ACTWATCH OUTLET SURVEY RESULTS

Cambodia, 2009-2015
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1.1 background
Overview of ACTwatch
**ACTwatch** is a multi-country research project implemented by Population Services International (PSI). Standardized tools and approaches are employed to provide comparable data across countries and over time. ACTwatch is designed to provide timely, relevant, and high quality antimalarial and malaria diagnostic testing market intelligence, including information on artemisinin-based combination therapies (ACT), the most effective treatment for malaria. 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).

Research methods implemented include outlet and household surveys, supply chain studies, key informant interviews, and a new module to document private sector fever case management practices using observation and client exit interviews.

**What are the project goals and objectives?**

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

The objectives include:

1) Generation of relevant, timely, and high quality antimalarial market evidence;

2) Identification of strengths and gaps in the antimalarial market performance of the public and private sector, and market readiness to adhere to national guidelines;

3) Dissemination of evidence at national, regional, and international levels; and

4) Reach of policy-makers, donors and programmers in a timely, actionable evidence

**Why is ACTwatch relevant?**

ACTwatch data provide timely and practical evidence for national malaria programs and their partners. The project monitors antimalarial markets in the context of policy shifts and investments in the scale-up of first-line ACT and blood testing using malaria rapid diagnostic tests (mRDT). This has included adaptation of project methods for the evaluation of the Affordable Medicines Facility-malaria (AMFm) pilot.

In the Greater Mekong Sub-Region (GMS), the evidence is also important to help inform malaria control strategies that have focused on the containment of artemisinin resistance and a more recent commitment to eliminate malaria in the region by 2025. The emergence of malaria parasites resistant to artemisinin in the GMS is a serious threat to the recent gains and current ambition of elimination of *Plasmodium falciparum* in the region. As ACTwatch provides market intelligence regarding the performance of both the public and private sectors, as well as provider readiness to adhere to national treatment guidelines, this information will be critical to knowing where there are gaps and opportunities within the different markets.

**What are the outlet surveys?**

Outlet surveys are the core component of the ACTwatch project. In sub-Saharan Africa (SSA), outlet surveys have been implemented in: Benin, the Democratic Republic of Congo (DRC) (in Kinshasa and Katanga), Kenya, Madagascar, Nigeria, Tanzania, Uganda, and Zambia. In the GMS, project countries include Cambodia, Laos, Myanmar, Thailand, and Vietnam.
In 2015, with funding from the BMGF, ACTwatch expanded into the GMS. ACTwatch conducted its fourth outlet survey in Cambodia in 2015, a follow-up from surveys implemented in 2009, 2011, and 2013. It was complemented by a fever case management survey, using exit interviews and interviewer observation to address provider practices. In Myanmar, a fourth sub-national outlet survey was conducted in the eastern part of the country in 2015, where surveys have been conducted on a yearly basis since 2012. Unique to Myanmar’s ACTwatch survey in 2015, a nation-wide assessment was conducted, covering coastal areas and borders with India in addition to domains in Eastern Myanmar. In 2015 and early 2016, outlet surveys were implemented for the first time in Laos and Thailand, providing a snapshot of the antimalarials available in these markets.

What questions are answered by the ACTwatch Outlet Survey?

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

What types of antimalarials and mRDT are available and distributed by public and private sectors?

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

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

What is the consumer price for antimalarial medicines and malaria blood testing among private sector outlets?
1.2 background
Cambodia Context
The malaria burden in Cambodia has been greatly reduced over the past few years, with confirmed malaria cases experiencing a general decline since 2009. 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.

Malaria incidence is highest in the northeastern regions of the country. The proportion of cases due to Plasmodium falciparum (Pf) versus Plasmodium vivax (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.

A history of the national treatment guidelines

In response to the development of multi-drug resistant malaria, Cambodia designed and implemented a number of policy and strategy changes to improve coverage of appropriate case management. In 2000, Cambodia switched its first-line national malaria treatment policy for Pf malaria to an ACT of artesunate and mefloquine (ASMQ) and stipulated diagnostic testing prior to treatment. Since 2000, the Cambodian government provided first-line artemisinin-based combination therapy (ACT) for free in public health facilities, and parasitological diagnosis was promoted through the introduction of malaria rapid diagnostic tests (mRDT) and by strengthening the capacity of skilled microscopists. Over the years there have been a series of changes in the national treatment guidelines following recommendations from the World Health Organization (WHO) to change treatments when resistance to the drug is detected. In 2008, due to high failure rates with ASMQ, the first-line treatment for uncomplicated Pf malaria was changed from co-blistered ASMQ to fixed-dose dihydroartemisinin piperaquine (DHA-PPQ) in specific areas of the country where artemisinin resistance had been identified; DHA-PPQ became the nationwide first-line treatment for both Pf malaria and Pv malaria in 2010. However, subsequent DHA-PPQ treatment failure rates prompted the use of atovaquone proguanil to treat cases in key areas of western Cambodia in 2012. Less than a year after adopting atovaquone proguanil, resistance-conferring mutations were detected in Pf malaria, so fixed dose combination (FDC) ASMQ was reintroduced as the first-line treatment in areas with drug resistance in March 2015.

Sources of treatment for malaria

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 Pf malaria and 44% being Pv malaria. Roughly 29,993 cases were reportedly treated by public sector Village Malaria Workers.

In the private sector, where most people seek treatment in Cambodia, the collection of routine caseload data is less common. However, in 2014, it was estimated that over two-thirds of care-seeking visits were to the private or non-medical sectors, where a wide range of providers operate, including hospitals, clinics, pharmacies, cabinets, mobile providers, and drug shops. Some of these private practices are run by government doctors or nurses during off-hours.

Malaria control and elimination strategies

In 2014, the WHO used available evidence about artemisinin
Cambodia National Treatment Guidelines:

1. 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.

2. The recommended first-line treatment for uncomplicated malaria in adults is fixed dose combination (FDC) DHA-PPQ (40mg/320mg) or FDC ASMQ (25mg/50mg or 100mg/200mg) for Pf, Pv, Plasmodium ovale (Po) and Plasmodium malariae (Pm) malaria.

3. 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 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.

4. The recommended treatment for severe malaria is intramuscular (IM) artemether, or intravenous or IM artesunate, followed by a full course of DHA-PPQ or FDC ASMQ 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.
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. However, beginning in 2016, the Cambodia Malaria Elimination Action Framework, 2016-2020 outlined 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.

Malaria case management and elimination in Cambodia

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. 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 mRDTs. 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 provinces, covering 2,030 villages by the end of 2013 and present in 44% of villages in Operational Districts (ODs) with high malaria prevalence. Malaria diagnosis and treatment is free in the public sector. The CNM purchases subsidized ACTs through the Global Fund copayment mechanism.

Private sector engagement and regulation

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. Subsidized mRDTs 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 location, but they are required to refer cases of severe malaria, pregnant women, children under five, and cases of suspected treatment failure to a public health facility.

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. The PPM program also allows for collection of caseload 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.

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.
• 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 to eliminate \( P.f \) malaria including multidrug resistance by 2020. Specific objectives are:

• Provide 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

• Implement comprehensive Information, Education, and Communication (IEC)/Behavior Change Communication (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
Cambodia timeline

- 2002: Social marketing of first-line ACT and RDT in the private sector by PSI.
- 2004: VMW Pilot
- 2007: Artemisinin resistance is detected in Cambodia.
- 2008: DHA-PPQ is introduced as the first-line treatment in zone 1.
- 2008: Artemisinin resistance containment zones are created.
2009
The Ministry of Health bans the importation, distribution, and sale of artemisinin monotherapy.

2009
DHA-PPQ is made the nationwide first-line treatment.

2009
Scale-up of the VMW program.

2011
CNM pilot PPM project under the containment Project with PATH

2011
Eurartesim (DHA-PPQ) receives Stringent Regulatory Approval.

2012
National scale up of PPM with CNM, PSI, and URC.

2012
400,000 Eurartesim doses are delivered to Cambodia.

March 2015
In provinces with DHQ-PPQ failure, ASMQ is re-introduced as first-line treatment.

2014
A total of 2010 licensed private providers are enrolled in the PPM project in 34/35 malaria endemic operational districts.
1.3 background
Outlet Survey Methods
ACTwatch implements standardized methods and questionnaires that allow for comparisons between countries and survey rounds. A full census of all outlets providing malaria care and a full audit of all available antimalarials provides a complete picture of the antimalarial market.

**How is the sampling conducted?**

A representative sample of clusters is selected from each research domain. Typically, a one-stage probability-proportional-to-size cluster design is used to select clusters within each domain, with cluster population serving as the measure of size. The primary sampling unit, or cluster, is usually an administrative unit with 10,000 to 15,000 inhabitants. In Cambodia, the cluster was a commune.

In Cambodia, surveys were stratified to compare between different areas of the country. In the last survey round, the outlet survey was designed to compare areas designated as Tier 1 (prioritized for immediate multifaceted response to contain or eliminate resistance) and Tier 2 (areas prioritized for intensified malaria control to reduce transmission and/or limit the risk of emergence or spread of resistant parasites).

Particular products are available in multiple package sizes, strengths, or formulations, and an audit sheet is completed for each unique product. Information gathered for every antimalarial and mRDT in stock allows for a complete picture of the market in regards to availability, price, and relative market share.
What types of outlets are screened?

The main types of outlets screened include public and not-for-profit health facilities, community health workers, private health facilities, pharmacies, drug stores, general retailers, and itinerant drug vendors. Outlets are classified using these broad definitions across each of the ACTwatch countries. However, within each country, a range of outlet types are considered relevant and are included.

In Cambodia, outlets screened in the public sector include referral hospitals, health centers, former district hospitals, health posts, and village malaria workers, and in the private sector, private hospitals and clinics, clinical pharmacies, ‘depot A’ and ‘depot B’ pharmacies, cabinets/health care rooms, drug stores, mobile providers, diagnostic labs, grocery stores, and village shops. These outlets are classified according to the broader ACTwatch outlet definitions during the analysis phase.

How are the outlets identified?

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

What is an outlet census?

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

What happens after an outlet is identified?

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

How is information on antimalarials and malaria rapid diagnostic tests captured?

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

What information is recorded on audit sheets?

The audit sheet captures product information from the product package including the brand name, the manufacturer, country of manufacture, formulation, and strength. The audit sheet also captures information from the provider including the amount sold in the last seven days and retail price. If a particular product is available in multiple package sizes, strengths, or formulations, an audit sheet is completed for each unique product. Information gathered for every antimalarial and mRDT in stock allows for a complete picture of the market in regard to availability, price, and relative market share.
2.1 results
A full audit of the antimalarials and mRDTs is conducted. Information is recorded for each unique antimalarial and mRDT identified in the outlet.

ACTwatch implements standardized methods and questionnaires that allow for comparisons between countries and across survey rounds. A full census of all outlets providing malaria care and a full audit of all available antimalarials provides a complete picture of the antimalarial market.
Across survey rounds, over 95% of the outlets enumerated were screened for antimalarials. Only 10% of outlets met the eligibility criteria.

### Outlet Sample Composition

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outlets enumerated</td>
<td>7,833</td>
<td>18,584</td>
<td>6,153</td>
<td>27,201</td>
</tr>
<tr>
<td>Outlets screened</td>
<td>7,513</td>
<td>17,923</td>
<td>15,755</td>
<td>26,664</td>
</tr>
<tr>
<td>Outlets that meet eligibility criteria</td>
<td>872</td>
<td>1,529</td>
<td>1,456</td>
<td>1,308</td>
</tr>
<tr>
<td>Antimalarial(s) in stock</td>
<td>865</td>
<td>1,283</td>
<td>1,221</td>
<td>862</td>
</tr>
<tr>
<td>Antimalarial(s) out of stock but reportedly in stock in previous three months</td>
<td>7</td>
<td>246</td>
<td>123</td>
<td>255</td>
</tr>
<tr>
<td>Antimalarial(s) not in stock but blood testing available</td>
<td>n/a</td>
<td>n/a</td>
<td>112</td>
<td>191</td>
</tr>
<tr>
<td>Outliers with completed interview</td>
<td>870</td>
<td>1,516</td>
<td>1,449</td>
<td>1,303</td>
</tr>
</tbody>
</table>

*n/a = screening questions regarding the availability of blood testing were not included in the 2009 and 2011 surveys*
Survey Flow Diagram, Cambodia, 2015

27,000+ Screened

26,500+ Met Screening Criteria

1,300+ Interviewed

1,356 RDT Audited

1,390 Antimalarials Audited

A. Outlets Enumerated* [27,201]

B. Outlets Screened** [26,664]

C. Outlets that met eligibility criteria [1,390]
1. [662]
2. [595]
3. [191]

D. Outlets interviewed [1,393]
1. [889]
2. [254]
3. [191]

Outlets not screened [537]

Outlets that did not meet eligibility criteria [25,356]

Outlets not interviewed [5]

1. Interview interrupted [1]
2. Respondent not available [73]
3. Outlet closed at time of visit [86]
4. Outlet closed permanently [221]
5. Other [108]
6. Refused [50]

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

What types of outlets were included?
The study population is defined as all outlets with the potential to sell or distribute antimalarial medicines and/or provide malaria blood testing. The classification of different outlets was based on discussions with national stakeholders to determine appropriate categories of outlets to screen as part of the census approach. These outlet categories have been included in each of the survey rounds.

What are itinerant drug vendors?
Of note in the 2015 survey is the relative importance of itinerant drug vendors as a source of care. Demographic information collected suggested that most of these providers are male (80%), around 46 years of age and have worked as an itinerant drug vendor for about 10 years. About one in three have some college education, and less than half have some sort of secondary school education. However, more than half have some sort of medical training. Almost fifty percent have nursing or nurse officer training.

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<table>
<thead>
<tr>
<th>Public Health Facilities</th>
<th>Referral hospitals, health centers, former district hospitals, and health posts. This category includes a small number of non-government not-for-profit (mission) facilities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village Malaria Workers</td>
<td>Village Malaria Workers (VMW) and Mobile Malaria Workers (MMW). VMWs are community-based providers equipped with antimalarial treatment and malaria blood testing. MMWs are VMWs who serve multiple villages.</td>
</tr>
<tr>
<td>Private For Profit Health Facilities</td>
<td>Private hospitals, clinics, cabinets, and diagnostic laboratories.</td>
</tr>
<tr>
<td>Pharmacies</td>
<td>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.</td>
</tr>
<tr>
<td>Drug Stores</td>
<td>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 are not licensed by a national regulatory authority.</td>
</tr>
<tr>
<td>General Retailers</td>
<td>Grocery stores and village shops.</td>
</tr>
<tr>
<td>Itinerant Drug Vendors</td>
<td>Mobile providers found primarily in rural areas, typically working within a radius of their home. They are not registered with any national regulatory authority.</td>
</tr>
</tbody>
</table>
results
Market Landscape

*Availability of antimalarials and diagnostics among all screened outlets.*

This section describes availability of antimalarials and malaria tests among all outlets that were screened in the survey. Results suggest relatively high availability in the public sector and point to notable changes in the private sector over time in regards to availability of antimalarials. In 2015, there was also considerable diversity across outlet types in regards to availability of malaria tests. Malaria tests were commonly available in the public sector, but lower availability was observed in the private sector.
Several strategies have been implemented in Cambodia to ensure increased access to antimalarials and diagnostic tests in the public sector, including the expansion of Village Malaria Workers (VMWs) by the CNM. There has also been an increased focus on strengthening the private sector. This has included increased regulation, licensing, and supervision of private for-profit facilities and pharmacies.

How has antimalarial availability changed over time in the public sector?

Public sector availability of antimalarials increased between 2009 and 2011 (from 61% to 92%). However, slight declines were observed between 2013 and 2015 (92% to 78% respectively), suggesting slightly lower availability among all public sector outlets screened in the last survey round. However, between 2009 and 2015 an overall increase in public sector antimalarial availability was observed.

What types of public sector outlets stocked antimalarials in 2015?

Among all outlets screened in the public sector, the percentage of public health facilities and VMWs with at least one antimalarial in stock on the day of the survey increased between 2009 and 2015. In 2015, almost 80 percent of all screened public health facilities had an antimalarial in stock (78%) and three-quarters of VMWs (75%).
How has antimalarial availability changed over time in the private sector?

In contrast to the public sector, availability of antimalarials among outlets in the private sector declined over time across all outlet types. In 2009, 85% of pharmacies stocked antimalarials compared to 21% of pharmacies in 2015. Similarly, in 2009, 73% of private for-profit facilities had antimalarials in stock, compared to 31% in 2015.

What types of private sector outlets stocked antimalarials in 2015?

Observing private sector data from the last survey round, availability of antimalarials was variable across outlet type, with one in three private for-profit facilities stocking an antimalarial, 21% of pharmacies, and only 7% of drug stores. Of the 23,840 general retailers that were screened, only 0.2% of these outlet types had an antimalarial in stock, suggesting that the majority of these private sector outlet types are not in the business of selling/distributing antimalarials. In 2015, it was also observed that 15% of itinerant drug vendors stocked antimalarials.
Since 2000, the CNM has stipulated diagnostic testing of febrile patients prior to treatment, and this has been promoted through the introduction of mRDTs and strengthening the capacity of skilled microscopists.

**What types of public and private sector outlets stocked malaria tests in 2015?**

In 2015, availability of malaria tests among outlets varied considerably across the public and private sector and by outlet type. Among all outlets screened in the public sector, the percentage of public health facilities and VMWs with at least one malaria test in stock on the day of the survey was over 80%, and almost 90% of public health facilities had a malaria test. In contrast, availability of malaria tests in the private sector was variable across outlet type, with 45% of private for-profit facilities, 30% of pharmacies, and 20% of itinerant drug vendors stocking a malaria test. Only 10% of drug stores had a malaria test in stock, and malaria tests were not available in general retailers.

How does availability of malaria tests compare with availability of antimalarials in 2015?

Overall, both the public and private sectors were more likely to have malaria tests in stock than antimalarials. For example, almost 45% of private for-profit facilities had a test in stock, but only 30% had an antimalarial in 2015. A similar pattern was observed for other public and private sector outlet types.

In 2015, malaria tests were widely available in the public sector.
2.3 results
Market Composition

*The relative distribution of outlets stocking antimalarials and diagnostics.*

This section demonstrates the composition of the antimalarial market by illustrating the distribution of outlets stocking at least one antimalarial, or an antimalarial and/or malaria test. Notable changes in the private sector antimalarial market composition are observed throughout the years, illustrating the increasing importance of private for-profit health facilities and pharmacies. Trend data illustrate how markets are constantly evolving in response to policy changes, national strategies to improve malaria case management, and consumer demand.
What does the antimalarial market composition look like?

Antimalarial market composition changed at the national level in Cambodia over time. Between 2009 and 2013, the majority of antimalarial-stocking outlets were private sector outlets. However, by 2015, more than half of the antimalarial-stocking outlets were public health facilities (14%) and VMWs (41%), illustrating how many more public sector service delivery points there were relative to the private sector.

Private sector market composition shifted over time, with a declining number of outlets that were ‘informal’ (or less likely, under Cambodia’s current national malaria strategy, to have some form of regulation or supervision), such as 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.

In 2009, there were more private sector service delivery points for malaria treatment relative to public, but over time this has shifted; in 2015, there were more public sector options for malaria treatment as compared to private.
Private sector market composition shifted overtime: 70% of the market composition was comprised of drug stores, general retailers, and itinerant drug vendors in 2009, as compared to 20% in 2015.
results
Antimalarial Availability

Availability of different types of antimalarials, among outlets with antimalarials in stock.

This section shows the availability of different types of ACT (ASMQ and DHA-PPQ) and oral artemisinin monotherapy among outlets with an antimalarial in stock. A new antimalarial classification is also shown: the availability of any antimalarial that is not on the nationally registered list, according to the most recent survey round. The results show a number of promising changes over time but point to the importance of being able to respond rapidly to changing first-line treatment guidelines.
How does ACTwatch present availability of different antimalarial categories?

The availability of specific antimalarial categories is restricted to those outlets that have antimalarials in stock. For example, the availability of ACT is measured as the proportion of outlets stocking ACT, among all outlets with at least one antimalarial in stock. Multiple drug policy changes and effective enforcement strategies have been required in Cambodia to respond to artemisinin drug resistance and to drive progress towards Pf elimination. Since 2002, Cambodia has implemented several policy and strategy changes, including the adaptation of ACT as first-line treatment, which has changed over time in response to failure rates. Furthermore, in 2009, the Cambodian government took significant steps to regulate the pharmaceutical industry, banning the importation, manufacturing, registration and sale of oral artemisinin monotherapies, given that its use fuels resistance.

How has ACT availability changed over time in the public sector?

The percentage of antimalarial-stocking public health facilities and VMWs with at least one ACT in stock on the day of the survey remained higher than 95% over time. In 2015, ACTs were universally available in the public sector.

How has ACT availability changed over time in the private sector?

ACT availability in the private sector was somewhat variable over time and across outlet type, though between 2013 and 2015, results were generally similar, with the exception of general retailers. Between 2009 and 2011, ACT availability declined in the private sector. This was attributed to stockouts and challenges related to procurement of the first-line treatment, which is discussed in the next section.
What types of private sector outlets stocked ACT in 2015?

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%) (data not shown).

ACT availability in the private sector in 2015:

- 94% of health facilities & pharmacies
- 75% drug stores
- 76% of itinerant drug vendors

*Private Sector ACT Availability 2009-2015*

Between 2009 and 2011, ACT availability declined in the private sector. However, by 2015 most of the antimalarial stocking private sector had ACTs in stock.
How has availability of ASMQ changed over time in the private sector?

The percentage of antimalarial-stocking public health facilities and VMWs with the ACT ASMQ in stock on the day of the survey decreased between 2009 and 2015, reflecting changes in the national treatment guidelines. 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 in 2015. Of note is the finding that none of the ASMQ audited in the 2015 survey was fixed-dose combination (FDC) ASMQ. This is most likely because the change in treatment guidelines (stipulating FDC ASMQ) was introduced only a few months prior to the survey, but it also speaks of apparent challenges with the manufacturer for FDC ASMQ, which required a minimum order quantity for production. While the manufacturer was willing to produce ASMQ 100mg/200mg, there was hesitancy to produce the pediatric strength (ASMQ 25mg/50mg) due to the low number of pediatric cases in Cambodia, thus resulting in manufacturing delays prior to the survey implementation.

How has availability of DHA-PPQ changed over time in the public and private sectors?

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, almost all public health facilities and VMWs had DHA-PPQ in stock.

Of note is the finding that in the private sector in 2011, availability of DHA-PPQ was substantially low, given that the national treatment guidelines had changed in 2010. The reasons for low availability of first-line treatment in 2011 centered around procurement regulations pertaining to the purchase of medicines using international donor funds. When the first-line treatment changed in 2010, two manufacturers were producing DHA-PPQ. Neither of these manufacturers were producing the pediatric strength (DHA-PPQ 25mg/50mg) due to the low number of pediatric cases in Cambodia.
manufacturers had Good Manufacturing Practice (GMP) or Stringent Regulatory Authority (SRA) approvals, both of which are required in order to procure antimalarial medicines under international donor regulations. In October 2011, one brand of DHA-PPQ, Eurartesim®, received SRA approval through the European Medicines Agency (EMA), allowing a much-delayed order to be placed. The 2011 outlet survey captures this contextual background, illustrating a low availability of DHA-PPQ in the public sector and no availability in the private sector. The moderate availability in the public sector is explained by efforts by the WHO in 2010, who procured DHA-PPQ directly for CNM from the second producer. However, the private sector was faced with an unprecedented ten month ACT stock-out. It was only in July 2012, that 400,000 doses were delivered to Cambodia’s private sector. Significant shifts in first-line ACT availability in both the public and private sectors are therefore only observed in the 2013 outlet survey, where substantial gains in DHA-PPQ availability were observed. This speaks to the importance of addressing procurement and other bottlenecks to allow the country to respond rapidly to emerging drug resistance by facilitating the immediate availability of malaria first-line treatment.

The procurement problems faced in 2010 had detrimental effects on malaria control efforts and strategies in Cambodia that were beyond the control of the government and other national stakeholders. While the WHO was able to procure much-needed first-line ACT for the public sector, the effects were devastating for the private sector. This situation demonstrates the fragility of the antimalarial market and illustrates how constant supply of quality-assured ACT, supported by donors, is challenging given the fact that there are only few manufacturers with the required regulatory approvals. The need to rapidly respond to evolving drug resistance further compounds the situation and highlights the challenges that in-country stakeholders and the government face in executing fast responses on the ground.

PUBLIC AND PRIVATE SECTOR AVAILABILITY OF DHA-PPQ, 2009-2015

While DHA-PPQ became the first-line treatment in 2011, gains in the availability are only observed in 2013 in the public and private sector.
What types of public and private sector outlets stocked DHA-PPQ in 2015?

In 2015, most antimalarial-stocking public health facilities (98%), VMWs (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%).

What is the availability of antimalarials that are not in the national treatment guidelines in 2015?

In the public sector, very few outlets (<2%) had an antimalarial that was not in the national treatment guidelines. In the private sector, the results were more variable. Antimalarials that were not in the national treatment guidelines were available in 100% of antimalarial-stocking general retailers, 48% of itinerant drug vendors, and 46% of drug stores. This type of antimalarial was rarely available in private for-profit facilities and pharmacies. Those treatments included A+M, Malarine, and chloroquine.
What is oral artemisinin monotherapy?

Artemisinin monotherapies include artemether, artesunate, dihydroartemisinin, and arteether. Oral artemisinin monotherapies are available in tablet and suspension formulations. Non-oral artemisinin monotherapy includes powder and liquid injections as well as suppositories. Oral artemisinin monotherapy is strictly regulated in all study countries because its use can fuel the spread of artemisinin drug resistance. Non-oral artemisinin monotherapy medicines are typically indicated for management of severe malaria.

What is the availability of oral artemisinin monotherapy?

Historically, artemisinins have been available as monotherapies in western Cambodia for more than 30 years, in a variety of forms and doses. In 2007, other research found that oral artemisinin monotherapies were notably less expensive than ACT in Cambodia. It was also estimated that 78% of artemisinin use in western Cambodia consisted of monotherapy provided through the private sector. To provide further evidence on this, the 2009 ACTwatch outlet survey found that 34% of pharmacies, 27% of general retailers, 13% of itinerant drug vendors, and 10% of private for-profit health facilities had oral artemisinin monotherapy in stock.

In 2009, the Cambodian government took significant steps to regulate the pharmaceutical industry, and banned the importation, manufacturing, registration and sale of oral artemisinin monotherapies. To enforce the move, the MOH created a new cadre of law enforcement officers called the "Justice Police", providing them with authority to crack down on illegal and substandard medicines. The government also used mystery clients to further identify outlets selling any oral artemisinin monotherapy and instituted a system for licensing drug outlets. In addition, an international collaboration led by INTERPOL succeeded in shutting down a major Chinese producer of fake artemisinin that had flooded the markets throughout the GMS. These efforts were also supported with a communication campaign to educate private providers about the dangers of oral artemisinin monotherapy.

The findings from the 2011, 2013, and 2015 outlet surveys showed that 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 – representing one package that was audited.

Significant reductions and removal of oral artemisinin monotherapy across the private sector reflect effective policy changes and successful enforcement and implementation by Cambodian officials. Measures by the Cambodian government to stop the importation and distribution of oral artemisinin monotherapy and supportive and educative activities with private providers of malaria treatment were successful.

1 the number of packages of oral artemisinin monotherapy found in 2015.
What is the availability of treatment for severe malaria?

According to Cambodia’s treatment guidelines, only public health facilities have the mandate to treat severe cases of malaria. 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. Similarly, licensed private sector providers are authorized to test and treat uncomplicated malaria regardless of geographic location, but they are required to refer severe malaria to a public health facility.

Treatment for severe malaria in public health facilities is notably low and had declined over time from 35% in 2009 to 15% in 2015. The findings point to the need to ensure the increase of treatment for severe malaria in the context of declining malaria incidence and changing epidemiology.
results
Malaria Diagnostic Availability

Availability of malaria diagnostics, among outlets with antimalarials in stock

This section summarizes availability of malaria blood testing, including both malaria microscopy and rapid diagnostic testing, among outlets with an antimalarial in stock. The results show high and constant availability in the public sector and increasing availability in the private sector. However, the findings illustrate that current rates of diagnostic availability are sub-optimal among private sector antimalarial-stocking outlets.
Long before the WHO launched the Test, Treat, Track initiative, recommending confirmatory testing prior to antimalarial treatment, Cambodia’s national malaria treatment guidelines stipulated that suspected malaria cases should be confirmed with a diagnostic test. Since 2002, strategies to scale up testing using malaria rapid diagnostic tests (mRDT) were introduced by the CNM. This has included expansion of diagnosis by the provision of mRDTs through VMWs in the public sector, and social marketing of mRDTs by PSI in the private sector.

How has availability of malaria microscopy changed over time?

Trends in the percentage of antimalarial-stocking outlets with malaria microscopy suggest a 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. VMWs did not have malaria microscopy (data not shown), reflecting national policy that these providers should only administer mRDT. Malaria microscopy availability declined in the private sector, and availability was less than 10% of private outlets.
How has availability of mRDT changed over time?

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

Given that one of the cornerstones of malaria elimination is parasitological confirmation of all suspected malaria cases by either microscopy or mRDT, outlet survey results point to the fact that current rates of diagnostic availability are sub-optimal among private sector antimalarial-stocking outlets.
2.6 results
Distribution of Antimalarials and Tests

*Distribution or sales of malaria commodities, among outlets with antimalarials or and mRDTs in stock*

This section summarizes the percentage of outlets with malaria commodities (antimalarials or and mRDTs) that report selling or distributing antimalarials or tests during the week prior to the survey. The aim of showing this indicator is to demonstrate, across sectors, how common it is for outlets to distribute a malaria commodity to patients. This indicator is particularly important for countries with low and declining malaria endemicity. The findings show that most outlets did not sell or distribute malaria commodities in the previous week, though malaria diagnostic are more commonly distributed than antimalarials.
The malaria burden in Cambodia has been greatly reduced over the past few years, with confirmed malaria cases experiencing a general decline since 2009. Thus the frequency for which providers report distributing or selling a malaria test or antimalarial is of interest in the context of declining malaria prevalence.

**To what extent do outlets distribute malaria tests or antimalarials?**

Among outlets with a malaria test available, 56% of public health facilities and 36% of VMWs 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.

Outlets were more likely to distribute malaria tests than antimalarials. This was most notable in the public sector, where only 25% of public health facilities and 10% of VMWs distributed an antimalarial. In public health facilities, almost 60% provided testing to a patient in the previous week.

*In the week prior to the survey, only 1 of 4 private sector outlets reported distributing an antimalarial.*

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**PUBLIC AND PRIVATE SECTOR OUTLETS THAT SOLD OR DISTRIBUTED MALARIA TESTS OR ANTIMALARIALS IN THE PREVIOUS WEEK, 2015**

*Distribution of malaria tests in the last week is more common than distribution of antimalarials across all outlet types.*

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2.7 results
Antimalarial Market Share

Relative sale or distribution of antimalarials, in the week preceding the survey

This section summarizes relative market share for different categories of antimalarials and malaria tests in the public and private sectors. Trends over time show market share for ACT has changed relative to market share for non-artemisinin therapies, and slightly more antimalarials are distributed through the public sector over time, though the private sector still dominates the market. Of note is that most of the market share of antimalarials in the private sector is comprised of private for-profit facilities or itinerant drug vendors.
How has the market share of antimalarials changed over time?

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%), reflecting the considerable challenges regarding the shift from ASMQ to DHA-PPQ as the first-line treatment in 2010. However, subsequent survey rounds show an increase of DHA-PPQ to 87% in 2013 and 94% in 2015. The high market share for the first-line ACT in 2015 reflects effective strategies to implement changes in national treatment guidelines.

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, suggesting that measures by the Cambodian government to stop the importation and distribution of oral artemisinin monotherapy, such as supportive and educative activities with private providers of malaria treatment, were successful.

Finally, reductions in chloroquine are also observed, as it was only sold/distributed in the private sector in 2015 and comprised only 5% of the market share.

What is the role of the private sector?

While antimalarial availability is declining in the private sector, private sector outlets are still responsible for substantial antimalarial market share, indicating that this is an important source of treatment for febrile patients. The most recent Cambodia Malaria Survey (2013) also shows that over half of the population exclusively obtain treatment from the private sector, and up to 40% first seek treatment from outlets such as drug stores, general retailers, and itinerant drug vendors. The 2009, 2011, 2013, and 2015 outlet surveys show that the performance of the private sector over time has improved, with most of these outlet types distributing the first-line treatment in 2015.

That said, interpretation of the market share data should be viewed through a malaria diagnostic lens. Indeed, the market share data suggest more antimalarials are being distributed through the private sector, but this may also be explained through increasing confirmatory diagnosis in the public sector, with fewer patients being administered an antimalarial given a negative diagnosis.

How is antimalarial market share defined?

Provider reports on the amount of the drug sold or distributed during the week preceding the survey were used to calculate market share according to class of antimalarial: ASMQ, DHA-PPQ, other ACT, oral artemisinin monotherapy, non-oral artemisinin monotherapy, and non-artemisinin monotherapy. The volume of each drug is therefore the number of ‘adult equivalent treatment doses’ (AETDs) that were reportedly sold/distributed during the week preceding the survey. Measures include all dosage forms to provide a complete assessment of antimalarial market shares to the consumer or patient.
ANTIMALARIAL MARKET SHARE, 2009-2015

The antimalarial market share has improved over the years. In 2015, most of the antimalarials distributed were ACT.

LEGEND
- Non-oral artemisinin monotherapy
- Oral artemisinin monotherapy
- Other non-artemisinin therapy
- Chloroquine
- Any ACT
MARKET SHARE ACROSS PRIVATE SECTOR OUTLET TYPES, 2015

Most of the antimalarials sold or distributed in the private sector are through health facilities and itinerant drug vendors.

LEGEND
- ■ Non-oral artemisinin monotherapy
- □ Oral artemisinin monotherapy
- ◼ Artemisinin Piperaquine
- ▲ Chloroquine
- ● DHA-PPQ
What types of public and private sector outlets sell/distribute antimalarials?

At the national level, 41% of all antimalarials distributed in the week preceding the survey were distributed through the public sector, of which 15% were through VMWs. In contrast, 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%) and itinerant drug vendors (23%). Only 7% of the market share was through pharmacies. Drug stores and general retailers had a negligible contribution to the market share of antimalarials. The majority of antimalarials sold/distributed in the private sector were ACTs, including DHA-PPQ (49%) and artemisinin piperquine (3.8%).

It is also notable that the private sector market composition has shifted over time towards an increasing contribution from private health facilities and pharmacies, and a declining contribution from drug stores and general retailers – outlets which typically operate without formal licensing or registration and are not formally regulated. Active and supportive regulation may play a key role in improving the performance of the market for malaria treatment. This has included active engagement by the CNM with the private sector through PSI to ensure the availability of high quality first-line ACT treatments and mRDT in the private sector through social marketing techniques.
2.8 results
Diagnostic Market Share

*Relative sale or distribution of malaria tests, in the week preceding the survey*

This section summarizes relative market share for malaria microscopy and mRDT in the public and private sectors. Most of the diagnostic market share is through the private sector and, overall, is comprised mainly of mRDTs. Of note is that most of the market share of mRDTs in the private sector is comprised of private for-profit facilities, pharmacies, or itinerant drug vendors.
What is the market share of antimalarial diagnostic tests across the public and private sectors in 2015?

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%). Health facilities most commonly sold or distributed tests, followed by pharmacies and itinerant drug vendors. Drug stores and general retailers rarely sold or distributed malaria tests (data not shown).

Across sectors, most blood tests performed in Cambodia were mRDTs (87%).

What types of mRDTs are sold within the private and public sectors and nationally?

mRDTs manufactured by Standard Diagnostics Inc. accounted for 90% of all mRDTs performed within both the public and private sectors. Premier Medical Corporation LTD mRDTs were distributed by 10% of the public and 8% of the private sector outlets. Approximately two-thirds of tests were Pf/Pv tests, and one-quarter of tests were Pf/Pan tests. Nearly all tests audited were HRP2/pLDH tests.
Almost 90% of the diagnostic market share comprises of mRDTs. In the private sector, most of the mRDTs are distributed through health facilities and itinerant drug vendors.
results
ACT & Malaria Diagnostic Price

Subsidized quality-assured ACT has been made available at scale in the private sector through Population Services International since 2002. Figures in this section compare the median private sector price of the first-line adult treatment of the ACT DHA-PPQ (Eurartesim®) with the price of an mRDT. This comparison is drawn to help illustrate whether or not there is an incentive to test for malaria prior to treatment.
What is the price of an adult ACT compared to an mRDT?

The median price of an mRDT test among private sector outlets in 2015 was less than $1 across all outlet types, ranging between $0.75 - $0.99. DHA-PPQ, the first-line treatment, was more expensive than mRDTs across all private sector outlet types. The median price of an adult treatment of DHA-PPQ ranged from $1.24 in pharmacies to $2.24 among itinerant drug vendors.

Among itinerant drug vendors, first-line ACT treatment was 2 and a half times more expensive than an mRDT. In the private sector, the first-line treatment was twice as expensive as an mRDT, suggesting there is a financial incentive for the patient to test prior to seeking treatment.

First-line ACT $2.00
mRDT $1.00
2.10 results
Provider Knowledge & Characteristics

This section addresses provider knowledge and awareness of the first-line treatment for malaria. Providers were asked about their knowledge of the first-line treatment, and, among those that could correctly state it, the treatment regimen.
Do providers know the first-line treatment for uncomplicated malaria?

Provider knowledge of the first-line treatment for uncomplicated malaria (either DHA-PPQ or FDC ASMQ) was high among public health facilities (89%) and VMWs (94%), as well as among private for-profit facilities (78%) and pharmacies (79%). Provider knowledge was relatively low among itinerant drug vendors (50%). Most providers correctly stated the DHA-PPQ treatment. Less than 10% of providers across all outlet types correctly cited FDC ASMQ.

Do providers know the first-line dosing regimen for uncomplicated malaria?

Provider knowledge of the first-line dosing regimen for uncomplicated malaria was high among public health facilities (87%) in 2015. Almost three in four providers from private for-profit facilities and pharmacies correctly stated the first-line dosing regimen. Provider knowledge was relatively low 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 FDC ASMQ.

PERCENT OF PROVIDERS WHO CORRECTLY STATE THE FIRST-LINE TREATMENT FOR UNCOMPLICATED MALARIA, 2015

Provider knowledge of the first line treatment for malaria is high in the public sector, with most providers stating DHA-PPQ. Knowledge in the private sector is more variable, and highest among private for-profit facilities and pharmacies. Knowledge is lower among itinerant drug vendors, which are important sources of antimalarial market distribution.
PERCENT OF PROVIDERS WHO CORRECTLY STATE THE FIRST-LINE DOSING REGIMEN FOR UNCOMPPLICATED MALARIA, 2015

Most providers have knowledge of the first line DHA-PPQ dosing regimen.
results
Private Sector Monitoring & Supervision

Provider-reported supervision, training, and caseload reporting, among private sector providers

This section addresses the extent to which all private providers have received training on malaria treatment and diagnosis, and the frequency for which they receive supervisory visits and report on malaria caseload data.
Several strategies have been in place since 2011 to engage with the private sector, as a means to improve the quality of case management services. This has included the provision of commodities, training, and supervision among some of the private for-profit facilities and pharmacies. This mechanism allows for a more regulated inclusion of the private sector in case management while still adhering to national guidelines.

To what extent has the private sector received training on malaria diagnosis and national treatment guidelines?

Provider training on malaria diagnosis and national treatment guidelines was very similar for both of these indicators. Training was most common among private for-profit facilities (~35%) and pharmacies (43%). This provider malaria training was less common among drug stores, general retailers, and itinerant drug vendors (<20%). With regard to training on the malaria national treatment guidelines, this was most common among private for-profit facilities (35%) and pharmacies (42%). This was reportedly less frequent among drug stores, general retailers, and itinerant drug vendors (<15%).

To what extent do private providers keep records and report on malaria caseload data?

Around 35% of private for-profit facilities report keeping records on the number of patients tested or treated for malaria. This is lower among pharmacies (18%), drug stores (10%), and itinerant drug vendors (7%). Of those that keep records, almost all reported that they provide these numbers to government or non-government organizations.

To what extent are providers in line with the national treatment guidelines in regards to training, supervision, caseload reporting, and access to malaria commodities?

The percentage of outlets that reportedly received training and supervision was low overall 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.

PERCENTAGE OF PROVIDERS WHO REPORTEDLY RECEIVED TRAINING ON MALARIA DIAGNOSIS (MRDT OR MICROSCOPY), 2015

Less than one in five private sector outlets have received training on malaria diagnosis
PERCENTAGE OF PROVIDERS THAT REPORTEDLY RECEIVED PROVIDER TRAINING AND SUPERVISION AND KEEP RECORDS ON MALARIA CASELOAD DATA AND REPORT ON THESE RECORDS AND HAVE DHA-PPQ AND MALARIA BLOOD TESTING IN STOCK, 2015

There is room for improvement in the private sector to ensure that providers can adhere to national guidelines and strategies for malaria elimination.
3.0 summary
Summary
Findings from the 2015 ACTwatch malaria diagnostic and medicine outlet survey show that public sector readiness for appropriate case management is generally high in Cambodia. In 2015, among public health facilities and Village Malaria Workers (VMWs) stocking antimalarials, availability of the national first-line ACT was nearly universal. Malaria blood testing was available in over 90% of antimalarial stocking public health facilities, and in nine out of ten VMWs, reflecting an increase over time (from around 80% in 2009).

The outlet survey included an audit of all available antimalarials in the public and private sectors. In 2015, nearly all antimalarials audited were the first line ACT treatment, primarily DHA-PPQ. Only 1 box of oral artesiminin monotherapy (artesunate tablets) was found during the survey, which included screening more than 27,000 outlets for antimalarial availability and auditing antimalarials in 467 public and 391 private sector outlets. The study, however, found high availability of antimalarial medicines that are not indicated in the national treatment guidelines. All of the antimalarial-stocking general retailers and half of antimalarial-stocking drug stores and itinerant drug vendors were stocking antimalarials that were not in the treatment guidelines, and these were primarily chloroquine and ACTs that were not recommended first-line treatments.

Since 2009, the outlet survey identified that the private sector plays an important role in malaria case management, delivering 59% of all antimalarials to patients in 2015. Trend data suggest that there is a slight decline in the role of the private sector in antimalarial distribution as compared to the public sector over time. Furthermore, there has been a decline in the availability of antimalarials among private sector outlets, including among private for-profit facilities and pharmacies. Similarly, over time there has been a shift in the type of private sector outlets that are stocking antimalarials such that the private sector for antimalarial treatment is no longer dominated by general retail outlets and is now characterized by private for-profit health facilities and pharmacies, as well as itinerant drug vendors. This reflects the work of the CNM and partners to continue engaging the private sector for malaria care, but to focus on formal and regulated outlet types. In 2015, private for-profit facilities accounted for almost one third of all antimalarial distribution. Other private sector outlets distributing antimalarials included itinerant drug vendors, which comprised about 27% of the total antimalarial market share. These itinerant drug vendors tend to have some sort of health qualification such as nursing or medical training and have operated as medicine vendors for the past decade.

In 2015, over 90% of all antimalarials distributed in Cambodia were ACTs, with chloroquine comprising only 5% of the market share and sold only in the private sector. The market share trends reflect substantial improvements from data collected in 2009, which showed that only 72% of the antimalarials distributed were ACTs and 6% of the market volume was comprised of oral artesiminin monotherapy. However, in 2010, changes to the first-line treatment, coupled with challenges procuring the new treatment, led to a drop in ACT market share between 2009 and 2011. This recovered in 2013, but demonstrates the susceptibility of markets and the need to rapidly respond to changing treatment guidelines.
The median price of mRDT tests among private sector outlets in 2015 ranged between $0.75- $0.99. DHA-PPQ, the first-line treatment, was more expensive than mRDTs across all private sector outlet types. The median price of an AETD DHA-PPQ ranged from $1.24-$2.24. This suggests that there may be a financial incentive for a patient to request testing, given that the price of an mRDT is lower than that of the first-line treatment.

The private sector is responsible for the majority of malaria testing (58%), and most malaria testing (nearly 90%) is conducted using mRDTs rather than microscopy. Among public health facilities with malaria testing available, the median number of tests performed in the week preceding the survey was 4, suggesting that, at least during the study period, facilities tend to perform malaria tests on a weekly basis. In the private sector, availability of malaria testing was variable, though national guidelines stipulate that all febrile patients should receive a confirmatory test. While availability of malaria tests was universal in the public sector, four in five private for-profit facilities and 70% of itinerant drug vendors had malaria testing available, both of which play an important role in the distribution of antimalarials.

The study also showed the extent to which private sector providers have received training and supervision and routinely report on caseload data. Only 20% of private sector outlets stocking antimalarials or malaria diagnostics reported receiving a supervisory or regulatory visit within the past year, and around 35% of private for-profit facilities and 18% of pharmacies record and report malaria caseload data into national systems. Many of the private providers reported receiving subsidized or free ACTs and RDTs.

In summary, results from the 2015 outlet survey are promising, with most of the antimalarials distributed being first line ACT treatment, very little chloroquine, and no oral artemisinin monotherapy. With an increased focus on regulation of the private sector, evidence that few private for-profit facilities and pharmacies report on national caseload data points to the need to further engage with these outlets. This is particularly important given that, currently, private for-profit facilities play a relatively large role in antimalarial distribution. In addition, given the need to test all febrile patients, there is merit to ensure universal coverage of mRDTs in the private sector as a means of adhering to national guidelines. The role of the itinerant drug vendor also needs to be further explored, given that this is also a source of malaria treatment for many patients in Cambodia. Results also show strong readiness in the public sector to test and appropriately treat malaria cases, given high availability of both ACTs and malaria diagnostics.
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Vuth Yun
WHAT IS ACTWATCH?
ACTwatch is a multi-country research project designed to provide timely, relevant, and high quality antimalarial market evidence. Launched in 2008 with funding from the Bill and Melinda Gates Foundation, it is currently implemented in 13 countries with additional funding from UNITAID and the DFID. Standardized tools and approaches are employed to provide comparable data across countries and over time.

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