher among providers in Tier 1.

Training, Supervision and Reporting in the Private Sector

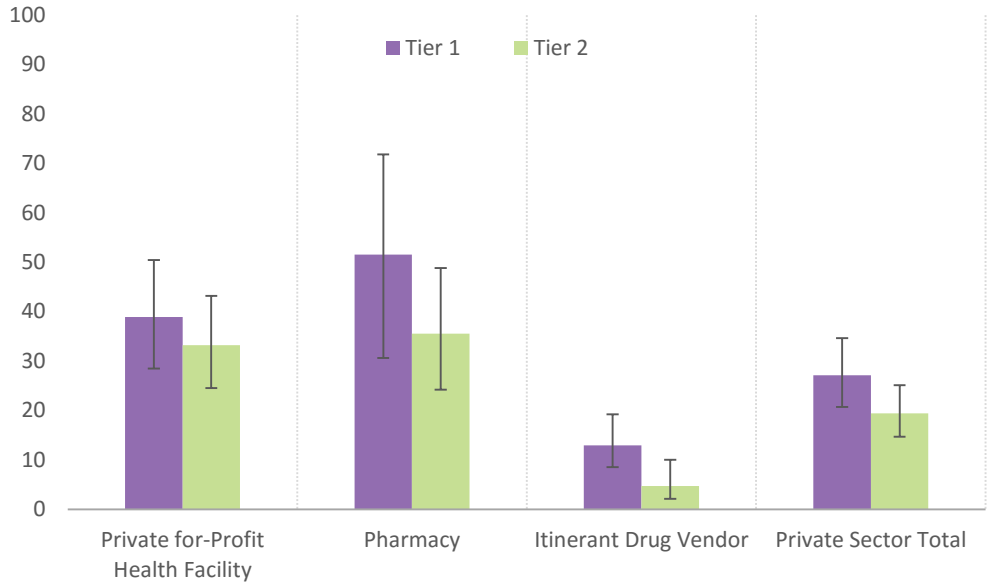
Figure 46: Percentage of providers who reportedly received training on malaria diagnosis (RDT or microscopy) by outlet type, 2015

Among providers in outlets providing antimalarials or malaria blood testing



Provider training on malaria diagnosis was reportedly most common among private for-profit facilities (37%) and pharmacies (43%). This provider malaria training was less common among drug stores, general retailers, and itinerant drug vendors (<20%).

Figure 49: Percentage of providers who reportedly received training on malaria diagnosis by outlet type, across national malaria burden stratification, 2015



Provider malaria training on malaria diagnosis was higher among outlets in Tier 1 as compared to Tier 2, and differences were most notable among pharmacies (52% versus 36% respectively) and itinerant drug vendors (13% versus 5% respectively).

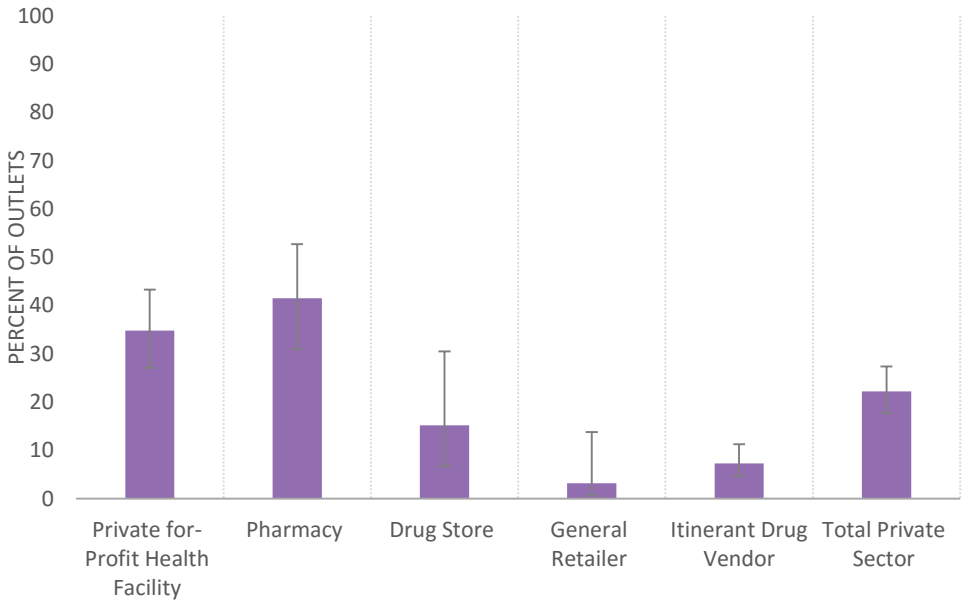
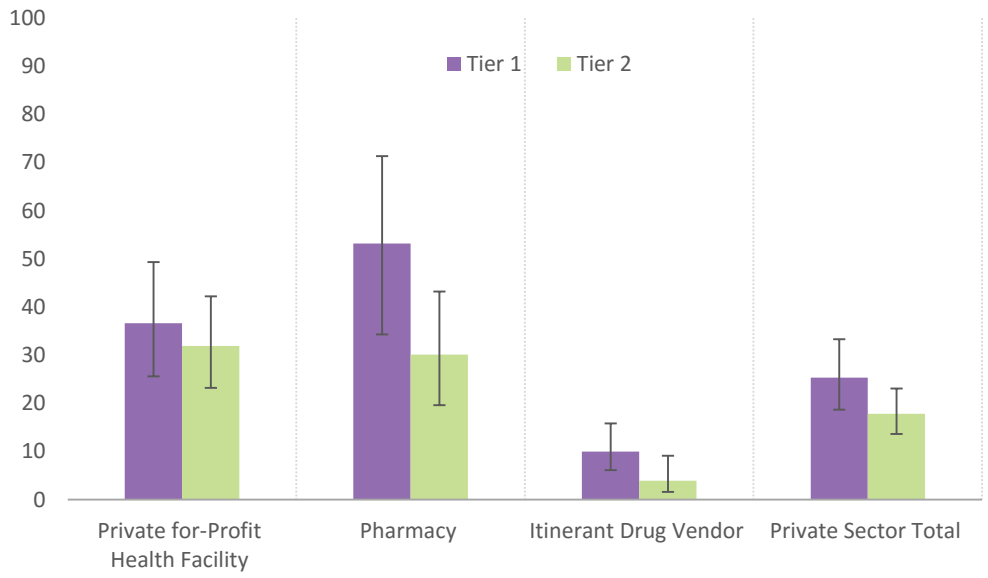
Figure 47: Percentage of providers who reportedly received training on national malaria treatment guidelines by outlet type, 2015	Figure 48: Percentage of providers who reportedly received training on the national malaria treatment guidelines, by outlet type, across national malaria burden stratification, 2015
Among providers in outlets providing antimalarials or malaria blood testing	
	
Provider training on malaria national treatment guidelines was most common among private for-profit facilities (35%) and pharmacies (42%). This was reportedly less frequent amoung drug stores, general retailers, and itinerant drug vendors (<15%).	Provider training on malaria was higher amoung outlets in Tier 1 as compared to Tier 2, and diffrences were most notable among pharmacies (53% versus 30% respectively) and itinerant drug vendors (13% versus 5% respectively).

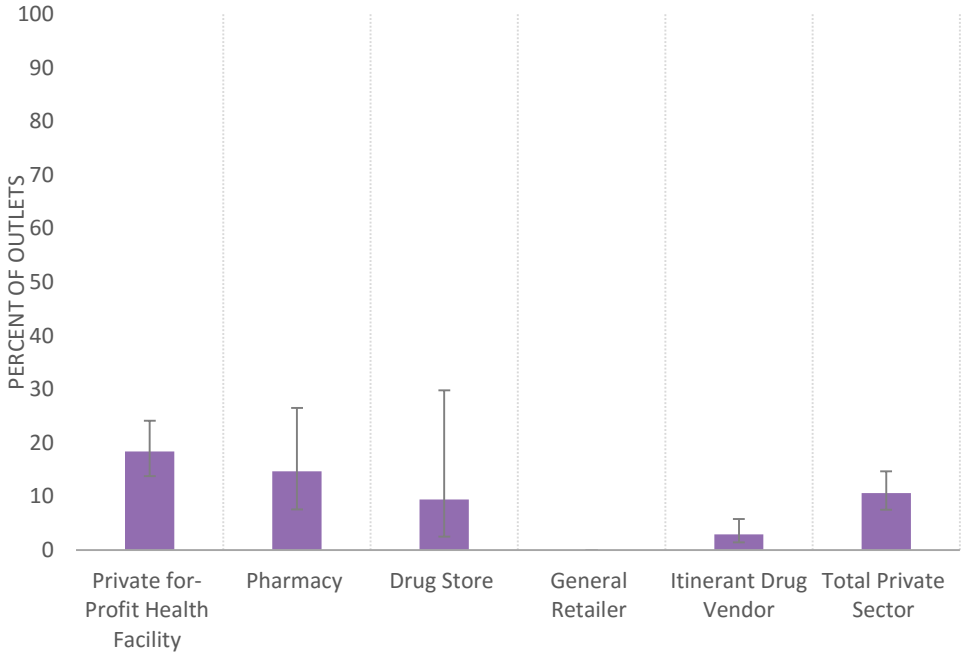
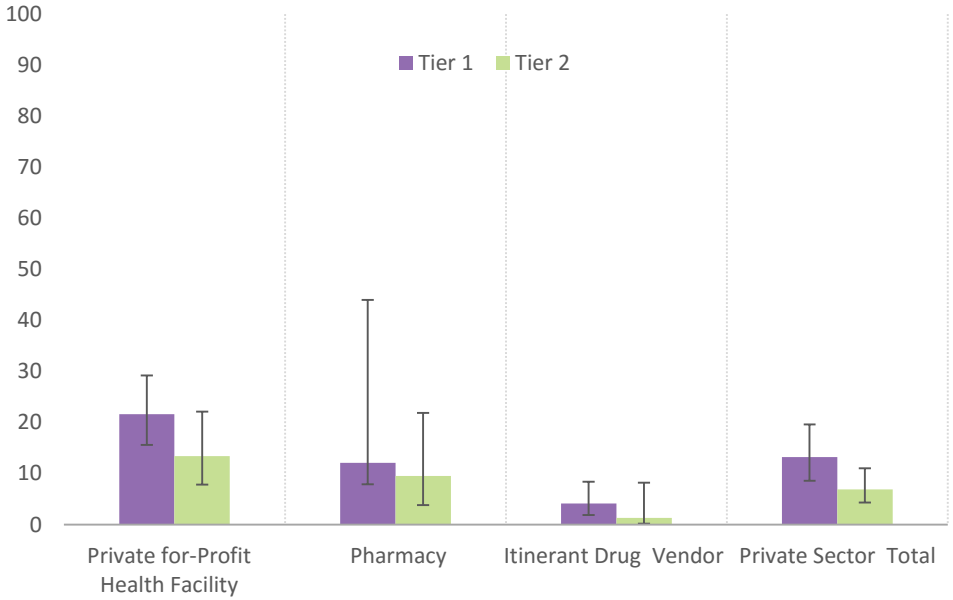
Figure 49: Percentage of providers who reportedly received a supervisory or regulatory visit within the past year by outlet type, 2015	Figure 50: Percentage of providers who reportedly received a supervisory or regulatory visit in the past year, by outlet type, across national malaria burden stratification, 2015
Among providers in outlets providing antimalarials or malaria blood testing	
	
Receiving provider supervisory or regulatory visits was reportedly uncommon in the private sector and across all outlet types (<20%) in 2015 .	Outlets that reportedly received a supervisory or regulatory visit was generally similar across domains, though slightly higher among Tier 1 outlets.

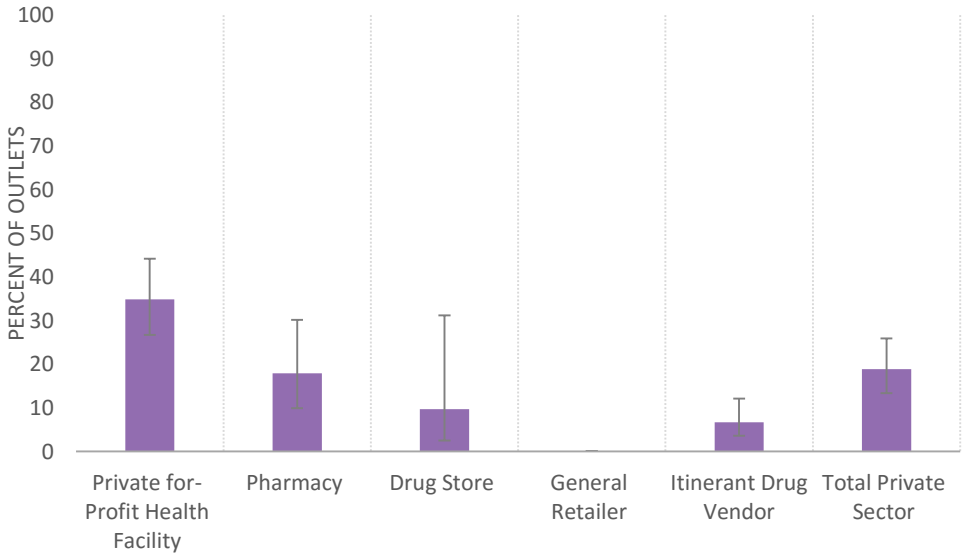
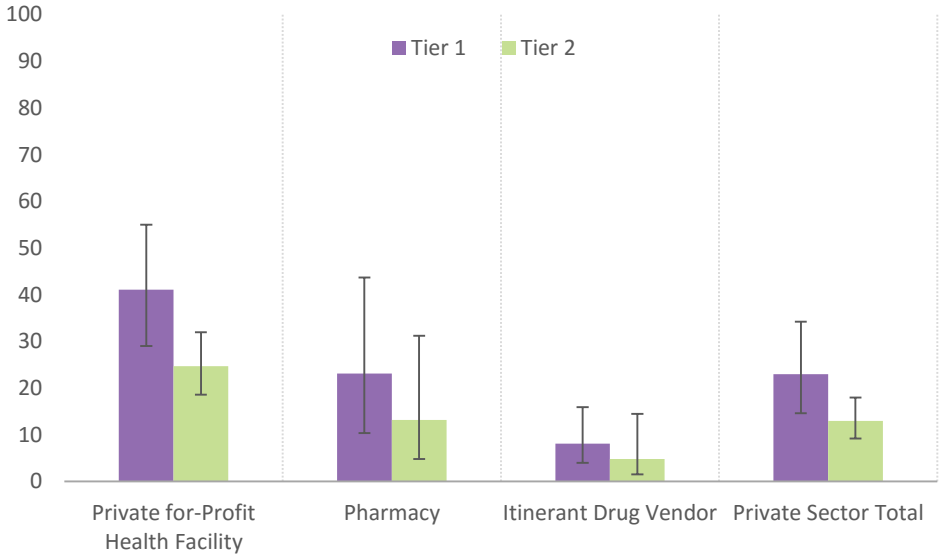
Figure 51: Percentage of providers who reportedly keep records on the number of patients tested/treated for malaria by outlet type, 2015	Figure 52: Percentage of providers who reportedly keep records on the number of patients tested and treated for malaria, by outlet type, across national malaria burden stratification, 2015
Among providers in outlets providing antimalarials or malaria blood testing	
	
Around 35% of private for-profit facilities report keeping records on the number of patients trested or treated for malaria. This is lower among pharmacies (18%), drug stores (10%) and itinerant drug vendors (7%).	Provider record keeping was higher among outlets in Tier 1 as compared to Tier 2, and most notable among private for-profit facilities (41% versus 25% respectively) and pharmacies (23% versus 13% respectively).

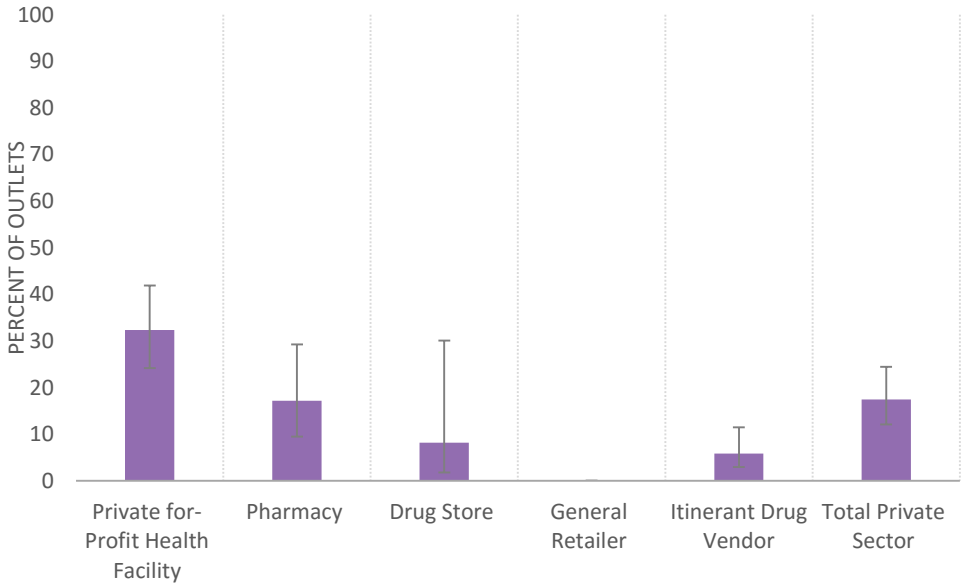
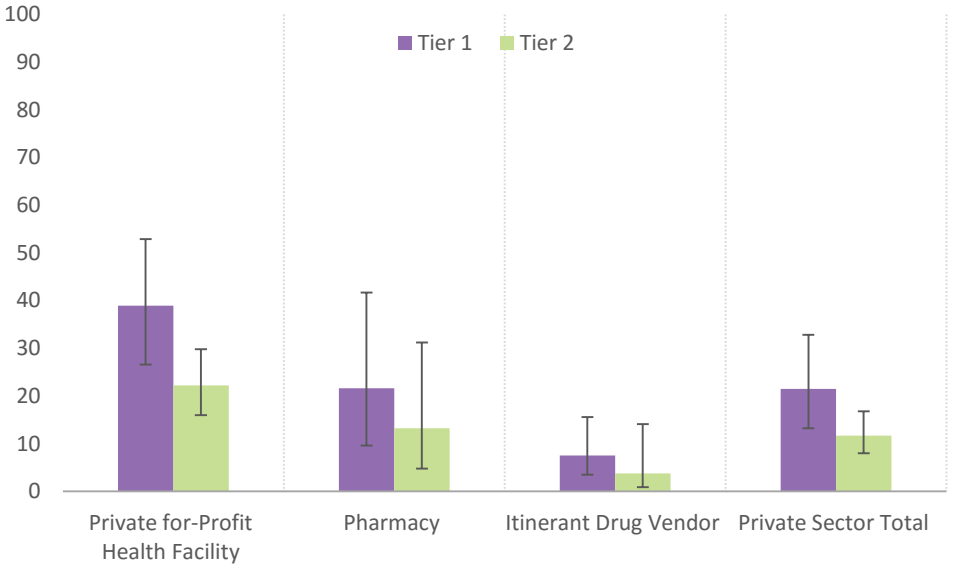
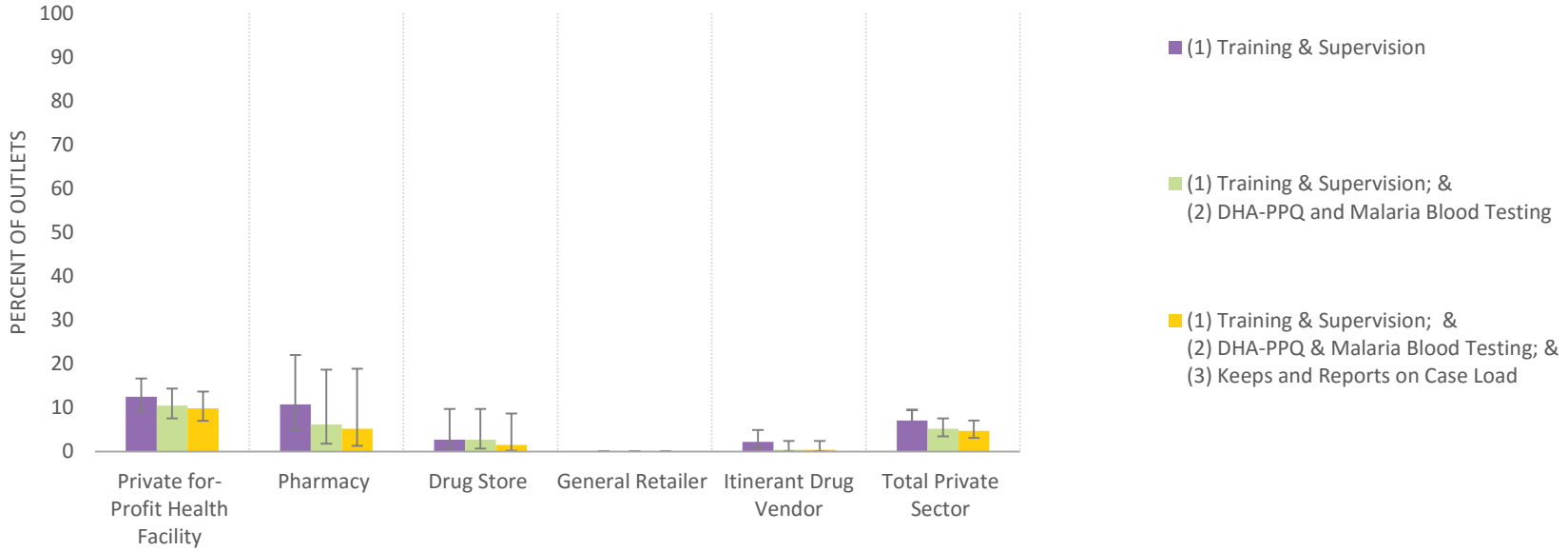
Figure 53: Percentage of providers who reportedly report on the numbers of patients tested/treated to the government or non-government organization by outlet type, 2015	Figure 54: Percentage of providers who reportedly report on the numbers of patients tested/treated to the government or non-government organizations, by outlet type, across national malaria burden stratification, 2015
Among providers in outlets providing antimalarials or malaria blood testing	
	
Around 32% of private for-profit facilities and 17% of pharmacies reportedly provide numbers on the patients tested or treated to the government or non-government organisation, as compared to less than 10% of drug stores and itinerant drug vendors.	Provider reporting on patients tested or treated for malaria to the government or non-governmental organizations was higher among outlets in Tier 1 as compared to Tier 2, and most notable among private for-profit facilities (39% versus 22% respectively) and pharmacies (22% versus 13% respectively).

Figure 55: Percentage of providers that reportedly: receive provider training and supervision and keep records on malaria case load data and report on these records and outlets have DHA-PPQ and malaria blood testing in stock, 2015

Among providers in outlets providing antimalarials or malaria blood testing



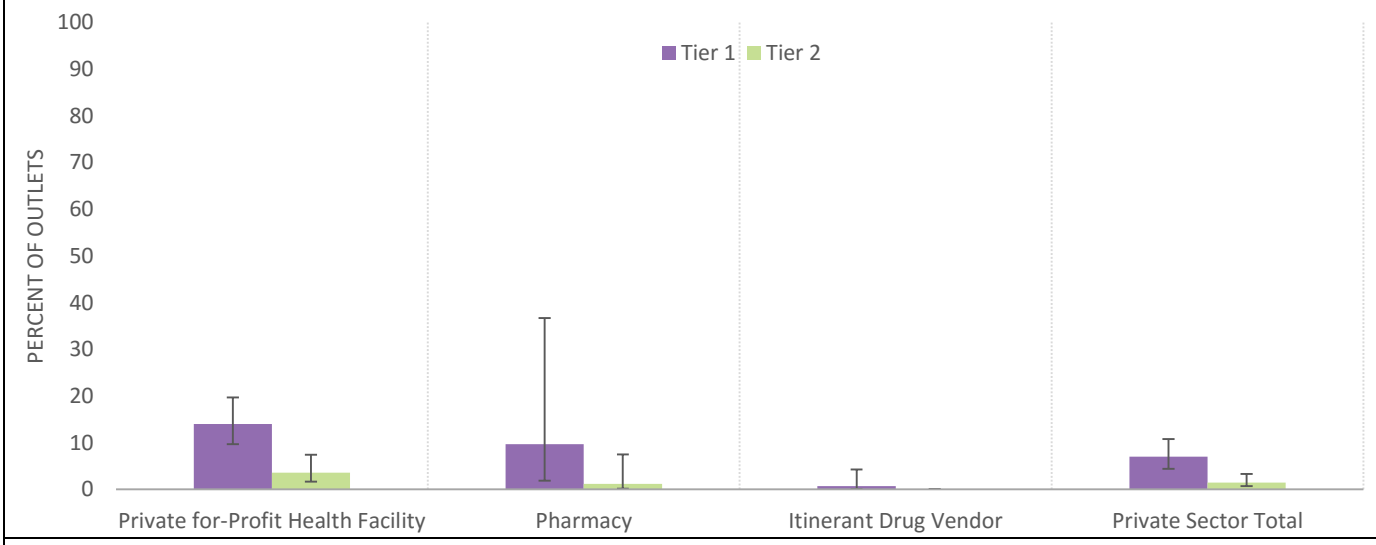
The percentage of outlets that reportedly received training and supervision was overall low, and highest among private for-profit facilities (13%) and pharmacies (11%).

The percentage of outlets that reportedly received training and supervision, and had the first-line treatment and malaria blood testing in stock, was only 11% in private for-profit facilities and less than 7% across all other outlet types.

Less than 10% of all private sector outlet types met the indicator criteria.

Figure 59: Percentage of providers that reportedly: receive provider training and supervision and keep records on malaria case load data and report on these records; and outlets have DHA-PPQ and malaria blood testing in stock, across national malaria burden stratification, 2015

Among providers in outlets providing antimalarials or malaria blood testing, by domain



Most of the outlets that meet the indicator criteria are in Tier 1 as compared to Tier 2. This is most notable for private for-profit facilities (14% versus 4% respectively) and pharmacies (10% versus 1% respectively).

Results Section A: Core Indicators

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

	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public / Not- For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	N=173	N=430	N=1	N=604	N=668	N=290	N=338	N=23,840	N=924	N=26,060	N=26,664
Any antimalarial at the time of survey visit	77.9 (69.1, 84.8)	74.3 (66.4, 80.9)	0.0 -	75.2 (68.8, 80.6)	31.0 (26.1, 36.3)	20.5 (14.8, 27.6)	6.6 (4.2, 10.1)	0.2 (0.1, 0.4)	15.1 (11.4, 19.8)	1.8 (1.5, 2.1)	3.9 (3.4, 4.4)
Any ACT	77.7 (68.9, 84.5)	74.3 (66.4, 80.9)	0.0 -	75.1 (68.7, 80.6)	29.2 (24.3, 34.7)	19.3 (13.7, 26.4)	4.9 (2.9, 8.2)	0.1 (0.0, 0.3)	11.5 (8.2, 15.8)	1.5 (1.2, 1.8)	3.6 (3.1, 4.1)
Any national first-line ACT Ψ	76.5 (67.8, 83.5)	74.1 (66.2, 80.7)	0.0 -	74.7 (68.3, 80.1)	27.9 (23.1, 33.2)	17.5 (12.1, 24.7)	3.1 (1.6, 6.1)	<0.1 (0.0, <0.1)	9.5 (6.9, 13.0)	1.3 (1.0, 1.5)	3.3 (2.9, 3.9)
Dihydroartemisinin Piperaquine (DHA-PPQ)	76.5 (67.8, 83.5)	74.1 (66.2, 80.7)	0.0 -	74.7 (68.3, 80.1)	27.9 (23.1, 33.2)	17.5 (12.1, 24.7)	3.1 (1.6, 6.1)	<0.1 (0.0, <0.1)	9.5 (6.9, 13.0)	1.3 (1.0, 1.5)	3.3 (2.9, 3.9)
Any Eurartesim β	75.8 (67.1, 82.8)	73.7 (65.9, 80.3)	0.0 -	74.2 (67.9, 79.6)	27.6 (22.8, 32.9)	17.5 (12.1, 24.7)	3.1 (1.6, 6.1)	<0.1 (0.0, <0.1)	9.3 (6.7, 12.7)	1.2 (1.0, 1.5)	3.3 (2.9, 3.8)
Eurartesim adult 36-74kg	73.7 (64.9, 80.9)	59.7 (50.4, 68.4)	0.0 -	63.2 (55.4, 70.3)	23.0 (19.0, 27.7)	14.4 (9.5, 21.1)	2.3 (1.1, 4.7)	<0.1 (0.0, <0.1)	7.4 (5.3, 10.3)	1.0 (0.8, 1.2)	2.8 (2.4, 3.2)
Eurartesim child 7-23 kg	25.5 (18.8, 33.6)	26.7 (20.4, 34.2)	0.0 -	26.4 (21.1, 32.5)	4.8 (3.2, 7.3)	4.0 (1.7, 9.4)	0.2 (0.0, 0.9)	0.0 -	0.8 (0.3, 2.1)	0.2 (0.1, 0.3)	0.9 (0.7, 1.2)
Eurartesim child 13-23kg	5.9 (3.2, 10.5)	4.3 (2.5, 7.1)	0.0 -	4.7 (3.1, 7.1)	3.5 (2.1, 5.9)	0.0 -	0.7 (0.1, 4.3)	0.0 -	0.8 (0.3, 2.0)	0.1 (0.1, 0.2)	0.3 (0.2, 0.4)
Eurartesim child 24-35kg	29.1 (21.1, 38.7)	23.3 (17.0, 31.0)	0.0 -	24.7 (19.1, 31.3)	8.5 (6.2, 11.5)	5.9 (3.2, 10.8)	0.0 -	0.0 -	1.5 (0.8, 3.1)	0.3 (0.2, 0.5)	1.0 (0.8, 1.3)
Artesunate Mefloquine (ASMQ) Ω	2.0 (0.7, 5.5)	0.7 (0.2, 2.6)	0.0 -	1.0 (0.4, 2.4)	0.4 (0.2, 1.3)	0.7 (0.2, 2.4)	0.8 (0.3, 2.5)	<0.1 (0.0, <0.1)	1.0 (0.5, 1.9)	0.1 (0.0, 0.1)	0.1 (0.1, 0.2)
Artemisinin Piperaquine	2.2 (0.9, 5.1)	0.0 -	0.0 -	0.5 (0.2, 1.3)	2.3 (1.1, 5.0)	1.1 (0.4, 3.1)	1.0 (0.3, 3.4)	0.0 (0.0, 0.3)	2.2 (0.9, 5.2)	0.2 (0.1, 0.4)	0.2 (0.1, 0.4)
Quality-Assured ACT (QA ACT) Δ	75.3 (66.6, 82.3)	73.1 (65.4, 79.6)	0.0 -	73.6 (67.4, 79.0)	26.7 (22.2, 31.7)	16.5 (11.2, 23.8)	3.1 (1.6, 6.1)	<0.1 (0.0, <0.1)	9.3 (6.7, 12.7)	1.2 (1.0, 1.5)	3.3 (2.8, 3.8)
Non-quality-assured ACT (non-QA ACT)	4.7 (2.6, 8.5)	3.7 (2.0, 7.0)	0.0 -	4.0 (2.5, 6.3)	4.0 (2.4, 6.8)	2.7 (1.0, 7.6)	1.8 (0.8, 4.1)	0.1 (0.0, 0.3)	3.3 (1.8, 5.9)	0.3 (0.2, 0.5)	0.4 (0.3, 0.6)
Any non-artemisinin therapy	8.9 (4.9, 15.5)	0.0 -	0.0 -	2.2 (1.3, 3.9)	1.9 (0.9, 3.7)	1.6 (0.6, 4.1)	1.8 (0.9, 3.6)	0.1 (0.1, 0.2)	4.8 (3.0, 7.6)	0.4 (0.3, 0.5)	0.4 (0.3, 0.6)
Chloroquine	0.0 -	0.0 -	0.0 -	0.0 -	1.4 (0.6, 3.3)	1.6 (0.6, 4.1)	1.3 (0.6, 2.8)	0.1 (0.1, 0.2)	4.6 (2.9, 7.5)	0.4 (0.2, 0.5)	0.3 (0.2, 0.5)
Other non-artemisinin therapy ^	8.9 (4.9, 15.5)	0.0 -	0.0 -	2.2 (1.3, 3.9)	0.4 (0.1, 1.6)	0.0 -	0.4 (0.1, 1.6)	0.0 -	0.3 (0.1, 0.8)	0.0 (0.0, 0.1)	0.1 (0.1, 0.1)

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

	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public / Not- For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	N=173	N=430	N=1	N=604	N=668	N=290	N=338	N=23,840	N=924	N=26,060	N=26,664
Oral artemisinin monotherapy	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	<0.1 (0.0, <0.1)	0.0 -	<0.1 (0.0, <0.1)	<0.1 (0.0, <0.1)
Non-oral artemisinin monotherapy	9.9 (5.7, 16.7)	0.0 -	0.0 -	2.5 (1.4, 4.5)	2.4 (1.3, 4.5)	0.0 -	0.0 -	0.0 -	1.1 (0.3, 3.8)	0.1 (0.1, 0.2)	0.2 (0.1, 0.3)
Any treatment for severe malaria	9.9 (5.7, 16.7)	0.0 -	0.0 -	2.5 (1.4, 4.5)	2.4 (1.3, 4.5)	0.0 -	0.0 -	0.0 -	1.3 (0.4, 3.8)	0.1 (0.1, 0.2)	0.2 (0.1, 0.3)
Artesunate IV/IM #	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.1 (0.0, 0.6)	<0.1 (0.0, <0.1)	<0.1 (0.0, <0.1)
Artemether IV/IM	9.9 (5.7, 16.7)	0.0 -	0.0 -	2.5 (1.4, 4.5)	2.4 (1.3, 4.5)	0.0 -	0.0 -	0.0 -	1.0 (0.2, 3.9)	0.1 (0.0, 0.2)	0.2 (0.1, 0.3)
Quinine IV/IM	0.6 (0.1, 3.8)	0.0 -	0.0 -	0.2 (0.0, 1.0)	0.0 -	0.0 -	0.0 -	0.0 -	0.2 (0.0, 0.7)	<0.1 (0.0, <0.1)	<0.1 (0.0, <0.1)
Second-line treatment											
Quinine + Doxycyline / Tetracycline £	7.6 (4.0, 14.0)	0.0 -	0.0 -	1.9 (1.0, 3.6)	0.1 (0.0, 0.6)	0.0 -	0.4 (0.1, 1.6)	0.0 -	0.0 -	<0.1 (0.0, <0.1)	<0.1 (0.0, <0.1)
Any antimalarial that is not indicated within national treatment guidelines ¥	4.7 (2.4, 8.7)	0.7 (0.2, 2.6)	0.0 -	1.7 (0.9, 3.1)	4.0 (2.4, 6.5)	3.3 (1.9, 5.7)	3.0 (1.6, 5.3)	0.2 (0.1, 0.4)	7.3 (4.8, 10.8)	0.6 (0.4, 0.8)	0.6 (0.5, 0.8)

* The denominator includes 34 outlets that met screening criteria for a full interview but did not complete the interview (were not interviewed or completed a partial interview).

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

B At the time of the 2015 Cambodia ACTwatch outlet survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

Ω No fixed-dose combination artesunate mefloquine was audited during the 2015 Cambodia ACTwatch outlet survey.

Δ All QA ACT audited in Cambodia had the "green leaf" logo.

^ Other non-artemisinin therapy includes mefloquine and quinine.

At the time of the 2015 Cambodia ACTwatch outlet survey, artesunate IV/IM was the first-line treatment for severe malaria.

£ At the time of the 2015 Cambodia ACTwatch outlet survey, quinine and doxycycline/tetracycline was the second-line treatment for uncomplicated *P. falciparum* and *P. vivax* malaria.

¥ See Annex 2

Source: ACTwatch Outlet Survey, Cambodia, 2015.

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

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	N=137	N=330	N=467	N=186	N=45	N=22	N=29	N=109	N=391	N=858
Any ACT	99.7 (98.0, 99.9)	100.0 -	99.9 (99.5, 100.0)	94.3 (87.6, 97.5)	94.2 (82.3, 98.3)	75.1 (55.0, 88.1)	35.8 (10.3, 73.1)	76.0 (63.4, 85.2)	82.2 (75.8, 87.2)	92.0 (88.8, 94.3)
Any national first-line ACT Ψ	98.2 (95.4, 99.3)	99.7 (98.1, 99.9)	99.3 (98.3, 99.7)	90.0 (82.5, 94.5)	85.6 (74.3, 92.4)	47.9 (27.8, 68.6)	2.8 (0.5, 15.6)	62.8 (51.7, 72.7)	70.9 (63.1, 77.6)	86.6 (82.5, 89.8)
Dihydroartemisinin Piperaquine (DHA-PPQ)	98.2 (95.4, 99.3)	99.7 (98.1, 99.9)	99.3 (98.3, 99.7)	90.0 (82.5, 94.5)	85.6 (74.3, 92.4)	47.9 (27.8, 68.6)	2.8 (0.5, 15.6)	62.8 (51.7, 72.7)	70.9 (63.1, 77.6)	86.6 (82.5, 89.8)
Any Eurartesim β	97.2 (93.4, 98.8)	99.1 (97.9, 99.6)	98.6 (97.5, 99.3)	89.0 (81.6, 93.6)	85.6 (74.3, 92.4)	47.9 (27.8, 68.6)	2.8 (0.5, 15.6)	61.3 (50.4, 71.3)	70.0 (62.1, 76.8)	85.8 (81.7, 89.1)
Eurartesim adult 36-74kg	94.5 (89.1, 97.3)	80.3 (71.7, 86.8)	84.0 (77.1, 89.1)	74.3 (66.7, 80.7)	70.2 (53.6, 82.8)	34.5 (17.6, 56.6)	2.8 (0.5, 15.6)	48.9 (38.2, 59.7)	57.3 (50.1, 64.3)	72.1 (66.6, 77.0)
Eurartesim child 7-23 kg	32.7 (24.6, 42.0)	35.9 (27.8, 45.0)	35.1 (28.3, 42.6)	15.6 (10.9, 21.7)	19.7 (9.1, 37.5)	2.3 (0.4, 12.9)	0.0 -	5.3 (2.2, 12.2)	10.7 (7.5, 15.0)	24.2 (19.8, 29.1)
Eurartesim child 13-23kg	7.6 (4.2, 13.4)	5.7 (3.5, 9.4)	6.2 (4.1, 9.3)	11.4 (7.1, 18.0)	0.0 -	11.1 (1.9, 44.7)	0.0 -	5.5 (2.2, 13.3)	7.3 (4.5, 11.4)	6.7 (4.7, 9.4)
Eurartesim child 24-35kg	37.4 (27.9, 48.0)	31.3 (23.2, 40.8)	32.9 (25.7, 41.0)	27.4 (21.3, 34.3)	28.8 (16.8, 44.8)	0.0 -	0.0 -	10.2 (5.1, 19.3)	18.2 (13.7, 23.7)	26.3 (21.5, 31.7)
Artesunate Mefloquine (ASMQ) Ω	2.5 (0.9, 7.0)	0.9 (0.2, 3.5)	1.3 (0.6, 3.1)	1.4 (0.5, 4.1)	3.4 (0.9, 12.1)	12.4 (4.0, 32.4)	5.6 (1.3, 21.0)	6.6 (3.4, 12.4)	4.2 (2.6, 6.7)	2.6 (1.7, 4.0)
Artemisinin Piperaquine	2.8 (1.2, 6.5)	0.0 -	0.7 (0.3, 1.7)	7.5 (3.4, 15.5)	5.2 (1.8, 14.3)	14.8 (4.2, 40.9)	27.4 (5.2, 72.4)	14.4 (7.0, 27.5)	11.6 (6.3, 20.4)	5.6 (3.1, 9.8)
Quality-Assured ACT (QA ACT) Δ	96.6 (92.8, 98.5)	98.3 (96.5, 99.2)	97.9 (96.4, 98.8)	86.0 (78.7, 91.1)	80.8 (63.0, 91.2)	47.9 (27.8, 68.6)	2.8 (0.5, 15.6)	61.3 (50.4, 71.3)	68.2 (60.5, 75.0)	84.6 (80.6, 87.9)
Non-quality-assured ACT (non-QA ACT)	6.1 (3.3, 10.8)	5.0 (2.6, 9.3)	5.3 (3.3, 8.4)	13.0 (7.9, 20.6)	13.4 (4.6, 33.4)	27.2 (11.9, 50.7)	33.0 (8.3, 72.8)	21.7 (14.0, 32.0)	18.3 (12.3, 26.3)	11.1 (8.2, 14.9)
Any non-artemisinin therapy	11.4 (6.4, 19.5)	0.0 -	3.0 (1.7, 5.1)	6.0 (2.9, 11.8)	7.7 (2.9, 19.1)	27.3 (13.7, 46.9)	67.1 (27.6, 91.6)	31.7 (21.0, 44.7)	21.0 (15.2, 28.1)	11.0 (8.3, 14.4)
Chloroquine	0.0 -	0.0 -	0.0 -	4.6 (2.0, 10.3)	7.7 (2.9, 19.1)	20.5 (9.7, 38.1)	67.1 (27.6, 91.6)	30.7 (20.1, 43.7)	19.7 (14.1, 26.9)	8.8 (6.2, 12.4)
Other non-artemisinin therapy ^	11.4 (6.4, 19.5)	0.0 -	3.0 (1.7, 5.1)	1.3 (0.3, 5.4)	0.0 -	6.8 (1.9, 21.4)	0.0 -	1.8 (0.6, 5.2)	1.5 (0.7, 3.3)	2.3 (1.5, 3.6)
Oral artemisinin monotherapy	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	2.3 (0.4, 12.7)	0.0 -	0.2 (0.0, 1.2)	0.1 (0.0, 0.6)
Non-oral artemisinin monotherapy	12.7 (7.4, 21.0)	0.0 -	3.3 (1.8, 5.9)	7.7 (4.0, 14.1)	0.0 -	0.0 -	0.0 -	7.2 (2.2, 21.2)	5.6 (3.1, 10.0)	4.3 (2.7, 6.8)

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

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	N=137	N=330	N=467	N=186	N=45	N=22	N=29	N=109	N=391	N=858
Any treatment for severe malaria	12.7 (7.4, 21.0)	0.0 -	3.3 (1.8, 5.9)	7.7 (4.0, 14.1)	0.0 -	0.0 -	0.0 -	8.4 (3.1, 21.1)	6.0 (3.4, 10.3)	4.5 (2.9, 7.0)
Artesunate IV/IM #	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.7 (0.1, 4.0)	0.2 (0.0, 1.3)	0.1 (0.0, 0.6)
Artemether IV/IM	12.7 (7.4, 21.0)	0.0 -	3.3 (1.8, 5.9)	7.7 (4.0, 14.1)	0.0 -	0.0 -	0.0 -	6.6 (1.8, 21.4)	5.4 (2.9, 9.8)	4.3 (2.7, 6.7)
Quinine IV/IM	0.8 (0.1, 4.9)	0.0 -	0.2 (0.0, 1.3)	0.0 -	0.0 -	0.0 -	0.0 -	1.2 (0.3, 4.5)	0.4 (0.1, 1.5)	0.3 (0.1, 0.8)
Second-line treatment										
Quinine + Doxycyline / Tetracycline £	9.7 (5.1, 17.7)	0.0 -	2.5 (1.4, 4.7)	0.3 (0.1, 2.0)	0.0 -	6.8 (1.9, 21.4)	0.0 -	0.0 -	0.5 (0.2, 1.4)	1.6 (0.9, 2.8)
Any antimalarial that is not indicated within national treatment guidelines ¥	6.0 (3.1, 11.1)	0.9 (0.2, 3.5)	2.2 (1.2, 4.0)	12.8 (7.8, 20.4)	16.3 (9.0, 27.7)	45.3 (26.1, 66.1)	100.0 -	47.9 (37.8, 58.2)	33.9 (26.3, 42.4)	16.4 (12.7, 20.9)

* Antimalarial-stocking outlets have at least one antimalarial in stock on the day of the survey, verified by presence of at least one antimalarial recorded in the antimalarial audit sheet. The denominator includes 10 outlets that met screening criteria for a full interview but did not complete the interview (were not interviewed or completed a partial interview).

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

B At the time of the 2015 Cambodia ACTwatch outlet survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

Ω No fixed-dose combination artesunate mefloquine was audited during the 2015 Cambodia ACTwatch outlet survey.

Δ All QA ACT audited in Cambodia had the "green leaf" logo.

^ Other non-artemisinin therapy includes mefloquine and quinine.

At the time of the 2015 Cambodia ACTwatch outlet survey, artesunate IV/IM was the first-line treatment for severe malaria.

£ At the time of the 2015 Cambodia ACTwatch outlet survey, quinine and doxycycline/tetracycline was the second-line treatment for uncomplicated *P. falciparum* and *P. vivax* malaria.

¥ See Annex 2

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A3: Provision of malaria blood testing and antimalarials in the past week, among outlets with testing/antimalarials available, by outlet type

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
Proportion of outlets with any antimalarial in stock that:	N=137	N=330	N=467	N=185	N=45	N=22	N=23	N=106	N=381	N=848
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Distributed antimalarials in the past week	30.3 (22.5, 39.4)	11.9 (7.8, 17.8)	16.7 (12.7, 21.7)	27.2 (20.2, 35.5)	28.4 (15.6, 45.9)	2.9 (0.5, 16.1)	15.4 (4.5, 41.4)	24.3 (18.2, 31.6)	24.3 (19.1, 30.3)	20.0 (16.2, 24.5)
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]
Number of AETDs distributed in the past week	0.0 [0.0-1.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.5]	0.0 [0.0-0.3]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]
Proportion of outlets with first-line ACT in stock that:	N=133	N=329	N=462	N=170	N=37	N=10	N=1	N=71	N=289	N=751
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Distributed first-line ACT in the past week Ψ	30.3 (22.5, 39.6)	12.0 (7.9, 17.8)	16.7 (12.6, 21.7)	23.8 (17.1, 32.1)	29.2 (15.2, 48.7)	6.0 (0.9, 30.9)	0.0 -	26.8 (17.7, 38.4)	24.7 (19.0, 31.4)	19.6 (15.6, 24.4)
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]
Number of first-line AETDs distributed in the past week	0.0 [0.0-1.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.3]	0.0 [0.0-0.0]	0.0 -	0.0 [0.0-1.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]
Proportion of outlets with chloroquine in stock that:	N=0	N=0	N=0	N=8	N=4	N=4	N=16	N=26	N=60	N=60
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Distributed chloroqine in the past week	- -	- -	- -	69.2 (33.7, 90.9)	12.7 (1.6, 56.6)	0.0 -	24.8 (7.8, 56.2)	17.3 (6.4, 39.2)	23.8 (14.9, 35.8)	23.8 (14.9, 35.9)
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]
Number of chloroquine AETDs distributed in the past week	- -	- -	- -	1.2 [0.0-1.2]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]

Table A3: Provision of malaria blood testing and antimalarials in the past week, among outlets with testing/antimalarials available, by outlet type

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
Proportion of outlets with any antimalarial that is not indicated within national treatment guidelines in stock # that:	N=9	N=3	N=12	N=22	N=9	N=10	N=23	N=42	N=106	N=118
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Distributed antimalarial that is not indicated within national treatment guidelines in the past week	8.7 (1.3, 40.3)	0.0 -	6.0 (0.9, 30.8)	30.7 (12.3, 58.3)	20.8 (5.0, 56.4)	0.0 -	15.4 (4.5, 41.4)	17.9 (8.2, 34.7)	18.5 (12.0, 27.4)	17.5 (11.2, 26.2)
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]
Number of AETDs distributed in the past week	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.6]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]
Proportion of outlets with malaria blood testing available (microscopy or RDT) that:	N=135	N=370	N=505	N=283	N=74	N=31	N=0	N=155	N=543	N=1,048
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Provided/performed a malaria test in the past week	56.2 (46.8, 65.1)	35.5 (27.1, 44.9)	40.4 (33.7, 47.4)	48.3 (41.6, 55.1)	44.5 (32.3, 57.4)	39.5 (22.3, 59.9)	- -	38.2 (29.8, 47.4)	44.0 (39.1, 48.9)	42.1 (37.6, 46.7)
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]
Number of malaria tests provided/performed in the past week	1.0 [0.0-5.0]	0.0 [0.0-1.0]	0.0 [0.0-2.0]	0.0 [0.0-3.0]	0.0 [0.0-3.0]	0.0 [0.0-1.0]	- -	0.0 [0.0-2.0]	0.0 [0.0-3.0]	0.0 [0.0-2.0]

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

See Annex 2

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A4: Types of quality-assured and non-quality-assured ACTs audited in the public and private sector				
ACT generic name and formulation	**Quality-assured ACT**		**Non-quality-assured ACT**	
	Public sector	Private sector	Public Sector	Private Sector
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of all audited antimalarials:	N audited=701	N audited=366	N audited=31	N audited=70
Tablet formulation:				
Dihydroartemisinin piperaquine	100.0 -	100.0 -	62.5 (39.0, 81.2)	15.7 (7.8, 29.0)
Artesunate mefloquine	0.0 -	0.0 -	25.8 (10.6, 50.6)	27.1 (15.1, 43.8)
Artemisinin piperaquine	0.0 -	0.0 -	11.7 (5.1, 24.6)	57.2 (37.7, 74.7)
Source: ACTwatch Outlet Survey, Cambodia, 2015.				

Table A5: Antimalarial market composition

Outlet type, among outlets with at least 1 antimalarial in stock on the day of the survey:	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
N=858 outlets	14.3 (12.2, 16.7)	40.9 (34.7, 47.5)	55.2 (49.2, 61.1)	19.4 (15.5, 24.0)	4.8 (3.1, 7.3)	2.2 (1.4, 3.4)	4.0 (2.0, 7.9)	14.3 (10.9, 18.5)	44.8 (38.9, 50.8)

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

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A6a: Price of tablet formulation antimalarials, by outlet type

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Median price of a tablet AETD*:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Any ACT	$2.24 [1.49-3.73] (234)	$1.24 [0.99-1.99] (48)	$2.49 [1.24-8.02] (16)	$6.01 [1.24-6.01] (5)	$2.49 [1.24-3.73] (88)	$2.24 [1.24-3.73] (391)
Any national first-line ACT Ψ	$2.24 [1.34-3.73] (224)	$1.24 [0.99-1.99] (41)	$2.24 [1.24-4.97] (9)	$3.73 (1)	$2.49 [1.49-3.73] (69)	$2.24 [1.24-3.73] (344)
Dihydroartemisinin piperaquine	$2.24 [1.34-3.73] (224)	$1.24 [0.99-1.99] (41)	$2.24 [1.24-4.97] (9)	$3.73 (1)	$2.49 [1.49-3.73] (69)	$2.24 [1.24-3.73] (344)
Artesunate mefloquine	$7.04 [1.99-7.04] (2)	$1.24 [0.87-1.66] (4)	$0.99 [0.99-1.99] (5)	$1.24 [0.62-1.24] (2)	$1.24 [0.99-1.99] (13)	$1.24 [0.99-1.99] (26)
Artemisinin piperaquine	$4.01 [2.51-10.02] (8)	$2.51 [0.40-4.01] (3)	$8.02 [6.01-8.02] (2)	$6.01 [6.01-6.01] (2)	$4.01 [4.01-6.01] (6)	$4.45 [4.01-6.01] (21)
Quality-Assured ACT (QA ACT)	$2.24 [1.49-3.73] (218)	$1.24 [0.99-2.24] (39)	$2.24 [1.24-4.97] (9)	$3.73 (1)	$2.49 [1.49-3.73] (67)	$2.24 [1.24-3.73] (334)
Non-Quality Assured ACT (non-QA ACT)	$4.01 [1.60-6.21] (16)	$1.24 [0.83-1.66] (9)	$2.65 [0.99-8.02] (7)	$6.01 [1.24-6.01] (4)	$1.99 [1.16-4.01] (21)	$2.49 [1.16-6.01] (57)
Chloroquine	$2.07 [0.75-2.07] (6)	$1.24 [0.50-1.24] (4)	$0.75 [0.25-1.24] (4)	$0.50 [0.25-0.62] (6)	$1.24 [0.50-2.59] (18)	$1.24 [0.50-2.07] (38)

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

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

Figures in this table are derived using audited products with price information. The numbers of antimalarials captured in audit sheets with missing price information are as follows:
45 any ACT tablet, 33 any national first-line ACT tablet, 33 dihydroartemisinin piperaquine tablet, 1 artesunate mefloquine tablet, 11 artemisinin piperaquine tablet, 32 QA ACT tablet, 13 non-QAACT tablet, 29 chloroquine tablet.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A6b: Price of pre-packaged antimalarials, by outlet type

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Median price of one pre-packaged therapy:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Eurartesim adult 36-74kg	$1.99 [1.24-2.98] (140)	$1.24 [0.87-1.99] (27)	$1.49 [1.24-2.49] (8)	$3.73 (1)	$2.49 [1.24-3.73] (54)	$1.99 [1.24-3.23] (230)
Eurartesim child 7-23 kg	$1.24 [0.75-1.99] (26)	$0.75 [0.50-1.24] (4)	- -	- -	$1.24 [1.24-2.49] (4)	$1.24 [0.75-1.99] (34)
Eurartesim child 13-23kg	$1.24 [1.24-2.24] (16)	- -	$4.97 (1)	- -	$1.24 [1.24-2.98] (3)	$1.49 [1.24-2.24] (20)
Eurartesim child 24-35kg	$1.49 [1.24-2.24] (40)	$0.99 [0.75-1.24] (10)	- -	- -	$1.24 [1.24-1.74] (6)	$1.24 [1.12-1.99] (56)

Figures in this table are derived using audited products with price information. The numbers of antimalarials captured in audit sheets with missing price information are as follows:
13 Eurartesim for Adults (36-74kg), 5 Eurartesim for Children (7-23kg) , 6 Eurartesim for Children (13-23kg), 8 Eurartesim for Children (24-35kg)

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A7: Availability of malaria blood testing among antimalarial-stocking outlets*, by outlet type

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets stocking**	N=140	N=402	N=542	N=237	N=74	N=34	N=39	N=186	N=570	N=1,112
Any malaria blood testing	97.8 (93.8, 99.2)	89.6 (85.6, 92.6)	91.4 (88.3, 93.8)	83.0 (76.8, 87.8)	70.1 (58.2, 79.7)	60.9 (40.8, 77.9)	0.0 -	60.4 (50.6, 69.4)	64.7 (58.5, 70.3)	78.2 (74.5, 81.6)
	N=140	N=402	N=542	N=237	N=74	N=34	N=39	N=186	N=570	N=1,112
Malaria microscopy	33.9 (25.8, 42.9)	0.3 (0.1, 1.9)	8.0 (5.9, 10.6)	15.6 (10.9, 22.0)	4.8 (1.6, 13.1)	4.0 (0.6, 21.7)	0.0 -	5.6 (3.2, 9.8)	8.7 (6.4, 11.9)	8.3 (6.8, 10.2)
	N=140	N=402	N=542	N=237	N=74	N=34	N=39	N=186	N=570	N=1,112
Rapid diagnostic tests (RDTs)	97.1 (93.3, 98.7)	89.6 (85.6, 92.6)	91.3 (88.1, 93.7)	81.3 (74.8, 86.5)	70.1 (58.2, 79.7)	60.9 (40.8, 77.9)	0.0 -	59.8 (50.0, 68.9)	63.8 (57.6, 69.6)	77.7 (73.9, 81.2)

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

** Results in this table are derived using responses captured among outlets with blood testing information. No antimalarial-stocking outlet were missing information about either availability of microscopy or availability of RDTs.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A8: Malaria blood testing market composition

Outlet type, among outlets with malaria blood testing available on the day of the survey:*	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**Total****
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	
1. Antimalarial-stocking outlets Ψ	12.2 (10.3, 14.3)	37.9 (32.0, 44.2)	50.0 (44.3, 55.7)	16.8 (13.6, 20.5)	4.2 (2.8, 6.2)	1.9 (1.0, 3.5)	0.0 -	11.4 (8.6, 15.0)	34.3 (29.7, 39.3)	84.3 (81.4, 86.9)
2. Non-antimalarial-stocking outlets (testing only)	0.3 (0.1, 1.2)	1.7 (0.9, 3.1)	2.0 (1.1, 3.5)	6.6 (5.0, 8.7)	1.6 (1.0, 2.6)	1.1 (0.6, 1.9)	0.0 -	4.3 (3.2, 5.8)	13.7 (11.3, 16.5)	15.7 (13.1, 18.6)
Total outlets, N=1,058 ***	12.5 (10.5, 14.7)	39.5 (33.4, 46.0)	52.0 (46.0, 57.9)	23.4 (19.2, 28.3)	5.8 (4.1, 8.2)	3.0 (1.9, 4.7)	0.0 -	15.8 (12.8, 19.3)	48.0 (42.1, 54.0)	100.0 -

* Outlets with malaria blood testing available on the day of the survey, verified by presence of at least one RDT recorded in the RDT audit sheet and/or reported availability of malaria microscopy.
** Row sum – market composition for antimalarial-stocking or non-antimalarial-stocking outlets.
Ψ Outlets with at least one antimalarial in stock on the day of the survey or reportedly in stock within the past 3 months.
*** Column sum – market composition for the specified outlet type.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A9: Price of malaria blood testing for adults, outlet type

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Total median price to consumers:*	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Microscopy	$1.24 [0.75-1.24] (73)	$0.99 [0.75-1.24] (6)	$0.75 [0.50-0.99] (3)	- -	$1.24 [1.24-1.24] (13)	$1.24 [0.75-1.24] (95)
Rapid diagnostic test (RDT)	$0.99 [0.75-1.24] (297)	$0.75 [0.50-0.99] (57)	$0.75 [0.75-1.24] (32)	- -	$0.99 [0.75-1.24] (156)	$0.99 [0.75-1.24] (542)

* Total price to the consumer including consultation and/or service fees.
** Price to the consumer for an RDT excluding consultation and/or service fees.
Microscopic blood testing price information was not available (missing or "don't know" response) for: 50 adult RDTs, 5 adult microscopy tests.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A10: Antimalarial market share

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold / distributed:*	Public Health Facility	Community Health Worker	**TOTAL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**TOTAL Private**	**ANTI-MALARIAL TOTAL****
	%	%	%	%	%	%	%	%	%	%
Any antimalarial that is indicated in the national treatment guidelines #	26.2	15.2	41.4	23.2	6.9	0.3	0.0	19.4	49.7	91.1
1. Any ACT	25.8	15.2	41.0	24.3	7.0	0.3	0.0	21.5	53.1	94.2
Any first line ACT Ψ	25.8	15.2	41.0	22.7	6.9	0.3	0.0	19.4	49.3	90.3
Dihydroartemisinin piperaquine	25.8	15.2	41.0	22.7	6.9	0.3	0.0	19.4	49.3	90.3
Eurartesim β	25.8	15.2	41.0	22.7	6.9	0.3	0.0	19.4	49.3	90.3
Artemisinin piperaquine	0.0	0.0	0.0	1.6	0.1	0.0	0.0	2.1	3.8	3.8
Quality-Assured ACT (QA ACT)	25.2	15.2	40.4	22.7	6.9	0.3	0.0	19.4	49.3	89.7
Non-Quality-Assured ACT (non QA ACT)	0.6	0.0	0.6	1.6	0.1	0.0	0.0	2.1	3.9	4.5
2. Any non-artemisinin therapy	0.1	0.0	0.1	2.0	0.2	0.0	0.7	1.9	4.9	5.0
Chloroquine Ψ	0.0	0.0	0.0	2.0	0.2	0.0	0.7	1.9	4.9	4.9
Other non-artemisinin therapy ##	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Non-oral artemisinin monotherapy	0.4	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.4	0.8
OUTLET TYPE TOTAL***	26.3	15.2	41.5	26.8	7.3	0.3	0.7	23.4	58.5	100.0

* A total of 346.8 AETDs were reportedly sold or distributed in the previous seven days. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

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

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

See Annex 2

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

β At the time of the 2015 Cambodia ACTwatch outlety survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

Other non-artemisinin therapies include mefloquine and quinine.

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

A total of 1,290 antimalarials were audited. Of these, 47 audited antimalarials were not included in market share calculations due to incomplete or inconsistent information.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A11: Antimalarial market share within outlet type

AETDs sold or distributed in the previous week by antimalarial type as a percentage of all AETDs sold / distributed within each outlet type:*	TOTAL Public / Not-For-Profit	TOTAL Private
	%	%
Any antimalarial that is indicated in the national treatment guidelines #	99.8	85.0
1. Any ACT	98.8	90.8
Any first line ACT Ψ	98.8	84.3
Dihydroartemisinin piperaquine	98.8	84.3
Eurartesim β	98.8	84.3
Artemisinin piperaquine	0.0	6.5
Quality-Assured ACT (QA ACT)	97.4	84.3
Non-Quality-Assured ACT (non QA ACT)	1.4	6.6
2. Any non-artemisinin therapy	0.2	8.4
Chloroquine	0.0	8.4
Other non-artemisinin therapy ##	0.2	0.0
3. Oral artemisinin monotherapy	0.0	0.0
4. Non-oral artemisinin monotherapy	1.0	0.8

* AETDs reportedly sold or distributed in the previous seven days: 105.4 public health facility; 51.0 CHW; 94.4 private for-profit HF; 29.5 pharmacy; 2 drug store; 2.7 general retailer; 61.8 itinerant drug vendor. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

\# See Annex 2

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

β At the time of the 2015 Cambodia ACTwatch outlet survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

Other non-artemisinin therapies include: mefloquine and quinine.

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

A total of 1,290 antimalarials were audited. Of these, 47 audited antimalarials were not included in market share calculations due to due to incomplete or inconsistent information, including the following number of antimalarials by outlet type: 7 public health facility; 3 community health worker; 5 drug store; 19 retailer; and 13 itinerant drug vendor.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A12: Malaria blood testing market share

Number of malaria blood tests provided in the previous week by outlet type and blood test type as a percentage of all blood tests provided:*	Public Health Facility	Community Health Worker	**TOTAL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**TOTAL Private**	**BLOOD TEST TOTAL****
	%	%	%	%	%	%	%	%	%	%
1. Malaria microscopy	9.1	0.1	9.2	3.7	0.3	0.0	0.0	0.2	4.2	13.4
2. RDT	19.2	13.9	33.2	34.2	8.6	1.5	0.0	9.1	53.4	86.6
OUTLET TYPE TOTAL***	28.4	14.0	42.4	37.9	8.9	1.5	0.0	9.3	57.6	100.0

* A total of 2,623 malaria blood tests were reportedly administered in the previous seven days.

** Row sum – market share for the specified type of blood testing medicine.

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

Categories 1 and 2 sum to 100% in the far-right column – malaria blood testing total column.

A total of 1,346 malaria blood tests were audited. Of these, 32 audited tests were not included in market share calculations due to incomplete or inconsistent information.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A13: Malaria blood testing market share within outlet type

Number of malaria blood tests provided in the previous week by blood test type as a percentage of all blood tests provided within each outlet type:*	Public Health Facility	Community Health Worker	**TOTAL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	Itinerant Drug Vendor	**TOTAL Private**	**BLOOD TEST TOTAL****
	%	%	%	%	%	%	%	%	%
Total blood testing market									
1. Malaria microscopy	32.2	0.4	21.7	9.8	3.6	0.0	2.0	7.3	13.4
2. RDT	67.8	99.6	78.3	90.2	96.4	100.0	98.0	92.7	86.6
Malaria RDT market									
Manufacturer Ψ									
Standard Diagnostics	94.5	83.9	90.0	90.0	92.9	92.3	91.0	90.7	90.5
Premier Medical	5.5	16.1	10.0	9.3	4.5	7.7	5.8	7.9	8.7
Access Bio	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.1
Other	0.0	0.0	0.0	0.5	2.1	0.0	0.0	0.6	0.4
Unknown	0.0	0.0	0.0	0.2	0.6	0.0	2.7	0.7	0.4

* A total of 2,623 malaria blood tests were reportedly administered in the previous seven days; 721 public health facility; 309 CHW; 1,046 private for-profit health facility; 273 pharmacy; 51 drug store; 0 general retailer; 223 itinerant drug vendor.

Categories 1 through 2 sum to 100% in within each column.

A total of 1,346 malaria blood tests were audited. Of these, 32 audited tests were not included in market share calculations due to incomplete or inconsistent information.

Ψ Manufacturer was not captured for 22 RDTs audited.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A14: Private sector case management training, supervision, support and surveillance, by outlet type

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Proportion of outlets that:	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Have a provider who reportedly received training in the past year on:	N=314	N=95	N=46	N=39	N=233	N=727
(1) Malaria diagnosis (RDT and/or microscopy)	36.6 (29.3, 44.6)	43.3 (31.9, 55.4)	16.4 (7.8, 31.2)	3.2 (0.7, 13.8)	9.3 (6.3, 13.7)	23.9 (19.5, 28.9)
	N=314	N=97	N=46	N=39	N=233	N=729
(2) National malaria treatment guidelines	34.8 (27.1, 43.3)	41.5 (31.0, 52.7)	15.2 (6.8, 30.5)	3.2 (0.7, 13.8)	7.3 (4.7, 11.3)	22.2 (17.8, 27.4)
Supervision/regulation	N=318	N=97	N=46	N=39	N=235	N=735
(3) Report receiving a supervisory or regulatory visit within the past year	18.4 (13.8, 24.1)	14.7 (7.6, 26.5)	9.4 (2.5, 29.8)	0.0 -	2.9 (1.4, 5.8)	10.6 (7.5, 14.7)
Report access to subsidized commodities:	N=313	N=99	N=46	N=39	N=234	N=731
Antimalarials	37.9 (32.1, 44.1)	52.9 (43.2, 62.4)	12.2 (6.1, 22.9)	0.0 -	14.3 (10.3, 19.5)	26.9 (23.0, 31.1)
	N=317	N=99	N=45	N=39	N=233	N=733
Malaria RDTs	40.1 (34.2, 46.2)	52.1 (43.9, 60.2)	27.8 (15.9, 44.1)	0.0 -	15.0 (10.6, 20.9)	29.0 (25.0, 33.3)
Passive surveillance	N=318	N=99	N=46	N=39	N=235	N=737
(4) Keep records on number of patients tested/treated for malaria	34.9 (26.7, 44.2)	17.9 (9.9, 30.2)	9.7 (2.5, 31.2)	0.0 -	6.7 (3.6, 12.1)	18.9 (13.4, 25.9)
	N=318	N=99	N=46	N=39	N=235	N=737
(5) Report numbers of patients tested/treated for malaria to government or non-government organization	32.4 (24.2, 41.9)	17.2 (9.5, 29.3)	8.2 (1.8, 30.1)	0.0 -	5.9 (3.0, 11.5)	17.5 (12.1, 24.5)
	N=318	N=99	N=46	N=39	N=235	N=737
Report numbers to government	16.6 (11.4, 23.6)	9.8 (4.5, 20.0)	0.0 -	0.0 -	3.2 (1.3, 8.0)	8.9 (6.2, 12.5)
	N=318	N=99	N=46	N=39	N=235	N=737
Report numbers of to a non-governmental organization	15.2 (8.7, 25.2)	7.4 (2.7, 18.8)	8.2 (1.8, 30.1)	0.0 -	2.1 (0.7, 6.2)	8.1 (4.4, 14.6)

Table A14: Private sector case management training, supervision, support and surveillance, by outlet type

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Proportion of outlets that:	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Composite indicators *	N=315	N=95	N=46	N=39	N=235	N=730
Reportedly have a trained provider (1 or 2) and receive supervision (3)	12.5 (9.3, 16.7)	10.8 (4.9, 22.0)	2.7 (0.7, 9.7)	0.0 -	2.2 (1.0, 4.9)	7.1 (5.3, 9.5)
	N=315	N=95	N=46	N=39	N=235	N=730
Reportedly have a trained provider (1 or 2), receive supervision (3), have national first-line treatment for *Pf* and *Pv* in stock, and provide malaria blood testing (RDT or microscopy)	10.5 (7.6, 14.4)	6.2 (1.8, 18.7)	2.7 (0.7, 9.7)	0.0 -	0.4 (0.1, 2.4)	5.2 (3.5, 7.6)
	N=314	N=95	N=46	N=39	N=235	N=729
Reportedly have a trained provider (1 or 2), receive supervision (3), have national first-line treatment for *Pf* and *Pv* in stock, provide malaria blood testing (RDT or microscopy), keep records on numbers of patients tested/treatment for malaria (4), and report these numbers to a government or non-governmental organization (5)	9.9 (7.0, 13.7)	5.2 (1.3, 18.9)	1.5 (0.2, 8.7)	0.0 -	0.4 (0.1, 2.4)	4.7 (3.1, 7.1)

Provider questions were administered to one staff member working in each outlet eligible for a full interview (current/recent antimalarial-stocking outlets or outlets providing malaria blood testing).
There were no missing responses. The number of providers who reported "don't know" included: 11 diagnosis training, 9 case management training, 3 supervision, 7 subsidized antimalarials, 5 RDTs, 1 record keeping, and 0 reporting.

* Among outlets with responses for all relevant questions.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table A15: Provider antimalarial treatment knowledge and practices, by outlet type

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers who:	N=140	N=402	N=542	N=237	N=74	N=34	N=39	N=186	N=570	N=1,112
Correctly state the national first-line treatment for uncomplicated *P. falciparum / vivax* malaria Ψ										
DHAPPQ	85.4 (77.8, 90.7)	94.2 (89.9, 96.7)	92.2 (88.6, 94.7)	77.4 (70.3, 83.3)	76.5 (67.5, 83.6)	63.2 (45.4, 78.0)	9.8 (3.0, 27.3)	45.5 (36.8, 54.5)	58.9 (52.7, 64.8)	75.8 (71.9, 79.3)
ASMQ fixed-dose combination	7.4 (3.7, 14.1)	3.7 (2.0, 7.0)	4.6 (2.8, 7.3)	0.9 (0.2, 3.2)	2.2 (0.6, 7.8)	0.0 -	0.0 -	6.4 (3.7, 11.0)	2.9 (1.7, 4.8)	3.7 (2.6, 5.3)
DHAPPQ or ASMQ fixed-dose combination	89.2 (82.9, 93.4)	94.3 (90.0, 96.8)	93.2 (89.8, 95.5)	78.0 (70.8, 83.8)	78.7 (70.9, 84.9)	63.2 (45.4, 78.0)	9.8 (3.0, 27.3)	50.1 (41.5, 58.7)	61.0 (54.9, 66.8)	77.3 (73.5, 80.7)
Correctly state the first-line dosing regimen for uncomplicated *P. falciparum / vivax* malaria for an adult										
DHAPPQ	83.5 (75.9, 89.1)	88.2 (83.0, 91.9)	87.1 (82.9, 90.5)	74.4 (67.2, 80.5)	73.7 (63.9, 81.5)	61.5 (43.5, 76.8)	9.8 (3.0, 27.3)	42.3 (34.2, 50.9)	56.2 (50.0, 62.2)	71.9 (68.1, 75.3)
ASMQ fixed-dose combination	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
For uncomplicated malaria in adults, report an ACT as the:										
Most effective treatment	92.7 (86.9, 96.0)	96.0 (93.2, 97.6)	95.2 (92.8, 96.9)	92.1 (87.2, 95.2)	85.0 (76.3, 90.9)	82.0 (64.0, 92.1)	29.0 (18.0, 43.2)	83.3 (74.6, 89.4)	81.8 (76.9, 85.8)	88.6 (85.9, 90.8)
Treatment he/she most commonly recommends	96.4 (92.0, 98.4)	91.0 (85.9, 94.3)	92.2 (88.2, 94.9)	93.0 (88.3, 95.9)	91.1 (75.7, 97.1)	82.4 (69.0, 90.8)	40.0 (19.1, 65.2)	84.2 (77.2, 89.4)	84.2 (79.3, 88.1)	88.2 (85.2, 90.7)

Numbers of providers (N) in this table are the total number of providers eligible for table indicators. No providers were missing information about the national first-line treatment or dosing regimen for *Pf/Pv* malaria.

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria. Primaquine is also recommended to treat uncomplicated *P. falciparum* and *P. vivax* malaria in patients determined to be G6PD non-deficient. No providers reported primaquine as part of the national first-line treatment and in practice, due to concerns with G6PD deficiency, primaquine has not yet been implemented.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Results Section B: Core Indicators across National Malaria Burden Stratification

Table B1: Availability of antimalarials, among all screened outlets, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Tier 1 N=82 Tier 2 N=91	Tier 1 N=280 Tier 2 N=150	Tier 1 N=0 Tier 2 N=1	Tier 1 N=362 Tier 2 N=242	Tier 1 N=326 Tier 2 N=342	Tier 1 N=98 Tier 2 N=192	Tier 1 N=219 Tier 2 N=119	Tier 1 N=11,290 Tier 2 N=12,550	Tier 1 N=486 Tier 2 N=438	Tier 1 N=12,419 Tier 2 N=13,641	Tier 1 N=12,781 Tier 2 N=13,883
Any antimalarial at the time of survey visit											
Tier 1	76.4 (61.9, 86.6)	74.9 (63.4, 83.7)	- -	75.2 (65.3, 83.1)	37.3 (30.3, 45.0)	28.1 (19.2, 39.2)	8.2 (4.9, 13.3)	0.2 (0.1, 0.5)	16.2 (11.4, 22.5)	2.2 (1.8, 2.7)	4.6 (3.8, 5.5)
Tier 2	79.4 (67.9, 87.5)	73.4 (62.4, 82.2)	0.0 -	75.1 (67.3, 81.6)	23.4 (17.5, 30.7)	14.5 (8.7, 23.2)	3.5 (1.1, 10.6)	0.1 (0.1, 0.4)	13.9 (8.6, 21.9)	1.4 (1.0, 1.8)	3.1 (2.5, 3.9)
Any ACT											
Tier 1	76.4 (61.9, 86.6)	74.9 (63.4, 83.7)	- -	75.2 (65.3, 83.1)	35.2 (27.5, 43.7)	26.2 (17.0, 38.1)	6.4 (3.7, 11.1)	0.1 (0.0, 0.5)	13.8 (9.7, 19.2)	1.9 (1.5, 2.4)	4.3 (3.6, 5.2)
Tier 2	78.9 (67.5, 87.0)	73.4 (62.4, 82.2)	0.0 -	75.0 (67.2, 81.4)	22.2 (16.6, 28.9)	13.9 (8.1, 22.8)	2.1 (0.3, 11.7)	0.0 (0.0, 0.1)	8.9 (4.4, 17.2)	1.0 (0.7, 1.4)	2.8 (2.2, 3.5)
Any national first-line ACT Ψ											
Tier 1	74.1 (59.8, 84.6)	74.5 (63.2, 83.2)	- -	74.4 (64.7, 82.2)	34.1 (26.4, 42.7)	23.8 (15.0, 35.5)	3.7 (1.8, 7.5)	<0.1 (0.0, 0.1)	11.4 (8.2, 15.8)	1.6 (1.3, 2.1)	4.0 (3.3, 4.8)
Tier 2	78.9 (67.5, 87.0)	73.4 (62.4, 82.2)	0.0 -	75.0 (67.2, 81.4)	20.5 (15.9, 26.1)	12.6 (6.9, 22.0)	2.1 (0.3, 11.7)	0.0 -	7.4 (3.7, 14.0)	0.9 (0.7, 1.2)	2.7 (2.1, 3.3)
Dihydroartemisinin Piperaquine (DHA-PPQ)											
Tier 1	74.1 (59.8, 84.6)	74.5 (63.2, 83.2)	- -	74.4 (64.7, 82.2)	34.1 (26.4, 42.7)	23.8 (15.0, 35.5)	3.7 (1.8, 7.5)	<0.1 (0.0, 0.1)	11.4 (8.2, 15.8)	1.6 (1.3, 2.1)	4.0 (3.3, 4.8)
Tier 2	78.9 (67.5, 87.0)	73.4 (62.4, 82.2)	0.0 -	75.0 (67.2, 81.4)	20.5 (15.9, 26.1)	12.6 (6.9, 22.0)	2.1 (0.3, 11.7)	0.0 -	7.4 (3.7, 14.0)	0.9 (0.7, 1.2)	2.7 (2.1, 3.3)
Any Eurartesim β											
Tier 1	72.5 (58.6, 83.1)	74.2 (63.0, 83.0)	- -	73.9 (64.1, 81.7)	33.7 (26.1, 42.3)	23.8 (15.0, 35.5)	3.7 (1.8, 7.5)	<0.1 (0.0, 0.1)	11.0 (7.8, 15.3)	1.6 (1.2, 2.1)	4.0 (3.3, 4.8)
Tier 2	78.9 (67.5, 87.0)	72.8 (61.9, 81.5)	0.0 -	74.6 (66.8, 81.0)	20.2 (15.7, 25.6)	12.6 (6.9, 22.0)	2.1 (0.3, 11.7)	0.0 -	7.4 (3.7, 14.0)	0.9 (0.6, 1.2)	2.7 (2.1, 3.3)
Eurartesim adult 36-74kg											
Tier 1	71.8 (58.0, 82.4)	60.4 (47.0, 72.4)	- -	62.8 (51.0, 73.2)	27.6 (21.1, 35.1)	17.2 (10.3, 27.3)	3.5 (1.6, 7.3)	<0.1 (0.0, 0.1)	8.8 (6.0, 12.7)	1.3 (1.0, 1.7)	3.3 (2.7, 4.0)
Tier 2	75.5 (63.7, 84.3)	58.6 (46.6, 69.7)	0.0 -	63.7 (54.4, 72.0)	17.6 (13.7, 22.4)	12.2 (6.4, 22.0)	0.0 -	0.0 -	5.8 (3.0, 11.1)	0.7 (0.5, 1.0)	2.3 (1.8, 2.8)

Table B1: Availability of antimalarials, among all screened outlets, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Tier 1 N=82 Tier 2 N=91	Tier 1 N=280 Tier 2 N=150	Tier 1 N=0 Tier 2 N=1	Tier 1 N=362 Tier 2 N=242	Tier 1 N=326 Tier 2 N=342	Tier 1 N=98 Tier 2 N=192	Tier 1 N=219 Tier 2 N=119	Tier 1 N=11,290 Tier 2 N=12,550	Tier 1 N=486 Tier 2 N=438	Tier 1 N=12,419 Tier 2 N=13,641	Tier 1 N=12,781 Tier 2 N=13,883
Eurartesim child 7-23 kg											
Tier 1	24.3 (14.8, 37.2)	20.6 (13.8, 29.6)	- -	21.4 (15.3, 29.0)	5.7 (3.5, 9.0)	7.8 (2.8, 19.9)	0.2 (0.0, 1.4)	0.0 -	0.5 (0.1, 1.6)	0.2 (0.1, 0.4)	0.9 (0.6, 1.3)
Tier 2	26.6 (17.9, 37.6)	36.4 (25.2, 49.3)	0.0 -	33.3 (24.6, 43.5)	3.8 (1.7, 8.4)	1.1 (0.2, 4.9)	0.0 -	0.0 -	1.2 (0.3, 4.1)	0.1 (0.1, 0.3)	0.9 (0.6, 1.4)
Eurartesim child 13-23kg											
Tier 1	5.6 (2.1, 14.2)	4.7 (2.4, 9.1)	- -	4.9 (2.8, 8.6)	4.8 (2.5, 9.0)	0.0 -	0.0 -	0.0 -	1.3 (0.4, 3.6)	0.2 (0.1, 0.3)	0.3 (0.2, 0.6)
Tier 2	6.2 (2.9, 12.7)	3.5 (1.7, 7.3)	0.0 -	4.3 (2.3, 8.0)	2.1 (0.9, 4.7)	0.0 -	2.1 (0.3, 11.7)	0.0 -	0.3 (0.1, 1.2)	0.1 (0.0, 0.2)	0.2 (0.1, 0.3)
Eurartesim child 24-35kg											
Tier 1	27.1 (17.3, 39.8)	20.9 (13.2, 31.3)	- -	22.2 (15.2, 31.1)	8.8 (5.7, 13.3)	10.6 (4.7, 22.2)	0.0 -	0.0 -	2.6 (1.2, 5.6)	0.4 (0.3, 0.7)	1.1 (0.8, 1.6)
Tier 2	31.1 (19.3, 45.9)	27.1 (17.4, 39.7)	0.0 -	28.3 (19.7, 38.8)	8.1 (5.1, 12.7)	2.2 (0.9, 5.2)	0.0 -	0.0 -	0.3 (0.1, 1.1)	0.2 (0.1, 0.3)	0.9 (0.6, 1.3)
Artesunate Mefloquine (ASMQ) Ω											
Tier 1	2.7 (0.7, 9.4)	1.1 (0.3, 4.3)	- -	1.5 (0.6, 3.8)	0.6 (0.1, 2.1)	0.0 -	1.2 (0.4, 3.9)	<0.1 (0.0, 0.1)	1.3 (0.6, 2.9)	0.1 (0.1, 0.2)	0.1 (0.1, 0.2)
Tier 2	1.3 (0.2, 7.6)	0.0 -	0.0 -	0.4 (0.1, 2.4)	0.3 (0.0, 1.8)	1.2 (0.3, 4.2)	0.0 -	<0.1 (0.0, 0.1)	0.6 (0.2, 1.8)	0.1 (0.0, 0.1)	0.1 (0.0, 0.1)
Artemisinin Piperaquine											
Tier 1	2.9 (0.9, 8.7)	0.0 -	- -	0.6 (0.2, 1.9)	2.9 (1.1, 7.2)	2.4 (0.8, 7.0)	1.5 (0.4, 5.2)	0.1 (0.0, 0.6)	2.4 (0.8, 6.9)	0.3 (0.1, 0.7)	0.3 (0.2, 0.7)
Tier 2	1.5 (0.4, 5.4)	0.0 -	0.0 -	0.5 (0.1, 1.7)	1.7 (0.4, 7.2)	0.0 -	0.0 -	0.0 -	1.9 (0.4, 8.2)	0.1 (0.0, 0.3)	0.1 (0.0, 0.3)
Quality-Assured ACT (QA ACT) Δ											
Tier 1	71.6 (57.8, 82.2)	74.2 (63.0, 83.0)	- -	73.7 (64.0, 81.5)	32.6 (25.4, 40.7)	21.5 (12.9, 33.6)	3.7 (1.8, 7.5)	<0.1 (0.0, 0.1)	11.0 (7.8, 15.3)	1.6 (1.2, 2.0)	3.9 (3.2, 4.7)
Tier 2	78.9 (67.5, 87.0)	71.3 (60.9, 79.8)	0.0 -	73.5 (66.1, 79.8)	19.6 (15.3, 24.8)	12.6 (6.9, 22.0)	2.1 (0.3, 11.7)	0.0 -	7.4 (3.7, 14.0)	0.9 (0.6, 1.2)	2.6 (2.1, 3.3)
Non-quality-assured ACT (non-QA ACT)											
Tier 1	4.9 (2.1, 11.0)	3.5 (1.4, 8.9)	- -	3.8 (1.8, 7.8)	5.0 (2.6, 9.5)	4.7 (1.2, 16.7)	2.7 (1.1, 6.4)	0.1 (0.0, 0.6)	3.9 (1.9, 7.8)	0.5 (0.3, 0.8)	0.6 (0.4, 0.9)
Tier 2	4.6 (1.9, 10.5)	4.0 (1.8, 8.7)	0.0 -	4.2 (2.4, 7.3)	2.8 (1.1, 7.2)	1.2 (0.3, 4.2)	0.0 -	<0.1 (0.0, 0.1)	2.6 (0.8, 7.7)	0.2 (0.1, 0.4)	0.3 (0.2, 0.5)

Table B1: Availability of antimalarials, among all screened outlets, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Tier 1 N=82 Tier 2 N=91	Tier 1 N=280 Tier 2 N=150	Tier 1 N=0 Tier 2 N=1	Tier 1 N=362 Tier 2 N=242	Tier 1 N=326 Tier 2 N=342	Tier 1 N=98 Tier 2 N=192	Tier 1 N=219 Tier 2 N=119	Tier 1 N=11,290 Tier 2 N=12,550	Tier 1 N=486 Tier 2 N=438	Tier 1 N=12,419 Tier 2 N=13,641	Tier 1 N=12,781 Tier 2 N=13,883
Any non-artemisinin therapy											
Tier 1	12.8 (6.1, 25.0)	0.0 -	- -	2.7 (1.3, 5.5)	3.0 (1.4, 6.5)	1.9 (0.4, 8.1)	2.0 (0.8, 4.6)	0.1 (0.0, 0.2)	3.9 (2.0, 7.8)	0.4 (0.2, 0.6)	0.5 (0.3, 0.7)
Tier 2	5.2 (2.0, 12.7)	0.0 -	0.0 -	1.6 (0.6, 3.9)	0.4 (0.2, 1.2)	1.3 (0.5, 3.9)	1.4 (0.4, 4.9)	0.1 (0.0, 0.4)	5.8 (3.0, 10.8)	0.4 (0.2, 0.6)	0.4 (0.2, 0.6)
Chloroquine											
Tier 1	0.0 -	0.0 -	- -	0.0 -	2.3 (0.9, 6.0)	1.9 (0.4, 8.1)	1.7 (0.7, 3.9)	0.1 (0.0, 0.2)	3.8 (1.9, 7.7)	0.4 (0.2, 0.6)	0.3 (0.2, 0.6)
Tier 2	0.0 -	0.0 -	0.0 -	0.0 -	0.4 (0.2, 1.2)	1.3 (0.5, 3.9)	0.7 (0.1, 4.1)	0.1 (0.0, 0.4)	5.6 (2.9, 10.6)	0.3 (0.2, 0.6)	0.3 (0.2, 0.6)
Other non-artemisinin therapy ^											
Tier 1	12.8 (6.1, 25.0)	0.0 -	- -	2.7 (1.3, 5.5)	0.8 (0.2, 2.9)	0.0 -	0.3 (0.0, 1.8)	0.0 -	0.1 (0.0, 0.7)	0.0 (0.0, 0.1)	0.1 (0.1, 0.2)
Tier 2	5.2 (2.0, 12.7)	0.0 -	0.0 -	1.6 (0.6, 3.9)	0.0 -	0.0 -	0.7 (0.1, 4.4)	0.0 -	0.4 (0.1, 1.6)	0.0 (0.0, 0.1)	0.1 (0.0, 0.1)
Oral artemisinin monotherapy											
Tier 1	0.0 -	0.0 -	- -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Tier 2	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	<0.1 (0.0, <0.1)	0.0 -	<0.1 (0.0, <0.1)	<0.1 (0.0, <0.1)
Non-oral artemisinin monotherapy											
Tier 1	10.3 (4.5, 21.9)	0.0 -	- -	2.2 (0.9, 5.3)	2.8 (1.3, 6.0)	0.0 -	0.0 -	0.0 -	0.4 (0.1, 1.5)	0.1 (0.0, 0.2)	0.2 (0.1, 0.3)
Tier 2	9.5 (4.5, 19.1)	0.0 -	0.0 -	2.9 (1.3, 6.2)	1.8 (0.6, 5.8)	0.0 -	0.0 -	0.0 -	1.9 (0.4, 8.3)	0.1 (0.0, 0.3)	0.2 (0.1, 0.4)
Any treatment for severe malaria											
Tier 1	10.3 (4.5, 21.9)	0.0 -	- -	2.2 (0.9, 5.3)	2.8 (1.3, 6.0)	0.0 -	0.0 -	0.0 -	0.5 (0.2, 1.6)	0.1 (0.1, 0.2)	0.2 (0.1, 0.3)
Tier 2	9.5 (4.5, 19.1)	0.0 -	0.0 -	2.9 (1.3, 6.2)	1.8 (0.6, 5.8)	0.0 -	0.0 -	0.0 -	2.1 (0.5, 8.0)	0.1 (0.0, 0.3)	0.2 (0.1, 0.4)
Artesunate IV/IM #											
Tier 1	0.0 -	0.0 -	- -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.2 (0.0, 1.2)	0.0 -	0.0 -
Tier 2	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -

Table B1: Availability of antimalarials, among all screened outlets, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	Private Not-For-Profit Facility	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Tier 1 N=82 Tier 2 N=91	Tier 1 N=280 Tier 2 N=150	Tier 1 N=0 Tier 2 N=1	Tier 1 N=362 Tier 2 N=242	Tier 1 N=326 Tier 2 N=342	Tier 1 N=98 Tier 2 N=192	Tier 1 N=219 Tier 2 N=119	Tier 1 N=11,290 Tier 2 N=12,550	Tier 1 N=486 Tier 2 N=438	Tier 1 N=12,419 Tier 2 N=13,641	Tier 1 N=12,781 Tier 2 N=13,883
Artemether IV/IM											
Tier 1	10.3 (4.5, 21.9)	0.0 -	- -	2.2 (0.9, 5.3)	2.8 (1.3, 6.0)	0.0 -	0.0 -	0.0 -	0.2 (0.0, 1.4)	0.1 (0.0, 0.2)	0.2 (0.1, 0.3)
Tier 2	9.5 (4.5, 19.1)	0.0 -	0.0 -	2.9 (1.3, 6.2)	1.8 (0.6, 5.8)	0.0 -	0.0 -	0.0 -	1.9 (0.4, 8.3)	0.1 (0.0, 0.3)	0.2 (0.1, 0.4)
Quinine IV/IM											
Tier 1	1.3 (0.2, 7.9)	0.0 -	- -	0.3 (0.0, 1.7)	0.0 -	0.0 -	0.0 -	0.0 -	0.1 (0.0, 0.7)	0.0 -	0.0 (0.0, 0.1)
Tier 2	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.2 (0.0, 1.5)	0.0 (0.0, 0.1)	0.0 (0.0, 0.1)
Second-line treatment Quinine + Doxycyline / Tetracycline £											
Tier 1	12.8 (6.1, 25.0)	0.0 -	- -	2.7 (1.3, 5.5)	0.2 (0.0, 1.2)	0.0 -	0.3 (0.0, 1.8)	0.0 -	0.0 -	0.0 -	0.1 (0.1, 0.2)
Tier 2	2.6 (0.7, 9.3)	0.0 -	0.0 -	0.8 (0.2, 2.9)	0.0 -	0.0 -	0.7 (0.1, 4.4)	0.0 -	0.0 -	0.0 -	0.0 (0.0, 0.1)
Any antimalarial that is not indicated within national treatment guidelines ¥											
Tier 1	4.0 (1.5, 10.1)	1.1 (0.3, 4.3)	- -	1.7 (0.7, 4.0)	5.3 (3.0, 9.3)	4.3 (2.1, 8.6)	4.2 (2.2, 7.9)	0.2 (0.1, 0.5)	6.5 (3.5, 11.6)	0.7 (0.5, 1.0)	0.7 (0.5, 1.1)
Tier 2	5.3 (2.2, 12.2)	0.0 -	0.0 -	1.6 (0.7, 3.8)	2.4 (0.8, 6.7)	2.6 (1.2, 5.5)	0.7 (0.1, 4.1)	0.1 (0.1, 0.4)	8.2 (4.7, 13.8)	0.5 (0.3, 0.8)	0.5 (0.4, 0.8)

* The denominator includes 34 outlets that met screening criteria for a full interview but did not complete the interview (were not interviewed or completed a partial interview).

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey,DHAPPQ and fixed-dose combination ASMQ were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

β At the time of the 2015 Cambodia ACTwatch outlet survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

Ω No fixed-dose combination artesunate mefloquine was audited during the 2015 Cambodia ACTwatch outlet survey.

Δ All QA ACT audited in Cambodia had the "green leaf" logo.

^ Other non-artemisinin therapy includes mefloquine and quinine.

At the time of the 2015 Cambodia ACTwatch outlet survey, artesunate IV/IM was the first-line treatment for severe malaria.

£ At the time of the 2015 Cambodia ACTwatch outlet survey, quinine and doxycycline/tetracycline was the second-line treatment for uncomplicated *P. falciparum* and *P. vivax* malaria.

¥ See Annex 2

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B2: Availability of antimalarials, among outlets stocking at least one antimalarials, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Tier 1 N=65 Tier 2 N=72	Tier 1 N=214 Tier 2 N=116	Tier 1 N=279 Tier 2 N=188	Tier 1 N=112 Tier 2 N=74	Tier 1 N=24 Tier 2 N=21	Tier 1 N=19 Tier 2 N=3	Tier 1 N=16 Tier 2 N=13	Tier 1 N=69 Tier 2 N=40	Tier 1 N=240 Tier 2 N=151	Tier 1 N=519 Tier 2 N=339
Any ACT										
Tier 1	100.0 -	100.0 -	100.0 -	94.2 (84.4, 98.0)	93.2 (72.3, 98.6)	78.7 (56.6, 91.3)	56.9 (19.0, 88.1)	85.0 (75.9, 91.1)	87.3 (81.1, 91.7)	94.1 (90.9, 96.3)
Tier 2	99.4 (96.1, 99.9)	100.0 -	99.8 (98.7, 100.0)	94.5 (81.4, 98.6)	95.6 (83.8, 98.9)	59.2 (13.2, 93.3)	7.5 (0.9, 41.5)	64.2 (38.3, 83.7)	73.8 (60.8, 83.7)	88.8 (82.4, 93.1)
Any national first-line ACT Ψ										
Tier 1	96.9 (91.0, 99.0)	99.5 (97.0, 99.9)	98.9 (97.2, 99.6)	91.3 (81.8, 96.1)	84.5 (69.0, 93.1)	45.3 (24.9, 67.4)	5.0 (0.8, 26.0)	70.5 (57.8, 80.6)	74.4 (64.0, 82.6)	87.5 (82.0, 91.5)
Tier 2	99.4 (96.1, 99.9)	100.0 -	99.8 (98.7, 100.0)	87.5 (72.8, 94.8)	87.1 (67.4, 95.7)	59.2 (13.2, 93.3)	0.0 -	52.8 (32.9, 71.9)	65.2 (53.1, 75.6)	85.2 (78.4, 90.1)
Dihydroartemisinin Piperaquine (DHA-PPQ)										
Tier 1	96.9 (91.0, 99.0)	99.5 (97.0, 99.9)	98.9 (97.2, 99.6)	91.3 (81.8, 96.1)	84.5 (69.0, 93.1)	45.3 (24.9, 67.4)	5.0 (0.8, 26.0)	70.5 (57.8, 80.6)	74.4 (64.0, 82.6)	87.5 (82.0, 91.5)
Tier 2	99.4 (96.1, 99.9)	100.0 -	99.8 (98.7, 100.0)	87.5 (72.8, 94.8)	87.1 (67.4, 95.7)	59.2 (13.2, 93.3)	0.0 -	52.8 (32.9, 71.9)	65.2 (53.1, 75.6)	85.2 (78.4, 90.1)
Any Eurartesim β										
Tier 1	94.8 (87.1, 98.0)	99.1 (97.0, 99.7)	98.2 (96.2, 99.1)	90.4 (80.9, 95.4)	84.5 (69.0, 93.1)	45.3 (24.9, 67.4)	5.0 (0.8, 26.0)	67.8 (55.8, 77.9)	73.2 (62.8, 81.5)	86.6 (81.1, 90.7)
Tier 2	99.4 (96.1, 99.9)	99.2 (97.0, 99.8)	99.2 (97.8, 99.7)	86.2 (72.3, 93.7)	87.1 (67.4, 95.7)	59.2 (13.2, 93.3)	0.0 -	52.8 (32.9, 71.9)	64.7 (52.5, 75.2)	84.6 (77.9, 89.6)
Eurartesim adult 36-74kg										
Tier 1	93.9 (86.3, 97.4)	80.7 (67.6, 89.3)	83.5 (73.0, 90.4)	73.8 (63.3, 82.2)	61.1 (39.4, 79.2)	42.4 (22.2, 65.5)	5.0 (0.8, 26.0)	54.4 (39.8, 68.2)	59.1 (49.4, 68.1)	72.1 (64.2, 78.9)
Tier 2	95.1 (84.9, 98.5)	79.8 (68.5, 87.8)	84.8 (75.0, 91.2)	75.3 (64.0, 83.9)	83.9 (63.7, 93.9)	0.0 -	0.0 -	41.8 (25.9, 59.5)	54.5 (43.7, 64.9)	72.0 (64.7, 78.2)
Eurartesim child 7-23 kg										
Tier 1	31.8 (20.0, 46.6)	27.5 (18.8, 38.2)	28.4 (20.7, 37.5)	15.2 (10.1, 22.3)	27.9 (11.2, 54.4)	2.8 (0.5, 15.6)	0.0 -	2.8 (0.8, 9.8)	10.8 (6.6, 17.3)	20.2 (15.3, 26.3)
Tier 2	33.6 (23.2, 45.8)	49.6 (35.1, 64.1)	44.4 (33.2, 56.2)	16.3 (8.3, 29.7)	7.3 (2.1, 22.7)	0.0 -	0.0 -	8.6 (3.2, 21.3)	10.4 (6.4, 16.5)	30.0 (22.6, 38.7)
Eurartesim child 13-23kg										
Tier 1	7.3 (2.8, 18.2)	6.3 (3.2, 12.0)	6.5 (3.7, 11.2)	12.8 (7.0, 22.1)	0.0 -	0.0 -	0.0 -	7.9 (2.6, 21.8)	8.2 (4.5, 14.4)	7.3 (4.6, 11.4)

Table B2: Availability of antimalarials, among outlets stocking at least one antimalarials, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Tier 1 N=65 Tier 2 N=72	Tier 1 N=214 Tier 2 N=116	Tier 1 N=279 Tier 2 N=188	Tier 1 N=112 Tier 2 N=74	Tier 1 N=24 Tier 2 N=21	Tier 1 N=19 Tier 2 N=3	Tier 1 N=16 Tier 2 N=13	Tier 1 N=69 Tier 2 N=40	Tier 1 N=240 Tier 2 N=151	Tier 1 N=519 Tier 2 N=339
Tier 2	7.8 (3.7, 15.8)	4.8 (2.4, 9.5)	5.8 (3.2, 10.3)	8.9 (4.1, 18.3)	0.0 -	59.2 (13.2, 93.3)	0.0 -	2.4 (0.6, 8.7)	5.8 (2.8, 11.6)	5.8 (3.4, 9.6)
Eurartesim child 24-35kg										
Tier 1	35.5 (23.5, 49.6)	27.8 (18.2, 40.1)	29.5 (20.8, 39.9)	23.5 (16.3, 32.7)	37.9 (18.6, 61.9)	0.0 -	0.0 -	16.2 (8.1, 29.8)	19.4 (13.2, 27.6)	24.8 (18.6, 32.3)
Tier 2	39.1 (25.3, 55.0)	36.9 (23.5, 52.6)	37.6 (26.1, 50.8)	34.6 (25.1, 45.5)	15.3 (7.4, 29.0)	0.0 -	0.0 -	2.3 (0.6, 8.6)	16.2 (11.3, 22.8)	28.6 (21.5, 36.9)
Artesunate Mefloquine (ASMQ) Ω										
Tier 1	3.6 (1.0, 12.0)	1.5 (0.4, 5.6)	1.9 (0.8, 5.0)	1.5 (0.4, 5.6)	0.0 -	15.2 (4.9, 38.5)	4.1 (0.5, 25.5)	8.2 (3.6, 17.3)	4.4 (2.4, 8.0)	3.1 (1.8, 5.1)
Tier 2	1.6 (0.2, 9.5)	0.0 -	0.5 (0.1, 3.2)	1.3 (0.2, 7.6)	8.5 (2.1, 28.8)	0.0 -	7.5 (0.9, 41.5)	4.5 (1.5, 13.1)	3.9 (1.8, 8.3)	1.9 (0.9, 3.9)
Artemisinin Piperaquine										
Tier 1	3.7 (1.2, 11.1)	0.0 -	0.8 (0.2, 2.5)	7.7 (3.0, 18.5)	8.7 (2.9, 23.5)	18.2 (5.2, 47.7)	47.9 (11.1, 87.2)	14.8 (6.0, 32.2)	13.9 (6.5, 27.3)	6.9 (3.4, 13.5)
Tier 2	1.9 (0.5, 6.9)	0.0 -	0.6 (0.2, 2.3)	7.0 (1.7, 25.1)	0.0 -	0.0 -	0.0 -	14.0 (4.0, 39.0)	7.9 (2.9, 19.9)	3.7 (1.4, 9.3)
Quality-Assured ACT (QA ACT) Δ										
Tier 1	93.6 (85.9, 97.2)	99.1 (97.0, 99.7)	97.9 (95.9, 99.0)	87.2 (77.6, 93.1)	76.5 (50.3, 91.3)	45.3 (24.9, 67.4)	5.0 (0.8, 26.0)	67.8 (55.8, 77.9)	70.9 (60.6, 79.4)	85.4 (79.9, 89.6)
Tier 2	99.4 (96.1, 99.9)	97.1 (92.7, 98.9)	97.9 (94.9, 99.1)	83.8 (70.7, 91.7)	87.1 (67.4, 95.7)	59.2 (13.2, 93.3)	0.0 -	52.8 (32.9, 71.9)	63.7 (51.7, 74.2)	83.4 (77.2, 88.2)
Non-quality-assured ACT (non-QA ACT)										
Tier 1	6.4 (2.8, 14.1)	4.7 (1.8, 11.7)	5.1 (2.5, 10.2)	13.4 (7.1, 23.9)	16.7 (4.1, 48.4)	33.4 (14.9, 59.0)	52.0 (13.9, 87.8)	24.1 (14.8, 36.7)	21.4 (13.0, 33.2)	12.6 (8.4, 18.7)
Tier 2	5.8 (2.4, 13.2)	5.5 (2.4, 12.0)	5.6 (3.2, 9.6)	12.0 (5.1, 26.0)	8.5 (2.1, 28.8)	0.0 -	7.5 (0.9, 41.5)	18.5 (7.6, 38.6)	13.2 (7.2, 23.1)	8.8 (5.9, 12.9)
Any non-artemisinin therapy										
Tier 1	16.8 (8.2, 31.4)	0.0 -	3.6 (1.8, 7.1)	8.1 (3.6, 17.4)	6.8 (1.4, 27.7)	24.1 (10.8, 45.5)	52.1 (12.8, 88.9)	24.2 (14.2, 38.3)	17.4 (11.1, 26.2)	10.0 (6.9, 14.3)
Tier 2	6.5 (2.5, 15.9)	0.0 -	2.1 (0.8, 5.2)	1.9 (0.6, 5.3)	9.2 (2.9, 25.9)	40.8 (6.7, 86.8)	87.1 (57.6, 97.1)	41.4 (20.4, 66.1)	26.8 (16.8, 39.9)	12.5 (8.2, 18.7)

Table B2: Availability of antimalarials, among outlets stocking at least one antimalarials, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Tier 1 N=65 Tier 2 N=72	Tier 1 N=214 Tier 2 N=116	Tier 1 N=279 Tier 2 N=188	Tier 1 N=112 Tier 2 N=74	Tier 1 N=24 Tier 2 N=21	Tier 1 N=19 Tier 2 N=3	Tier 1 N=16 Tier 2 N=13	Tier 1 N=69 Tier 2 N=40	Tier 1 N=240 Tier 2 N=151	Tier 1 N=519 Tier 2 N=339
Chloroquine										
Tier 1	0.0 -	0.0 -	0.0 -	6.1 (2.3, 15.2)	6.8 (1.4, 27.7)	20.6 (9.2, 39.9)	52.1 (12.8, 88.9)	23.5 (13.5, 37.7)	16.0 (10.0, 24.7)	7.4 (4.5, 12.0)
Tier 2	0.0 -	0.0 -	0.0 -	1.9 (0.6, 5.3)	9.2 (2.9, 25.9)	19.9 (2.3, 72.1)	87.1 (57.6, 97.1)	40.0 (19.5, 64.7)	25.8 (15.9, 39.0)	10.9 (6.6, 17.4)
Other non-artemisinin therapy ^										
Tier 1	16.8 (8.2, 31.4)	0.0 -	3.6 (1.8, 7.1)	2.0 (0.5, 8.3)	0.0 -	3.5 (0.6, 17.6)	0.0 -	0.7 (0.1, 4.7)	1.4 (0.5, 3.9)	2.6 (1.5, 4.4)
Tier 2	6.5 (2.5, 15.9)	0.0 -	2.1 (0.8, 5.2)	0.0 -	0.0 -	20.9 (2.5, 73.5)	0.0 -	3.2 (0.8, 11.3)	1.7 (0.5, 6.0)	1.9 (0.9, 3.9)
Oral artemisinin monotherapy										
Tier 1	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Tier 2	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	5.3 (0.9, 26.3)	0.0 -	0.5 (0.1, 3.2)	0.2 (0.0, 1.4)
Non-oral artemisinin monotherapy										
Tier 1	13.5 (6.1, 27.4)	0.0 -	2.9 (1.2, 7.0)	7.6 (3.4, 15.9)	0.0 -	0.0 -	0.0 -	2.6 (0.7, 8.9)	4.2 (2.3, 7.7)	3.5 (2.0, 6.1)
Tier 2	12.0 (5.7, 23.6)	0.0 -	3.9 (1.8, 8.1)	7.9 (2.5, 22.0)	0.0 -	0.0 -	0.0 -	13.4 (3.6, 39.1)	8.0 (3.1, 19.3)	5.6 (2.7, 11.2)
Any treatment for severe malaria										
Tier 1	13.5 (6.1, 27.4)	0.0 -	2.9 (1.2, 7.0)	7.6 (3.4, 15.9)	0.0 -	0.0 -	0.0 -	3.3 (1.1, 9.5)	4.4 (2.4, 7.9)	3.6 (2.1, 6.1)
Tier 2	12.0 (5.7, 23.6)	0.0 -	3.9 (1.8, 8.1)	7.9 (2.5, 22.0)	0.0 -	0.0 -	0.0 -	15.1 (4.9, 38.3)	8.6 (3.6, 19.5)	5.9 (3.0, 11.3)
Artesunate IV/IM #										
Tier 1	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	1.2 (0.2, 7.1)	0.3 (0.1, 2.1)	0.2 (0.0, 1.0)
Tier 2	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Artemether IV/IM										
Tier 1	13.5 (6.1, 27.4)	0.0 -	2.9 (1.2, 7.0)	7.6 (3.4, 15.9)	0.0 -	0.0 -	0.0 -	1.4 (0.2, 7.9)	3.9 (2.0, 7.4)	3.3 (1.9, 5.9)

Table B2: Availability of antimalarials, among outlets stocking at least one antimalarials, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	Tier 1 N=65 Tier 2 N=72	Tier 1 N=214 Tier 2 N=116	Tier 1 N=279 Tier 2 N=188	Tier 1 N=112 Tier 2 N=74	Tier 1 N=24 Tier 2 N=21	Tier 1 N=19 Tier 2 N=3	Tier 1 N=16 Tier 2 N=13	Tier 1 N=69 Tier 2 N=40	Tier 1 N=240 Tier 2 N=151	Tier 1 N=519 Tier 2 N=339
Tier 2	12.0 (5.7, 23.6)	0.0 -	3.9 (1.8, 8.1)	7.9 (2.5, 22.0)	0.0 -	0.0 -	0.0 -	13.4 (3.6, 39.1)	8.0 (3.1, 19.3)	5.6 (2.7, 11.2)
Quinine IV/IM										
Tier 1	1.7 (0.3, 10.1)	0.0 -	0.4 (0.1, 2.3)	0.0 -	0.0 -	0.0 -	0.0 -	0.7 (0.1, 4.7)	0.2 (0.0, 1.4)	0.3 (0.1, 1.1)
Tier 2	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	1.8 (0.3, 10.5)	0.7 (0.1, 4.0)	0.3 (0.0, 1.7)
Second-line treatment Quinine + Doxycyline / Tetracycline £										
Tier 1	16.8 (8.2, 31.4)	0.0 -	3.6 (1.8, 7.1)	0.5 (0.1, 3.1)	0.0 -	3.5 (0.6, 17.6)	0.0 -	0.0 -	0.5 (0.1, 1.7)	2.1 (1.1, 4.0)
Tier 2	3.3 (0.9, 11.6)	0.0 -	1.1 (0.3, 3.8)	0.0 -	0.0 -	20.9 (2.5, 73.5)	0.0 -	0.0 -	0.5 (0.1, 3.1)	0.8 (0.3, 2.3)
Any antimalarial that is not indicated within national treatment guidelines ¥										
Tier 1	5.2 (2.0, 12.9)	1.5 (0.4, 5.6)	2.3 (1.0, 5.2)	14.2 (7.7, 24.8)	15.5 (6.9, 31.0)	51.2 (29.6, 72.3)	100.0 -	39.9 (26.5, 55.0)	31.3 (21.5, 43.2)	15.8 (11.0, 22.1)
Tier 2	6.7 (2.8, 15.3)	0.0 -	2.2 (0.9, 5.0)	10.2 (3.8, 24.2)	17.6 (6.8, 38.5)	19.9 (2.3, 72.1)	100.0 -	58.5 (42.8, 72.7)	38.1 (27.4, 50.1)	17.3 (12.1, 24.3)

* Antimalarial-stocking outlets have at least one antimalarial in stock on the day of the survey, verified by presence of at least one antimalarial recorded in the antimalarial audit sheet. The denominator includes 10 outlets that met screening criteria for a full interview but did not complete the interview (were not interviewed or completed a partial interview).

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

β At the time of the 2015 Cambodia ACTwatch outlet survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

Ω No fixed-dose combination artesunate mefloquine was audited during the 2015 Cambodia ACTwatch outlet survey.

Δ All QA ACT audited in Cambodia had the "green leaf" logo.

^ Other non-artemisinin therapy includes mefloquine and quinine.

At the time of the 2015 Cambodia ACTwatch outlet survey, artesunate IV/IM was the first-line treatment for severe malaria.

£ At the time of the 2015 Cambodia ACTwatch outlet survey, quinine and doxycycline/tetracycline was the second-line treatment for uncomplicated *P. falciparum* and *P. vivax* malaria.

¥ See Annex 2

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B3: Provision of malaria blood testing and antimalarials in the past week, among outlets with testing/antimalarials available, by outlet type, across national malaria burden stratification.

	Public Health Facility	Community Health Worker	**ALL Public / Not- For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
Proportion of outlets with any antimalarial in stock that:	Tier 1 N=65 Tier 2 N=72	Tier 1 N=214 Tier 2 N=116	Tier 1 N=279 Tier 2 N=188	Tier 1 N=111 Tier 2 N=74	Tier 1 N=24 Tier 2 N=21	Tier 1 N=19 Tier 2 N=3	Tier 1 N=12 Tier 2 N=11	Tier 1 N=67 Tier 2 N=39	Tier 1 N=233 Tier 2 N=148	Tier 1 N=512 Tier 2 N=336
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Distributed antimalarials in the past week										
Tier 1	31.8 (20.1, 46.2)	15.8 (9.6, 24.8)	19.2 (13.0, 27.5)	33.2 (23.8, 44.2)	44.0 (23.9, 66.4)	3.5 (0.5, 19.6)	23.9 (4.9, 65.7)	26.9 (19.1, 36.5)	29.9 (22.7, 38.4)	24.1 (18.3, 31.1)
Tier 2	29.0 (19.2, 41.1)	5.8 (2.8, 11.6)	13.3 (9.4, 18.5)	15.8 (8.5, 27.3)	4.9 (0.7, 26.8)	0.0 -	5.5 (0.8, 31.2)	20.8 (11.9, 33.8)	15.1 (9.6, 22.9)	14.0 (10.3, 18.8)
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]
Number of AETDs distributed in the past week										
Tier 1	0.0 [0.0-1.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-1.0]	0.0 [0.0-1.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-1.0]	0.0 [0.0-1.0]	0.0 [0.0-0.0]
Tier 2	0.0 [0.0-1.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]
Proportion of outlets with first-line ACT in stock that:	Tier 1 N=62 Tier 2 N=71	Tier 1 N=213 Tier 2 N=116	Tier 1 N=275 Tier 2 N=187	Tier 1 N=101 Tier 2 N=69	Tier 1 N=20 Tier 2 N=17	Tier 1 N=9 Tier 2 N=1	Tier 1 N=1 Tier 2 N=0	Tier 1 N=49 Tier 2 N=22	Tier 1 N=180 Tier 2 N=109	Tier 1 N=455 Tier 2 N=296
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Distributed first-line ACT in the past week Ψ										
Tier 1	32.8 (20.8, 47.5)	15.9 (9.7, 24.9)	19.4 (13.1, 27.8)	29.9 (20.9, 40.9)	47.4 (25.9, 69.8)	7.8 (1.2, 37.9)	0.0 -	32.4 (22.8, 43.7)	31.6 (24.0, 40.4)	24.2 (18.1, 31.6)
Tier 2	28.2 (18.5, 40.4)	5.8 (2.8, 11.6)	13.0 (9.1, 18.1)	11.6 (5.9, 21.5)	2.8 (0.4, 17.4)	0.0 -	- -	17.1 (5.3, 42.9)	11.6 (6.8, 19.1)	12.5 (9.1, 17.1)
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]
Number of first-line AETDs distributed in the past week										
Tier 1	0.0 [0.0-1.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-1.0]	0.0 [0.0-1.0]	0.0 [0.0-0.0]	0.0 -	0.0 [0.0-1.0]	0.0 [0.0-1.0]	0.0 [0.0-0.0]
Tier 2	0.0 [0.0-1.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 -	- -	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]

Table B3: Provision of malaria blood testing and antimalarials in the past week, among outlets with testing/antimalarials available, by outlet type, across national malaria burden stratification.

	Public Health Facility	Community Health Worker	**ALL Public / Not- For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
Proportion of outlets with chloroquine in stock that:	Tier 1 N=0 Tier 2 N=0	Tier 1 N=0 Tier 2 N=0	Tier 1 N=0 Tier 2 N=0	Tier 1 N=5 Tier 2 N=3	Tier 1 N=1 Tier 2 N=3	Tier 1 N=5 Tier 2 N=1	Tier 1 N=7 Tier 2 N=9	Tier 1 N=14 Tier 2 N=12	Tier 1 N=32 Tier 2 N=28	Tier 1 N=32 Tier 2 N=28
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Distributed chloroquine in the past week										
Tier 1	- -	- -	- -	76.4 (35.2, 95.1)	0.0 -	0.0 -	55.2 (29.1, 78.8)	20.6 (4.6, 58.1)	35.0 (22.6, 49.7)	35.0 (21.9, 50.7)
Tier 2	- -	- -	- -	24.2 (3.2, 75.3)	26.6 (3.4, 78.8)	0.0 -	6.6 (0.9, 36.5)	14.7 (3.3, 46.9)	12.8 (4.0, 34.0)	12.8 (3.6, 36.5)
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]
Number of chloroquine AETDs distributed in the past week										
Tier 1	- -	- -	- -	1.2 [0.6-1.2]	0.0 -	0.0 [0.0-0.0]	0.3 [0.0-0.4]	0.0 [0.0-0.0]	0.0 [0.0-0.8]	0.0 [0.0-0.8]
Tier 2	- -	- -	- -	0.0 [0.0-0.0]	0.0 [0.0-2.0]	0.0 -	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]
Proportion of outlets with any antimalarial that is not indicated within national treatment guidelines in stock # that:	Tier 1 N=4 Tier 2 N=5	Tier 1 N=3 Tier 2 N=0	Tier 1 N=7 Tier 2 N=5	Tier 1 N=16 Tier 2 N=6	Tier 1 N=4 Tier 2 N=5	Tier 1 N=9 Tier 2 N=1	Tier 1 N=12 Tier 2 N=11	Tier 1 N=23 Tier 2 N=19	Tier 1 N=64 Tier 2 N=42	Tier 1 N=71 Tier 2 N=47
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Distributed antimalarial that is not indicated within national treatment guidelines in the past week										
Tier 1	0.0 -	0.0 -	0.0 -	36.4 (13.4, 68.0)	26.0 (3.8, 75.9)	0.0 -	23.9 (4.9, 65.7)	12.5 (2.8, 41.8)	19.6 (11.6, 31.3)	17.9 (10.3, 29.3)
Tier 2	14.9 (2.1, 58.6)	- -	14.9 (2.1, 58.6)	15.4 (2.6, 55.8)	13.9 (2.0, 56.3)	0.0 -	5.5 (0.8, 31.2)	22.5 (9.9, 43.5)	17.0 (7.8, 33.3)	16.8 (7.6, 33.3)
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]
Number of AETDs distributed in the past week										
Tier 1	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-2.4]	0.0 [0.0-0.5]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]
Tier 2	0.0 [0.0-0.0]	- -	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 -	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-0.0]

Table B3: Provision of malaria blood testing and antimalarials in the past week, among outlets with testing/antimalarials available, by outlet type, across national malaria burden stratification.

	Public Health Facility	Community Health Worker	**ALL Public / Not- For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
Proportion of outlets with malaria blood testing available (microscopy or RDT) that:	Tier 1 N=64 Tier 2 N=71	Tier 1 N=240 Tier 2 N=130	Tier 1 N=304 Tier 2 N=201	Tier 1 N=157 Tier 2 N=126	Tier 1 N=31 Tier 2 N=43	Tier 1 N=26 Tier 2 N=5	Tier 1 N=0 Tier 2 N=0	Tier 1 N=92 Tier 2 N=63	Tier 1 N=306 Tier 2 N=237	Tier 1 N=610 Tier 2 N=438
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Provided/performed a malaria test in the past week										
Tier 1	65.2 (53.0, 75.6)	40.4 (28.9, 53.1)	45.3 (35.4, 55.6)	48.4 (41.5, 55.4)	52.5 (36.3, 68.1)	41.1 (21.9, 63.5)	- -	37.9 (27.0, 50.2)	45.0 (38.5, 51.6)	45.2 (38.9, 51.6)
Tier 2	47.5 (33.8, 61.7)	27.7 (17.6, 40.8)	33.5 (26.0, 41.9)	48.1 (34.9, 61.6)	37.1 (20.7, 57.2)	32.0 (7.2, 74.1)	- -	38.6 (26.2, 52.8)	42.5 (35.3, 50.1)	37.8 (31.7, 44.4)
	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]	Median [IQR]
Number of malaria tests provided/performed in the past week										
Tier 1	2.0 [0.0-5.0]	0.0 [0.0-1.0]	0.0 [0.0-2.0]	0.0 [0.0-4.0]	1.0 [0.0-3.0]	0.0 [0.0-1.0]	- -	0.0 [0.0-2.0]	0.0 [0.0-3.0]	0.0 [0.0-2.0]
Tier 2	0.0 [0.0-3.0]	0.0 [0.0-1.0]	0.0 [0.0-1.0]	0.0 [0.0-3.0]	0.0 [0.0-3.0]	0.0 [0.0-2.0]	- -	0.0 [0.0-2.0]	0.0 [0.0-2.0]	0.0 [0.0-2.0]

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

\# See Annex 2

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B5: Antimalarial market composition, across national malaria burden stratification

Outlet type, among outlets with at least 1 antimalarial in stock on the day of the survey:	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Tier 1, N = 519 outlets									
Tier 2, N = 339 outlets									

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

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B6a: Price of tablet formulation antimalarials, by outlet type, across national malaria burden stratification

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Median price of a tablet AETD*:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Any ACT						
Tier 1	$2.49 [1.49-3.73] (140)	$1.24 [1.12-1.86] (26)	$1.99 [1.24-4.97] (15)	$6.01 [3.73-6.01] (4)	$2.49 [1.49-3.73] (59)	$2.49 [1.49-3.73] (244)
Tier 2	$1.99 [1.24-3.73] (94)	$1.12 [0.87-2.24] (22)	$14.92 (1)	$1.24 (1)	$2.51 [1.24-4.01] (29)	$1.99 [1.24-3.73] (147)
Any national first-line ACT Ψ						
Tier 1	$2.49 [1.49-3.73] (133)	$1.24 [1.12-1.86] (23)	$1.49 [1.24-2.49] (8)	$3.73 (1)	$2.49 [1.86-3.73] (48)	$2.49 [1.49-3.73] (213)
Tier 2	$1.99 [1.24-3.73] (91)	$1.12 [0.87-2.24] (18)	$14.92 (1)	- -	$2.49 [1.24-3.73] (21)	$1.99 [1.24-3.73] (131)
Dihydroartemisinin piperaquine						
Tier 1	$2.49 [1.49-3.73] (133)	$1.24 [1.12-1.86] (23)	$1.49 [1.24-2.49] (8)	$3.73 (1)	$2.49 [1.86-3.73] (48)	$2.49 [1.49-3.73] (213)
Tier 2	$1.99 [1.24-3.73] (91)	$1.12 [0.87-2.24] (18)	$14.92 (1)	- -	$2.49 [1.24-3.73] (21)	$1.99 [1.24-3.73] (131)
Artesunate mefloquine						
Tier 1	$7.04 (1)	- -	$0.99 [0.99-1.99] (5)	$0.62 (1)	$1.16 [0.87-1.99] (9)	$1.16 [0.87-1.99] (16)
Tier 2	$1.99 (1)	$1.24 [0.87-1.66] (4)	- -	$1.24 (1)	$1.24 [1.16-1.74] (4)	$1.24 [1.16-1.74] (10)
Artemisinin piperaquine						
Tier 1	$4.01 [1.67-4.01] (6)	$2.51 [0.40-4.01] (3)	$8.02 [6.01-8.02] (2)	$6.01 [6.01-6.01] (2)	$6.01 [4.01-6.01] (2)	$4.01 [4.01-6.01] (15)
Tier 2	$10.02 [10.02-10.02] (2)	- -	- -	- -	$4.01 [4.01-6.01] (4)	$6.01 [4.01-10.02] (6)

Table B6a: Price of tablet formulation antimalarials, by outlet type, across national malaria burden stratification

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Median price of a tablet AETD*:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Quality-Assured ACT (QA ACT)						
Tier 1	$2.49 [1.49-3.73] (130)	$1.31 [1.24-1.86] (21)	$1.49 [1.24-2.49] (8)	$3.73 (1)	$2.49 [1.86-3.73] (46)	$2.49 [1.49-3.73] (206)
Tier 2	$1.99 [1.24-3.73] (88)	$1.12 [0.87-2.24] (18)	$14.92 (1)	- -	$2.49 [1.24-3.73] (21)	$1.99 [1.24-3.73] (128)
Non-Quality Assured ACT (non-QA ACT)						
Tier 1	$4.01 [1.60-4.97] (10)	$1.24 [0.75-2.51] (5)	$2.65 [0.99-8.02] (7)	$6.01 [6.01-6.01] (3)	$1.74 [0.87-2.49] (13)	$2.49 [0.99-6.01] (38)
Tier 2	$2.51 [0.75-10.02] (6)	$1.24 [0.87-1.66] (4)	- -	$1.24 (1)	$4.01 [1.78-6.01] (8)	$2.51 [1.24-6.01] (19)
Chloroquine						
Tier 1	$2.07 [0.75-2.07] (5)	$1.24 (1)	$1.24 [0.75-1.24] (3)	$0.50 [0.25-0.62] (5)	$1.24 [0.50-2.59] (10)	$1.24 [0.50-2.07] (24)
Tier 2	$1.49 (1)	$0.20 [0.20-1.24] (3)	$0.25 (1)	$0.25 (1)	$1.33 [0.75-1.86] (8)	$1.24 [0.50-1.86] (14)

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

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

Figures in this table are derived using audited products with price information. The numbers of antimalarials captured in audit sheets with missing price information are as follows:
45 any ACT tablet, 33 any national first-line ACT tablet, 33 dihydroartemisinin piperaquine tablet, 1 artesunate mefloquine tablet, 11 artemisinin piperaquine tablet, 32 QA ACT tablet, 13 non-QAACT tablet, 29 chloroquine tablet.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B6b: Price of pre-packaged antimalarials, by outlet type, across national malaria burden stratification

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Median price of one pre-packaged therapy:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Eurartesim adult 36-74kg						
Tier 1	$1.99 [1.24-2.98] (85)	$1.24 [1.12-1.49] (13)	$1.49 [1.24-2.49] (8)	$3.73 (1)	$2.49 [1.74-3.73] (39)	$1.99 [1.24-3.73] (146)
Tier 2	$1.24 [1.24-2.49] (55)	$0.99 [0.75-2.49] (14)	- -	- -	$1.99 [1.24-3.73] (15)	$1.24 [0.99-2.49] (84)
Eurartesim child 7-23 kg						
Tier 1	$1.12 [0.75-2.49] (17)	$0.75 [0.50-1.24] (3)	- -	- -	$0.75 (1)	$1.12 [0.75-2.24] (21)
Tier 2	$1.24 [0.75-1.24] (9)	$0.75 (1)	- -	- -	$1.24 [1.24-2.49] (3)	$1.24 [0.75-1.24] (13)
Eurartesim child 13-23kg						
Tier 1	$1.74 [1.24-2.24] (11)	- -	- -	- -	$1.24 [1.24-2.98] (2)	$1.74 [1.24-2.24] (13)
Tier 2	$1.24 [0.00-1.24] (5)	- -	$4.97 (1)	- -	$1.24 (1)	$1.24 [1.24-4.97] (7)
Eurartesim child 24-35kg						
Tier 1	$1.74 [1.12-2.49] (19)	$1.24 [0.75-1.24] (7)	- -	- -	$1.24 [1.24-1.74] (4)	$1.24 [1.12-2.24] (30)
Tier 2	$1.24 [1.24-1.99] (21)	$0.99 [0.75-0.99] (3)	- -	- -	$0.75 [0.75-2.49] (2)	$1.24 [0.99-1.99] (26)

Figures in this table are derived using audited products with price information. The numbers of antimalarials captured in audit sheets with missing price information are as follows:
13 Eurartesim for Adults (36-74kg), 5 Eurartesim for Children (7-23kg) , 6 Eurartesim for Children (13-23kg), 8 Eurartesim for Children (24-35kg)

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B7: Availability of malaria blood testing among antimalarial-stocking outlets*, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets stocking**	Tier 1 N=66 Tier 2 N=74	Tier 1 N=265 Tier 2 N=137	Tier 1 N=331 Tier 2 N=211	Tier 1 N=140 Tier 2 N=97	Tier 1 N=34 Tier 2 N=40	Tier 1 N=30 Tier 2 N=4	Tier 1 N=22 Tier 2 N=17	Tier 1 N=120 Tier 2 N=66	Tier 1 N=346 Tier 2 N=224	Tier 1 N=677 Tier 2 N=435
Any malaria blood testing										
Tier 1	98.4 (94.3, 99.6)	89.3 (84.6, 92.7)	91.0 (87.2, 93.8)	84.5 (76.8, 90.0)	72.1 (54.8, 84.6)	70.0 (49.8, 84.6)	0.0 -	58.9 (48.3, 68.8)	65.9 (57.9, 73.0)	78.4 (73.6, 82.5)
Tier 2	97.1 (88.7, 99.3)	90.0 (81.4, 94.9)	92.1 (85.6, 95.8)	80.4 (68.9, 88.3)	67.8 (50.3, 81.5)	0.0 -	0.0 -	62.6 (44.1, 77.9)	62.6 (52.7, 71.6)	78.1 (71.6, 83.4)
	Tier 1 N=66 Tier 2 N=74	Tier 1 N=265 Tier 2 N=137	Tier 1 N=331 Tier 2 N=211	Tier 1 N=140 Tier 2 N=97	Tier 1 N=34 Tier 2 N=40	Tier 1 N=30 Tier 2 N=4	Tier 1 N=22 Tier 2 N=17	Tier 1 N=120 Tier 2 N=66	Tier 1 N=346 Tier 2 N=224	Tier 1 N=677 Tier 2 N=435
Malaria microscopy										
Tier 1	41.5 (29.5, 54.6)	0.5 (0.1, 3.0)	8.2 (5.5, 11.9)	14.9 (8.9, 23.9)	9.0 (2.9, 24.9)	4.7 (0.7, 24.9)	0.0 -	5.6 (2.6, 11.5)	9.0 (5.8, 13.6)	8.6 (6.6, 11.1)
Tier 2	26.6 (16.9, 39.2)	0.0 -	7.6 (4.7, 12.1)	17.0 (10.3, 26.8)	0.0 -	0.0 -	0.0 -	5.7 (2.2, 13.6)	8.4 (5.3, 12.9)	8.0 (5.6, 11.2)
	Tier 1 N=66 Tier 2 N=74	Tier 1 N=265 Tier 2 N=137	Tier 1 N=331 Tier 2 N=211	Tier 1 N=140 Tier 2 N=97	Tier 1 N=34 Tier 2 N=40	Tier 1 N=30 Tier 2 N=4	Tier 1 N=22 Tier 2 N=17	Tier 1 N=120 Tier 2 N=66	Tier 1 N=346 Tier 2 N=224	Tier 1 N=677 Tier 2 N=435
Rapid diagnostic tests (RDTs)										
Tier 1	97.6 (93.2, 99.2)	89.3 (84.6, 92.7)	90.8 (87.0, 93.6)	83.8 (75.9, 89.4)	72.1 (54.8, 84.6)	70.0 (49.8, 84.6)	0.0 -	58.5 (48.0, 68.2)	65.4 (57.4, 72.7)	78.1 (73.2, 82.2)
Tier 2	96.5 (88.7, 99.0)	90.0 (81.4, 94.9)	91.9 (85.5, 95.6)	77.1 (65.1, 85.8)	67.8 (50.3, 81.5)	0.0 -	0.0 -	61.7 (43.1, 77.5)	61.1 (50.9, 70.4)	77.2 (70.5, 82.8)

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

** Results in this table are derived using responses captured among outlets with blood testing information. No antimalarial-stocking outlet were missing information about either availability of microscopy or availability of RDTs.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B8a: Malaria blood testing market composition, national malaria burden stratification tier 1

Outlet type, among outlets with malaria blood testing available on the day of the survey:*	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**Total****
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	
1. Antimalarial-stocking outlets Ψ	10.2 (8.1, 12.8)	40.4 (31.7, 49.7)	50.6 (42.2, 58.9)	18.6 (14.1, 24.1)	3.9 (2.3, 6.7)	3.3 (1.8, 5.9)	- -	11.3 (8.3, 15.4)	37.1 (30.3, 44.4)	87.7 (84.2, 90.5)
2. Non-antimalarial-stocking outlets (testing only)	0.2 (0.0, 1.0)	1.1 (0.5, 2.6)	1.2 (0.6, 2.7)	6.0 (4.0, 8.9)	0.8 (0.4, 1.8)	1.0 (0.5, 2.0)	- -	3.3 (2.2, 5.0)	11.1 (8.3, 14.6)	12.3 (9.5, 15.8)
Total outlets, N= ***	10.4 (8.2, 13.0)	41.5 (32.5, 51.0)	51.8 (43.2, 60.3)	24.6 (18.7, 31.5)	4.7 (2.8, 7.9)	4.2 (2.5, 7.1)	- -	14.6 (11.3, 18.8)	48.2 (39.7, 56.8)	100.0 -

* Outlets with malaria blood testing available on the day of the survey, verified by presence of at least one RDT recorded in the RDT audit sheet and/or reported availability of malaria microscopy.
** Row sum – market composition for antimalarial-stocking or non-antimalarial-stocking outlets.
Ψ Outlets with at least one antimalarial in stock on the day of the survey or reportedly in stock within the past 3 months.
*** Column sum – market composition for the specified outlet type.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B8b: Malaria blood testing market composition, national malaria burden stratification tier 2

Outlet type, among outlets with malaria blood testing available on the day of the survey:*	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**Total****
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	
1. Antimalarial-stocking outlets Ψ	14.9 (11.7, 18.8)	34.3 (27.2, 42.2)	49.2 (42.1, 56.4)	14.3 (10.4, 19.3)	4.6 (2.6, 8.0)	- -	- -	11.6 (6.9, 18.8)	30.4 (24.6, 36.9)	79.7 (74.2, 84.2)
2. Non-antimalarial-stocking outlets (testing only)	0.5 (0.1, 3.2)	2.5 (1.0, 5.8)	3.0 (1.4, 6.4)	7.5 (5.1, 11.0)	2.7 (1.5, 4.9)	1.3 (0.5, 3.1)	- -	5.8 (3.8, 8.7)	17.3 (13.1, 22.6)	20.3 (15.8, 25.8)
Total outlets, N= ***	15.4 (12.1, 19.5)	36.8 (29.1, 45.3)	52.2 (44.3, 60.1)	21.8 (16.2, 28.6)	7.3 (4.6, 11.6)	1.3 (0.5, 3.1)	- -	17.4 (12.4, 23.8)	47.8 (39.9, 55.7)	100.0 -

* Outlets with malaria blood testing available on the day of the survey, verified by presence of at least one RDT recorded in the RDT audit sheet and/or reported availability of malaria microscopy.
** Row sum – market composition for antimalarial-stocking or non-antimalarial-stocking outlets.
Ψ Outlets with at least one antimalarial in stock on the day of the survey or reportedly in stock within the past 3 months.
*** Column sum – market composition for the specified outlet type.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B9: Price of malaria blood testing for adults, outlet type

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Total median price to consumers:*	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Microscopy						
Tier 1	$1.24 [0.75-1.24] (30)	$1.24 [0.99-1.24] (5)	$0.75 [0.50-0.99] (3)	- -	$1.24 [1.24-1.24] (7)	$1.24 [0.75-1.24] (45)
Tier 2	$1.24 [0.75-1.24] (43)	$0.75 (1)	- -	- -	$1.24 [0.99-3.73] (6)	$1.24 [0.75-1.24] (50)
Rapid diagnostic test (RDT)						
Tier 1	$0.99 [0.75-1.24] (170)	$0.75 [0.50-0.75] (24)	$0.75 [0.62-1.24] (27)	- -	$0.99 [0.75-1.24] (92)	$0.87 [0.75-1.24] (313)
Tier 2	$0.99 [0.62-1.24] (127)	$0.75 [0.62-0.99] (33)	$0.87 [0.75-0.99] (5)	- -	$0.99 [0.75-1.24] (64)	$0.99 [0.75-1.24] (229)

* Total price to the consumer including consultation and/or service fees.
** Price to the consumer for an RDT excluding consultation and/or service fees.
Microscopic blood testing price information was not available (missing or "don't know" response) for: 50 adult RDTs, 5 adult microscopy tests.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B10.1: Antimalarial market share, national malaria burden stratification tier 1

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold / distributed:*	Public Health Facility	Community Health Worker	**TOTAL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**TOTAL Private**	**ANTI-MALARIAL TOTAL****
	%	%	%	%	%	%	%	%	%	%
Any antimalarial that is indicated in the national treatment guidelines #	23.4	14.4	37.8	25.1	7.9	0.4	0.0	21.8	55.1	93.0
1. Any ACT	23.0	14.4	37.5	26.7	8.1	0.4	0.0	22.2	57.4	94.8
Any first line ACT Ψ	23.0	14.4	37.5	24.9	7.9	0.4	0.0	21.8	55.0	92.5
Dihydroartemisinin piperaquine	23.0	14.4	37.5	24.9	7.9	0.4	0.0	21.8	55.0	92.5
Eurartesim β	23.0	14.4	37.5	24.9	7.9	0.4	0.0	21.8	55.0	92.5
Artemisinin piperaquine	0.0	0.0	0.0	1.8	0.2	0.0	0.0	0.4	2.4	2.4
Quality-Assured ACT (QA ACT)	22.3	14.4	36.8	24.9	7.9	0.4	0.0	21.8	55.0	91.7
Non-Quality-Assured ACT (non QA ACT)	0.7	0.0	0.7	1.8	0.2	0.0	0.0	0.4	2.4	3.1
2. Any non-artemisinin therapy	0.0	0.0	0.0	2.4	0.0	0.0	0.8	1.5	4.7	4.7
Chloroquine Ψ	0.0	0.0	0.0	2.4	0.0	0.0	0.8	1.5	4.7	4.7
Other non-artemisinin therapy ##	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Non-oral artemisinin monotherapy	0.4	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.5
OUTLET TYPE TOTAL***	23.4	14.4	37.8	29.3	8.1	0.4	0.8	23.6	62.2	100.0

* A total of 346.8 AETDs were reportedly sold or distributed in the previous seven days. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

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

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

See Annex 2

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

β At the time of the 2015 Cambodia ACTwatch outlety survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

Other non-artemisinin therapies include mefloquine and quinine.

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

A total of 1,290 antimalarials were audited. Of these, 47 audited antimalarials were not included in market share calculations due to incomplete or inconsistent information.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B10.2: Antimalarial market share, national malaria burden stratification tier 2

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold / distributed:*	Public Health Facility	Community Health Worker	**TOTAL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**TOTAL Private**	**ANTI-MALARIAL TOTAL****
	%	%	%	%	%	%	%	%	%	%
Any antimalarial that is indicated in the national treatment guidelines #	39.4	19.1	58.4	14.2	2.0	0.0	0.0	8.0	24.1	82.6
1. Any ACT	38.7	19.1	57.8	12.8	2.0	0.0	0.0	18.3	33.1	90.9
Any first line ACT Ψ	38.7	19.1	57.8	12.3	2.0	0.0	0.0	8.0	22.2	80.1
Dihydroartemisinin piperaquine	38.7	19.1	57.8	12.3	2.0	0.0	0.0	8.0	22.2	80.1
Eurartesim β	38.7	19.1	57.8	12.3	2.0	0.0	0.0	8.0	22.2	80.1
Artemisinin piperaquine	0.0	0.0	0.0	0.5	0.0	0.0	0.0	10.1	10.6	10.6
Quality-Assured ACT (QA ACT)	38.7	19.1	57.8	12.3	2.0	0.0	0.0	8.0	22.2	80.1
Non-Quality-Assured ACT (non QA ACT)	0.0	0.0	0.0	0.5	0.0	0.0	0.0	10.3	10.9	10.9
2. Any non-artemisinin therapy	0.5	0.0	0.5	0.2	1.3	0.0	0.5	4.0	6.0	6.6
Chloroquine Ψ	0.0	0.0	0.0	0.2	1.3	0.0	0.5	4.0	6.0	6.0
Other non-artemisinin therapy ##	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Non-oral artemisinin monotherapy	0.6	0.0	0.6	1.9	0.0	0.0	0.0	0.0	1.9	2.5
OUTLET TYPE TOTAL***	39.9	19.1	59.0	14.9	3.3	0.0	0.5	22.3	41.0	100.0

* A total of 346.8 AETDs were reportedly sold or distributed in the previous seven days. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

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

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

See Annex 2

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

β At the time of the 2015 Cambodia ACTwatch outlety survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

Other non-artemisinin therapies include mefloquine and quinine.

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

A total of 1,290 antimalarials were audited. Of these, 47 audited antimalarials were not included in market share calculations due to incomplete or inconsistent information.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B11.1: Antimalarial market share within outlet type, national malaria burden stratification tier 1

AETDs sold or distributed in the previous week by antimalarial type as a percentage of all AETDs sold / distributed within each outlet type:*	TOTAL Public / Not-For-Profit	TOTAL Private
	%	%
Any antimalarial that is indicated in the national treatment guidelines #	85.6	93.0
1. Any ACT	91.2	94.8
Any first line ACT Ψ	85.1	92.5
Dihydroartemisinin piperaquine	85.1	92.5
Eurartesim β	85.1	92.5
Artemisinin piperaquine	6.1	2.4
Quality-Assured ACT (QA ACT)	85.1	91.7
Non-Quality-Assured ACT (non QA ACT)	6.1	3.1
2. Any non-artemisinin therapy	8.3	4.7
Chloroquine	8.3	4.7
Other non-artemisinin therapy ##	0.0	0.0
3. Oral artemisinin monotherapy	0.0	0.0
4. Non-oral artemisinin monotherapy	0.5	0.5

* AETDs reportedly sold or distributed in the previous seven days: 105.4 public health facility; 51.0 CHW; 94.4 private for-profit HF; 29.5 pharmacy; 2 drug store; 2.7 general retailer; 61.8 itinerant drug vendor. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

\# See Annex 2

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

β At the time of the 2015 Cambodia ACTwatch outlet survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

Other non-artemisinin therapies include: mefloquine and quinine.

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

A total of 1,290 antimalarials were audited. Of these, 47 audited antimalarials were not included in market share calculations due to due to incomplete or inconsistent information, including the following number of antimalarials by outlet type: 7 public health facility; 3 community health worker; 5 drug store; 19 retailer; and 13 itinerant drug vendor.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B11.2: Antimalarial market share within outlet type, national malaria burden stratification tier 2

AETDs sold or distributed in the previous week by antimalarial type as a percentage of all AETDs sold / distributed within each outlet type:*	TOTAL Public / Not-For-Profit	TOTAL Private
	%	%
Any antimalarial that is indicated in the national treatment guidelines #	95.1	82.6
1. Any ACT	85.8	90.9
Any first line ACT Ψ	82.3	80.1
Dihydroartemisinin piperaquine	82.3	80.1
Eurartesim β	82.3	80.1
Artemisinin piperaquine	3.5	10.6
Quality-Assured ACT (QA ACT)	82.3	80.1
Non-Quality-Assured ACT (non QA ACT)	3.5	10.9
2. Any non-artemisinin therapy	1.4	6.6
Chloroquine	1.4	6.0
Other non-artemisinin therapy ##	0.0	0.5
3. Oral artemisinin monotherapy	0.0	0.0
4. Non-oral artemisinin monotherapy	12.8	2.5

* AETDs reportedly sold or distributed in the previous seven days: 105.4 public health facility; 51.0 CHW; 94.4 private for-profit HF; 29.5 pharmacy; 2 drug store; 2.7 general retailer; 61.8 itinerant drug vendor. See Annex 11 for a description of AETD calculation and Annex 12 for AETD numbers by outlet type and drug category.

\# See Annex 2

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

β At the time of the 2015 Cambodia ACTwatch outlet survey, Eurartesim brand dihydroartemisinin piperaquine was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

Other non-artemisinin therapies include: mefloquine and quinine.

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

A total of 1,290 antimalarials were audited. Of these, 47 audited antimalarials were not included in market share calculations due to due to incomplete or inconsistent information, including the following number of antimalarials by outlet type: 7 public health facility; 3 community health worker; 5 drug store; 19 retailer; and 13 itinerant drug vendor.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B14: Private sector case management training, supervision, support and surveillance, by outlet type, across national malaria burden stratification

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Proportion of outlets that:	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Have a provider who reportedly received training in the past year on:						
(1) Malaria diagnosis (RDT and/or microscopy)	Tier 1 N=174 Tier 2 N=140	Tier 1 N=39 Tier 2 N=56	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=143 Tier 2 N=90	Tier 1 N=415 Tier 2 N=312
Tier 1	38.9 (28.5, 50.4)	51.5 (30.6, 71.8)	21.1 (10.7, 37.5)	5.2 (1.3, 18.6)	12.9 (8.5, 19.2)	27.1 (20.7, 34.6)
Tier 2	33.2 (24.5, 43.2)	35.5 (24.2, 48.8)	0.0 -	0.0 -	4.7 (2.1, 10.0)	19.4 (14.7, 25.1)
(2) National malaria treatment guidelines	Tier 1 N=174 Tier 2 N=140	Tier 1 N=40 Tier 2 N=57	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=143 Tier 2 N=90	Tier 1 N=416 Tier 2 N=313
Tier 1	36.6 (25.6, 49.3)	53.2 (34.3, 71.3)	19.5 (9.3, 36.5)	5.2 (1.3, 18.6)	10.0 (6.1, 15.8)	25.3 (18.7, 33.3)
Tier 2	31.9 (23.2, 42.2)	30.1 (19.6, 43.2)	0.0 -	0.0 -	3.9 (1.6, 9.1)	17.8 (13.6, 23.1)
Supervision/regulation						
(3) Report receiving a supervisory or regulatory visit within the past year	Tier 1 N=177 Tier 2 N=141	Tier 1 N=38 Tier 2 N=59	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=144 Tier 2 N=91	Tier 1 N=418 Tier 2 N=317
Tier 1	21.6 (15.6, 29.2)	20.6 (7.9, 44.0)	12.1 (3.1, 37.0)	0.0 -	4.1 (1.9, 8.4)	13.2 (8.6, 19.6)
Tier 2	13.4 (7.8, 22.1)	9.5 (3.8, 21.9)	0.0 -	0.0 -	1.3 (0.2, 8.2)	6.9 (4.3, 11.0)
Report access to subsidized commodities:						
Antimalarials	Tier 1 N=174 Tier 2 N=139	Tier 1 N=40 Tier 2 N=59	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=143 Tier 2 N=91	Tier 1 N=416 Tier 2 N=315
Tier 1	38.6 (31.2, 46.6)	64.0 (51.4, 75.0)	15.7 (7.7, 29.2)	0.0 -	16.3 (11.6, 22.4)	28.6 (23.4, 34.4)
Tier 2	36.8 (27.5, 47.1)	42.5 (28.8, 57.5)	0.0 -	0.0 -	11.7 (6.0, 21.5)	24.4 (19.0, 30.7)
Malaria RDTs	Tier 1 N=177 Tier 2 N=140	Tier 1 N=40 Tier 2 N=59	Tier 1 N=36 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=142 Tier 2 N=91	Tier 1 N=417 Tier 2 N=316
Tier 1	41.6 (33.5, 50.3)	56.1 (44.7, 66.8)	26.3 (14.0, 43.8)	0.09 -	20.2 (14.0, 28.1)	31.4 (26.0, 37.3)
Tier 2	37.7 (29.6, 46.5)	48.4 (36.7, 60.4)	33.3 (8.7, 72.3)	0.0 -	8.4 (3.7, 17.8)	25.5 (20.1, 31.8)

Table B14: Private sector case management training, supervision, support and surveillance, by outlet type, across national malaria burden stratification

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Proportion of outlets that:	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Passive surveillance						
(4) Keep records on number of patients tested/treated for malaria	Tier 1 N=178 Tier 2 N=140	Tier 1 N=40 Tier 2 N=59	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=144 Tier 2 N=91	Tier 1 N=421 Tier 2 N=316
Tier 1	41.4 (29.0, 55.0)	23.1 (10.4, 43.7)	12.4 (3.1, 38.6)	0.0 -	8.1 (4.0, 15.9)	23.0 (14.6, 34.2)
Tier 2	24.7 (18.6, 32.0)	13.2 (4.8, 31.2)	0.0 -	0.0 -	4.8 (1.5, 14.5)	13.0 (9.2, 18.0)
(5) Report numbers of patients tested/treated for malaria to government or non-government organization	Tier 1 N=178 Tier 2 N=140	Tier 1 N=40 Tier 2 N=59	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=144 Tier 2 N=91	Tier 1 N=421 Tier 2 N=316
Tier 1	38.9 (26.6, 52.9)	21.6 (9.6, 41.7)	10.5 (2.3, 37.1)	0.0 -	7.5 (3.5, 15.6)	21.5 (13.2, 32.8)
Tier 2	22.2 (16.0, 29.8)	13.2 (4.8, 31.2)	0.0 -	0.0 -	3.8 (0.9, 14.1)	11.7 (8.0, 16.8)
Report numbers to government	Tier 1 N=178 Tier 2 N=140	Tier 1 N=40 Tier 2 N=59	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=144 Tier 2 N=91	Tier 1 N=421 Tier 2 N=316
Tier 1	17.1 (10.0, 27.6)	7.4 (2.8, 18.1)	0.0 -	0.0 -	2.8 (0.7, 9.7)	8.6 (5.2, 14.0)
Tier 2	15.9 (9.7, 25.1)	12.0 (4.1, 30.6)	0.0 -	0.0 -	3.8 (0.9, 14.1)	9.2 (5.6, 14.6)
Report numbers of to a non-governmental organization	Tier 1 N=178 Tier 2 N=140	Tier 1 N=40 Tier 2 N=59	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=144 Tier 2 N=91	Tier 1 N=421 Tier 2 N=316
Tier 1	20.8 (11.0, 36.1)	14.3 (4.6, 36.2)	10.5 (2.3, 37.1)	0.0 -	2.6 (0.7, 9.9)	11.7 (5.7, 22.3)
Tier 2	6.2 (3.2, 12.0)	1.1 (0.2, 7.2)	0.0 -	0.0 -	1.3 (0.2, 8.2)	3.0 (1.6, 5.7)
Composite indicators *						
Reportedly have a trained provider (1 or 2) and receive supervision (3)	Tier 1 N=175 Tier 2 N=140	Tier 1 N=38 Tier 2 N=57	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=144 Tier 2 N=91	Tier 1 N=416 Tier 2 N=314
Tier 1	15.0 (10.7, 20.6)	15.2 (5.0, 37.7)	3.5 (0.9, 12.6)	0.0 -	2.9 (1.2, 6.8)	8.7 (6.1, 12.4)
Tier 2	8.7 (4.6, 16.1)	6.8 (2.3, 18.4)	0.0 -	0.0 -	1.3 (0.2, 8.2)	4.8 (2.8, 8.0)

Table B14: Private sector case management training, supervision, support and surveillance, by outlet type, across national malaria burden stratification

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Proportion of outlets that:	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Reportedly have a trained provider (1 or 2), receive supervision (3), have national first-line treatment for *Pf* and *Pv* in stock, and provide malaria blood testing (RDT or microscopy)	Tier 1 N=175 Tier 2 N=140	Tier 1 N=38 Tier 2 N=57	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=144 Tier 2 N=91	Tier 1 N=416 Tier 2 N=314
Tier 1	14.2 (10.0, 19.9)	11.6 (3.0, 36.2)	3.5 (0.9, 12.6)	0.0 -	0.7 (0.1, 4.3)	7.4 (4.8, 11.1)
Tier 2	4.9 (2.5, 9.2)	1.2 (0.2, 7.5)	0.0 -	0.0 -	- -	2.0 (1.0, 4.1)
Reportedly have a trained provider (1 or 2), receive supervision (3), have national first-line treatment for *Pf* and *Pv* in stock, provide malaria blood testing (RDT or microscopy), keep records on numbers of patients tested/treatment for malaria (4), and report these numbers to a government or non-governmental organization (5)	Tier 1 N=175 Tier 2 N=139	Tier 1 N=38 Tier 2 N=57	Tier 1 N=37 Tier 2 N=9	Tier 1 N=22 Tier 2 N=17	Tier 1 N=144 Tier 2 N=91	Tier 1 N=416 Tier 2 N=313
Tier 1	14.0 (9.7, 19.7)	9.7 (1.9, 36.7)	1.9 (0.3, 11.3)	0.0 -	0.7 (0.1, 4.3)	7.0 (4.4, 10.8)
Tier 2	3.6 (1.7, 7.4)	1.2 (0.2, 7.5)	0.0 -	0.0 -	0.0 -	1.5 (0.7, 3.3)

Provider questions were administered to one staff member working in each outlet eligible for a full interview (current/recent antimalarial-stocking outlets or outlets providing malaria blood testing).
There were no missing responses. The number of providers who reported "don't know" included: 11 diagnosis training, 9 case management training, 3 supervision, 7 subsidized antimalarials, 5 RDTs, 1 record keeping, and 0 reporting.

* Among outlets with responses for all relevant questions.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Table B15: Provider antimalarial treatment knowledge and practices, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers who:	Tier 1 N=66 Tier 2 N=74	Tier 1 N=265 Tier 2 N=137	Tier 1 N=331 Tier 2 N=211	Tier 1 N=140 Tier 2 N=97	Tier 1 N=34 Tier 2 N=40	Tier 1 N=40 Tier 2 N=4	Tier 1 N=22 Tier 2 N=17	Tier 1 N=120 Tier 2 N=66	Tier 1 N=346 Tier 2 N=224	Tier 1 N=677 Tier 2 N=435
Correctly state the national first-line treatment for uncomplicated *P. falciparum / vivax* malaria Ψ										
DHA-PPQ										
Tier 1	90.9 (82.7, 95.4)	96.7 (92.6, 98.5)	95.6 (92.3, 97.5)	75.0 (65.2, 82.7)	78.3 (68.3, 85.8)	62.8 (43.1, 79.0)	10.4 (2.5, 34.5)	48.9 (36.3, 61.7)	59.7 (51.2, 67.6)	77.5 (72.6, 81.8)
Tier 2	80.4 (67.4, 89.0)	90.2 (80.7, 95.3)	87.4 (80.0, 92.3)	82.3 (71.9, 89.4)	74.9 (58.4, 86.4)	66.0 (25.6, 91.6)	8.8 (1.1, 44.4)	40.4 (29.5, 52.4)	58.1 (49.1, 66.6)	73.4 (66.8, 79.1)
ASMQ fixed-dose combination										
Tier 1	0.0 -	1.7 (0.6, 4.5)	1.4 (0.5, 3.7)	0.8 (0.1, 5.0)	0.0 -	0.0 -	0.0 -	6.6 (3.2, 13.2)	2.6 (1.2, 5.5)	2.0 (1.1, 3.5)
Tier 2	14.2 (7.1, 26.5)	7.0 (3.0, 15.4)	9.1 (5.1, 15.8)	0.9 (0.1, 5.8)	4.7 (1.3, 15.6)	0.0 -	0.0 -	6.1 (2.5, 14.0)	3.3 (1.7, 6.3)	6.3 (3.9, 10.1)
DHAPPQ or ASMQ fixed-dose combination										
Tier 1	90.9 (82.7, 95.4)	96.7 (92.6, 98.5)	95.6 (92.3, 97.5)	75.8 (66.0, 83.5)	78.3 (68.3, 85.8)	62.8 (43.1, 79.0)	10.4 (2.5, 34.5)	53.1 (40.5, 65.2)	61.4 (53.1, 69.1)	78.4 (73.6, 82.5)
Tier 2	87.8 (77.0, 94.0)	90.5 (80.9, 95.5)	89.7 (82.6, 94.1)	82.3 (71.9, 89.4)	79.7 (66.2, 88.7)	66.0 (25.6, 91.6)	8.8 (1.1, 44.4)	45.6 (34.8, 56.9)	60.7 (51.7, 69.0)	75.9 (69.4, 81.4)
Correctly state the first-line dosing regimen for uncomplicated *P. falciparum / vivax* malaria for an adult										
DHAPPQ										
Tier 1	87.7 (78.5, 93.3)	92.5 (87.1, 95.8)	91.6 (87.0, 94.7)	73.2 (63.3, 81.2)	78.3 (68.3, 85.8)	60.9 (41.0, 77.7)	10.4 (2.5, 34.5)	45.8 (34.2, 58.0)	57.8 (49.3, 65.8)	74.6 (69.9, 78.8)
Tier 2	78.3 (65.5, 87.3)	81.2 (71.3, 88.3)	80.4 (72.4, 86.5)	77.2 (67.0, 85.0)	69.0 (50.9, 82.8)	66.0 (25.6, 91.6)	8.8 (1.1, 44.4)	37.1 (26.4, 49.3)	54.2 (45.3, 62.7)	67.9 (61.7, 73.6)
ASMQ fixed-dose combination										
Tier 1	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
Tier 2	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -

Table B15: Provider antimalarial treatment knowledge and practices, by outlet type, across national malaria burden stratification

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
For uncomplicated malaria in adults, report an ACT as the:										
Most effective treatment										
Tier 1	91.5 (82.1, 96.2)	96.7 (93.9, 98.2)	95.7 (92.7, 97.5)	93.6 (86.4, 97.1)	84.4 (71.2, 92.2)	84.3 (66.0, 93.7)	25.1 (10.9, 48.0)	88.1 (80.9, 92.9)	84.0 (78.1, 88.5)	89.8 (86.4, 92.4)
Tier 2	93.9 (85.0, 97.7)	94.8 (88.1, 97.8)	94.6 (89.6, 97.2)	89.0 (80.4, 94.1)	86.1 (73.0, 93.4)	66.8 (16.2, 95.4)	34.9 (18.5, 55.9)	75.9 (56.0, 88.6)	78.0 (69.1, 85.0)	86.7 (81.8, 90.4)
Treatment he/she most commonly recommends										
Tier 1	95.7 (89.0, 98.4)	95.8 (92.0, 97.8)	95.8 (92.7, 97.6)	93.8 (86.7, 97.3)	89.9 (58.7, 98.2)	84.9 (70.3, 93.0)	36.1 (9.1, 76.2)	87.3 (79.9, 92.3)	85.4 (79.0, 90.1)	90.5 (87.0, 93.2)
Tier 2	97.1 (88.7, 99.3)	83.1 (71.5, 90.6)	87.1 (78.3, 92.7)	91.7 (84.9, 95.6)	92.7 (80.4, 97.5)	66.0 (25.6, 91.6)	45.8 (22.8, 70.8)	78.8 (63.3, 88.9)	82.1 (73.9, 88.1)	84.7 (79.1, 89.0)

Numbers of providers (N) in this table are the total number of providers eligible for table indicators. No providers were missing information about the national first-line treatment or dosing regimen for *Pf/Pv* malaria.

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, dihydroartemisinin piperaquine and fixed-dose combination artesunate mefloquine were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria. Primaquine is also recommended to treat uncomplicated *P. falciparum* and *P. vivax* malaria in patients determined to be G6PD non-deficient. No providers reported primaquine as part of the national first-line treatment and in practice, due to concerns with G6PD deficiency, primaquine has not yet been implemented.

Source: ACTwatch Outlet Survey, Cambodia, 2015.

Results Section C: Core Indicators across Survey Round: 2009, 2011, 2013, 2015

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

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	2009 N=249 2011 N=430 2013 N=614 2015 N=173	2009 N=300 2011 N=353 2013 N=325 2015 N=430	2009 N=549 2011 N=783 2013 N=939 2015 N=604	2009 N=77 2011 N=261 2013 N=293 2015 N=668	2009 N=28 2011 N=145 2013 N=158 2015 N=290	2009 N=164 2011 N=293 2013 N=304 2015 N=338	2009 N=6,312 2011 N=15,781 2013 N=13,472 2015 N=23,840	2009 N=393 2011 N=657 2013 N=589 2015 N=924	2009 N=6,964 2011 N=17,137 2013 N=14,816 2015 N=26,060	2009 N=7,513 2011 N=17,920 2013 N=15,755 2015 N=26,664
Any antimalarial at the time of survey visit										
2009	65.8 (47.1, 80.6)	57.7 (28.5, 82.3)	60.8 (38.5, 79.3)	73.0 (58.5, 83.9)	85.4 (69.9, 93.6)	51.9 (42.5, 61.1)	3.3 (2.3, 4.8)	32.4 (25.5, 40.2)	7.2 (5.7, 8.9)	9.8 (8.0, 12.0)
2011	90.0 (84.3, 93.8)	93.7 (89.5, 96.4)	92.2 (88.6, 94.8)	46.4 (35.0, 58.2)	41.7 (32.5, 51.5)	31.4 (21.0, 44.1)	1.1 (0.6, 1.9)	25.1 (18.1, 33.6)	3.4 (2.6, 4.5)	5.1 (4.0, 6.4)
2013	82.0 (74.7, 87.6)	88.1 (81.8, 92.5)	85.6 (80.4, 89.6)	45.5 (37.6, 53.6)	53.2 (46.4, 59.9)	20.8 (16.0, 26.5)	0.4 (0.2, 0.7)	17.5 (12.9, 23.4)	3.0 (2.5, 3.7)	4.2 (3.6, 4.9)
2015	77.9 (69.1, 84.8)	74.3 (66.4, 80.9)	75.2 (68.8, 80.6)	31.0 (26.1, 36.3)	20.5 (14.8, 27.6)	6.6 (4.2, 10.1)	0.2 (0.1, 0.4)	15.1 (11.4, 19.8)	1.8 (1.5, 2.1)	3.9 (3.4, 4.4)
Any ACT										
2009	64.7 (46.1, 79.7)	54.7 (27.7, 79.2)	58.5 (37.5, 76.9)	67.5 (54.3, 78.3)	74.8 (43.2, 92.0)	45.4 (36.9, 54.2)	1.5 (1.0, 2.0)	19.9 (15.0, 26.0)	4.5 (3.7, 5.5)	7.2 (5.9, 8.8)
2011	85.6 (79.3, 90.2)	91.3 (86.0, 94.8)	89.0 (84.4, 92.4)	34.1 (25.0, 44.5)	21.7 (14.1, 31.8)	18.4 (12.4, 26.4)	0.2 (0.1, 0.3)	15.4 (10.7, 21.7)	1.6 (1.3, 2.2)	3.3 (2.6, 4.1)
2013	81.4 (74.0, 87.1)	87.6 (81.3, 92.0)	85.0 (79.8, 89.1)	41.1 (33.8, 48.9)	50.4 (41.7, 59.0)	14.6 (10.6, 19.6)	0.1 (0.0, 0.2)	13.7 (9.7, 19.1)	2.3 (1.8, 3.0)	3.5 (3.0, 4.2)
2015	77.7 (68.9, 84.5)	74.3 (66.4, 80.9)	75.1 (68.7, 80.6)	29.2 (24.3, 34.7)	19.3 (13.7, 26.4)	4.9 (2.9, 8.2)	0.1 (0.0, 0.3)	11.5 (8.2, 15.8)	1.5 (1.2, 1.8)	3.6 (3.1, 4.1)
Artesunate mefloquine (ASMQ)										
2009	60.8 (43.3, 75.8)	46.6 (24.0, 70.7)	52.0 (33.5, 70.0)	8.3 (4.1, 16.3)	10.5 (3.6, 27.0)	7.8 (4.2, 14.0)	0.1 (0.1, 0.2)	5.6 (2.8, 10.9)	0.7 (0.5, 1.0)	3.3 (2.4, 4.4)
2011	65.0 (54.2, 74.5)	49.7 (30.0, 69.5)	55.9 (42.0, 69.0)	33.2 (24.3, 43.5)	21.7 (14.1, 31.8)	17.0 (11.4, 24.6)	0.2 (0.1, 0.3)	13.4 (8.8, 20.0)	1.5 (1.1, 2.0)	2.5 (2.0, 3.2)
2013	56.7 (48.5, 64.6)	21.5 (9.7, 41.0)	36.1 (26.8, 46.5)	20.8 (14.5, 28.8)	26.9 (19.1, 36.4)	9.6 (6.0, 15.1)	<0.1 (0.0, <0.1)	6.3 (4.1, 9.5)	1.2 (0.8, 1.7)	1.7 (1.3, 2.2)
2015	2.0 (0.7, 5.5)	0.7 (0.2, 2.6)	1.0 (0.4, 2.4)	0.4 (0.2, 1.3)	0.7 (0.2, 2.4)	0.8 (0.3, 2.5)	<0.1 (0.0, <0.1)	1.0 (0.5, 1.9)	0.1 (0.0, 0.1)	0.1 (0.1, 0.2)

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

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Dihydroartemisinin Piperaquine (DHA-PPQ)										
2009	3.3 (1.3, 8.4)	7.7 (1.6, 29.4)	5.9 (1.6, 19.8)	16.0 (9.6, 25.4)	13.3 (6.2, 26.0)	8.0 (3.9, 15.8)	4.9 (2.7, 8.6)	5.2 (2.9, 9.3)	7.0 (4.8, 10.0)	6.7 (4.3, 10.3)
2011	21.1 (13.8, 30.8)	43.5 (25.6, 63.2)	34.4 (23.3, 47.6)	2.5 (1.0, 6.1)	0.0 (0.0, 0.1)	1.9 (0.9, 3.9)	<0.1 (0.0, <0.1)	2.1 (1.1, 3.8)	0.2 (0.1, 0.3)	0.8 (0.5, 1.2)
2013	66.8 (58.2, 74.4)	84.1 (77.4, 89.1)	76.9 (70.8, 82.1)	29.5 (23.7, 36.0)	38.3 (30.2, 47.0)	8.7 (5.4, 13.9)	0.1 (0.0, 0.2)	8.1 (5.2, 12.5)	1.6 (1.2, 2.0)	2.7 (2.2, 3.2)
2015	76.5 (67.8, 83.5)	74.1 (66.2, 80.7)	74.7 (68.3, 80.1)	27.9 (23.1, 33.2)	17.5 (12.1, 24.7)	3.1 (1.6, 6.1)	<0.1 (0.0, <0.1)	9.5 (6.9, 13.0)	1.3 (1.0, 1.5)	3.3 (2.9, 3.9)
Any non-artemisinin therapy										
2009	31.5 (21.2, 44.0)	36.0 (17.3, 60.2)	34.3 (20.2, 51.9)	21.1 (11.0, 36.7)	17.1 (7.9, 33.3)	16.1 (10.0, 24.9)	2.0 (1.2, 3.3)	14.1 (9.9, 19.7)	3.3 (2.2, 4.8)	4.8 (3.4, 6.7)
2011	60.1 (51.5, 68.1)	61.0 (55.5, 66.2)	60.6 (55.8, 65.2)	18.5 (11.8, 27.8)	22.3 (15.5, 31.1)	19.8 (12.7, 29.6)	0.7 (0.3, 1.4)	14.2 (8.3, 23.2)	1.9 (1.3, 2.9)	3.0 (2.2, 4.1)
2013	15.4 (11.3, 20.6)	8.0 (3.0, 19.8)	11.1 (6.9, 17.2)	6.2 (4.0, 9.5)	7.1 (4.5, 11.0)	7.6 (4.3, 13.0)	0.3 (0.1, 0.7)	3.2 (1.8, 5.4)	0.8 (0.5, 1.1)	0.9 (0.7, 1.3)
2015	8.9 (4.9, 15.5)	0.0 -	2.2 (1.3, 3.9)	1.9 (0.9, 3.7)	1.6 (0.6, 4.1)	1.8 (0.9, 3.6)	0.1 (0.1, 0.2)	4.8 (3.0, 7.6)	0.4 (0.3, 0.5)	0.4 (0.3, 0.6)
Oral artemisinin monotherapy										
2009	0.0 -	2.2 (0.9, 5.5)	1.4 (0.6, 3.2)	7.2 (2.4, 19.8)	29.3 (12.1, 55.6)	13.8 (8.1, 22.5)	0.8 (0.4, 1.4)	4.2 (2.4, 7.2)	1.4 (0.9, 2.3)	1.4 (0.9, 2.3)
2011	0.0 -	0.0 -	0.0 -	1.6 (0.6, 4.1)	0.8 (0.1, 4.7)	1.3 (0.3, 4.8)	0.1 (0.0, 0.6)	0.0 (0.0, 0.2)	0.1 (0.0, 0.5)	0.1 (0.0, 0.5)
2013	0.0 -	0.0 -	0.0 -	0.3 (0.0, 1.8)	0.0 -	0.0 -	0.0 -	0.9 (0.3, 3.3)	0.0 (0.0, 0.2)	0.0 (0.0, 0.2)
2015	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	<0.1 (0.0, <0.1)	0.0 -	<0.1 (0.0, <0.1)	<0.1 (0.0, <0.1)
Non-oral artemisinin monotherapy										
2009	22.9 (14.0, 35.2)	38.4 (18.5, 63.2)	32.5 (18.4, 50.7)	14.2 (5.8, 30.6)	8.6 (3.1, 21.8)	6.0 (3.0, 11.7)	0.2 (0.1, 0.3)	4.8 (3.2, 7.1)	0.7 (0.5, 1.1)	2.3 (1.6, 3.5)
2011	13.7	4.2	8.1	9.6	2.7	2.3	<0.1	4.0	0.3	0.5

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

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
	(10.1, 18.5)	(0.7, 20.6)	(4.3, 14.6)	(6.0, 15.0)	(1.1, 6.5)	(1.1, 4.7)	(0.0, <0.1)	(2.5, 6.4)	(0.2, 0.5)	(0.3, 0.7)
2013	13.1 (9.3, 18.1)	0.0 -	5.4 (3.6, 8.0)	6.9 (4.0, 11.7)	0.0 -	0.9 (0.3, 2.8)	0.0 -	2.1 (0.9, 4.9)	0.2 (0.1, 0.4)	0.3 (0.2, 0.5)
2015	9.9 (5.7, 16.7)	0.0 -	2.5 (1.4, 4.5)	2.4 (1.3, 4.5)	0.0 -	0.0 -	0.0 -	1.1 (0.3, 3.8)	0.1 (0.1, 0.2)	0.2 (0.1, 0.3)
Any treatment for severe malaria										
2009	34.8 (24.1, 47.4)	66.6 (46.9, 81.9)	53.5 (38.5, 67.9)	19.4 (8.5, 38.6)	10.0 (3.6, 25.3)	14.7 (8.8, 23.5)	6.6 (3.7, 11.4)	24.8 (18.0, 33.1)	14.2 (10.8, 18.4)	26.2 (20.3, 33.2)
2011	13.8 (10.2, 18.6)	4.2 (0.7, 20.6)	8.1 (4.3, 14.6)	11.6 (7.5, 17.5)	3.6 (1.3, 9.6)	2.4 (1.2, 4.9)	<0.1 (0.0, <0.1)	5.0 (3.4, 7.4)	0.4 (0.3, 0.6)	0.6 (0.4, 0.8)
2013	13.1) (9.3, 18.1)	0.0 -	5.4 (3.6, 8.0)	7.2 (4.3, 11.9)	0.0 -	1.3 (0.5, 3.5)	0.0 -	2.2 (0.9, 5.0)	0.3 (0.2, 0.4)	0.3 (0.2, 0.5)
2015	9.9 (5.7, 16.7)	0.0 -	2.5 (1.4, 4.5)	2.4 (1.3, 4.5)	0.0 -	0.0 -	0.0 -	1.3 (0.4, 3.8)	0.1 (0.1, 0.2)	0.2 (0.1, 0.3)

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

Source: ACTwatch Outlet Survey, Cambodia, 2009, 2011, 2013, 2015.

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

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets* stocking:	2009 N=180 2011 N=383 2013 N=525 2015 N=132	2009 N=189 2011 N=319 2013 N=286 2015 N=330	2009 N=369 2011 N=702 2013 N=811 2015 N=467	2009 N=60 2011 N=98 2013 N=123 2015 N=186	2009 N=24 2011 N=57 2013 N=78 2015 N=45	2009 N=86 2011 N=89 2013 N=54 2015 N=22	2009 N=204 2011 N=150 2013 N=42 2015 N=29	2009 N=122 2011 N=174 2013 N=107 2015 N=109	2009 N=496 2011 N=568 2013 N=404 2015 N=391	2009 N=865 2011 N=1,270 2013 N=1,215 2015 N=858
Any ACT										
2009	98.4 (96.2, 99.3)	94.9 (88.3, 97.9)	96.4 (92.1, 98.4)	92.4 (84.6, 96.4)	87.6 (51.1, 97.9)	87.5 (79.7, 92.6)	43.6 (35.0, 52.5)	61.5 (51.1, 71.0)	63.0 (54.8, 70.4)	73.2 (65.5, 79.7)
2011	95.1 (91.5, 97.2)	97.4 (95.5, 98.6)	96.5 (94.4, 97.8)	77.3 (59.3, 88.9)	53.5 (37.2, 69.0)	58.8 (47.4, 69.3)	16.3 (9.3, 27.0)	61.8 (49.5, 72.8)	49.2 (38.8, 59.7)	65.4 (57.0, 73.0)
2013	99.2 (97.3, 99.8)	99.4 (98.2, 99.8)	99.3 (98.5, 99.7)	90.4 (82.8, 94.9)	94.7 (77.0, 99.0)	70.0 (52.2, 83.3)	17.3 (4.8, 46.4)	78.5 (67.5, 86.5)	77.2 (67.1, 85.0)	83.8 (76.6, 89.1)
2015	99.7 (98.0, 99.9)	100.0 -	99.9 (99.5, 100.0)	94.3 (87.6, 97.5)	94.2 (82.3, 98.3)	75.1 (55.0, 88.1)	35.8 (10.3, 73.1)	76.0 (63.4, 85.2)	82.2 (75.8, 87.2)	92.0 (88.8, 94.3)
Artesunate mefloquine (ASMQ)										
2009	97.5 (94.5, 98.9)	87.6 (73.6, 94.7)	91.7 (82.4, 96.3)	81.1 (70.9, 88.4)	84.0 (54.1, 95.9)	84.0 (74.5, 90.4)	39.7 (31.3, 48.7)	56.1 (45.5, 66.1)	58.0 (50.3, 65.3)	68.3 (60.6, 75.1)
2011	72.3 (60.6, 81.5)	53.1 (32.5, 72.7)	60.6 (46.2, 73.5)	75.4 (57.6, 87.3)	53.5 (37.2, 69.0)	54.4 (44.1, 64.3)	15.1 (8.9, 24.6)	54.0 (41.8, 65.7)	45.3 (35.6, 55.4)	50.5 (43.8, 57.2)
2013	69.2 (61.4, 75.9)	24.4 (11.2, 45.3)	42.1 (31.6, 53.4)	45.6 (33.8, 58.0)	50.5 (35.9, 65.1)	46.2 (30.0, 63.2)	3.6 (1.0, 12.7)	35.9 (26.7, 46.2)	39.4 (30.9, 48.6)	40.2 (33.4, 47.5)
2015	2.5 (0.9, 7.0)	0.9 (0.2, 3.5)	1.3 (0.6, 3.1)	1.4 (0.5, 4.1)	3.4 (0.9, 12.1)	12.4 (4.0, 32.4)	5.6 (1.3, 21.0)	6.6 (3.4, 12.4)	4.2 (2.6, 6.7)	2.6 (1.7, 4.0)
Dihydroartemisinin Piperaquine (DHA-PPQ)										
2009	3.3 (1.3, 8.3)	7.7 (1.6, 29.8)	5.9 (1.5, 19.9)	16.0 (9.5, 25.6)	13.3 (6.2, 26.2)	8.0 (3.9, 15.8)	4.9 (2.7, 8.6)	5.2 (2.9, 9.4)	7.0 (4.8, 10.0)	6.7 (4.3, 10.3)
2011	23.5 (15.4, 34.1)	46.4 (26.5, 67.4)	37.3 (24.8, 51.8)	5.6 (2.3, 13.3)	0.1 (0.0, 0.4)	5.9 (3.0, 11.6)	0.7 (0.1, 4.6)	8.3 (4.0, 16.3)	4.7 (2.6, 8.3)	15.9 (10.4, 23.4)
2013	81.5 (74.0, 87.1)	95.4 (90.2, 97.9)	89.9 (85.4, 93.1)	64.8 (57.2, 71.7)	71.9 (60.6, 81.0)	42.0 (25.3, 60.7)	13.7 (3.1, 43.9)	46.5 (34.2, 59.2)	52.6 (44.8, 60.2)	63.6 (57.1, 69.7)
2015	98.2 (95.4, 99.3)	99.7 (98.1, 99.9)	99.3 (98.3, 99.7)	90.0 (82.5, 94.5)	85.6 (74.3, 92.4)	47.9 (27.8, 68.6)	2.8 (0.5, 15.6)	62.8 (51.7, 72.7)	70.9 (63.1, 77.6)	86.6 (82.5, 89.8)
Any non-artemisinin therapy										
2009	47.9	62.4	56.4	29.0	20.1	31.1	59.4	43.5	45.5	48.9

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

	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
	(37.1, 58.9)	(43.6, 78.1)	(42.8, 69.2)	(15.6, 47.4)	(9.1, 38.5)	(21.2, 43.2)	(48.5, 69.4)	(34.7, 52.7)	(36.6, 54.7)	(41.2, 56.6)
2011	66.8 (57.1, 75.2)	65.0 (59.7, 70.0)	65.7 (60.8, 70.4)	41.9 (27.7, 57.7)	55.1 (41.8, 67.7)	63.3 (53.4, 72.3)	62.6 (42.5, 79.1)	57.2 (38.7, 73.8)	57.2 (45.3, 68.3)	60.1 (52.3, 67.4)
2013	18.7 (14.1, 24.4)	9.1 (3.4, 22.3)	12.9 (8.1, 20.0)	13.6 (9.0, 20.0)	13.3 (8.3, 20.8)	36.5 (22.0, 53.9)	82.9 (53.7, 95.3)	18.1 (9.2, 32.3)	25.5 (17.8, 35.0)	21.8 (16.2, 28.7)
2015	11.4 (6.4, 19.5)	0.0 -	3.0 (1.7, 5.1)	6.0 (2.9, 11.8)	7.7 (2.9, 19.1)	27.3 (13.7, 46.9)	67.1 (27.6, 91.6)	31.7 (21.0, 44.7)	21.0 (15.2, 28.1)	11.0 (8.3, 14.4)
Oral artemisinin monotherapy										
2009	0.0 -	3.8 (1.7, 8.6)	2.3 (1.0, 5.0)	9.8 (3.3, 25.8)	34.4 (13.0, 64.8)	26.5 (16.3, 40.0)	23.1 (16.0, 32.1)	13.0 (7.8, 20.7)	20.2 (13.8, 28.7)	14.7 (9.7, 21.7)
2011	0.0 -	0.0 -	0.0 -	3.6 (1.3, 9.3)	1.9 (0.3, 11.2)	4.0 (1.0, 14.6)	10.1 (1.7, 42.5)	0.1 (0.0, 0.9)	4.2 (1.1, 14.5)	2.8 (0.8, 9.4)
2013	0.0 -	0.0 -	0.0 -	0.6 (0.1, 3.8)	0.0 -	0.0 -	0.0 -	5.2 (1.7, 15.1)	1.6 (0.5, 5.3)	1.1 (0.3, 3.8)
2015	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	2.3 (0.4, 12.7)	0.0 -	0.2 (0.0, 1.2)	0.1 (0.0, 0.6)
Non-oral artemisinin monotherapy										
2009	34.8 (24.0, 47.5)	66.6 (46.8, 81.9)	53.5 (38.4, 68.0)	19.4 (8.4, 38.9)	10.0 (3.5, 25.6)	11.6 (6.4, 20.2)	5.1 (2.8, 9.2)	14.7 (10.4, 20.4)	10.4 (7.9, 13.5)	23.6 (17.9, 30.5)
2011	15.3 (11.3, 20.3)	4.5 (0.8, 21.7)	8.7 (4.7, 15.7)	21.8 (14.1, 32.2)	6.8 (2.9, 15.0)	7.4 (3.6, 14.5)	0.1 (0.0, 0.2)	16.0 (9.4, 25.9)	10.2 (6.4, 16.0)	9.7 (6.5, 14.3)
2013	15.9 (11.5, 21.7)	0.0 -	6.3 (4.2, 9.4)	15.2 (9.1, 24.3)	0.0 -	4.2 (1.3, 13.0)	0.0 -	11.8 (5.0, 25.5)	7.8 (4.9, 12.2)	7.4 (5.2, 10.4)
2015	12.7 (7.4, 21.0)	0.0 -	3.3 (1.8, 5.9)	7.7 (4.0, 14.1)	0.0 -	0.0 -	0.0 -	7.2 (2.2, 21.2)	5.6 (3.1, 10.0)	4.3 (2.7, 6.8)
Any treatment for severe malaria										
2009	34.8 (24.0, 47.5)	66.6 (46.8, 81.9)	53.5 (38.4, 68.0)	19.4 (8.4, 38.9)	10.0 (3.5, 25.6)	14.7 (8.7, 23.7)	6.6 (3.7, 11.4)	24.8 (17.9, 33.2)	14.2 (10.7, 18.4)	26.2 (20.3, 33.2)
2011	15.4 (11.4, 20.3)	4.5 (0.8, 21.7)	8.8 (4.7, 15.7)	26.3 (17.7, 37.4)	9.0 (3.3, 22.4)	7.8 (3.9, 14.9)	0.8 (0.1, 4.4)	20.2 (15.0, 26.7)	12.8 (9.3, 17.5)	11.4 (8.4, 15.3)
2013	15.9 (11.5, 21.7)	0.0 -	6.3 (4.2, 9.4)	15.8 (9.7, 24.6)	0.0 -	6.5 (2.3, 16.8)	0.0 -	12.3 (5.4, 25.9)	8.4 (5.4, 13.0)	7.8 (5.5, 11.0)
2015	12.7 (7.4, 21.0)	0.0 -	3.3 (1.8, 5.9)	7.7 (4.0, 14.1)	0.0 -	0.0 -	0.0 -	8.4 (3.1, 21.1)	6.0 (3.4, 10.3)	4.5 (2.9, 7.0)

* Antimalarial-stocking outlets have at least one antimalarial in stock on the day of the survey, verified by presence of at least one antimalarial recorded in the antimalarial audit sheet.

Table C2: Availability of antimalarials, among outlets stocking at least one antimalarial, by outlet type, across survey round										
	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Source: ACTwatch Outlet Survey, Cambodia, 2009, 2011, 2013, 2015.										

Table C5: Antimalarial market composition, across survey round

Outlet type, among outlets with at least 1 antimalarial in stock on the day of the survey:*	Public Health Facility	Community Health Worker	**ALL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
2009, N = 652 outlets**	5.0 (2.9, 8.4)	14.3 (9.3, 21.2)	19.2 (12.7, 28.1)	8.3 (5.8, 11.6)	2.9 (1.4, 5.8)	15.1 (10.8, 20.6)	34.1 (27.1, 41.9)	20.4 (15.1, 27.1)	80.8 (71.9, 87.3)
2011, N = 1,001 outlets**	3.5 (2.4, 5.2)	22.8 (16.8, 30.3)	26.3 (20.1, 33.8)	10.7 (7.0, 16.1)	6.4 (3.4, 12.0)	8.2 (6.3, 10.7)	22.1 (15.5, 30.6)	26.2 (20.7, 32.6)	73.7 (66.2, 79.9)
2013, N = 792 outlets**	3.0 (1.9, 4.8)	19.7 (13.5, 27.8)	22.7 (15.9, 31.4)	20.4 (14.4, 28.0)	16.7 (9.9, 26.8)	10.3 (7.8, 13.5)	8.6 (4.4, 16.1)	21.3 (14.1, 30.9)	77.3 (68.6, 84.1)
2015, N = 858 outlets	14.3 (12.2, 16.7)	40.9 (34.7, 47.5)	55.2 (49.2, 61.1)	19.4 (15.5, 24.0)	4.8 (3.1, 7.3)	2.2 (1.4, 3.4)	4.0 (2.0, 7.9)	14.3 (10.9, 18.5)	44.8 (38.9, 50.8)

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

Source: ACTwatch Outlet Survey, Cambodia, 2009, 2011, 2013, 2015.

Table C6a: Price of tablet formulation antimalarials, by outlet type, across survey round

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Median price of a tablet AETD*:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Any ACT						
2009	$1.18 [0.82-1.65] (87)	$0.94 [0.59-1.41] (40)	$1.18 [0.94-1.65] (101)	$1.18 [0.82-1.65] (120)	$1.65 [1.18-2.15] (107)	$1.18 [0.94-1.88] (455)
2011	$1.47 [1.10-2.21] (88)	$1.10 [0.92-1.26] (46)	$1.79 [1.12-1.84] (51)	$1.47 [1.12-1.66] (39)	$1.84 [1.29-2.94] (121)	$1.56 [1.10-2.21] (345)
2013	$1.27 [0.84-2.11] (206)	$0.84 [0.63-1.27] (150)	$1.05 [0.74-2.11] (75)	$2.11 [1.69-3.16] (13)	$1.05 [1.05-2.11] (121)	$1.05 [0.74-2.11] (565)
2015	$1.80 [1.20-3.01] (234)	$1.00 [0.80-1.60] (48)	$2.00 [1.00-6.47] (16)	$4.85 [1.00-4.85] (5)	$2.00 [1.00-3.01] (88)	$1.80 [1.00-3.01] (391)
Artesunate mefloquine (ASMQ)						
2009	$1.18 [0.82-1.41] (72)	$0.71 [0.59-1.18] (33)	$1.18 [0.89-1.41] (89)	$1.18 [0.82-1.65] (107)	$1.41 [1.18-1.88] (93)	$1.18 [0.82-1.65] (394)
2011	$1.47 [1.10-2.21] (77)	$1.10 [0.92-1.12] (44)	$1.79 [1.10-1.84] (43)	$1.47 [1.12-1.66] (36)	$1.84 [1.29-2.39] (93)	$1.47 [1.10-1.84] (293)
2013	$1.05 [0.63-1.28] (73)	$0.70 [0.53-0.84] (47)	$0.84 [0.53-1.49] (29)	$1.37 [1.37-1.37] (3)	$1.05 [0.84-2.11] (40)	$0.84 [0.63-1.05] (192)
2015	$5.68 [1.60-5.68] (2)	$1.00 [0.70-1.34] (4)	$0.80 [0.80-1.60] (5)	$1.00 [0.50-1.00] (2)	$1.00 [0.80-1.60] (13)	$1.00 [0.80-1.60] (26)
Dihydroartemisinin piperaquine (DHA-PPQ)						
2009	$2.12 [1.59-2.12] (11)	$1.85 [1.85-1.85] (3)	$1.32 [1.32-2.12] (9)	$2.25 [1.69-3.18] (8)	$2.12 [2.12-2.65] (7)	$2.12 [1.59-2.65] (38)
2011	$2.51 [2.51-3.52] (9)	$1.26 (1)	$6.53 [6.53-6.53] (6)	$2.51 (1)	$4.02 [2.23-7.54] (24)	$6.53 [2.23-7.54] (41)
2013	$1.58 [1.05-2.32] (127)	$0.95 [0.63-1.69] (103)	$1.58 [0.84-2.21] (43)	$2.11 [1.69-3.16] (10)	$1.69 [1.05-2.11] (75)	$1.27 [0.84-2.11] (358)
2015	$1.80 [1.08-3.01] (224)	$1.00 [0.80-1.60] (41)	$1.80 [1.00-4.01] (9)	$3.01 (1)	$2.00 [1.20-3.01] (69)	$1.80 [1.00-3.01] (344)

Table C6a: Price of tablet formulation antimalarials, by outlet type, across survey round

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Median price of a tablet AETD*:	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Chloroquine						
2009	$0.46 [0.23-0.46] (12)	$0.16 [0.11-0.23] (7)	$0.23 [0.23-0.23] (12)	$0.46 [0.23-0.46] (18)	$0.46 [0.34-0.46] (8)	$0.27 [0.23-0.46] (57)
2011	$0.56 [0.45-0.67] (40)	$0.34 [0.22-0.67] (24)	$0.45 [0.34-0.67] (36)	$0.45 [0.37-0.67] (30)	$0.67 [0.45-1.12] (41)	$0.45 [0.37-0.67] (171)
2013	$0.53 [0.21-1.05] (10)	$0.32 [0.32-0.63] (9)	$0.32 [0.32-0.35] (8)	$0.42 [0.42-0.42] (15)	$0.63 [0.42-1.05] (12)	$0.42 [0.32-0.63] (54)
2015	$1.67 [0.60-1.67] (6)	$1.00 [0.40-1.00] (4)	$0.60 [0.20-1.00] (4)	$0.40 [0.20-0.50] (6)	$1.00 [0.40-2.09] (18)	$1.00 [0.40-1.67] (38)

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

Figures in this table are derived using audited products with price information.

Source: ACTwatch Outlet Survey, Cambodia, 2009, 2011, 2013, 2015.

Table C7: Availability of malaria blood testing among antimalarial-stocking outlets*, by outlet type, across survey round

	Public Health Facility	Community Health Worker	**ALL Public/Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets stocking**	2009 N=181 2011 N=394 2013 N=544 2015 N=140	2009 N=190 2011 N=345 2013 N=300 2015 N=402	2009 N=371 2011 N=739 2013 N=844 2015 N=542	2009 N=61 2011 N=133 2013 N=141 2015 N=237	2009 N=24 2011 N=77 2013 N=86 2015 N=74	2009 N=87 2011 N=103 2013 N=64 2015 N=34	2009 N=199 2011 N=208 2013 N=54 2015 N=39	2009 N=125 2011 N=256 2013 N=149 2015 N=186	2009 N=496 2011 N=777 2013 N=494 2015 N=570	2009 N=867 2011 N=1,516 2013 N=1,338 2015 N=1,112
Any malaria blood testing										
2009	82.7 (70.2, 90.7)	76.3 (62.2, 86.3)	78.9 (70.9, 85.2)	78.8 (67.3, 87.0)	69.9 (39.5, 89.2)	65.0 (49.9, 77.7)	24.7 (13.9, 39.9)	75.7 (67.4, 82.4)	52.7 (43.0, 62.2)	60.8 (52.1, 68.8)
2011	95.4 (91.8, 97.4)	96.9 (93.4, 98.6)	96.3 (93.9, 97.8)	81.3 (71.2, 88.4)	32.1 (17.6, 51.1)	44.9 (30.1, 60.7)	4.7 (2.7, 8.2)	63.5 (54.9, 71.3)	44.2 (38.3, 50.2)	59.1 (53.2, 64.7)
2013	94.5 (91.3, 96.6)	96.1 (92.6, 98.0)	95.5 (93.3, 97.0)	85.3 (78.5, 90.2)	60.1 (45.7, 73.0)	50.9 (34.9, 66.8)	9.6 (2.0, 35.8)	45.4 (32.6, 58.8)	54.5 (44.4, 64.4)	65.3 (57.5, 72.4)
2015	97.8 (93.8, 99.2)	89.6 (85.6, 92.6)	91.4 (88.3, 93.8)	83.0 (76.8, 87.8)	70.1 (58.2, 79.7)	60.9 (40.8, 77.9)	0.0 -	60.4 (50.6, 69.4)	64.7 (58.5, 70.3)	78.2 (74.5, 81.6)
	2009 N=181 2011 N=391 2013 N=541 2015 N=140	2009 N=189 2011 N=341 2013 N=300 2015 N=402	2009 N=370 2011 N=732 2013 N=841 2015 N=542	2009 N=61 2011 N=133 2013 N=141 2015 N=237	2009 N=24 2011 N=77 2013 N=86 2015 N=74	2009 N=87 2011 N=103 2013 N=64 2015 N=34	2009 N=199 2011 N=208 2013 N=54 2015 N=39	2009 N=125 2011 N=256 2013 N=149 2015 N=186	2009 N=496 2011 N=777 2013 N=494 2015 N=570	2009 N=866 2011 N=1,509 2013 N=1,335 2015 N=1,112
Microscopic blood tests										
2009	38.1 (27.1, 50.4)	2.1 (0.5, 9.0)	17.0 (13.0, 22.0)	40.2 (29.4, 52.0)	23.9 (12.1, 41.7)	32.3 (19.5, 48.3)	4.1 (2.3, 7.0)	43.8 (33.1, 55.1)	24.1 (18.9, 30.2)	21.9 (18.0, 26.5)
2011	22.5 (18.8, 26.6)	0.5 (0.2, 1.6)	9.1 (6.6, 12.3)	31.4 (19.1, 47.1)	8.4 (3.3, 19.6)	9.3 (4.4, 18.7)	0.9 (0.2, 5.2)	23.5 (13.2, 38.4)	15.3 (9.7, 23.4)	13.5 (9.1, 19.7)
2013	19.5 (15.3, 24.6)	11.0 (4.6, 24.0)	14.3 (9.2, 21.7)	35.3 (27.7, 43.8)	11.6 (5.0, 24.7)	14.3 (6.0, 30.2)	0.0 -	11.7 (6.4, 20.4)	16.5 (12.4, 21.5)	15.9 (12.5, 20.0)
2015	33.9 (25.8, 42.9)	0.3 (0.1, 1.9)	8.0 (5.9, 10.6)	15.6 (10.9, 22.0)	4.8 (1.6, 13.1)	4.0 (0.6, 21.7)	0.0 -	5.6 (3.2, 9.8)	8.7 (6.4, 11.9)	8.3 (6.8, 10.2)

Table C7: Availability of malaria blood testing among antimalarial-stocking outlets*, by outlet type, across survey round

	Public Health Facility	Community Health Worker	**ALL Public/Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
	2009 N=180 2011 N=394 2013 N=544 2015 N=140	2009 N=190 2011 N=345 2013 N=300 2015 N=402	2009 N=370 2011 N=739 2013 N=844 2015 N=542	2009 N=61 2011 N=133 2013 N=141 2015 N=237	2009 N=24 2011 N=77 2013 N=86 2015 N=74	2009 N=87 2011 N=103 2013 N=64 2015 N=34	2009 N=199 2011 N=207 2013 N=54 2015 N=39	2009 N=125 2011 N=256 2013 N=149 2015 N=186	2009 N=496 2011 N=776 2013 N=494 2015 N=570	2009 N=866 2011 N=15,15 2013 N=1,338 2015 N=1,112
Rapid diagnostic tests (RDTs)										
2009	73.6 (59.4, 84.1)	76.3 (62.2, 86.3)	75.2 (66.0, 82.5)	61.5 (46.8, 74.3)	62.3 (30.5, 86.1)	40.8 (26.5, 56.8)	21.7 (11.0, 38.5)	46.2 (35.8, 56.9)	37.2 (28.2, 47.3)	48.9 (40.0, 57.9)
2011	93.9 (90.1, 96.3)	96.9 (93.4, 98.6)	95.7 (93.2, 97.3)	65.7 (54.3, 75.5)	27.9 (15.5, 45.0)	44.2 (29.5, 59.9)	4.8 (2.7, 8.3)	43.7 (31.7, 56.5)	34.0 (28.5, 40.0)	51.7 (45.0, 58.4)
2013	92.8 (89.3, 95.3)	96.0 (92.5, 97.9)	94.7 (92.4, 96.4)	68.2 (54.8, 79.1)	59.4 (45.1, 72.2)	45.9 (30.4, 62.2)	9.6 (2.0, 35.8)	41.8 (29.3, 55.3)	48.4 (38.6, 58.3)	60.6 (52.9, 67.8)
2015	97.1 (93.3, 98.7)	89.6 (85.6, 92.6)	91.3 (88.1, 93.7)	81.3 (74.8, 86.5)	70.1 (58.2, 79.7)	60.9 (40.8, 77.9)	0.0 -	59.8 (50.0, 68.9)	63.8 (57.6, 69.6)	77.7 (73.9, 81.2)

* Blood testing availability is reported among outlets that either had antimalarials in stock on the day of the survey or reportedly stocked antimalarials in the previous 3 months.
** Results in this table are derived using responses captured among outlets with blood testing information.

Source: ACTwatch Outlet Survey, Cambodia, 2009, 2011, 2013, 2015.

Table C9: Price of malaria blood testing for adults, by outlet type, across survey round

	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**
Total median price to consumers:*	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)	Median [IQR] (N of Antimalarials)
Microscopy						
2009	$0.71 [0.47-0.94] (27)	$0.47 [0.47-0.71] (8)	$0.71 [0.47-0.94] (27)	$0.71 [0.24-1.18] (9)	$0.94 [0.71-1.18] (98)	$0.71 [0.59-1.18] (169)
2011	$0.67 [0.45-0.78] (53)	$0.67 [0.67-1.12] (7)	$0.45 [0.34-0.45] (9)	$2.23 (1)	$0.67 [0.67-1.34] (58)	$0.67 [0.45-1.12] (128)
2013	$0.84 [0.63-1.05] (72)	$1.05 [1.05-1.05] (11)	$1.05 [0.42-1.05] (10)	- -	$0.63 [0.63-1.05] (12)	$1.05 [0.63-1.05] (105)
2015	$1.00 [0.60-1.00] (73)	$0.80 [0.60-1.00] (6)	$0.60 [0.40-0.80] (3)	- -	$1.00 [1.00-1.00] (13)	$1.00 [0.60-1.00] (95)
Rapid diagnostic test (RDT)						
2009	$0.71 [0.47-0.94] (45)	$0.47 [0.45-0.71] (12)	$0.71 [0.71-0.94] (49)	$0.71 [0.47-0.94] (38)	$0.71 [0.59-0.94] (83)	$0.71 [0.47-0.94] (227)
2011	$0.45 [0.45-0.67] (41)	$0.56 [0.34-0.56] (10)	$0.56 [0.45-0.89] (27)	$0.78 [0.67-1.12] (3)	$0.56 [0.34-0.89] (56)	$0.56 [0.45-0.67] (137)
2013	$1.05 [0.63-1.05] (145)	$0.63 [0.42-0.84] (55)	$0.84 [0.42-1.05] (52)	$1.05 [0.63-1.05] (5)	$0.63 [0.53-1.05] (98)	$0.84 [0.53-1.05] (355)
2015	$0.80 [0.60-1.00] (297)	$0.60 [0.40-0.80] (57)	$0.60 [0.60-1.00] (32)	- -	$0.80 [0.60-1.00] (156)	$0.80 [0.60-1.00] (542)

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

Source: ACTwatch Outlet Survey, Cambodia, 2009, 2011, 2013, 2015.

Table C10: Antimalarial market share, across survey round

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold/ distributed:	Public Health Facility	Community Health Worker	**TOTAL Public/Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**TOTAL Private**	**ANTI-MALARIAL TOTAL***
	%	%	%	%	%	%	%	%	%	%
2009										
1. Any ACT	11.7	14.7	26.4	14.1	6.6	7.0	8.1	9.6	45.4	71.8
2. Any non-artemisinin therapy	0.4	0.9	1.3	2.1	6.7	4.5	2.9	2.2	18.4	19.6
Chloroquine	0.4	0.5	0.9	1.2	6.7	4.1	1.7	1.6	15.3	16.2
3. Oral artemisinin monotherapy	0.0	0.1	0.1	0.7	0.1	1.6	1.1	2.6	6.1	6.2
4. Non-oral artemisinin monotherapy	0.8	1.0	1.8	0.3	0.0	0.1	0.1	0.2	0.6	2.4
OUTLET TYPE TOTAL**	12.9	16.7	29.6	17.2	13.4	13.2	12.2	14.6	70.5	100.0
2011										
1. Any ACT	24.7	8.5	33.2	5.7	0.1	1.5	0.4	11.2	18.9	52.1
2. Any non-artemisinin therapy	3.1	0.6	3.8	14.4	1.6	3.0	2.9	14.2	36.2	39.9
Chloroquine	3.1	0.6	3.8	14.3	1.6	3.0	2.9	14.0	35.8	39.5
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.7	0.0	0.0	0.2	0.0	0.9	0.9
4. Non-oral artemisinin monotherapy	5.7	0.0	5.7	0.3	0.0	0.1	0.0	1.0	1.4	7.1
OUTLET TYPE TOTAL**	33.5	9.1	42.7	21.1	1.7	4.6	3.5	26.4	57.4	100.0
2013										
1. Any ACT	32.7	6.3	39	12.4	16.9	5.9	0.8	11.7	47.8	86.8
2. Any non-artemisinin therapy	0	0.8	0.8	0	3.5	0.8	6.3	1.9	12.4	13.2
Chloroquine	0	0	0	0	3.5	0.8	6.3	1.8	12.4	12.4
3. Oral artemisinin monotherapy	0	0	0	0	0	0	0	0	0	0
4. Non-oral artemisinin monotherapy	0	0	0	0	0	0	0	0	0	0
OUTLET TYPE TOTAL**	32.7	7.1	39.8	12.4	20.4	6.7	7.1	13.6	60.2	100
2015										
1. Any ACT	25.8	15.2	41.0	24.3	7.0	0.3	0.0	21.5	53.1	94.2
2. Any non-artemisinin therapy	0.1	0.0	0.1	2.0	0.2	0.0	0.7	1.9	4.9	5.0
Chloroquine	0.0	0.0	0.0	2.0	0.2	0.0	0.7	1.9	4.9	4.9
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Non-oral artemisinin monotherapy	0.4	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.4	0.8
OUTLET TYPE TOTAL**	26.3	15.2	41.5	26.8	7.3	0.3	0.7	23.4	58.5	100.0

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

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

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

Source: ACTwatch Outlet Survey, Cambodia, 2009, 2011, 2013, 2015.

Table C11: Antimalarial market share, within outlet type, across survey round

AETDs sold or distributed in the previous week by outlet type and antimalarial type as a percentage of all AETDs sold/ distributed:	Public Health Facility	Community Health Worker	**TOTAL Public / Not-For-Profit**	Private For-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**TOTAL Private**
	%	%	%	%	%	%	%	%	%
2009									
1. Any ACT	90.4	88.5	89.3	82.0	49.2	53.2	66.4	66.0	64.4
2. Any non-artemisinin therapy	3.1	5.3	4.3	12.2	50.2	34.1	23.6	15.0	26.1
Chloroquine	3.1	2.9	3.0	7.0	50.2	30.8	13.9	11.0	21.7
3. Oral artemisinin monotherapy	0.0	0.4	0.2	4.2	0.5	12.4	9.3	17.6	8.7
4. Non-oral artemisinin monotherapy	6.5	5.8	6.1	1.6	0.1	0.4	0.7	1.3	0.9
2011									
1. Any ACT	73.7	93.1	77.9	27.0	7.1	33.2	10.3	42.4	33.0
2. Any non-artemisinin therapy	9.4	6.9	8.9	68.3	92.9	64.3	84.5	53.8	63.0
Chloroquine	9.4	6.9	8.9	67.7	92.9	64.3	84.5	52.8	62.3
3. Oral artemisinin monotherapy	0.0	0.0	0.0	3.3	0.0	0.0	5.2	0.1	1.5
4. Non-oral artemisinin monotherapy	16.9	0.0	13.3	1.5	0.0	2.5	0.0	3.7	2.5
2013									
1. Any ACT	100	88.7	98	99.8	83	88.1	11.7	86.3	79.4
2. Any non-artemisinin therapy	0	11.3	2	0	17	11.9	88.3	13.7	20.6
Chloroquine	0	0	0	0	17	11.9	88.3	13.6	20.6
3. Oral artemisinin monotherapy	0	0	0	0	0	0	0	0	0
4. Non-oral artemisinin monotherapy	0	0	0	0.2	0	0	0	0	0
2015									
1. Any ACT	98.1	100.0	98.8	90.7	96.8	100.0	0.0	91.9	90.8
2. Any non-artemisinin therapy	0.3	0.0	0.2	7.6	3.2	0.0	100.0	8.1	8.4
Chloroquine	0.0	0.0	0.0	7.6	3.2	0.0	100.0	8.1	8.4
3. Oral artemisinin monotherapy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Non-oral artemisinin monotherapy	1.5	0.0	1.0	1.7	0.0	0.0	0.0	0.0	0.8

Categories 1 through 4 sum to 100% within each column (within each survey round).

Source: ACTwatch Outlet Survey, Cambodia, 2009, 2011, 2013, 2015.

Table C15: Provider antimalarial treatment knowledge and practices, by outlet type, across survey round

	Public Health Facility	Community Health Worker	**ALL Public / Not for-profit**	Private for-profit HF	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Private**	**ALL Outlets**
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers who:	2009 N=181 2011 N=394 2013 N=544 2015 N=140	2009 N=190 2011 N=345 2013 N=300 2015 N=402	2009 N=371 2011 N=739 2013 N=844 2015 N=542	2009 N=61 2011 N=133 2013 N=141 2015 N=237	2009 N=24 2011 N=77 2013 N=86 2015 N=74	2009 N=87 2011 N=103 2013 N=63 2015 N=34	2009 N=206 2011 N=208 2013 N=54 2015 N=39	2009 N=125 2011 N=256 2013 N=149 2015 N=186	2009 N=503 2011 N=777 2013 N=493 2015 N=570	2009 N=874 2011 N=1,516 2013 N=1,337 2015 N=1,112
For uncomplicated malaria in adults, report an ACT as the:										
Most effective treatment										
2009	88.2 (79.3, 93.6)	93.3 (87.6, 96.5)	91.2 (86.5, 94.4)	43.0 (31.9, 54.9)	29.1 (17.0, 45.1)	26.3 (16.2, 39.7)	11.6 (6.9, 18.9)	25.3 (19.1, 32.7)	21.7 (16.3, 28.3)	42.9 (35.9, 50.3)
2011	90.1 (85.4, 93.3)	94.3 (89.2, 97.1)	92.7 (88.9, 95.2)	80.9 (72.5, 87.3)	57.4 (38.5, 74.3)	63.6 (51.7, 74.0)	11.9 (5.9, 22.4)	63.7 (58.2, 68.9)	50.3 (44.2, 56.3)	62.4 (56.7, 67.7)
2013	95.2 (93.0, 96.8)	96.7 (94.3, 98.1)	96.1 (94.4, 97.3)	82.8 (73.7, 89.2)	81.4 (65.3, 91.0)	75.9 (61.6, 86.0)	20.5 (8.1, 43.0)	74.5 (62.3, 83.7)	71.6 (62.3, 79.4)	78.1 (71.1, 83.7)
2015	92.7 (86.9, 96.0)	96.0 (93.2, 97.6)	95.2 (92.8, 96.9)	92.1 (87.2, 95.2)	85.0 (76.3, 90.9)	82.0 (64.0, 92.1)	29.0 (18.0, 43.2)	83.3 (74.6, 89.4)	81.8 (76.9, 85.8)	88.6 (85.9, 90.8)
Treatment he/she most commonly recommends										
2009	92.3 (80.5, 97.2)	89.7 (83.3, 93.8)	90.7 (85.6, 94.2)	80.8 (66.4, 90.0)	62.1 (31.6, 85.3)	60.8 (48.2, 72.2)	25.6 (17.5, 35.8)	52.4 (41.6, 63.1)	46.0 (36.6, 55.6)	59.7 (51.0, 67.8)
2011	94.3 (90.1, 96.8)	93.7 (88.5, 96.7)	94.0 (90.4, 96.2)	85.5 (75.9, 91.7)	56.4 (32.9, 77.3)	59.2 (48.6, 69.1)	7.1 (4.3, 11.5)	68.4 (60.8, 75.2)	50.8 (42.7, 58.9)	63.2 (56.1, 69.6)
2013	94.4 (90.9, 96.5)	90.6 (86.8, 93.5)	92.1 (89.5, 94.1)	81.8 (72.2, 88.5)	81.8 (64.4, 91.7)	65 (45.2, 80.7)	18.2 (6.5, 41.9)	64.6 (54.6, 73.5)	66.7 (57.2, 74.9)	73.4 (66.4, 79.4)
2015	96.4 (92.0, 98.4)	91.0 (85.9, 94.3)	92.2 (88.2, 94.9)	93.0 (88.3, 95.9)	91.1 (75.7, 97.1)	82.4 (69.0, 90.8)	40.0 (19.1, 65.2)	84.2 (77.2, 89.4)	84.2 (79.3, 88.1)	88.2 (85.2, 90.7)

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

Source: ACTwatch Outlet Survey, Cambodia, 2009, 2011, 2013, 2015.

Annex 1: ACTwatch Background

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

ACTwatch is designed to provide timely, relevant, and high quality antimalarial market evidence.[2] The goal of providing this market evidence is to inform and monitor national and global policy, strategy, and funding decisions for improving malaria case management. ACTwatch is monitoring antimalarial markets in the context of policy shifts and investments in the scale-up of first-line ACT and blood testing using RDTs. This has included adaptation of project methods for the evaluation of the Affordable Medicines Facility-malaria (AMFm) pilot.[3] Project scale-up in the Greater Mekong sub-Region (GMS) in 2015 was designed to deliver key indicators for informing and monitoring strategies and policies for malaria elimination. The project implements a set of research tools designed to:

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

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

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

ACTwatch research tools for malaria market monitoring include:

1. Outlet surveys

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

[2] Shewchuk T, O'Connell KA, Goodman C, Hanson K, Chapman S, Chavasse D. 2011. The ACTwatch project: methods to describe anti-malarial markets in seven countries. *Malaria Journal, 10*: 325.

[3] AMFm Independent Evaluation Team. 2012. *Independent evaluation of Phase 1 of the Affordable Medicines Facility – malaria (AMFm), multi-country independent evaluation report: final report.* Calverton, MD and London: ICF International and London School of Hygiene and Tropical Medicine.

[4] O'Connell KA, Poyer S, Solomon T, et al. 2013. Methods for implementing a medicine outlet survey: lessons from the anti-malarial market. *Malaria Journal, 12*: 52.

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

2. Supply chain studies

Supply chain studies employ quantitative and qualitative research methods to effectively map the antimalarial supply chain in a given country. The supply chain is mapped from the antimalarial outlets (service delivery points) identified during an outlet survey to national importers and distributors with identification of all mid-level distributers in between. Retail prices are documented along the supply chain to facilitate calculation of commodity mark-ups. From 2008 through 2012, ACTwatch conducted 8 national supply chain studies. Reports are available at www.actwatch.info, and a peer-reviewed publication has appeared in *PLoS One*.[7]

2015 outlet surveys in the Greater Mekong sub-Region include a component to collect additional information about the supply chain for oral artemisinin monotherapy (oral AMT, e.g. artesunate tablets). Oral AMT identified during the outlet surveys was further investigated and research teams identified and visited named suppliers to collect further information about the supply chain.

3. Population-based surveys

Population-based surveys are conducted among consumers to document fever treatment-seeking behavior. A representative sample of the target population (caregivers of children and/or adults according to burden and risk) is identified, and a screening tool is used to identify individuals who have recently experienced fever. The surveys investigate the extent to which health care was sought, as well as common sources of care received. Respondent reports of malaria blood testing and antimalarials acquired are documented and summarized. The survey includes measures of demographic and other individual, household/family, and community characteristics that can be used to develop consumer profiles as well as monitor equity in access to malaria case management. From 2008 through 2012, ACTwatch conducted 14 household surveys focused on fever treatment-seeking behavior. Reports are available at www.actwatch.info, and a peer-reviewed publication has appeared in *Malaria Journal.*[8]

4. Fever case management quality of care

Fever case management quality of care is monitored using a set of research tools designed to measure aspects of the interaction between providers and clients. ACTwatch launched fever case management quality of care studies in 2015 in a subset of project countries. The following research tools were integrated into the outlet surveys in Cambodia and Uganda and were implemented among private sector outlets providing malaria testing and treatment:

- Exit interviews conducted with target consumers immediately after receiving fever case management services in the private sector. A structured interview documented client reports about key aspects of service delivery including malaria blood testing, test results, medicines recommended/prescribed and obtained, counseling, and costs of services and commodities received. Exit interviews were also used to measure client recall and comprehension of provider counseling including instructions for completing prescribed drug regimens, as well as client satisfaction with services provided.

[5] Surveys in the DRC (2) and Myanmar (3) were sub-national.

[6] O'Connell K, Gatakaa H, Poyer S, et al. 2011. Got ACTs? Availability, price, market share and provider knowledge of anti-malarial medicines in public and private sector outlets in six malaria-endemic countries. *Malaria Journal*, 10: 326.
Tougher S, the ACTwatch Group, Ye Y, et al. 2013. Effect of the Affordable Medicines Facility-malaria (AMFm) on the availability, price, and market share of quality-assured artemisinin-based combination therapies in seven countries: a before-and-after analysis of outlet survey data. *Lancet, 380*: 1916-26.

[7] Palafox B, Patouillard E, Tougher S, et al. 2014. Understanding private sector antimalarial distribution chains: a cross-sectional mixed methods study in six malaria-endemic countries. *PLoS One, 9*(4).

[8] Littrell M, Gatakaa H, Evance I, et al. (2011). Monitoring fever treatment behavior and equitable access to effective medicines in the context of initiatives to improve ACT access: baseline results and implications for programming in six African countries. *Malaria Journal, 10*: 327.

- A consultation observation checklist was used to document aspects of the provider-client interaction in the private sector. A trained observer completed the checklist designed to document provider compliance with standard practice and procedures as well as aspects of client demand for specific products or services. The observer remained silent during the consultation.

ACTwatch in Country

ACTwatch baseline surveys were conducted in Cambodia in 2009 including an outlet survey (2009) and a household survey (2009). Follow-up outlet surveys were conducted in 2011, 2013 and 2015. A supply chain study was conducted in 2011 and a follow-up household survey was conducted in 2012. All reports are available at www.actwatch.info.

Annex 2: Country Background

Cambodia is located in the Greater Mekong Sub-region of Southeast Asia. It is bordered by Thailand to the west, Laos and Thailand to the north, the Gulf of Thailand to the southwest, and Vietnam to the east and the south. It has a population of 15.7 million people, almost 80% of which live in rural areas.[9] Cambodia has a tropical climate with two distinct seasons: the dry season from November to February, and the wet season from May to October. Cambodia is composed of 25 provinces and four municipalities (see Figure X1). A sixth of Cambodia's population lives below the poverty line.[10] Nearly half of the labor force works in the agricultural sector (which includes mainly rice culture), whilst the growing services sector employs over one third of the labor force.[11]

Figure X1. Cambodia provinces and municipalities

Healthcare system

The health system in Cambodia has undergone several periods of changes through decades of civil conflict and social and economic transition. In 2008, the Cambodian Ministry of Health developed the second Health Sector Strategic Plan 2008-2015 designed to improve coverage of primary healthcare and increase financial allocations for provincial health departments.[12] In addition, the plan created operational districts (ODs) and established community-based programs, such as for immunizations and birth spacing.[13] The third Health Sector Strategic Plan 2016-2020 is currently underway, with main priorities being an increase in health spending and efficiency, stable financial sources and management, expanded social health protection, and improved harmonization and alignment.[14]

Health outcomes have improved recently. The under-five mortality rate decreased from 83 per 1,000 live births in 2005 to 38 per 1,000 live births in 2013.[15] Between 2000 and 2013, maternal mortality ratio decreased from 540 to 170 deaths per 100,000 live births.[16] Life expectancy at birth for both sexes increased from 60 to 73 between 2000-2013.[17] Health expenditures comprise 7.5% of the GDP, and 83% of the national disease burden is due to

[9] Central Intelligence Agency. (2016). The World Factbook. Retrieved from https://www.cia.gov/library/publications/the-world-factbook/geos/cb.html.
[10] Ibid
[11] Ibid
[12] Kingdom of Cambodia Ministry of Health. (2008). *Health Strategic Plan 2008-2015*. Phnom Penh: Ministry of Health.
[13] Ibid
[14] Veasnakiry, L. (2014). *Financing Arrangments in Health Sector under Sector-Wide Management* [PowerPoint slides]. Retrieved from http://www.internationalhealthpartnership.net/fileadmin/uploads/ihp/Documents/About_IHP_/mgt_arrangemts___docs/Core_Team/CHTM_2014/Day_two_presentations/EN-KH-IHP_December_2014_Dr._Kiry.pptx.
[15] WHO. (2015). *Cambodia: WHO statistical profile.* Geneva, Switzerland: WHO.
[16] Ibid
[17] WHO. (2015). *World Health Statistics 2015*. Geneva, Switzerland: WHO.

communicable diseases.[18]

Nonetheless, challenges remain. The Cambodian public healthcare system is financed through a national budget, donor funding and user fees. One goal of the health care system is to have appropriate funding mechanisms for the population to acquire health care without deepening poverty. The 1996 National Health Financing Charter established a right for government facilities to implement user fees, which has helped to control under-the-table payments but has also created a barrier for poor patients seeking care in the public sector[19]. To address this issue, decentralized health equity funds (HEFs) were created in 2000 as third-party payers for poor patients. Eligible patients are reimbursed for associated healthcare costs and are provided with healthcare free of charge at government health facilities.[20] However, according to the 2014 Demographic and Health Survey, HEFs represent only 4% of the source of expenditures for transport and health care; across all sectors, wages/income is the most common source of funding (64%), followed by savings (31.3%).[21]

Over two-thirds of care-seeking visits are to the private or non-medical sectors[22], where a wide range of providers operates, including hospitals, clinics, pharmacies, cabinets, mobile providers, drug shops and grocery sellers. Some of these private practices are run by government doctors or nurses during off-hours. Many private sector providers have limited or no health qualifications but are still widely used, especially by poor patients and in remote areas where communities have limited access to the formal health sector.[23]

Malaria risk and burden

The malaria burden in Cambodia has been greatly reduced over the past few years, with confirmed malaria cases experiencing a general decline since 2009 (see Figure X2). However, of Cambodia's 25 provinces, 21 are still considered to be endemic, and an estimated 48% of the population, or approximately 7.4 million people, live in high transmission areas.[24] Malaria incidence is highest in the northeastern regions of the country (see Figure X3). In 2014, public health facilities reported 26,278 total treated cases, 1,515 severe cases and 18 reported deaths from malaria, with around 55% of confirmed cases being *Plasmodium falciparum* (*Pf*) malaria, and 44% being *Plasmodium vivax* (*Pv*) malaria.[25] Roughly 29,993 and 15,894 cases were reported treated by VMWs and in the private sector, respectively.[26] The proportion of cases due to *Pf* versus *Pv* is variable across the country, with *Pf* cases being more common in the southwest and northeast, and *Pv* cases dominating the northwest and central regions. Transmission of malaria in Cambodia is associated with the rainy season, which occurs from May until October, peaking around August/September, and the primary malaria vectors are the *Anopeheles dirus*, *A. minimus*, *A. maculatus*, and *A. sundaicus* mosquito species.[27]

[18] Kingdom of Cambodia Ministry of Health. (2016). *Malaria elimination action framework 2016–2020.* Phnom Penh: Ministry of Health.
[19] Bigdeli, M., & Annear, P.L. (2009). Barriers to access and the purchasing function of health equity funds: lessons from Cambodia. *Bulletin of the World Health Organization 2009;87:560-564. doi: 10.2471/BLT.08.053058*
[20] Ibid
[21] National Institute of Statistics, Directorate General for Health, and ICF International. (2015). *Cambodia Demographic and Health Survey 2014*. Phnom Penh, Cambodia, and Rockville, Maryland, USA: National Institute of Statistics, Directorate General for Health, and ICF International.
[22] Ibid
[23] Patouillard E, Palafox B, Tougher S, Goodman C, Hanson K, Sochea P, O'Connell K and the ACTwatch Study group. 2012. A Qualitative Assessment of the Private Sector Antimalarial Distribution Chain in Cambodia, 2009. Nairobi: ACTwatch project, Population Services International.
[24] WHO. (2015). *World Malaria Report 2015*. Geneva, Switzerland: WHO.
[25] National Center for Parasitology, Entomology and Malaria Control (2014). *Malaria Situation 2014.* Retrieved from http://www.cnm.gov.kh/userfiles/Malaria_Situation_2014.pdf
[26] Ibid
[27] WHO. (2015). *World Malaria Report 2015*. Geneva, Switzerland: WHO.

Figure X2. Malaria treated cases and deaths (Public Health Facilities), 2009-2015[28]

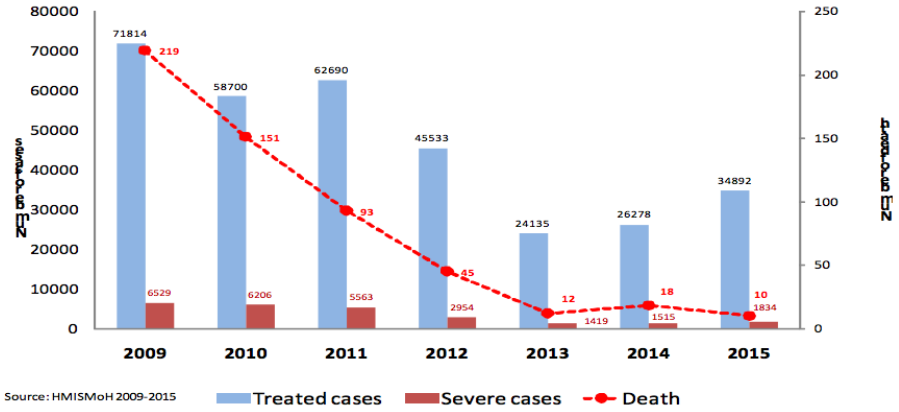
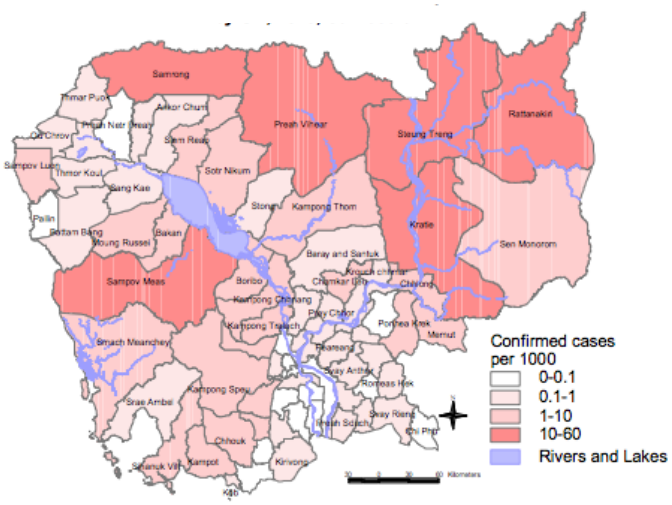


Figure X3. Malaria confirmed cases per 1000 population, 2015[29]



Artemisinin resistance in *Pf* malaria, characterized by slow parasite clearance and treatment failure, was observed in northwest Cambodia as early as 2002.[30] By 2005, multiple studies had documented high failure rates of artesunate mefloquine (ASMQ), especially near the Thai-Cambodia border.[31,32] In 2008 dihydroartemisinin piperaquine (DHA PPQ) was recommended to treat resistant cases. As malaria control efforts intensified between 2008 and 2010 and the number of *Pf* malaria cases declined, artemisinin drug pressure increased and the proportion of patients treated with DHA PPQ that remained parasitemic on day 3 increased from 26% to 45% between 2008 and 2010.[33] In June 2015, DHA PPQ failure rates had surpassed 60% in Siem Reap province.[34] Continued high DHA PPQ treatment failure rates prompted the use of atovaquone-proguanil to treat cases in Pailin province and other areas with resistance in western Cambodia in 2012. Less than a year after adopting atovaquone-proguanil, resistance conferring mutations were detected in *Pf* malaria[35], so ASMQ has been reintroduced as the first-line treatment in areas with drug resistance.

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[28] National Center for Parasitology, Entomology and Malaria Control (2016). *Malaria Situation 2015.* Retrieved from http://www.cnm.gov.kh/userfiles/12c_Web_CNM_Malaria situation_2015.pdf

[29] Ibid

[30] Dondorp, AM, Nosten, F, Yi, P et al. Artemisinin resistance in *Plasmodium falciparum* malaria. *N Engl J Med*. 2009; 361: 455–467

[31] Denis MB, Tsuyuoka R, Poravuth Y, Narann TS, Seila S, Lim C, et al. Surveillance of the efficacy of artesunate and mefloquine combination for the treatment of uncomplicated falciparum malaria in Cambodia. Trop Med Int Health. 2006;11:1360–6

[32] Vijaykadga S, Rojanawatsirivej C, Cholpol S, Phoungmanee D, Nakavej A, Wongsrichanalai C. In vivo sensitivity monitoring of mefl oquine monotherapy and artesunate-mefloquine combinations for the treatment of uncomplicated falciparum malaria in Thailand in 2003. Trop Med Int Health. 2006;11:211–9

[33] WHO (2011). Global report on antimalarial efficacy and drug resistance: 2000-2010.

[34] Kingdom of Cambodia Ministry of Health. (2016). *Malaria elimination action framework 2016–2020.* Phnom Penh: Ministry of Health.

[35] Cottrell, G., Musset, L., Hubert V., et al. Emergence of Resistance to Atovaquone-Proguanil in Malaria Parasites: Insights from Computational Modeling and Clinical Case Reports. Antimicrobail Agents and Chemotherapy. 2014; 58(8):4504-4514.

Malaria case management guidelines

The 2014 national treatment guidelines state that all suspected malaria cases should receive parasite-based diagnosis, and no treatment should be initiated until diagnosis is confirmed except in cases of severe malaria.[36] The recommended first-line treatment for uncomplicated malaria in adults is fixed dose combination DHA PPQ (40mg/320mg) or ASMQ (25mg/50mg or 100mg/200mg) for *Pf, Pv*, *Plasmodium ovale* (*Po*) and *malariae* (*Pm*) malaria. ASMQ is to be used in all provinces with drug resistance but is being considered for use throughout the whole country. However, there have been challenges surrounding procurement of ASMQ, with the manufacturer being unwilling to produce such low quantities of pediatric ASMQ.[37] In addition to treatment with DHA PPQ or ASMQ, uncomplicated *Pf* malaria should be treated with a single low dose of primaquine (PQ) on the first day of artemisinin-based combination therapy (ACT) treatment, while *Pv* and *Po* malaria should be treated with a standard dose of PQ on a weekly basis for 8 weeks or daily for 14 days, depending on likelihood of patient adherence. However, use of PQ has not yet been implemented beyond a few sentinel sites, due to challenges surrounding glucose-6-phosphate dehydrogenase (G6PD) deficiency and how to regulate use of PQ in the private sector.[38]

Atovaquone-proguanil is permitted only with special permissions from the National Center for Parasitology Entomology and Malaria Control (CNM) and must be used in combination with another antimalarial drug. The second-line treatment for uncomplicated malaria remains quinine taken with either doxycycline or tetracycyline.

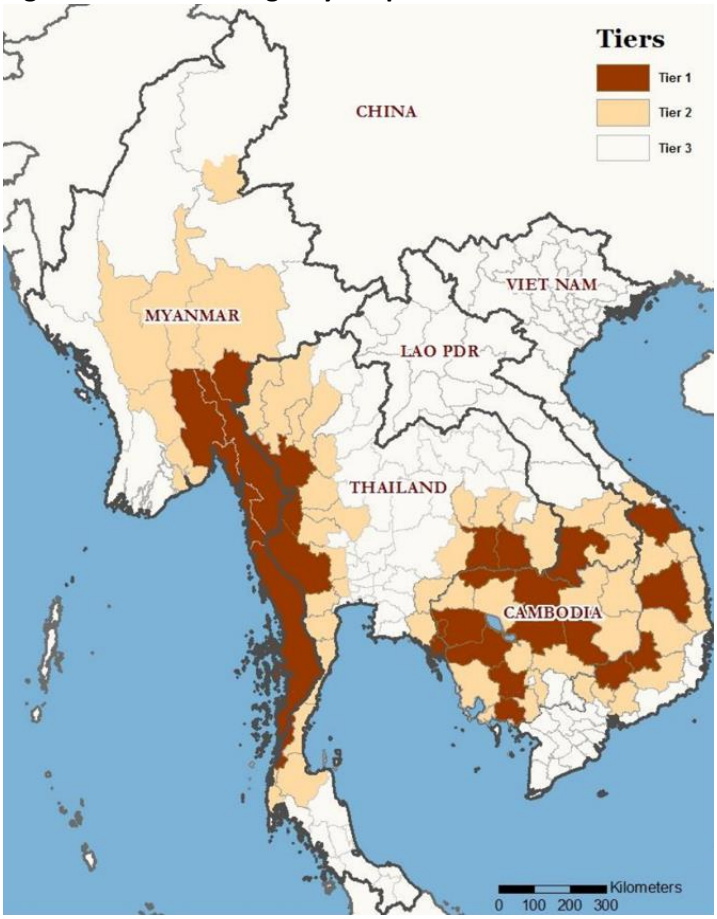
The recommended treatment for severe malaria is intramuscular (IM) artemether, or intravenous or IM artesunate, followed by a full course of DHA PPQ or ASMQ FDC when the patient can swallow. Rectal artesunate suppositories may be given as pre-referral treatment in severe cases that are delayed from immediate admission to a referral hospital. Recommended first-line treatment for malaria in pregnancy is quinine in the first trimester of pregnancy and the recommended ACT (ASMQ or DHA PPQ) in second and third trimesters of pregnancy.

Malaria control and elimination strategies

In 2014, the World Health Organization (WHO) used available evidence about artemisinin resistance to define a 3-tier stratification system for targeting action to address drug resistance. Areas designated as Tier 1 were prioritized for immediate multifaceted response to contain or eliminate resistance. Areas designated as Tier 2 were prioritized for intensified malaria control to reduce transmission and/or limit the risk of emergence or spread of resistant parasites. Tier 3 areas had no evidence of artemisinin resistance and limited contact with Tier 1 areas. Figure X4 displays the distribution of the tiers across the GMS.

[36] 2014 National Treatment Guidelines for Malaria in the Kingdom of Cambodia.
[37] CAP-MALARIA. (2015). *Control and Prevention of Malaria (CAP-Malaria), Cambodia, Annual Progress Report (October 1, 2014 to September 30, 2015).* Washington, DC: USAID.
[38] Ibid

Figure X4. WHO Emergency Response to Artemisinin Resistance Tier Map, Sep 2014[39]



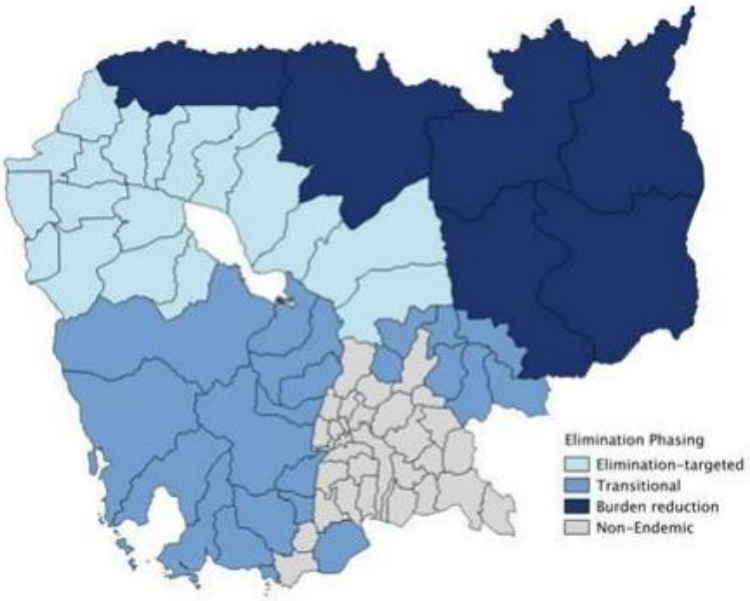
The 2015 outlet survey in Cambodia was designed according to the WHO tier stratification, with tiers 1 and 2 representing each of the survey domains. At this time, the CNM was using the tier stratifications to guide private sector engagement, with the CNM managing private sector providers in tier 1 provinces and PSK managing those in tier 2 provinces.

However, beginning in 2016, the Cambodia Malaria Elimination Action Framework, 2016-2020 outlines a new stratification system that will be used for operations and targeting, which is based on both evidence of multidrug resistance as well as measures of burden and operational capacity.[40] The new strategy for elimination will stratify ODs into one of four categories:

- **Elimination-targeted ODs:** low average annual parasite index (API; less than 1 per 1000 population), and surrounding ODs with API between 1-10 per 1000 population and either in the same province, with few malaria cases, and/or with little to no evidence of multidrug resistance.
- **Transitional ODs:** API higher than elimination-targeted ODs and evidence of multidrug resistance. Will become elimination-targeted ODs during the following year.
- **Burden reduction ODs:** API more than 10 per 1000 population
- **Malaria free ODs:** no local malaria transmission[41]

[39] WHO GMP (2014). *Status report on artemisinin resistance September 2014.*
[40] Kingdom of Cambodia Ministry of Health. (2016). *Malaria elimination action framework 2016–2020.* Phnom Penh: Ministry of Health.
[41] Ibid

Figure X5. 2016 Operational district stratification[42]



Given progress in malaria control in recent years, Cambodia has set the goal of eliminating malaria by 2025, with the initial focus being on the elimination of *Pf* by 2020.[43] Beginning in 2007, the CNM and its partners have implemented many strategies to contain the spread of artemisinin resistance, such as scaling up the Village Malaria Worker (VMW) program, including training VMWs to administer rapid diagnostic tests (RDTs), directly-observed therapy (DOT) on days 0-2 for test-positive cases, and to prepare blood smears on days 0, 3, 7, and 28 for analysis by a trained laboratory technician.[44] VMWs are trained and authorized to manage uncomplicated malaria, malaria in pregnancy, and malaria in children under five but must refer severe/complicated malaria cases to a public health facility for treatment. Since 2009, over 2,000 new VMWs have been trained across 10 new provinces[45], covering 2,030 villages by the end of 2013 and present in 44% of villages in ODs with high malaria prevalence.[46] The CNM has estimated the hiring and training of an additional 1,100 VMWs by the end of 2016 and 1,965 new VMWs by the end of 2017.[47] Additionally, migrant populations have been targeted through a network of Mobile Malaria Workers (MMWs),[48] and long-lasting insecticide-treated nets (LLINs) are being distributed through employers of migrant workers.[49]

Malaria diagnosis and treatment is free in the public sector. The CNM purchases subsidized ACTs through the Global Fund copayment mechanism.[50] Historically, Cambodia's malaria commodities supply chain has experienced frequent stock-outs in both the public and private sector.[51] In response, the Malaria Control in Cambodia Project, implemented by University Research Co. LLC (URC), worked with the CNM to integrate RDTs and ACTs into the primary healthcare-related supply chain, leading to a decrease in malaria commodity stock-outs at the health center level.[52] In addition,

[42] Kingdom of Cambodia Ministry of Health. (2016). *Malaria elimination action framework 2016–2020.* Phnom Penh: Ministry of Health.
[43] Ibid
[44] University Research Co., LLC (2014). Monitoring drug-Resistant Malaria through Intensified Case Finding at the Village Level in Cambodia. Phnom Penh: University Research Co., LLC.
[45] Ibid
[46] Maude, R.J., Nguon, C., Bunkea, T., Ngor, P.,…Chuor, C.M. (2014). Spatial and temporal epidemiology of clinical malaria in Cambodia 2004-2013. *Malaria Journal, 13:385.* doi:10.1186/1475-2875-13-385
[47] CAP-MALARIA. (2015). *Control and Prevention of Malaria (CAP-Malaria), Cambodia, Annual Progress Report (October 1, 2014 to September 30, 2015).* Washington, DC: USAID.
[48] Canavati, S., Chea, N., Guyant, P., Roca-Feltrer, A., & Yeung, S. (2013). *Strategy to address migrant and mobile populations for malaria elimination in Cambodia.* Ministry of Health Cambodia, London School of Hygiene and Tropical Medicine, Malaria Consortium.
[49] University Research Co., LLC (2014). Monitoring drug-Resistant Malaria through Intensified Case Finding at the Village Level in Cambodia. Phnom Penh: University Research Co., LLC.
[50] Mellor, S. (2013). *Moving towards malaria elimination: developing innovative tools for malaria surveillance in Cambodia.* Retrieved from http://www.malariaconsortium.org/pages/learning-papers.htm
[51] Patouillard, E., Palafox, B., Tougher, S., Sochea, P., O'Connell, K. & the ACTwatch Study group (2011). *ACTwatch 2009 Supply Chain Survey Results, Cambodia*. Nairobi: ACTwatch project, PSI
[52] University Research Co., LLC (2011). *Malaria Control in Cambodia: Advocacy to Improve the Supply Chain for Malaria.* Phnom Penh, Cambodia: University Research Co., LLC

the Malaria Consortium, the Clinton Health Access Initiative (CHAI), and the CNM began piloting an SMS system for monitoring drug supplies in 2011, where biweekly stock level reports update a map of participating health centers, providing a visual of impending malaria commodity stock-outs and enabling national staff to reallocate commodities accordingly.[53] Currently, the CNM is developing a new system called the Logistic Management Information System (LMIS) which will contain information on quantification, LLIN demand, forecasting, and stock, and which will aim to provide monthly rather than quarterly reports.[54]

Current behavior change communication (BCC) strategies in Cambodia strive to deliver culturally-appropriate and gender-sensitive communication surrounding malaria prevention.[55] In early 2015, a technical working group was formed with the aim of developing updated and adaptive BCC strategies for reaching mobile and migrant populations in Cambodia.[56] One example is the training of monks, nuns, and elderly women in Battambang Province to provide malaria education to mobile migrants visiting local pagodas.[57] CAP-Malaria delivers BCC using strategies that consider social and occupational differences, including the likelihood of men working in forested areas and the higher risks associated with pregnancy.[58] PSI regularly delivers communications surrounding the appropriate use of malaria commodities in order to generate demand by consumers and providers, including TV, radio, and billboard advertising coinciding with product launches, distribution of point-of-sale educational materials, short films screened in rural areas, and medical detailing to educate and support providers.[59] Finally, a positive deviance project in northwest Cambodia aiming to increase informed demand and improve behaviors surrounding malaria prevention, diagnosis, and treatment found that community role models can be effective tools for achieving these outcomes.[60]

Private sector engagement and regulation

There has been a continued and increasing regulation of antimalarial sales in the private sector. Following a ban on import and sales of oral artemisinin monotherapies (AMTs) in 2009, the Cambodian Ministry of Health created the "Justice Police", giving them the authority to close down pharmacies found to be selling oral AMTs or counterfeit, substandard, or expired drugs.[61] In 2013 and 2015, the ACTwatch Outlet Survey found no oral AMT sold or distributed in Cambodia, suggesting that regulatory efforts have been highly effective.[62,63]

Malaria diagnosis and treatment is highly subsidized in the private sector. Population Services International (PSI) has managed a nationwide subsidized private sector malaria treatment program in Cambodia since 2003, reaching approximately 1,500 outlets per month through sales representatives by the end of 2013.[64] As of 2016, PSI provides licensed private providers (health facilities) access to subsidized ASMQ in nine provinces with demonstrated drug resistance and DHA PPQ (Eurartesim®) in 12 provinces where DHA PPQ remains efficacious. Subsidized RDTs were sold under the brand name Malacheck® until 2014, which initially just tested for *Pf* infections. In 2010, the diagnostic kit changed to test for both *Pf* and *Pv* infections and is currently sold unbranded, in line with the national program. Licensed private sector providers are authorized to test and treat uncomplicated malaria regardless of geographic

[53] Mellor, S. (2013). *Moving towards malaria elimination: developing innovative tools for malaria surveillance in Cambodia.* Retrieved from http://www.malariaconsortium.org/pages/learning-papers.htm
[54] USAID-PMI. (2016). *President's Malaria Initiative, Greater Mekong Sub-region, Malaria Operational Plan FY 2016.* Washington, DC: USAID.
[55] Cambodia Country Coordinating Mechanism (CCM) (2009). *Proposal Form – Round 9*. Submission to the Global Fund to Fight AIDS, Tuberculosis and Marlaria, Geneva, Switzerland.
[56] WHO (2015). *Behaviour change communication is a key tool for reaching mobile migrant populations.* Retrieved from http://www.who.int/malaria/areas/greater_mekong/lao-pdr-behaviour-change-communication/en/
[57] Ibid
[58] CAP-Malaria (2012). *Vector control*. Retrieved from http://capmalaria.org/about-us/what-we-do/vector-control
[59] Montagu, D. (2010). *Large-Scale Malaria Treatment in the Private Sector: A Case Study of the Cambodian Experience*. San Francisco: The Global Health Group, Global Health Sciences, University of California, San Francisco.
[60] Shafique, M., & George, S. (2014). Positive deviance: An asset-based approach to improve malaria outcomes. Retrieved from: http://www.malariaconsortium.org/media-downloads/301
[61] Asia Pacific Leaders Malaria Alliance (2014). *The Cambodia Justice Police: Pragmatic approaches can work to clamp down on monotherapies and counterfeit drugs*. Poster presented at the 2nd Access to Quality Medicines and Other Technologies Task Force (AQTMF) Meeting, Manila, Philippines.
[62] ACTwatch Group, PSK. (2014). *ACTwatch Study Reference Document: Cambodia Outlet Survey 2013*. Washington DC: PSI
[63] ACTwatch Group, PSK. (2016). *ACTwatch Study Reference Document: Cambodia Outlet Survey 2015.* Washington DC: PSI
[64] ACTwatch Group, Novotny, J., Singh, A., Dysoley, L., Sovannaroth, S., & Rekol, H. (2016). Evidence of successful malaria case management policy implementation in Cambodia: results from national ACTwatch outlet surveys. *Malaria Journal, 15:194.* doi: 10.1186/s12936-016-1200-2

location, but they are required to refer cases of severe malaria, pregnant women, children under five years of age, and cases of suspected treatment failure to a public health facility. In addition, since 2013, PSI and other partners have established a network of plantation malaria workers (PMWs) throughout Cambodia, who are provided with the necessary training and supplies for malaria diagnosis and treatment and can in turn provide free malaria case management to plantation workers. The PMWs are required to report their cases either monthly or every 3 months (depending on the supervisory organization) in exchange for new supplies.[65,66]

In 2011, the CNM and the Ministry of Health (MoH) established a public-private partnership (PPM) program to further engage the private sector and provide commodities, training, and supervision to registered PPM providers.[67] The PPM program also allows for collection of case-load reports from PPM providers. The program was scaled up in 2013, and by the end of 2014, in partnership with PSI and URC, there were nearly 1,200 registered PPM providers in 34 ODs out of a total of 45 malaria endemic ODs.[68]

The national strategic plan outlines increasingly regulated private sector involvement in malaria case management from 2016 to 2020. There has been an effort to strengthen PPM in order to improve quality of care for malaria cases. This mechanism aims to train licensed and registered private providers who provide malaria case management on appropriate malaria diagnosis, treatment, and referral procedures, allowing for a more regulated inclusion of the private sector in case management while still adhering to national guidelines.[69] Beginning in 2016, a two pronged PPM strategy will offer an adjusted approach for provinces with evidence of multi-drug resistance (formerly tier 1 provinces). These nine provinces will be managed by CNM, and private providers will attend bimonthly meetings at the OD, where they will be supplied with free malaria commodities in exchange for the submission of used RDTs and paper reports.[70,71] In addition to mandatory attendance at bimonthly meetings, CNM's PPMs will adhere to a policy of quality assurance checks by the OD health centers. Private providers in other provinces (formerly tier 2 provinces) will be managed by PSK, utilizing the original methodology that has proven successful since 2013. Private providers will be sold RDTs and ACTs by PSK sales teams, at their place of work and at a subsidized price, submitting either paper based or electronic reports, used RDTs, and participating in scheduled Quality Assurance assessments and biannual refresher trainings. In 2018, once both methodologies of the PPM program have been evaluated, the PSK network will begin to transition the management of private providers to CNM.[72]

Additionally, the CNM plans to map both licensed and unlicensed private providers, and all eligible providers will be encouraged to join the PPM network.[73] Unlicensed providers who do not qualify for enrollment in the PPM program will not be permitted to provide malaria case management or to sell malaria commodities.[74] These new strategies for the PPM network aim to bring in more qualified private providers into the system in order to improve oversight, provision of commodities, and quality of national data.

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[72] Ibid

[73] ACTwatch Group, Novotny, J., Singh, A., Dysoley, L., Sovannaroth, S., & Rekol, H. (2016). Evidence of successful malaria case management policy implementation in Cambodia: results from national ACTwatch outlet surveys. *Malaria Journal, 15:194.* doi: 10.1186/s12936-016-1200-2

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Annex 3: Outlet Survey Methods

Design and Study Population

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

Public health facilities	Referral hospitals, health centers, sub-health centers, former district hospitals, and health posts. This category is comprised primarily of government facilities, but includes a small number of non-government not-for-profit (mission) facilities.
Community health worker	Village Malaria Workers (VMW) and Mobile Malaria Workers (MMW). VMWs are community-based volunteers equipped with antimalarial treatment and malaria blood testing. MMWs are VMWs who serve multiple villages.
Private for profit health facilities	Private hospitals, clinics, cabinets, and diagnostic laboratories.
Pharmacies	Pharmacies are licensed and regulated by a national regulatory authority, and are staffed by pharmacists and qualified health practitioners. These include clinical pharmacies, pharmacies, depot A, and depot B.
Drug stores	Drug stalls in rural markets and shops that primarily sell medicines. These outlets are not guaranteed to be staffed by qualified health dispensers/ practitioners and not licensed by a national regulatory authority.
General retailers	Grocery stores and village shops.
Itinerant drug vendors	Mobile providers found primarily in rural areas, typically working within a radius of their home. They are not registered with any national regulatory authority.

Stratification

In 2014, the WHO used available evidence about artemisinin resistance to define a 3-tier stratification system for targeting action to address drug resistance. This Tier system is replacing the previous zone stratification used in Cambodia. Areas designated as Tier 1 are prioritized for immediate multifaceted response to contain or eliminate resistance. Areas designated as Tier 2 are prioritized for intensified malaria control to reduce transmission and/or limit the risk of emergence or spread of resistant parasites. Tier 3 areas have no evidence of artemisinin resistance and limited contact with Tier 1 areas. Malaria control in these areas focuses on vector control, increasing coverage with confirmatory testing, and treatment with quality-assured ACTs. Recent findings suggest that artemisinin resistance is not only spreading but also emerging *de novo.* As such, the importance of not only preventing the spread of resistance from foci but of eliminating malaria in the region has increased. In consequence of this strategic reorientation, it is being recommended that Tier 3 areas be reclassified as Tier 2 (abandoning Tier 3 category). The Cambodia outlet survey was therefore stratified to deliver estimates for zones according to the countries new Tier stratification.

Research domains for the 2015 OS were designated accordingly:

1) Domain 1: Tier 1
2) Domain 2: Tier 2

Eligibility Criteria

All outlets with the potential to sell or distribute antimalarials were included in the census screening. Outlets were eligible for a provider interview and malaria product audit if they met at least one of three study criteria: 1) one or more antimalarials reportedly in stock the day of the survey; 2) one or more antimalarials reportedly in stock within

the three months preceding the survey; and/or 3) provides malaria blood testing (microscopy or RDT). Outlets that do not serve the general public (e.g. military facilities) were excluded from the study.

Sample Size

A series of calculations was completed to identify minimum sample size requirements to estimate with precision (+/- 10 percentage points) 2 key indicators among public and private outlets: 1) proportion of outlets with first-line antimalarial treatments available, among outlets with antimalarial(s) in stock on the day of the survey; and 2) proportion of outlets with malaria blood testing (RDT or microscopy) available, among outlets with antimalarial(s) in stock on the day of the survey or within the past 3 months. Estimates from the 2013 ACTwatch outlet survey were used to complete these calculations. A sample size of **80 Tier 1 and 80 Tier 2 communes** was anticipated to yield at a minimum the illustrative numbers of outlets in the table below.

Anticipated number of outlets, Cambodia outlet survey 2015

	Per Tier		Total	
	# approached	**# stocking at least 1 antimalarial**	**# approached**	**# stocking at least 1 antimalarial**
Public health facility	96	82	192	164
CHW	280	230	560	461
Private for profit facility	216	85	432	170
Pharmacy	112	51	224	103
Drug stores	256	42	512	84
General Retail	10,328	30	20,656	61
Itinerant drug vendor	520	87	1,040	174
Total	**11,068**	**568**	**23,616**	**1,217**
Total public	***376***	***312***	***752***	***625***
Total private	***11,432***	***295***	***22,864***	***592***

Sampling

A representative sample of communes was selected in each research domain (Tier 1 and Tier 2). From a list of all communes in each domain, the required number of units was selected with probability proportional to size (PPS). Selection of units with PPS was completed based on population estimates obtained from the Ministry of Planning (2010). The sampling frames for each Tier excluded communes that were located in non-malaria-endemic provinces according to information provided by CNM. A list of selected communes is provided in Annex 4.

A sampling frame with population sizes was used for selected the sample because accurate estimates on the total number of outlets per geographic/administrative units that may be eligible for a medicine outlet survey do not exist. The major assumption in using population figures for sampling is that distribution of outlets and/or distribution of medicines moving through outlets in a given cluster is correlated with population size.

Within each unit, a census of all outlets with the potential to sell or distribute antimalarials and/or provide malaria blood testing was conducted. The census approach taken within 160 communes was anticipated to yield sufficient sample size for estimating key indicators among most outlet types.

Data Collection

Interviewers, supervisors, and quality controllers received training that included an orientation to the study and questionnaire, classroom training on completing antimalarial and RDT audits, and a field exercise. Following training, data collection was implemented from August 17th to October 1st, 2015.

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

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

Data Entry, Processing, and Analysis

All data cleaning and analysis was completed using Stata 12.1 (©StataCorp, College Station, TX). Sampling weights were applied to account for variations in probability of selection (see Annex 9) and standard error estimation accounted for clustering at the commune levels. Indicator definitions are provided in Annex 10.

Protection of Human Subjects

The 2015 outlet survey protocol received ethical approval from the National Ethics Committee for Health Research in Cambodia and from the Ethical Review Board at PSI. Provider interviews and product audits were completed only after administration of a standard informed consent form and provider consent to participate in the study. Providers had the option to end the interview at any point during the study. Standard measures were employed to maintain provider confidentiality and anonymity.

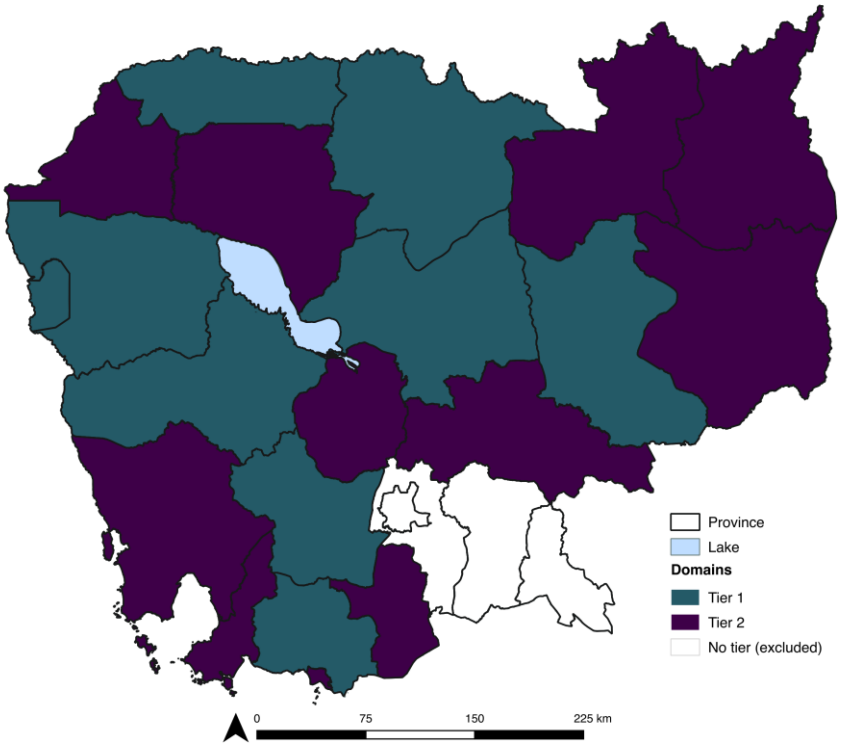
Annex 4: Sampled Communes

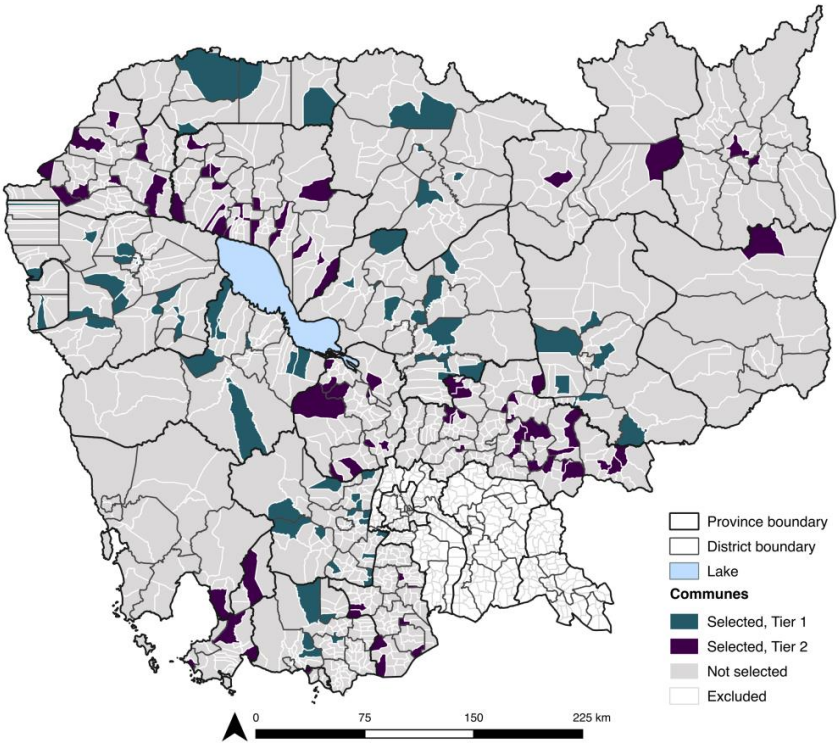
Table X2. Sampled communes				
PROVINCE	**DISTRICT**	**COMMUNE**	**TIER**	**POPULATION**
BATTAMBANG	BANNAN	CHAENG MEANCHEY	1	9296
BATTAMBANG	BANNAN	SNAENG	1	16867
BATTAMBANG	BATTAMBANG	CHOMKAR SAMRAONG	1	17179
BATTAMBANG	BATTAMBANG	PREK PREAH SDACH	1	13277
BATTAMBANG	BATTAMBANG	TOUL TA EK	1	18276
BATTAMBANG	BAVEL	BAVEL	1	26182
BATTAMBANG	BAVEL	KHLEANG MEAS	1	11639
BATTAMBANG	KAMRIENG	KAMRIENG	1	6485
BATTAMBANG	KAOS KROLOR	HAB	1	2915
BATTAMBANG	MOUNG RUESSEI	KEAR	1	17703
BATTAMBANG	MOUNG RUESSEI	PREY TOUCH	1	11314
BATTAMBANG	PHNUM PROEK	BOUR	1	19603
BATTAMBANG	RATANAK MONDUL	PHLOV MEAS	1	7431
BATTAMBANG	RUKHAK KIRI	MUK REAH	1	9052
BATTAMBANG	SAMLOUT	OU SAMRIL	1	5195
BATTAMBANG	SAMPOV LUN	SERIE MEANCHEY	1	11901
BATTAMBANG	THMOR KOUL	CHREY	1	14884
BATTAMBANG	THMOR KOUL	OU TAKI	1	16158
KAMPONG SPEU	AORAL	REAKSMEI SAMEAKKI	1	3130
KAMPONG SPEU	BASEDTH	KAT PHLUK	1	8682
KAMPONG SPEU	BASEDTH	POU ANGKRANG	1	16540
KAMPONG SPEU	BASEDTH	TUOL AMPIL	1	10678
KAMPONG SPEU	CHBAR MON	SOPOAR TEP	1	7129
KAMPONG SPEU	KONG PISEI	PREAH NIPEAN	1	13668
KAMPONG SPEU	KONG PISEI	SNAM KRAPEU	1	13453
KAMPONG SPEU	ODONGK	CHEUNG ROAS	1	7339
KAMPONG SPEU	ODONGK	PEANG LVEA	1	8224
KAMPONG SPEU	ODONGK	VEAL PONG	1	13657
KAMPONG SPEU	PHNUM SRUOCH	KRANG DEI VAY	1	7457
KAMPONG SPEU	PHNUM SRUOCH	TANG SYA	1	9665
KAMPONG SPEU	SAMRAONG TONG	PNEAY	1	12349
KAMPONG SPEU	SAMRAONG TONG	SAMBOUR	1	8811
KAMPONG SPEU	SAMRAONG TONG	TRAPEANG KONG	1	15647
KAMPONG SPEU	THPONG	PRAMBEI MUM	1	10520
KAMPONG THOM	BARAY	BALLANGK	1	16310
KAMPONG THOM	BARAY	CHHUK KHSACH	1	13825
KAMPONG THOM	BARAY	KOKIR THUM	1	9099
KAMPONG THOM	BARAY	TNAOT CHUM	1	8727
KAMPONG THOM	KAMPONG SVAY	KAMPONG SVAY	1	14027
KAMPONG THOM	KAMPONG SVAY	TBAENG	1	14234
KAMPONG THOM	PRASAT BALLANGK	SAKREAM	1	9378
KAMPONG THOM	PRASAT SAMBOUR	SAMBOUR	1	13818
KAMPONG THOM	SANDAN	NGAN	1	8001
KAMPONG THOM	SANTUK	KAMPONG THMA	1	9397
KAMPONG THOM	SANTUK	TI POU	1	9728
KAMPONG THOM	STOUNG	KAMPONG CHEN CHEUNG	1	6995
KAMPONG THOM	STOUNG	PREAH DAMREI	1	5974
KAMPONG THOM	STUENG SAEN	KAMPONG KRABAU	1	4794
KAMPOT	CHHUK	DOUN YAY	1	6394
KAMPOT	CHHUK	TAKAEN	1	11277
KAMPOT	CHUM KIRI	CHUMPU VOAN	1	8217
KAMPOT	DANG TONG	DAMNAK SOKRAM	1	3958
KAMPOT	KAMPOT	KAMPONG BAY	1	5447

KAMPOT	TUEK CHHOU	KANDAOL	1	12310
KAMPOT	TUEK CHHOU	PREY THNANG	1	9833
KRATIE	CHETR BOREI	DAR	1	9263
KRATIE	CHHLOUNG	CHHLOUNG	1	6712
KRATIE	CHHLOUNG	PREAEK SAMAN	1	9221
KRATIE	PREK PRASAB	CHROUY BANTEAY	1	10934
KRATIE	PREK PRASAB	TA MAO	1	7,928
KRATIE	SAMBOUR	SANDAN	1	8045
KRATIE	SNUOL	SRAE CHAR	1	16710
ODDAR MEANCHEY	ANLONG VEAENG	TRAPEANG TAV	1	7354
ODDAR MEANCHEY	CHONG KAL	CHEUNG TIEN	1	4291
ODDAR MEANCHEY	SAMRAONG	KOUN KRIEL	1	18723
ODDAR MEANCHEY	TRAPEANG PRASAT	TRAPEANG PRASAT	1	19669
PAILIN	PAILIN	TUOL LVEA	1	6229
PREAH VIHEAR	CHEY SAEN	S'ANG	1	3103
PREAH VIHEAR	CHOAM KSANT	PRING THUM	1	2046
PREAH VIHEAR	PREAH VIHEAR	KAMPONG PRANAK	1	8971
PREAH VIHEAR	ROVIENG	RUMDAOH	1	3487
PURSAT	BAKAN	BOENG KHNAR	1	13023
PURSAT	BAKAN	OU TA PAONG	1	16799
PURSAT	BAKAN	TA LOU	1	20797
PURSAT	KANDIENG	KAOH CHUM	1	7559
PURSAT	KRAKOR	ANLONG TNAOT	1	9858
PURSAT	KRAKOR	KBAL TRACH	1	10135
PURSAT	PHNUM KRAVANH	LEACH	1	9193
PURSAT	PHNUM KRAVANH	SANTREAE	1	5755
PURSAT	PURSAT	PREY NHI	1	5101
BANTEAY MEANCHEY	MALAI	TA KONG	2	9692
BANTEAY MEANCHEY	OU CHROV	SAMRAONG	2	7861
BANTEAY MEANCHEY	PHNOM SROK	PONLEY	2	10804
BANTEAY MEANCHEY	POIY PET	PAOY PET	2	54106
BANTEAY MEANCHEY	POIY PET	PSAR KANDAL	2	22624
BANTEAY MEANCHEY	PREAH NEATH PREAH	PHNUM LIEB	2	15593
BANTEAY MEANCHEY	SEREI SOPHORN	PHNIET	2	4464
BANTEAY MEANCHEY	SVAY CHEK	SVAY CHEK	2	19249
BANTEAY MEANCHEY	THMOR POUK	KUMRU	2	10394
KAMPONG CHAM	CHAMKAR LEU	CHAMKAR ANDOUNG	2	16567
KAMPONG CHAM	CHAMKAR LEU	SVAY TEAB	2	23888
KAMPONG CHAM	KANG MEAS	PEAM CHI KANG	2	9444
KAMPONG CHAM	PREY CHOR	BOEUNG NAY	2	15159
KAMPONG CHAM	PREY CHOR	KROUCH	2	7025
KAMPONG CHAM	PREY CHOR	THMA PON	2	9602
KAMPONG CHAM	STEUNG TRANG	KPOUP TANGOUN	2	7951
KAMPONG CHAM	STEUNG TRANG	PREAK BAK	2	10411
KAMPONG CHHNANG	BARIBOUR	ANHCHANH RUNG	2	5271
KAMPONG CHHNANG	BARIBOUR	TRAPEANG CHAN	2	5576
KAMPONG CHHNANG	KAMPONG CHHNANG	KHSAM	2	6240
KAMPONG CHHNANG	KAMPONG LEAENG	POU	2	5249
KAMPONG CHHNANG	KAMPONG TRALACH	CHRES	2	9919
KAMPONG CHHNANG	KAMPONG TRALACH	THMA EDTH	2	5293
KAMPONG CHHNANG	ROLEA B'IER	PRASNOEB	2	5475
KAMPONG CHHNANG	SAMEAKKI MEAN CHEY	CHHEAN LAEUNG	2	4612
KAMPONG CHHNANG	SAMEAKKI MEAN CHEY	SVAY CHUK	2	9394
KAMPONG CHHNANG	TUEK PHOS	KRANG SKEAR	2	13703
KEP	KAEB	OU KRASAR	2	7199
KOH KONG	KHEMARA PHOUMIN	DANG TONG	2	13388
KOH KONG	SRAE AMBEL	CHROUY SVAY	2	4334
MONDULKIRI	KAOH NHEAEK	NANG KHI LIK	2	3202
RATANAKIRI	BAN LUNG	BOENG KANSAENG	2	8753

RATANAKIRI	BAR KAEV	TING CHAK	2	2842
RATANAKIRI	OU CHUM	OU CHUM	2	4153
SIEM REAP	ANGKOR CHUM	CHAR CHHUK	2	9435
SIEM REAP	ANGKOR CHUM	TA SAOM	2	9780
SIEM REAP	BANTEAY SREI	PREAH DAK	2	8058
SIEM REAP	CHI KRAENG	KAMPONG KDEI	2	12280
SIEM REAP	CHI KRAENG	LVEAENG RUESSEI	2	14573
SIEM REAP	CHI KRAENG	SANGVAEUY	2	14969
SIEM REAP	KRALANH	SAMBUOR	2	6953
SIEM REAP	PRASAT BAKONG	KANDAEK	2	13463
SIEM REAP	PUOK	KAEV POAR	2	7294
SIEM REAP	PUOK	PUOK	2	14768
SIEM REAP	PUOK	TREI NHOAR	2	10175
SIEM REAP	SIEM REAP	KOK CHAK	2	23427
SIEM REAP	SIEM REAP	SLA KRAM	2	18263
SIEM REAP	SIEM REAP	SRANGAE	2	6944
SIEM REAP	SOUTR NIKOM	CHAN SA	2	9112
SIEM REAP	SOUTR NIKOM	KHCHAS	2	8656
SIEM REAP	SREI SNAM	CHROUY NEANG NGUON	2	6872
SIEM REAP	SVAY LEU	SVAY LEU	2	9490
SIHANOUKVILLE	KAMPONG SEILA	KAMPONG SEILA	2	6574
SIHANOUKVILLE	PREAH SIHANOUK	BUON	2	24017
SIHANOUKVILLE	PREY NOB	CHEUNG KOU	2	10227
SIHANOUKVILLE	PREY NOB	TUEK THLA	2	5123
STUNG TRENG	SESAN	TA LAT	2	3130
STUNG TRENG	STUENG TRAENG	SRAH RUESSEI	2	3714
TAKEO	BOREI CHOLSAR	DOUNG KHPOS	2	6756
TAKEO	KAOH ANDAET	PREY YUTHKA	2	4212
TAKEO	KIRI VONG	KOUK PRECH	2	14274
TAKEO	KIRI VONG	PREY RUMDENG	2	10273
TAKEO	PREY KABBAS	PREY PHDAU	2	10326
TAKEO	TRAM KAK	KUS	2	15280
TAKEO	TRAM KAK	TRAM KAK	2	12925
TAKEO	TREANG	ANGKANH	2	6136
TBONG KHMUM	DAMBAE	CHONG CHEACH	2	16433
TBONG KHMUM	DAMBAE	TRAPEANG PRING	2	16073
TBONG KHMUM	KROUCH CHHMAR	KAMPONG TREAS	2	10007
TBONG KHMUM	KROUCH CHHMAR	TREA	2	9820
TBONG KHMUM	MEMOT	CHOAM TA MAU	2	9445
TBONG KHMUM	MEMOT	MEMOT	2	15098
TBONG KHMUM	MEMOT	TRAMUNG	2	13052
TBONG KHMUM	PONHEA KRAEK	KANDAOL CHRUM	2	19987
TBONG KHMUM	PONHEA KRAEK	KRAEK	2	37590
TBONG KHMUM	PONHEA KRAEK	VEAL MLU	2	7549
TBONG KHMUM	TBOUNG KHMUM	ANHCHAEUM	2	13226
TBONG KHMUM	TBOUNG KHMUM	CHOB	2	20694
TBONG KHMUM	TBOUNG KHMUM	ROKA PO PRAM	2	30120
TBONG KHMUM	TBOUNG KHMUM	THMA PECH	2	15365

Figure X2: Additional Maps of sampled areas





Cambodia Outlet Survey, 2015

Annex 5: Detailed Sample Description

Table X3: Detailed sample description

	Public Health Facility	Community Health Worker	Private Not-for-Profit Facility	Private for-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Outlets**
Number of outlets screened (Figure 1 Box B)	173	430	1	668	290	338	23,840	924	26,664
Tier 1	82	280	0	326	98	219	11,290	486	12,781
Tier 2	91	150	1	342	192	119	12,550	438	13,883
Number of outlets eligible and interviewed (Figure 1 Box D)	142	415	0	327	99	46	39	235	1,303
Tier 1	67	271	0	182	40	37	22	144	763
Tier 2	75	144	0	145	59	9	17	91	540
Number of outlets eligible but not interviewed (interview non-participation)	0	1	0	1	2	0	1	0	5
Tier 1	0	0	0	1	1	0	0	0	2
Tier 2	0	1	0	0	1	0	1	0	3
Number of interviewed outlets with at least one antimalarial in stock on the day of the survey (Figure 1, Box D1)	137	330	0	186	45	22	29	109	858
Tier 1	65	214	0	112	24	19	16	69	519
Tier 2	72	116	0	74	21	3	13	40	339
Number of interviewed outlets with at least one antimalarial in stock on the day of the survey or at least one antimalarial reportedly in stock in the previous 3 months (Figure 1 sum of Box 1 and Box 2)	140	402	0	237	74	34	39	186	1112
Tier 1	66	265	0	140	34	30	22	120	677
Tier 2	74	137	0	97	40	4	17	66	435
Number of interviewed outlets that provide malaria blood testing, but do not stock antimalarial medicines (Figure 1 Box D3)	2	13	0	90	25	12	0	49	191
Tier 1	1	6	0	42	6	7	0	24	86
Tier 2	1	7	0	48	19	5	0	25	105
Proportion of eligible and interviewed antimalarial-stocking outlets with at least one provider with a health-related qualification*	100.0	89.1	-	97.3	82.2	40.9	6.9	66.1	85.3
Tier 1	100.0	95.3	-	97.3	87.5	42.1	12.5	65.2	87.5
Tier 2	100.0	77.6	-	97.3	76.2	33.3	0.0	67.5	82.0

* Health-related qualifications include: medical doctor, pharmacists, pharmacy technician, pharmacy assistant, nurse, nursing officer, medical assistant, nursing assistant, nursing aid, midwife, and community health worker.

Source: *ACTwatch* Outlet Survey, Cambodia, 2015.

Annex 6: Questionnaire

Section 1: Census Information

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

Outlet ID: **Interviewer-District-Commune-Outlet ID** [___|___]-[___|___]-[___|___|___]--[___|___|___]	
C1. Today's date (dd/mm/yyyy)	[___|___]-[___|___]-[_2_|_0_|_1_|_5_]
C2. Interviewer's name [_____]	C2a. Interviewer's code [___|___]
C3. District [_____]	C3a. District code [___|___]
C4. Commune [_____]	C4a. Commune code [___|___|___]
C5. Village [_____]	
C6. Name of outlet ***If no name, record "no name" or owner's name*** [_____]	C6a. Outlet code [___|___|___]

C7. Type of Outlet

01	Referral Hospital	09	Private Hospital	17	Village Shop	[___|___]
02	Health Center	10	Private Clinic / Poly Clinic	18	Mobile Provider - only mobile	
03	Former District Hospital	11	Clinical Pharmacy / Pharmacy	19	Mobile Provider - fixed clinic/base + mobile	
04	Health Post	12	Depot A	20	Private diagnostic lab (lab only)	
05	Village Malaria Worker / Mobile Malaria Worker	13	Depot B	21	NGO / Mission Diagnostic Lab (lab only)	
06	Plantation Malaria Worker	14	Cabinet / Health care room	96	Other ***(specify)*** [_____]	
07	NGO / Mission / Faith-based Hospital	15	Drug Store			
08	NGO / Mission / Faith-based Clinic	16	Grocery Store			

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

Section 2: Screening & Eligibility

S1. Do you have any medicines in stock today? 1 = Yes ***Go to S3*** 0 = No	[___]
S2. Are there any medicines that are out of stock today, but that you stocked in the **<u>past 3 months?</u>** 1 = Yes ***Go to S4*** 0 = No ***Go to S5*** 8 = Don't know ***Go to S5***	[___]
S3. Do you have any antimalarial medicines in stock today? 1 = Yes ***Provide information sheet & gain consent. Record start time in C9. Proceed to Section 3: Antimalarial Audit.*** 0 = No Verify with prompt card. ***Go to S4***	[___]
S4. Are there any antimalarial medicines that are out of stock today, but that you stocked in the **<u>past 3 months?</u>** 1 = Yes ***Provide information sheet & gain consent. Record start time in C9. Proceed to A16.*** 0 = No ***Verify with prompt card. Go to S5*** 8 = Don't know ***Verify with prompt card. Go to S5***	[___]
S5. Are you offering any diagnostic services or selling any diagnostic tests here today? 1 = Yes ***Go to S6*** 0 = No ***Verify with prompt card. Record details in C9 then complete Section X: Ending Interview***	[___]
S6. Are any of these services or tests for suspected malaria? 1 = Yes ***Provide information sheet & gain consent. Record start time in C9. Proceed to Section 4: Diagnostic Audit*** 0 = No ***Verify with prompt card. Record details in C9 then complete Sec X: Ending Interview***	[___]

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

C9. Result of Visit(s)

Date (dd/mm/yy)	Visit 1	Visit 2	Visit 3
	[___|___]-[___|___]-[_1_|_5_]	[___|___]-[___|___]-[_1_|_5_]	[___|___]-[___|___]-[_1_|_5_]
Time started ***(in 24hr clock)***	[___|___]:[___|___]	[___|___]:[___|___]	[___|___]:[___|___]
Time completed ***(in 24hr clock)***	[___|___]:[___|___]	[___|___]:[___|___]	[___|___]:[___|___]
Result	[___|___]	[___|___]	[___|___]

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

C10. If the provider refused, why? [___]

1 = Client load ***Ask respondent for a time they would prefer to be interviewed and note in C11***
2 = Thinks it's an inspection / nervous about license ***go to E1***
3 = Not interested ***go to E1***
6 = Other (specify):[_____]
7 = Refuses to give reason ***go to E1***

C11. ***Use this space to record call back details. If it is not possible to complete the interview at another time, go to E1.***

Section X: Ending the interview

E1. Name of interviewee:

[_____]

5 = Not applicable, no respondent; 7 = Refused

E2. Physical address or location identifiers of outlet (not PO box)***(Give detailed description that will help supervisor to find the outlet)***

E3. Telephone number

[___|___|___|___|___|___|___|___|___|___]
9999999995 = N/A: no respondent or has no telephone
9999999997 = Refused

E4.Latitude:

[_**N**_] - **[___|___]** . [___|___|___|___|___|___|___]

E5.Longitude:

[_**E**_] - **[___|___]** . [___|___|___|___|___|___|___]

E7. **Additional observations by interviewer (if any)**

THANK THE PROVIDER AND END THE INTERVIEW

Section 3: Antimalarial Audit

A0. Read to the provider:
Can you please show us the full range of antimalarials that you currently have in stock? Do you currently have any of the following?
Prompt entire list using antimalarial prompt card; No response to be recorded.

- Artemisinin combination therapies, such as:
  - A+M1, A+M2, A+M3, A+M4, A+M5
  - Malarine for adults, Malarine for children, Malarine for teenagers
  - Duo-cotecxin, Duo-cotecxin adults and children
  - Eurartesim Child 7-23kg, Euratesim Child 13-23kg, Eurartesim Child, 24-35kg, Eurartesim Adult 36-74kg
  - Other ACTs including Artekin, Artequick, Malarone, Malarone Paediatric, Noriafen
- Artemisinin monotherapies, such as Arsumax, Artesunate, Arinate, Arquine, Artemedine, Artim, Cotecxin, Plasmotrim, Prevention-A, Santecxin
- Quinine, such as Anoginquinin, Quinine dihydrochloride, Quinine sulphate (+Tetracyclin)
- Mefloquine, such as Eloquine, Larium, Mephaquin, Mefloquine
- Chloroquine, such as Chloroquine phosphate, Nitaquine, Nivaquine, HCQ 200
- Syrups or suspensions - Cotecxin Pediatrique
- Injectables, such as Artim, Artemedine, Artesiane, Artemether, Quinine Dihydrochloride, Malacin, Artesunate (powder)
- Granules or powders, such as Artequick, Artesunate

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

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

Separate the antimalarials into two piles:

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

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

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

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

ADDITIONAL NOTES ON THE SUB-OUTLET CODE

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

SUB-OUTLET CODES	
X	ALL outlets that have only ONE dispensing/distribution point for medicines/diagnostics
A	Outpatient department / dispensary/Main pharmacy (if used by all patients)
B	Adult outpatient department / adult dispensary / adult clinic
C	Child outpatient department / child dispensary / child clinic
D	Antenatal / maternity clinic/MCH
E	ART / HIV/AIDS clinic
G	Private dispensing unit within a public health facility
L	Laboratory ***(for RDT audit)***
Z	Other ***(specify the type in the space for audit comments – TSG 15 or NT 15)***

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

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

5. Manufacturer	6. Country of manufacture	7. Package size	8. Is product a fixed-dose combination (FDC)	9. Does product have the Green leaf logo?	10. Amount sold/distributed in the last 7 days to individual consumers (*Record # of packages / tins described in* Q7 *OR record the total # of tablets / suppositories / granule packs sold*)	11. Stocked out at any point in the past 3 months?
	[__|__|__]	There are a total of [___|___|___|___] tablets/ suppositories/ granule sachets in each: 1 = Package 2 = Pot/tin [___]	1 = Yes 0 = No 8 = Don't know [___]	1 = Yes 0 = No 8 = Don't know [___]	This outlet sold [___|___|___] **packages/ tins** in the last 7 days **OR** This outlet sold [___|___|___] **tablets/ suppositories or granule sachets** in the last 7 days ***Not applicable = 995; Refused = 997; Don't know = 998***	1 = Yes 0 = No 8 = Don't know [___]

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

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

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

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

5. Manufacturer	**6. Country of manufacture** [__|__|__]	**7. Package size** There are a total of [___|___|___|___] tablets/ suppositories/ granule sachets in each: 1 = Package 2 = Pot/tin [___]	**8. Is product a fixed-dose combination (FDC)** 1 = Yes 0 = No 8 = Don't know [___]	**9. Does product have the Green leaf logo?** 1 = Yes 0 = No 8 = Don't know [___]	**10. Amount sold/distributed in the last 7 days to individual consumers** (*Record # of packages / tins described in* Q7 *OR record the total # of tablets / suppositories / granule packs sold*) This outlet sold [___|___|___] **packages/ tins** in the last 7 days **OR** This outlet sold [___|___|___] **tablets/ suppositories or granule sachets** in the last 7 days ***Not applicable = 995; Refused = 997; Don't know = 998***	**11. Stocked out at any point in the past 3 months?** 1 = Yes 0 = No 8 = Don't know [___]

12. Retail selling price [___|___|___] **tablets, suppositories or granule sachets** cost an individual customer [___|___|___|___|___] USH ***Free = 00000 Refused = 99997 Don't know = 99998***	**13. Wholesale purchase price** For the outlet's most recent wholesale purchase [___|___|___|___] **tablets, suppositories or granule sachets** cost [___|___|___|___|___|___] USH ***Free = 000000 Refused = 999997 Don't know = 999998***

14. Why do you stock this medicine [SHOW PRODUCT]?
Do not read list.
Circle ALL responses given

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

15. Comments

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

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

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

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

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

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

Antimalarial stock outs

A16. Are there any antimalarial medicines that are out of stock <u>today</u>, but that you stocked in the past **<u>3 months?</u>** 1 = Yes ***go to A17*** 0 = No ***go to Section 4: Diagnostic Audit*** 8 = Don't know ***go to Section 4: Diagnostic Audit***	[___]
A17. What are the names of the treatments that are out of stock? ***Will accept generic or brand names. Record one medicine per line.*** 1 = Yes, ***specify*** [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] 0 = No, provider can't remember	[___]

Interviewer: Go to Section 4: Diagnostic Audit

Section 4: Diagnostic Audit

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

D1. Does this outlet/facility have disposable gloves available today for staff to use when seeing customers/patients? 1 = Yes 0 = No 8 = Don't know	[___]
D2. Does this outlet/facility have a sharps container, also called a sharps disposal box or safety box, available today for staff to use? 1 = Yes 0 = No 8 = Don't know	[___]
D3. Is malaria microscopic testing available here today? 1 = Yes 0 = No ***go to D6a***	[___]
D4. How many people were tested for **malaria** at this facility/outlet **using microscopy** within the past 7 days? **997 = Refused; 998 = Don't know**	[___|___|___]
D5. What is the total cost for a microscopic test for malaria for an adult: [___|___|___|___|___] Riel ***Free = 00000; NA =99995; Refused = 99997; Don't know=99998***	
D6a. G6PD tests are used to determine if an individual has a G6PD deficiency. Specific types of malaria medicines can harm patients with G6PD deficiency. **Have you ever heard of G6PD tests?** 1 = Yes 0 = No ***go to d7***	[___]
D6b. Does this outlet test people for G6PD deficiency? 1 = Yes 0 = No ***go to d7*** Don't know ***ask to speak with a respondent who has this information***	[___]
D6c. Does this outlet use rapid diagnostic tests (RDTs) for G6PD deficiency testing? 1 = Yes 0 = No ***go to d7*** Don't know ***ask to speak with a respondent who has this information***	[___]
D6d. Which G6PD rapid diagnostic tests (RDTs) are used in this outlet? ***Ask the provider to gather the G6PD rapid diagnostic tests.*** ***Do not read list. Circle ALL G6PD tests observed to be in stock.*** ***Record brand name and manufacturer for any observed G6PD RDTs not listed below.***	
Carestart G6PD RDT manufactured by Access Bio	A
BinaxNOW G6PD RDT manufactured by Alere	B
G-6-PDH Dye Reduction RDT manufactured by Trinity Biotech	C
Other (specify brand name and manufacturer) [_____]	X
D6e. How many people has this outlet tested for G6PD deficiency in the past month? ***997 = refused, 998 = don't know***	[___|___|___]
D7. Malaria rapid diagnostic tests, also called RDTs, are small, individually wrapped blood tests that are able to quickly diagnose whether a person has malaria. ***Show RDT images in prompt card*** Are malaria RDTs available here today? 1 = Yes 0 = No ***go to D9*** Don't know ***ask to speak with a respondent who has this information***	[___]

D8. Please show us the full range of RDTs that you currently have in stock. Do you currently have any of the following?
Read entire list; No response to be recorded.

- *Advanced, Carestart, First Response, Malacheck, One Step, Paracheck, SD Bioloine*

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

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

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

SUB-OUTLET CODES	
X	ALL outlets that have only ONE dispensing/distribution point for medicines/diagnostics
A	Outpatient department / dispensary/Main pharmacy (if used by all patients)
B	Adult outpatient department / adult dispensary / adult clinic
C	Child outpatient department / child dispensary / child clinic
D	Antenatal / maternity clinic/MCH
E	ART / HIV/AIDS clinic
G	Private dispensing unit within a public health facility
L	Laboratory ***(for RDT audit)***
Z	Other ***(specify the type in the space for audit comments – TSG 15 or NT 15)***

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

Sub-outlet code [_____] Product number [__|__]	1. Brand name	2. Antigen test *(circle ALL that apply)* HRP2 **A** pLDH **B** Aldolase **C** Not indicated **Z**	3. Parasite species *(circle ALL that apply)* Pf **A** Pv **B** Po **C** pm **D** pan **E** vom/Pvom **F** Other **G** **Specify** [_____] Not indicated **Z**	4. Manufacturer	5. Country of Manufacture	5b. Product Catalogue Number	6. Lot Number	7. Is this a self test kit, with each test kit co-packaged with its own buffer, pipette and lancet ? 1 = Yes 0 = No 8 = Don't know [___]

13. Number of tests sold/ distributed /used in the last 7 days to individual consumers *(Record total # of tests)* This outlet sold or distributed [___|___|___|___] **tests** in the last 7 days ***Refused = 9997; Don't know=9998***	14. Has this test been stocked out at any point in the past 3 months? 1 = Yes 0 = No 8 = Don't know [___]	15a. Do you or other staff use this brand of RDT to test clients here at this facility/outlet? 1 = Yes 0 = No ***go to 16a*** 8 = Don't know ***go to 16a*** [___] **14b. If yes, what is the total cost to have a test conducted with this RDT, including RDT cost and service fee?** [___|___|___|___|___] Riel	16a. Does this facility/outlet provide this brand of RDT for clients to take away for testing somewhere else? 1 = Yes 0 = No ***go to 17*** 8 = Don't know ***go to 17*** [___] **16b. If yes, what is cost of this RDT?** [___|___|___|___|___] Riel	17. Wholesale purchase price For the outlet's most recent wholesale purchase: [___|___|___|___] **tests** cost [___|___|___|___|___|___] Riel ***Free = 000000*** ***NA = 999995*** ***Refused = 999997*** ***Don't know=999998***	18. Why do you stock this RDT [SHOW RDT]? ***Do not read list*** ***Circle ALL responses given*** Free supply A Profitable B Recommended by the government C Low price D Customer demand or preference E Positive brand reputation F Don't know X Other Z ***specify*** [_____]	19. Comment

Free = 00000; NA = 99995; Refused = 99997; Don't know=99998

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

RDT stock outs

D9. Are there any malaria RDTs that are out of stock today, but that you stocked in the past **3 months**? 1 = Yes 0 = No ***go to D11*** 8 = Don't know ***go to D11***	[___]
D10. What are the brand names of the malaria RDTs that are out of stock? ***Record one brand per line.*** 1 = Yes, ***specify*** [_____] [_____] [_____] 0 = No, provider can't remember	[___]
D11. Does this facility/outlet **provide medicines or prescription** for medicines? 1 = Yes ***go to Section 5: Provider Module*** 0 = No ***Confirm response in S1 or S2 is not equal to 1 and outlet type recorded in C7 is 20 or 21 ("lab only"). Go to Section 6: Audit Tracking Sheet.***	[___]

Section 5: Provider Module

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

P1. Do your responsibilities at this outlet/facility include: providing prescriptions, treatment, or medicines to clients? 1 = Yes No ***ask to speak with the senior-most person at the outlet with 1 or more of these responsibilities.***	|___]
P2. For how many years have you worked in this outlet/facility? **If less than 1 year, enter 01**	[___|___]
P3. What age are you today? ***Write age in years*** 97 = Refused 98 = Don't know	[___|___]
P4. ***Don't read:*** Is respondent male or female? 98 = Male 2 = Female	[___|___]
P5. What is the highest level of education you completed? 1 = No formal education 2 = Some primary school 3 = Completed primary school 4 = Some secondary school 5 = Completed secondary school 6 = Some university/college 7 = Completed a university/college degree/diploma	[___]
P6. Have you received any training in the last 12 months that included a component on malaria diagnosis, including malaria rapid diagnostic tests or microscopy? ***Include pre-service training and stand-alone workshops.*** 1 = Yes 0 = No 8 = Don't know	[___]
P6a. What organization provided the training that included a component on malaria diagnosis? ***Do not read list and circle all that apply.*** ***Prompt "any other organizations" until the respondent is finished.***	
MOH / NMCP	A
PSI	B
URC	C
Other, specify [_____]	X
Don't Know	Z
P7. Have you received any training in the last 12 months on the national treatment guidelines for malaria? ***Include pre-service training and stand-alone workshops.*** 1 = Yes 0 = No 8 = Don't know	[___]
P7a. What organization provided the training on the national treatment guidelines for malaria? ***Do not read list and circle all that apply.*** ***Prompt "any other organizations" until the respondent is finished.***	
MOH / NMCP	A
PSI	B
URC	C
Other, specify [_____]	X
Don't Know	Z

P8. Do you have any of the following **health qualifications**? ***Read list***. ***Record 1 for yes, 0 for no***	
I. Pharmacist	[___]
II. Medical Doctor	[___]
III. Clinical Officer	[___]
IV. Nurse / Nursing Officer	[___]
V. Midwife	[___]
VI. Laboratory technician / Lab assistant	[___]
VII. Pharmacy technician / Pharmacy assistant	[___]
VIII. Health Assistant, Nursing Assistant / Nursing Aid	[___]
IX. Village Malaria Worker / Mobile Malaria Worker	[___]

P9. **Not** including yourself, do any other people working in this outlet or facility have the following **health qualifications**? ***Read list***. ***Record 1 for yes, 0 for no, 8 for don't know***	
I. Pharmacist	[___]
II. Medical Doctor	[___]
III. Clinical Officer	[___]
IV. Nurse / Nursing Officer	[___]
V. Midwife	[___]
VI. Laboratory technician / Lab assistant	[___]
VII. Pharmacy technician / Pharmacy assistant	[___]
VIII. Health Assistant, Nursing Assistant / Nursing Aid	[___]
IX. Village Malaria Worker / Mobile Malaria Worker	[___]

M1. ***Do not read***: Is this outlet a Public Health Facility. Public health facilities include referral hospitals, health centers, former district hospitals and health posts. ***Cross-check with question c7.*** 1 = Yes ***Go to P10*** 0 = No	[___]
M2. Does this outlet receive free antimalarial treatments or purchase reduced-cost antimalarial treatments from a government or non-government organization? 1 = Yes 0 = No ***Go to M4*** 8 = Don't know ***Go to M4***	[___]
M3. From where does this outlet receive free or reduced cost antimalarial treatments? ***Do not read list and circle all that apply.***	
Government / central medical stores	A
Specific government / public health facility	B
PSI	C
URC	D
Other, ***specify*** [_____]	X
M4. Does this outlet receive free RDTs or purchase reduced-cost RDTs from a government or non-government organization? 1 = Yes 0 = No ***Go to M6*** 8 = Don't know ***Go to M6***	[___]
M5. From where does this outlet receive free or reduced cost RDTs? ***Do not read list and circle all that apply.***	
Government / central medical stores	A
Specific government / public health facility	B
PSI	C
URC	D
Other, ***specify*** [_____]	X

M6. Has this outlet received a visit within the last year from a government or non-government organization that is providing a kind of support, regulation or supervision for the outlet specifically for malaria case management? 1 = Yes 0 = No ***Go to M8*** 8 = Don't know ***Go to M8***	[___]
M7. From which organization(s) does this outlet receive support, regulation or supervisory visits? ***<u>Do not read list</u> and circle all that apply.***	
District / provincial government authorities	A
Department of Drug and Food	B
PSI	C
URC	D
Other, ***specify*** [_____]	X
M8. How often does this outlet receive a support, regulation or supervisor visit? 1 = One or more time per month 2 = One time per 3 months 3 = One time per 6 months 4 = One time per year 5 = Other, **specify** [_____]	[___]
M9. Does this outlet record information about the number of patients that have received a malaria test or malaria treatment? 1 = Yes 0 = No ***Go to P10*** 8 = Don't know ***Go to P10***	[___]
M10. May I see the record keeping system? ***Record 1 if the record keeping was observed and 0 if the record keeping system was not observed.*** 1 = Record keeping system observed 0 = Record keeping system not observed	[___]
M11. Does the system record information about each individual patient (1 line in the register = 1 patient)? ***Ask the provider and also attempt to confirm by observing the record keeping system.*** 1 = Yes 0 = No 8 = Don't know	[___]
M12. Does the system keep a tally or count of the number of patients that have received a malaria test or malaria treatment for a certain period such as per day, per week, or per month? ***Ask the provider and also attempt to confirm by observing the record keeping system.*** 1 = Yes 0 = No 8 = Don't know	[___]
M13. Are the numbers of patients that receive malaria testing or treatment reported to any other government or non-government organizations? 1 = Yes 0 = No ***Go to P10*** 8 = Don't know ***Go to P10***	[___]
M14. To which organizations are the numbers of patients tested or treated for malaria reported? ***<u>Do not read list</u> and circle all that apply.***	
Township/regional authorities	A
PSI	B
URC	C
Other, ***specify*** [_____]	X

M15. How often are the numbers of patients tested or treated for malaria reported? 1 = One times per month 2 = One time per quarter 3 = Other, **specify** [_____]	[___]
M16. How do you share the patient data with these organizations? Read list and record 1 for yes, 0 for no. ***Read list. Record 1 for yes, 0 for no, 8 for don't know***	
I. By paper form/record	[___]
II. By phone - text or electronic form	[___]
III. By phone - verbal report	[___]
IV. By computer - electronic form	[___]

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

P10. In your opinion, for treating uncomplicated malaria in adults, what is the most effective antimalarial medicine?
Ask the provider to show you the medicine if it is in stock.

Generic or brand name	**Dosage form/formulation**		
	01 = Tablet 02 = Suppository 03 = Granule	04 = Syrup 05 = Suspension 06 = IM/IV Injection (liquid or powder)	07 = Drops 95 = None specified 98 = Don't know
[_____] ***Don't know = 98***	[___|___]		

P12. What antimalarial medicine for treating uncomplicated malaria in adults do you most often recommend to customers?
Ask the provider to show you the medicine if it is in stock.

Generic or brand name	**Dosage form/formulation**		
	01 = Tablet 02 = Suppository 03 = Granule	04 = Syrup 05 = Suspension 06 = IM/IV Injection (liquid or powder)	07 = Drops 95 = None specified 98 = Don't know
[_____] ***Don't know = 98***	[___|___]		

P16. Please name the first line treatment recommended by the government to treat uncomplicated malaria for an adult (60kg). ***Do not read list. Circle ALL responses given.***	
Artesunate Mefloquine (A+M, Malarine, Artequin)	A
Dihydroartemisinin Piperaquine (Duo-cotecxin, Eurartesim)	B
Primaquine	C
Atovaquone-Proguanil (Malarone)	D
Artesunate Pyronaridine	E
Other ***specify***: [_____]	X
Don't know	Z

SKIP INSTRUCTIONS

If Artesunate Mefloquine was circled >>> continue to P17a

If Artesunate Mefloquine was not circled, but Dihydroartemisinin-Piperaquine was circled >>> continue to P17b

If Artesunate Mefloquine and Dihydroartemisinin-Piperaquine were not circled >>> continue to P20a

P17a. Please explain the government recommended treatment regimen for **Artesunate Mefloquine** to treat **uncomplicated malaria** for an **adult (60kg)**.	
If the provider has the medicine(s) available, use the package to complete the medicine(s) details. ***If the medicine(s) is not available, ask the provider to identify the medicine(s) from the prompt card.*** ***If identification of the medicine(s) is not possible, ask the provider to recall the medicine(s) details.***	
i. Is the Artesunate Mefloquine medicine a fixed-dose combination? 1 = Yes 2 = No ***continue to SKIP INSTRUCTIONS*** 8 = Don't Know ***continue to SKIP INSTRUCTIONS***	[___]
ii. What is the strength of Artesunate?	[__|__|__].[__]mg
iii. What is the strength of Mefloquine?	[__|__|__].[__]mg ***Don't know = 999.8***
Read the following 3 questions to the provider (do not record this information from the package).	
iv. How many tablets of Artesunate Mefloquine should they take at a time?	[___|___].[___|___]
v. How many times per day should Artesunate Mefloquine be taken?	[___|___]
vi. Over how many days should Artesunate Mefloquine be taken?	[___|___] ***Don't know = 98***

SKIP INSTRUCTIONS

If Dihydroartemisinin Piperaquine was circled in question P16 >>> continue to P17b

If Dihydroartemisinin Piperaquine was not circled in question P16, but Primaquine was circled >>> continue to p17c

If Dihydroartemisinin Piperaquine and Primaquine were both not circled in question P16 >>> continue to P20a

P17b. Please explain the government recommended treatment regimen for **Dihydroartemisinin Piperaquine** to treat **uncomplicated malaria** for an **adult (60kg)**. ***If the provider has the medicine(s) available, use the package to complete the medicine(s) details.*** ***If the medicine(s) is not available, ask the provider to identify the medicine(s) from the prompt card.*** ***If identification of the medicine(s) is not possible, ask the provider to recall the medicine(s) details.***	
i. What is the strength of Dihydroartemisinin?	[__|__|__].[__]mg
ii. What is the strength of Piperaquine?	[__|__|__].[__]mg ***Don't know = 999.8***
Read the following 3 questions to the provider (do not record this information from the package). iii. How many tablets of Dihydroartemisinin Piperaquine should they take at a time?	[___|___].[___|___]
iv. How many times per day should Dihydroartemisinin Piperaquine be taken?	[___|___]
v. Over how many days should Dihydroartemisinin Piperaquine be taken?	[___|___] ***Don't know = 98***
SKIP INSTRUCTIONS ***If Primaquine was circled in question P16 >>> continue to P17c*** ***If Primaquine was not circled in question P16 >>> continue to P20a***	

P17c. Please explain the government recommended treatment regimen for **Primaquine** to treat **uncomplicated *Plasmodium falciparum* malaria** for an **adult (60kg)**. ***If the provider has the medicine(s) available, use the package to complete the medicine(s) details.*** ***If the medicine(s) is not available, ask the provider to identify the medicine(s) from the prompt card.*** ***If identification of the medicine(s) is not possible, ask the provider to recall the medicine(s) details.***	
i. What is the strength of Primaquine?	[__|__|__].[__]mg ***Don't know = 999.8***
Read the following 3 questions to the provider (do not record this information from the package). iii. How many tablets of Primaquine should they take at a time?	[___|___].[___|___]
iv. How many times per day should Primaquine be taken?	[___|___]
v. Over how many days should Primquine be taken?	[___|___] ***Don't know = 98***

P17d. Please explain the government recommended treatment regimen for **Primaquine** to treat **uncomplicated *Plasmodium vivax* malaria** for an **adult (60kg)**. ***If the provider has the medicine(s) available, use the package to complete the medicine(s) details.*** ***If the medicine(s) is not available, ask the provider to identify the medicine(s) from the prompt card.*** ***If identification of the medicine(s) is not possible, ask the provider to recall the medicine(s) details.***	
i. What is the strength of Primaquine?	[__|__|__].[__]mg ***Don't know = 999.8***
Read the following 3 questions to the provider (do not record this information from the package). iii. How many tablets of Primaquine should they take at a time?	[___|___].[___|___]
iv. How many times per week should Primaquine be taken?	[___|___]
v. Over how many weeks should Primquine be taken?	[___|___] ***Don't know = 98***

P20a. Have you seen or heard of a medicine called primaquine before? 1 = Yes ***go to P20a*** 0 = No ***go to P21*** 8 = Don't know ***go to P21***	[___]

P20b. What is primaquine used for? ***Do not read list. Circle ALL responses given.***	
As an **antimalarial medicine** / to **treat malaria**	A
As a **gametocyde** / to **prevent transmission** of malaria	B
As a **radical cure**/treatment for ***P. vivax*** malaria / to **prevent relapse** of ***P. vivax*** malaria	C
Don't know	Z
P20c. Have you ever prescribed primaquine for a patient/customer? 1 = Yes 0 = No	[___]
P20d. Have you ever provided or sold primaquine to a patient/customer? 1 = Yes 0 = No	[___]

P21. Malaria rapid diagnostic tests, also called RDTs, are small, individually wrapped blood tests that are able to quickly diagnose whether a person has malaria. ***Show RDT images in prompt card*** Have you ever seen or heard of malaria RDTs? 1 = Yes ***go to P22*** 0 = No ***go to Section 6*** 8 = Don't know ***go to Section 6***	[___]
P22. Have you ever tested a client for malaria using an RDT? 1 = Yes 0 = No 8 = Don't know	[___]
P23. Would you ever recommend a patient/customer take an antimalarial if a blood test using a rapid diagnostic test produced a negative test result for malaria? **Read list. Record only one response.** 1 = Yes, Sometimes 2 = Yes, Always 3 = No, Never ***go to Section 6*** 8 = Don't know ***go to Section 6***	[___]
P24. Under what circumstances would you recommend a patient/customer take an antimalarial following a negative RDT test for malaria? ***Do not read list. Prompt "anything else" until the respondent is finished.*** ***Circle ALL responses given***	
When they have signs/symptoms of malaria	A
When they ask for antimalarial treatment	B
When they are a child	C
When they are an adult	D
When they are a pregnant woman	E
When I do not trust/believe the test	F
When I know the patient/customer	G
Other (specify) [_____]	X

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

Section 6: Audit Tracking Sheet

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

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

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

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

Proceed to C9 and record the final status of the interview and time completed then, complete Section X: Ending the Interview.

Annex 7: Antimalarial Reference

Table X4: Number of antimalarials audited

	Public Health Facility	Community Health Worker	Private for-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Outlets**
Tier 1	126	303	162	33	22	18	90	754
Tier 2	141	189	109	29	4	13	51	536
TOTAL	267	492	271	62	26	31	141	1,290

Source: *ACTwatch* Outlet Survey, Cambodia, 2015.

Table X5: Quality-Assured (QA ACT) and Non-Quality Assured ACTs
Quality-Assured ACT (QA ACT)
QA ACTs are ACTs that comply with the Global Fund to Fight AIDS, Tuberculosis and Malaria's Quality Assurance Policy. A QAACT is any ACT that appeared on the Global Fund's indicative list of antimalarials meeting the Global Fund's quality assurance policy* prior to data collection, or that previously had C-status in an earlier Global Fund quality assurance policy and was used in a program supplying subsidized ACTs. QAACTs also include ACTs that have been granted regulatory approval by the European Medicines Agency (EMA) – specifically Eurartesim® and Pyramax®.
Dihydroartemisinin Piperaquine Tablets
Eurartesim for Adults, 36-74 kg ^ #
Eurartesim for Children, 7-23 kg ^ #
Eurartesim for Children, 13-23 kg ^ #
Eurartesim for Children, 24-35 kg ^ #
Non-Quality-Assured ACT
ACTs that do not meet the definition of being quality-assured.
Artesunate Mefloquine Tablets
A + M2 ^
A + M4 #
A + M5 ^ #
Malarine for Adults ^ #
Malarine for Children #
Malarine for Teenagers #
Artemisinin Piperaquine Tablets
Artequick ^ #
Dihydorartemisinin Piperaquine Tablets
Duo-cotecxin ^ #
* http://www.theglobalfund.org/en/procurement/quality/pharmaceutical ^ Product audited in the public sector # Product audited in the private sector

Table X6: Nationally Registered ACTs
ACT registered with Country's national drug regulatory authority and permitted for sale or distribution in country.
Dihydroartemisinin Piperaquine Tablets
Eurartesim for Adults, 36-74 kg ^ #
Eurartesim for Children, 7-23 kg ^ #
Eurartesim for Children, 13-23 kg ^ #
Eurartesim for Children, 24-35 kg ^ #
^ Product audited in the public sector # Product audited in the private sector

Table X7: Severe Malaria Treatment
WHO recommends intravenous or intramuscular artesunate as first-line treatment in the management of severe *falciparum* malaria. If artesunate is not available, artemether in preference to quinine should be used for treating severe malaria cases. Rectal artesunate is suitable for pre-referral treatment in children under 6 years of age.[75]
Artemether Liquid Injection (manufacturer)
Artemether (Zhangjiakou Kaiwei Pharmaceutical Co. Ltd.) ^ #
Artesiane 80 ^ # (Dafra Pharma)
Artesunate Powder Injection (manufacturer)
Artesunate (Guilin Pharmaceutical Co. Ltd.) #
Quinine Liquid Injection
Quinine dihydrochloride (Rotexmedica) ^
* *Guidelines for the treatment of malaria, 3rd edition.* WHO. Geneva: 2015. ^ Product audited in the public sector # Product audited in the private sector

[75] World Health Organization. (2015). *Guidelines for the treatment of malaria, 3rd edition*. Geneva: WHO.

Annex 8: RDT Reference

Table X8: Number of RDTs audited

	Public Health Facility	Community Health Worker	Private for-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**ALL Outlets**
Tier 1	72	282	179	36	27	0	97	693
Tier 2	86	165	131	51	5	0	66	504
TOTAL	158	447	310	87	32	0	163	1,197

Source: *ACTwatch* Outlet Survey, Cambodia, 2015.

Table X9: RDT Brand Names and Manufacturers*	
Brand Name	**Manufacturer**
Advanced Quality #	Intec Produts Inc.
Biotracer #	Bio Focus Co. Ltd.
Care Start ^ #	Access Bio Inc.
First Response ^ #	Premier Medical Corporation
Malacheck ^ #	Premier Medical Corporation, Standard Diagnostics
One Step #	Newscen Coast Bio Pharmaceutical Co. Ltd.
SD Bioline ^ #	Standard Diagnostics Inc.

* 1,197 RDTs were audited. 1 RDT was missing brand name information (missing or don't know) and 22 were missing manufacturer name (missing or don't know).
^ Product audited in the public sector
# Product audited in the private sector

Annex 9. Sampling Weights

Sampling weights were applied for analysis of the Cambodia 2015 outlet survey data to account for variations in probability of selection as a result of the sampling design:

1) **Stratification**: Disproportionate allocation stratification was used to ensure adequate sample size within each of two research domains to allow for domain-specific estimates. The research domains were based on the WHO tier stratification system for targeting action to address drug resistance. A representative sample was selected within each domain.

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

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

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

Where:

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

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

The population estimates used to select communes with PPS and to create sampling weights were obtained from a 2010 Ministry of Planning projection based on findings from the 2008 national census. A sampling frame with population sizes was used for selecting the sample because accurate estimates on the total number of outlets per geographic/administrative unit that may be eligible for a medicine outlet survey do not exist. The major assumption in using population figures for sampling and weighting is that distribution of outlets and/or distribution of medicines moving through outlets in a given cluster is correlated with population size.

Annex 10: Indicator Definitions

Table 1: Availability of antimalarials, among all screened outlets

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

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

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

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

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

Table 3: Provision of malaria blood testing and antimalarials in the past week, among outlets with testing/antimalarials available, by outlet type

Table 3 reports the provision of malaria blood testing, including RDT tests performed or distributed as well as malaria microscopy tests performed in the past week, among outlets that were stocking malaria RDTs or microscopy. Table 3 also reports the distribution of antimalarials in the past week, among outlets that were stocking antimalarials. This includes distribution of any antimalarial in the past week as well as distribution of specific types of antimalarials where they were in stock, including first-line treatments and oral artemisinin monotherapy. The table also reports median number of adult equivalent treatment dosages (AETDs) distributed in the past week.

Provision of malaria blood testing:

Numerator	Number of outlets that reportedly provided malaria blood testing in the past week, including performing and providing an RDT or providing a malaria microscopy test.
Denominator	Number of outlets with malaria microscopy and/or RDTs available.
Calculation	Numerator divided by denominator.
Handling missing values	Outlets with values of missing/don't know for testing provided by microscopy as well as volumes distributed for all RDTs in stock will be excluded from this indicator. Outlets with partial information about testing provision/RDT distribution will be included in the indicator (e.g with information about RDT distribution but not microspy provision).
Notes and considerations	Given partial information about provision of microscopy and RDTs and the inclusion of these outlets in the denominator, the indicator can be considered a conservative estimate of testing provision.

Median number of malaria tests provided/performed:

Calculation	Median number of tests reportedly provided/distributed in the past week including RDTs distributed/performed and malaria microscopy tests performed, at the outlet level.
Handling missing values	If all testing volume data are missing/refused/unknown, then the outlet is excluded from the median calculation. If partial information is available (e.g. distribution of RDTs but not microscopy test performed), then partial information will be used to calculate the median.
Notes and considerations	Given partial information about testing provision and the inclusion of these outlets in the denominator, this indicator can be considered conservative/minimum estimates of malaria testing provision.

Antimalarial distribution:

Numerator	Number of outlets that reportedly distributed antimalarials in the past week, including any antimalarial and specific types of antimalarials such as first-line treatments.
Denominator	Number of outlets with at least 1 antimalarial of the specified type (e.g. any antimalarial, first-line ACT, etc) audited.
Calculation	Numerator divided by denominator.
Handling missing values	Within a given antimalarial category, outlets with missing/don't know/refusal values for all antimalarials in that category will be excluded from the indicator. Outlets with partial information about distribution of antimalarials within a given category will be included in the indicator (e.g with information about 2 out of 4 first-line treatments audited).
Notes and considerations	Given partial information about antimalarial distribution and the inclusion of these outlets in the denominator, these distribution indicators can be considered conservative estimates of antimalarial distribution.

Median number of AETDs distributed

Calculation	Median number of AETDs (see Annex 11) reportedly distributed in the past week for the specified type of antimalarial (e.g. any antimalarial, first-line treatment, etc) at the outlet level.
Handling missing values	Within a given antimalarial category, if all volume data are missing/refused/unknown, then the outlet is excluded from the median calculation. If partial information is available (e.g. distribution of 1 out of 3 antimalarials in stock), then partial information will be used to calculate the median.
Notes and considerations	Given partial information about antimalarial distribution and the inclusion of these outlets in the denominator, these distribution indicators can be considered conservative/minimum estimates of antimalarial distribution.

Table 4: Types of quality-assured and non-quality-assured ACTs

Table 4 reports the types of quality-assured (QA) and non-quality-assured (non-QA) ACTs audited in the public and private sector, including generic name and formulation.

Numerator	By sector, the number of QA and non-QA ACTs audited within each generic and formulation category (e.g. number of QA artemether lumefantrine tablets audited in the public sector).
Denominator	By sector, total number of QA and non-QA ACTs audited.
Calculation	Numerator divided by the denominator within QA and non-QA ACTs for each sector.
Handling missing values	By definition, the generic name of all ACTs is known. ACTs with missing formulation information are excluded.

Table 5: Antimalarial market composition

Table 5 reports the distribution of outlet types among outlets with at least one antimalarial in stock on the day of the survey.

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

Table 6: Price of antimalarials

Table 6a provides the median price of an adult equivalent treatment dose (AETD, see Annex 11) for select tablet formulation types of antimalarials across outlet types. The inter-quartile range (IQR) is provided as a measure of dispersion.

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

A. Table 6b also provides the median price of two pre-packaged QAACT therapies: pediatric appropriate for a 10kg child (2 years of age), and adult appropriate for a 60kg adult. The inter-quartile range (IQR) is provided as a measure of dispersion.

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

Table 7: Availability of malaria blood testing, among antimalarial-stocking outlets

Table 7 reports the proportion of antimalarial-stocking outlets that had malaria blood testing available. Testing availability is reported among all outlets as well as among individual outlet types, all public outlets, and all private outlets. Availability is reported for any blood test as well as specific test types: microscopy and RDTs.

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

Table 8: Malaria blood testing market composition

Table 8 reports the distribution of outlet types among outlets with malaria blood testing available on the day of the survey.

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

Table 9: Price of malaria blood testing

A. Table 9 reports the median price of blood testing to consumers including any consultation or service fees. The inter-quartile range (IQR) is provided as a measure of dispersion.

Calculation	Median total blood test price in US dollars with inter-quartile range (25^{th} and 75^{th} percentiles).
Handling missing values	Microscopy-stocking outlets that are missing information about price of microscopy are excluded from this indicator. Audited RDTs with missing information about price of testing are excluded from this indicator.

Notes and considerations	Price in US dollars is calculated based on exchange rates available from www.oanda.com using the historical exchange rates tool. The average exchange rate over the entire data collection period is used for converting local currency captured during data collection to US dollars.

Table 10: Antimalarial market share

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

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

Table 11: Antimalarial market share across outlet type

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

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

Table 12: Malaria blood testing market share

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

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

Table 13: Malaria blood testing market share across outlet type

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

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

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

Table 14: Private sector case management training, supervision, support and surveillance

Table 14 reports key indicators of outlet case management training, supervision and surveillance. These include training within the last year for any provider within the outlet on malaria diagnosis, and on the national treatment guidelines for malaria; a supervisory or regulatory visit for the outlet within the past year; access to subsidized antimalarials and/or malaria RDTs; and passive surveillance including record keeping and reporting of case data to government or non-government organizations. This table also reports composite indicators comprised of combinations of these individual indicators of private sector engagement, support and readiness. Some composite indicators include availability of first-line antimalarial treatments and malaria blood testing as part of overall measures of private sector engagement and readiness for appropriate malaria case management.

Numerator	A. Training: respondents who indicated that training had been received for themselves or another provider at the outlet within the past year on 1) malaria diagnosis; and 2) national malaria treatment guidelines. B. Supervision/regulation: respondents who indicated that the outlet had received a supervisory or regulatory visit within the past year. C. Support/access to subsidized commodities: respondents who indicated that the outlet has access to subsidized: 1) antimalarials; and 2) malaria RDTs. D. Passive surveillance: respondents who indicated that the outlet keeps records on the number of patients tested/treated for malaria; and report these numbers to a governmental or non-governmental organization. E. Composite indicator for training plus supervision/regulation: trained provider (indicator A) with reported training for either malaria diagnosis or the national malaria training guidelines, as well as supervision (indicator B). F. Composite indicator for training, supervision/regulation, and appropriate stocking: trained provider (Indicator A) with reported training for either malaria diagnosis or the national malaria training guidelines; supervision/regulatory visits (Indicator B); first-line treatment for *Pf* and *Pv* in stock on the day of the survey (Table 1); and either malaria RDTs or microscopy available (Table 7).
Denominator	Training, supervision/regulation, support/access to subsidized commodities, passive surveillance (keep records on the number of patients tested/treated for malaria): Respondents who provided any response to the individual question, excluding "don't know." Passive surveillance (report the number of patients tested/treated for malaria to a governmental or non-governmental organization): Respondents who provided a response to the question, "Does this outlet record information about the number of patients that have received a malaria test or malaria treatment? and who provided a response to the individual question, excluding "don't know". Composite indicators: The number of outlets with a response for each component of the indicator, excluding "don't know."
Calculation	Numerator divided by denominator.
Handling missing values	Providers with missing responses to individual questions will be excluded from the indicator.
Notes and considerations	Questions assessing provider training, outlet supervision/regulation and support, and passive surveillance systems were administered to one respondent per outlet. As such, indicators are tabulated at the outlet level. Responses of "don't know" are excluded from each indicator. Number of "don't know" responses are noted in table footnotes.

Table 15: Provider antimalarial treatment knowledge and practices, by outlet type

Table 15 reports key indicators of provider antimalarial treatment knowledge and practices. These include knowledge of the first-line treatment for uncomplicated *Pf* and *Pv* malaria; knowledge of the first-line treatment dosing regimen for adults for each first-line treatment; citing ACT as most effective to treat malaria in adults; and citing ACT as most commonly recommended by the provider to manage malaria in adults.

Numerator	A. State first-line: providers who responded to questions about the first line treatment with a generic or brand name consistent with a national first-line treatment. Correct responses are reported for when the first-line was reported with and without the use of primaquine. B. First-line regimen, adult: providers who correctly stated the first-line generic ingredients and strengths, and correctly stated: number of days, times per day, and tablets per dose to be taken. Correct responses are reported for when the first-line was reported with and without the use of primaquine. C. ACT most effective for an adult: Any response for this open-ended question whereby: 1) one medicine or a set of medicines to be used in combination is mentioned only i.e. multiple antimalarial medicines mentioned will be counted as incorrect; and 2) the combination of medicines is an ACT – defined either by using a brand name, generic name, "ACT," or "ACTm." If the provider mentions a correct ACT response and also mentioned an anti-pyretic (e.g. paracetamol), this response will be counted as correct. However, if the provider mentions a correct ACT response and also mentioned other drugs – such as an antibiotic – this answer will be counted as incorrect. D. ACT most often recommended for an adult: Any response for this open-ended question whereby: 1) one medicine or a set of medicines to be used in combination is mentioned only i.e. multiple antimalarial medicines mentioned will be counted as incorrect; and 2) the combination of medicines is an ACT – defined either by using a brand name, generic name, "ACT," or "ACTm." If the provider mentions a correct ACT response and also mentioned an anti-pyretic (e.g. paracetamol), this response will be counted as correct. However, if the provider mentions a correct ACT response and also mentioned other drugs – such as an antibiotic – this answer will be counted as incorrect.
Denominator	All providers who responded to the respective question, including responses of "don't know" and responses of non-antimalarial medicines used with or without antimalarial medicines.
Calculation	Numerator divided by denominator.
Handling missing values	Providers with missing responses to individual questions will be excluded from the respective indicator. However, providers with partial information for the dosing regimen questions will be included in the denominator.

Annex 11. Adult Equivalent Treatment Dose (AETD)

Definition

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

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

Additional considerations:

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

- In the Greater Mekong sub-Region, primaquine is presumably distributed in combination with another antimalarial for the treatment of *Pf* or *Pv* according to national guidelines. As such primaquine volumes do not contribute to market share.

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

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

Calculation

Information collected on drug strength and unit size as listed on the product packaging was used to calculate the total amount of each active ingredient found in the package. The number of AETDs in a unit was calculated.[76] The number of AETDs in a monotherapy is calculated by dividing the total amount of active ingredient contained in the unit by the AETD (i.e. the total number of mg required to treat a 60kg adult). The number of AETDs for a combination therapy was calculated by dividing the total amount of the active ingredient that was used as the basis for the AETD by the AETD.

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

Table X9: Adult Equivalent Treatment Dose Definitions		
Antimalarial Generic [Ingredient used for AETD mg dose value]	**Dose used for calculating 1 AETD (mg required to treat a 60kg adult)**	**Source**
Artemether	960mg	WHO Use of Antimalarials, 2001 *Note: this includes a recommended loading dose of 4mg/kg on the first day followed by a six-day course of 2mg/kg once daily.*
Artemisinin-Piperaquine [Artemisinin]	504mg	Thanh NX, Trung TN, Phong NC, et al. 2012. The efficacy and tolerability of artemisinin-piperaquine (Artequick®) versus artesunate-amodiaquine (Coarsucam™) for the treatment of uncomplicated Plasmodium falciparum malaria in south-central Vietnam. *Malaria Journal*, *11*:217.
Artesunate	960mg	WHO Use of Antimalarials, 2001 *Note: this includes a recommended loading dose of 4mg/kg on the first day followed by a six-day course of 2mg/kg once daily.*
Artesunate-Mefloquine [Artesunate]	600mg	WHO Guidelines for the treatment of malaria 3rd edition, 2015
Chloroquine	1500mg	WHO Guidelines for the treatment of malaria 3rd edition, 2015
Dihydroartemisinin-Piperaquine [Dihydroartemisinin]	360mg	WHO Guidelines for the treatment of malaria 3rd edition, 2015 Note: the AETD under the new 2015 guidelines is now 480mg whereas 360mg was indicated in previous guidelines. Product availability for adult pre-packaged DHA-PPQ in 2015 was still most commonly 360mg administered over a 3-day course of a total of 9 tablets (40/320).
Mefloquine	1000mg	WHO Model Formulary, 2008
Quinine	10408mg	WHO Model Formulary, 2008

Annex 12: Antimalarial Volumes

Table X10: Antimalarial volumes, by outlet type

AETDs sold or distributed in the previous week by outlet type and antimalarial type:*	Public Health Facility	Community Health Worker	**ALL Public / Not for-Profit**	Private for-Profit Facility	Pharmacy	Drug Store	General Retailer	Itinerant Drug Vendor	**TOTAL Private**	**ALL Outlets****
	# AETD (95% CI)	# AETD (95% CI)	# AETD (95% CI)	# AETD (95% CI)	# AETD (95% CI)	# AETD (95% CI)	# AETD (95% CI)	# AETD (95% CI)	# AETD (95% CI)	# AETD (95% CI)
Any antimalarial that is indicated in the national treatment guidelines #	498.6 (235.8, 761.3)	290.4 (144.3, 436.4)	788.9 (487.0, 1090.9)	441.0 (177.0, 705.0)	131.3 (28.2, 234.4)	5.9 -	0.0 -	368.6 (65.6, 671.7)	946.8 (503.6, 1390.0)	1735.8 (1112.7, 2358.8)
1. Any ACT	491.0 (228.9, 753.2)	290.4 (144.3, 436.4)	781.4 (479.8, 1082.9)	462.3 (199.5, 725.1)	134.0 (30.9, 237.0)	5.9 -	0.0 -	409.5 (102.1, 717.0)	1011.7 (537.4, 1485.9)	1793.1 (1145.7, 2440.4)
Any first line ACT Ψ	491.0 (229.4, 752.7)	290.4 (144.3, 436.4)	781.4 (480.8, 1082.0)	432.5 (169.8, 695.2)	131.3 (28.2, 234.4)	5.9 -	0.0 -	368.6 (66.2, 671.1)	938.3 (497.1, 1379.5)	1719.7 (1100.6, 2338.8)
Dihydroartemisinin piperaquine	491.0 (229.4, 752.7)	290.4 (144.3, 436.4)	781.4 (480.8, 1082.0)	432.5 (169.8, 695.2)	131.3 (28.2, 234.4)	5.9 -	0.0 -	368.6 (66.2, 671.1)	938.3 (497.1, 1379.5)	1719.7 (1100.6, 2338.8)
Eurartesim β	491.0 (229.4, 752.7)	290.4 (144.3, 436.4)	781.4 (480.8, 1082.0)	432.5 (169.8, 695.2)	131.3 (28.2, 234.4)	5.9 -	0.0 -	368.6 (66.2, 671.1)	938.3 (497.1, 1379.5)	1719.7 (1100.6, 2338.8)
Artemisinin piperaquine	0.0 -	0.0 -	0.0 -	29.8 (0.0, 86.9)	2.7 (0.0, 13.2)	0.0 -	0.0 -	40.0 (0.0, 139.6)	72.4 (0.0, 153.4)	72.4 (0.0, 151.4)
Quality-Assured ACT (QA ACT)	479.6 (218.9, 740.4)	290.4 (144.3, 436.4)	770.0 (469.8, 1070.1)	432.5 (169.8, 695.2)	131.3 (29.8, 232.8)	5.9 -	0.0 -	368.6 (66.2, 671.1)	938.3 (497.1, 1379.5)	1708.3 (1089.4, 2327.2)
Non-Quality Assured ACT (non QA ACT)	11.4 (0.0, 35.5)	0.0 -	11.4 (0.0, 33.4)	29.8 (0.0, 76.5)	2.7 (0.0, 10.4)	0.0 -	0.0 -	40.9 (0.0, 108.8)	73.3 (0.0, 150.4)	84.8 (6.3, 163.2)
2. Any non-artemisinin therapy	1.7 (0.0, 6.9)	0.0 -	1.7 (0.0, 6.9)	38.9 (0.0, 85.1)	4.4 -	0.0 -	14.2 -	36.1 (0.0, 81.7)	93.6 (32.6, 154.5)	95.3 (33.8, 156.9)
Chloroquine	0.0 -	0.0 -	0.0 -	38.9 (0.0, 85.1)	4.4 -	0.0 -	14.2 -	36.1 (0.0, 81.9)	93.6 (33.0, 154.2)	93.6 (33.0, 154.2)
Other non-artemisinin therapy ##	1.7 (0.0, 6.9)	0.0 -	1.7 (0.0, 6.9)	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	1.7 (0.0, 5.9)
3. Oral artemisinin monotherapy	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -	0.0 -
4. Non-oral artemisinin monotherapy	7.6 (0.0, 19.3)	0.0 -	7.6 (0.0, 19.3)	8.5 (0.0, 22.3)	0.0 -	0.0 -	0.0 -	0.0 -	8.5 (0.0, 21.4)	16.0 (0.0, 34.0)
OUTLET TYPE TOTAL***	500.3 (237.3, 763.3)	290.4 (144.3, 436.4)	790.7 (488.3, 1093.1)	509.7 (235.6, 783.8)	138.4 (34.2, 242.5)	5.9 (0.0, 17.5)	14.2 (0.0, 36.6)	445.6 (134.7, 756.5)	1113.7 (607.0, 1620.5)	1904.4 (1230.5, 2578.4)

* A total of 346.8 AETDs were reportedly sold or distributed in the previous seven days. See Annex 11 for a description of AETD calculation.

** Row sum – total AETD for the specified antimalarial medicine.

*** Column sum – total AETD for the specified outlet type.

See Annex 2

Ψ At the time of the 2015 Cambodia ACTwatch outlet survey, DHAPPQ and fixed-dose combination ASMQ were the first-line treatments for uncomplicated *P. falciparum* and *P. vivax* malaria.

β At the time of the 2015 Cambodia ACTwatch outlet survey, Eurartesim brand DHAPPQ was the only quality-assured ACT (QAACT) audited in Cambodia, the only antimalarial with the Global Fund co-payment green leaf logo, and is the only ACT included in the Cambodia list of nationally registered medicines.

A total of 1,290 antimalarials were audited. Of these, 47 audited antimalarials were not included in market share calculations due to incomplete or inconsistent information.

Source: ACTwatch Outlet Survey, Cambodia, 2015.