



Outlet Survey: Baseline Study
The Republic of the Union of Myanmar
2012 Survey Report



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General Definitions

Term	Definition
Adult Equivalent Treatment Dose (AETD)	An AETD is the number of milligrams (mg) of an antimalarial drug needed to treat a 60 kg adult.
Antimalarial	Any medicine recognized by the WHO for the treatment of malaria. Medicines used solely for the prevention of malaria were excluded from analysis in this report.
Antimalarial combination therapy	The simultaneous use of two or more drugs with different modes of action to treat malaria.
Artemisinin-based Combination Therapy (ACT)	An antimalarial that combines artemisinin or one of its derivatives with an antimalarial or antimalarials of a different class. Refer to Combination Therapy (below).
Artemisinin monotherapy	An antimalarial medicine that has a single active compound, where this active compound is artemisinin or one of its derivatives.
Artemisinin and its derivatives	Artemisinin is a plant extract used in the treatment of malaria. The most common derivatives of artemisinin used to treat malaria are artemether, artesunate, and dihydroartemisinin.
Censused cluster	A cluster where field teams conducted a full census of all outlets with the potential to sell antimalarials.
Cluster	The primary sampling unit, or cluster, for the outlet survey is an administrative unit determined by the Myanmar Information Management Unit that hosts a population size of approximately 1,000 to 13,000 inhabitants. In Myanmar, these units are defined as wards and village tracts. Wards are in the urban areas and village tracts which comprise of a group of villages in rural areas.
Combination therapy	The use of two or more classes of antimalarial drugs/molecules in the treatment of malaria that have independent modes of action.
Dosing/treatment regimen	The posology or timing and number of doses of an antimalarial used to treat malaria. This schedule often varies by patient weight.
Enumerated Outlets	Outlets that were visited by a member of the field teams and for which, at minimum, basic descriptive information was collected.
First-line treatment	The government recommended treatment for uncomplicated malaria. Myanmar's first-line treatment for malaria is artemether-lumefantrine (AL) 20mg/120mg. <i>AL</i> , <i>Coartem</i> , <i>Coartem Dispersible</i> , <i>Lumartem</i> and <i>Artefan</i> are first-line treatment brands for malaria in Myanmar.

Monotherapy	An antimalarial medicine that has a single mode of action. This may be a medicine with a single active compound or a synergistic combination of two compounds with related mechanisms of action.
Nationally registered ACTs	ACTs registered with a country's national drug regulatory authority and permitted for sale or distribution in-country. Each country determines its own criteria for placing a drug on its nationally registered listing.
Non-artemisinin therapy	An antimalarial treatment that does not contain artemisinin or any of its derivatives.
Outlet	Any point of sale or provision of a commodity to an individual. Outlets are not restricted to stationary points of sale and may include mobile units or individuals. Refer to the annex for a description of the outlet types visited for this survey.
Oral artemisinin monotherapy	Artemisinin or one of its derivatives in a dosage form with an oral route of administration. These include tablets, suspensions, and syrups and exclude suppositories and injections.
Rapid-Diagnostic Test (RDT) for malaria	A test used to confirm the presence of malaria parasites in a patient's bloodstream.
Screened	An outlet that was administered the screening questions of the outlet survey questionnaire (see Screening criteria).
Screening criteria	The set of requirements that must be satisfied before the full questionnaire is administered. In this survey an outlet met the screening criteria if (1) they had antimalarials in stock at the time of the survey visit, or (2) they report having stocked them in the past three months.
Second-line treatment	The government recommended second-line treatment for uncomplicated malaria. Myanmar's second-line treatments for malaria include all oral dosage forms of: Artesunate + Doxycycline Artesunate + Tetracycline Artesunate + Clindamycin
Treatment/dosing regimen	The timing and number of doses of an antimalarial used to treat malaria. This schedule often varies by patient weight.

Classification of ACTs

Quality assured ACTs (QAACT)	<p>A quality-assured product must be WHO pre-qualified and/or authorized for marketing by a Stringent Drug Regulatory Authority. Products that have not yet been WHO pre-qualified or approved by a Stringent Drug Regulatory Authority must be evaluated and recommended for use by an independent panel of technical experts hosted by World Health Organisation's Department for Essential Medicines and Pharmaceutical Policies (GFATM, 2010). Quality assured ACTs comply with the Quality Assurance Policy of the Global Fund to Fight AIDS, Tuberculosis and Malaria.</p> <p>Brands included in this category and audited during data collection are:</p>
First-line quality assured ACTs (FAACT):	<p>Government recommended first-line treatments for uncomplicated malaria that appear on the WHO list of approved ACTs or the UNICEF procurement list.</p> <p>Brands included in this category and audited during data collection are:</p>
Non first-line quality assured ACTs (NAACT):	<p>ACTs that are <u>not</u> the government's recommended first-line treatment for uncomplicated malaria, but which do appear on the WHO list of approved ACTs or the UNICEF procurement list.</p> <p>Brands included in this category and audited during data collection are:</p>
Other ACTs	<p>ACTs that appear on neither the WHO list of approved ACTs or the UNICEF procurement list. This includes all audited brands of ACTs not included in the other two ACT categories:</p>
	<p>Arco Artescospe (Adults) Duo-Cotecxin Co-Artesun D-Artepp Artemodi (Adults/Children) Quinsunat Macsunate FD (kid) Arflo Quin Lumiter Artecom</p>

Other ACT classifications

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. . Brands included in this category and audited during data collection are: Artefan Artemeter 20mg, Lumefantrine 120mg Coartem Tablet Lumiter Uncoated Duo-Cotecxin Artemodi (Adults/Children) Arflo Quin Lumiter
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List of Abbreviations

--	No data was available
***	Undefined ratio as a non-zero value is being divided by a value of zero
ACT	Artemisinin-based Combination Therapy
AETD	Adult Equivalent Treatment Dose
AL	Artemether-Lumefantrine
AMFm	Affordable Medicines Facility – malaria
AMTR	Artemisinin Monotherapy Replacement Project
ASAQ	Artesunate Amodiaquine
CHW	Community Health Worker
CI	Confidence interval
CQ	Chloroquine
DHS	Demographic and Health Survey
FAACT	First-line Quality Assured ACT
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GPS	Global Positioning System
IQR	Inter-Quartile Range
LLIN	Long Lasting Insecticidal Net
LSHTM	London School of Hygiene and Tropical Medicine
MOH	Ministry of Health
n/a	Not applicable: Indicates statistic cannot be calculated as the numerator is zero
NAACT	Non-first line quality Assured ACT
NGO	Non-governmental Organization
NMCP	National Malaria Control Program
PPS	Probability Proportional to Size
PSI	Population Services International
QAACT	Quality Assured ACT
RDT	Rapid Diagnostic Test
SP	Sulfadoxine-Pyrimethamine
UNICEF	United Nations Children’s Fund
WHO	World Health Organization

Executive Summary

Overview

Financing for malaria control has increased substantially over the last decade, facilitating significant progress towards international targets for prevention and treatment. Increased coverage of at-risk populations with vector control as well as effective case management with artemisinin combination therapy (ACT) is contributing to substantial reductions in malaria cases and deaths. The spread of artemisinin resistance in *P. falciparum* malaria parasites would threaten recent malaria control progress across endemic countries.

Factors believed to be contributing to emerging drug resistance include the unregulated sale of artemisinin monotherapies; limited access to ACTs; co-blistered ACTs that are not co-formulated (facilitating continued use of artemisinin monotherapy); and ubiquitous counterfeit and substandard drugs. Serious efforts to contain drug resistance are currently underway along the Cambodia-Thai border.

The MARC is a comprehensive set of interventions, including prevention programs, increased testing and treatment through public and non-governmental providers, and replacement of artemisinin monotherapy in the private sector with ACT. PSI has received funding from UK Department for International Development (DFID), the Bill and Melinda Gates Foundation (BMGF) and Good Ventures, for Artemisinin Monotherapy Replacement Malaria Project (AMTR) for 3 years, to contribute to the goal of the Myanmar Artemisinin Resistant Containment program (MARC). Within the MARC framework, PSI will work with private sector suppliers and providers throughout Myanmar to rapidly replace widely available artemisinin monotherapy with highly subsidized, quality assured ACTs. Broad reaching behavior change communications (BCC) targeting both consumers and providers will support supply chain activities and together will halt the spread of artemisinin resistance in the region.

The objective of the outlet survey is to monitor levels and trends in the availability, price and volumes of antimalarials, and providers' perceptions and knowledge of antimalarial medicines at different outlets. Price and availability data on diagnostic testing services is also collected.

To conduct this outlet study PSI/Myanmar adapted the *ACTwatch* Outlet Survey, one of the components of the *ACTwatch* project. This report presents the results of a cross-sectional survey of outlets conducted in Myanmar from March to May 2012.

A nationally representative sample of all private outlets with the potential to sell or provide antimalarials to a consumer was taken through a census approach in 61 wards in the urban domain and 65 village tracts in the rural domain, giving a total of 122 wards and 130 village tracts across Myanmar including both the project intervention and control areas. The cluster was defined as wards in urban and village tract in rural areas. Sampling was conducted using a two-stage probability proportion to size (PPS) cluster design, with the measure of size being the relative cluster population.

The inclusion criteria for this study were outlets that stocked an antimalarial at the time of survey or had stocked antimalarials in the previous three months. An outlet is defined as any point of sale or provision of commodities for individuals. Outlets included in the survey are as follows: 1) private health facilities, private clinics (may or may not be affiliated with a franchise network) and hospitals; 2) registered pharmacies; 3) itinerant drug vendors (hawkers); 4) general retailers (village stores, groceries, and general stores); and 5) community health workers providing treatment outside of the

public health facilities. Please refer to the appendices for definitions and numbers of each type of outlet included in the analysis.

Three questionnaire modules were administered to participating outlets: 1) a screening module, 2) an audit module (antimalarial audit sheets and RDT audit sheets), and 3) a provider module. For all outlets, trained interviewers administered the screening module to collect information on the outlet type and location, and information on availability of antimalarials. Among those outlets that stocked antimalarials at the time of survey, the audit module was administered. For each antimalarial, information was recorded on the brand and generic names, strength, expiry, amount sold in the last week and price to the consumer. Among outlets that stocked antimalarials at the time of interview or in the past three months, the interviewer collected information on provider demographics, knowledge, perceptions, and medicine storage conditions using the provider module.

Several validation and data checking steps occurred during and after data collection. Double data entry was conducted using a CSPro database system designed with in-built checks for consistency and range values. Verification of the first and second entries was done and corrections on mismatched records done until a final verified data was achieved.

Data analysis was conducted in Stata 11.0 (Stata Corp College Station, TX) and included descriptive summaries and comparisons between urban and rural, and intervention and controls areas.

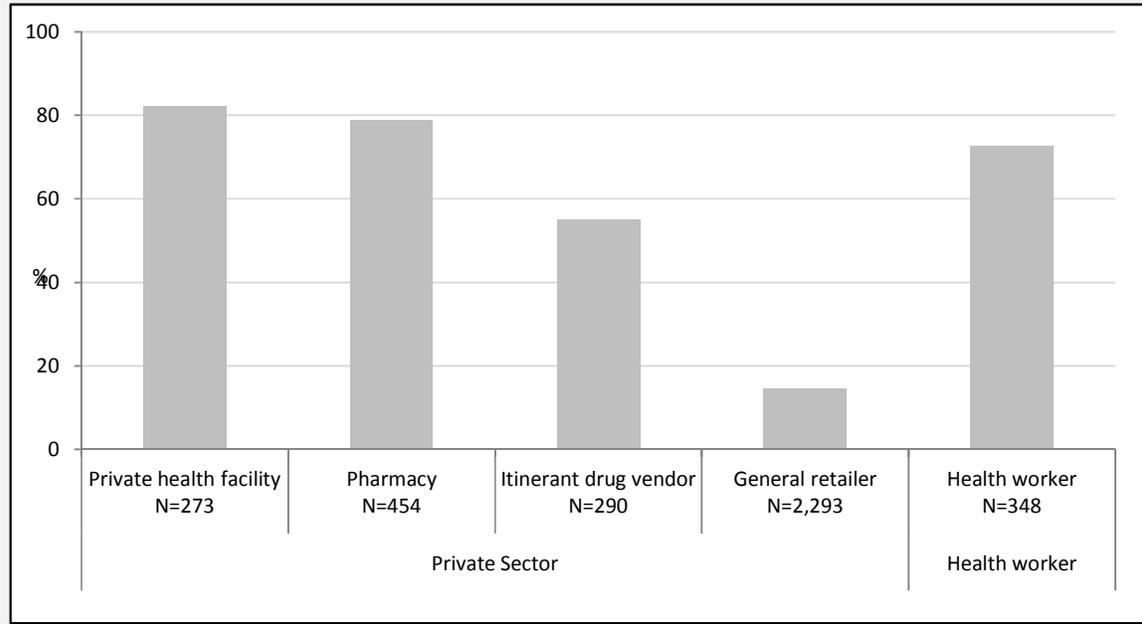
Key findings

Data collection ran from the 1st March 2012 to 30th May 2012. A total of 3,746 outlets were approached for inclusion in the study. 88 outlets were not screened for various reasons, including temporarily closure of outlet and no appropriate person available for interview, and the remaining 3,658 outlets were screened. Among the 3,658 outlets, 1,359 were found stocking any antimalarials on the day of interview (1256) or had stocked in the past 3-months (103). However, 85 outlets were not interviewed for reasons such as no appropriate person available for interview or inconvenient time for the full interview (53), not open at the time of return visits (10), and refused to participate (22). A total of 1,274 outlets completed interviews: 92 outlets reported having stocked antimalarials at any point in the three months period prior to the interview and 1,182 outlet reported stocking antimalarials at the time of the interview.

AVAILABILITY OF ANY ANTIMALARIAL:

On the day of interview 32% of outlets screened reporting having at least one antimalarial in stock, including 82% of private health facilities, 79% of pharmacies, 55% of itinerant drug vendors, 15% of general retailers and 73% of health workers. Availability was relatively low among general retailers (village stores, grocery stores) though they are the most numerous outlet types in the census.

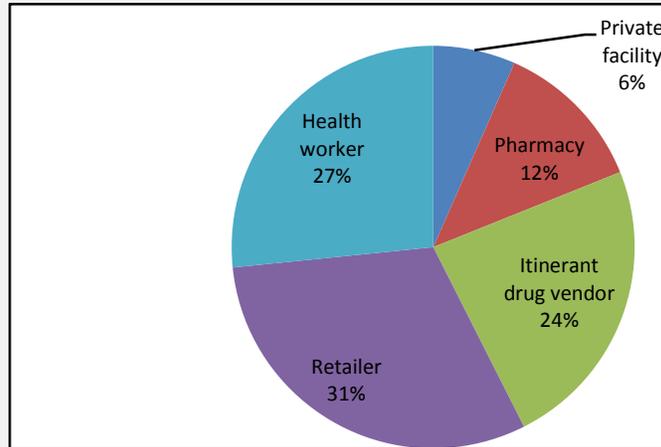
Figure 1. Availability of antimalarials by outlet type



OUTLET TYPES STOCKING ANTIMALARIALS:

On the day of interview 1256 outlets were found to stock at least one antimalarial. Figure 2 shows the relative distribution of outlets that had at least one antimalarial in stock on the day of interview. General retailers topped the list, followed by health workers.

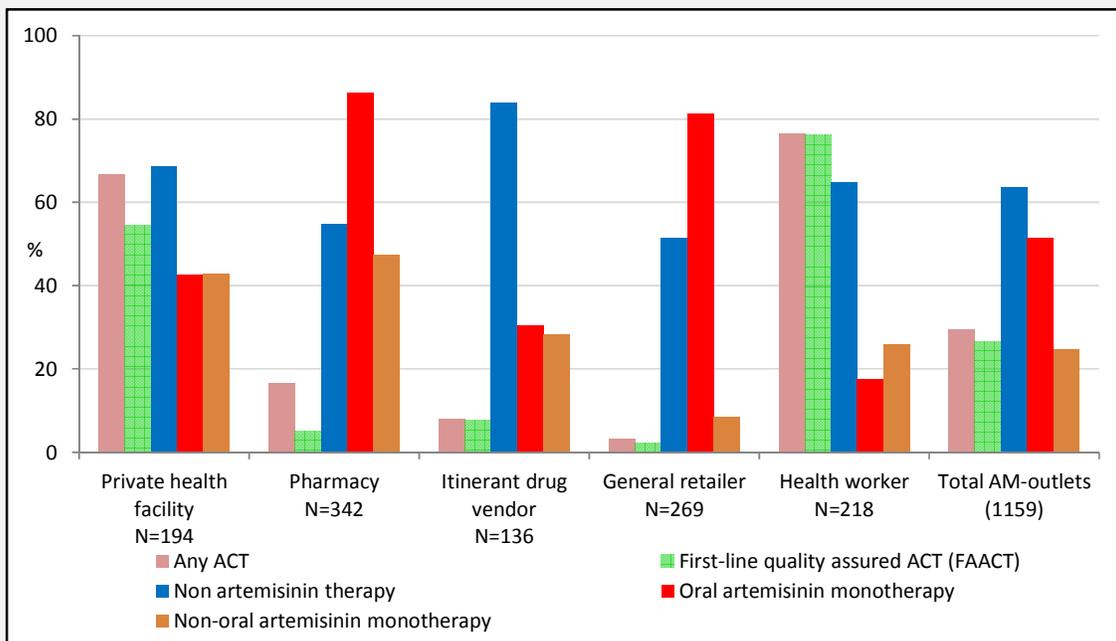
Figure 2. Relative distribution of outlet types stocking antimalarials



AVAILABILITY OF DIFFERENT CLASSES OF ANTIMALARIALS:

Among outlets stocking antimalarials on the day of interview patterns of antimalarial availability differed by type of outlet. In two categories of outlets - private health facility and health worker - availability of any ACT was relatively high. These two outlet types usually charge the consumer a consultation fee in addition to the drug cost. Pharmacies and general retailers rarely stocked ACT but very high proportion of pharmacies (85%) and general retailers (80%) stocked oral artemisinin monotherapy. Health workers reported the highest stock of first-line quality assured ACT (FAACT) (76%). Among itinerant drug vendors non-artemisinin therapy was the most commonly stocked class of antimalarials (83%), while fewer than 1 in 10 stocked any ACT.

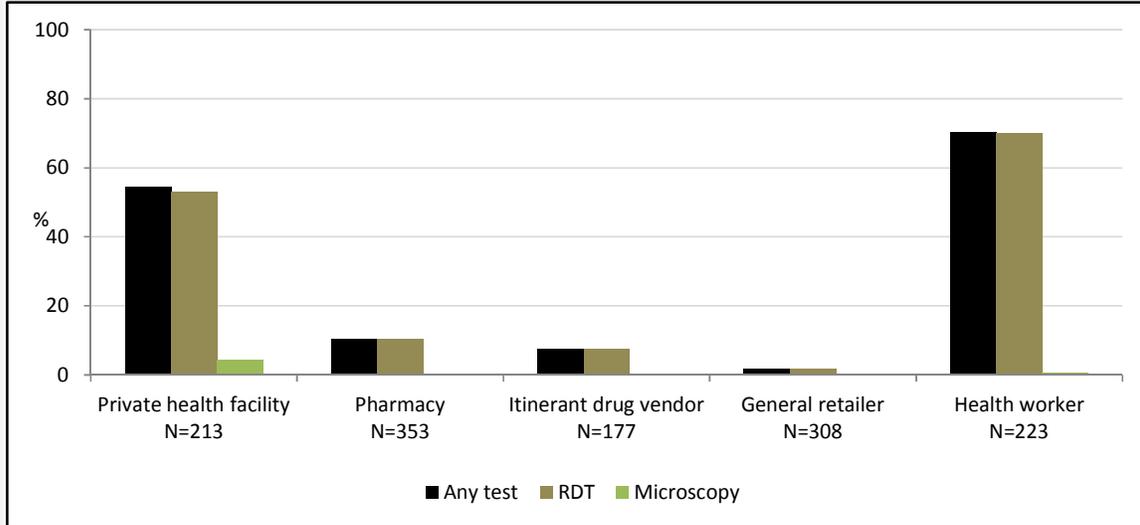
Figure 3. Availability of antimalarials, among outlets with at least one antimalarial in stock



AVAILABILITY OF DIAGNOSTIC BLOOD TESTING:

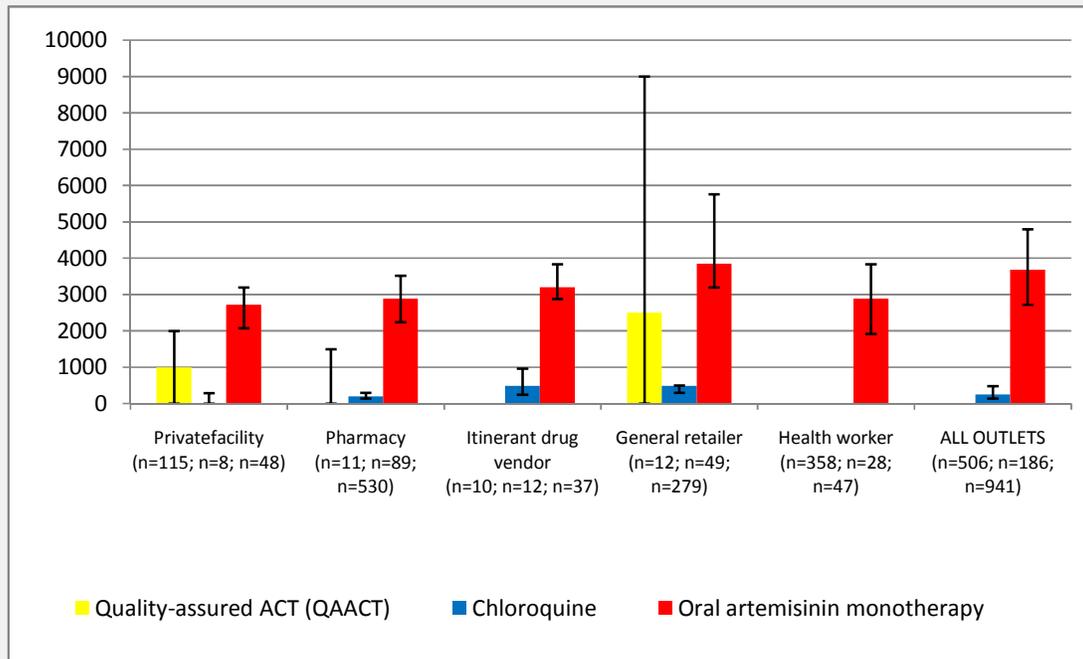
Among outlets stocking antimalarials in the past three months, availability of diagnostic blood testing facilities was low (figure 4) except among health workers (70%) and private health facilities (54%). Microscopic testing was rare; only 4% of private health facilities reported have microscopic testing available.

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



PRICE OF ANTIMALARIALS: At the time of data collection health workers [n=219] reported providing QAACT and chloroquine free of charge. The median price of one course of adult equivalent treatment dose of QAACT in private health facilities was [n=115] 1,000 Kyats and 2,500 Kyats in general retailers. Very few pharmacies and itinerant drug vendors stocked ACT and median price was not available from them.

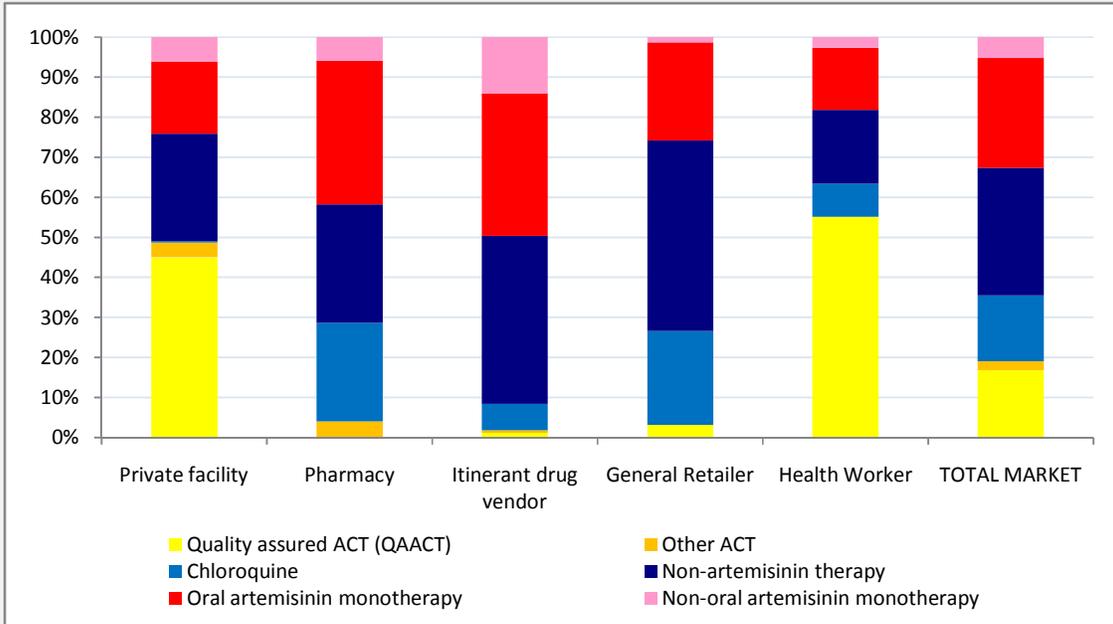
Figure 5. Median price of an AETD antimalarial treatment in the private sector



VOLUMES OF ANTIMALARIALS SOLD/ DISTRIBUTED:

Figure 6a shows the market share of different antimalarial classes sold/distributed in the 7 days before the survey, within each outlet type. Overall, private sector market share was dominated by oral artemisinin monotherapy (33%) and non-artemisinin therapies (38%). The private sector market share for ACT was 23%. Oral artemisinin monotherapy market share ranged from 17% (health worker) to 48% (pharmacy) and was present in all outlet types. In contrast quality assured ACTs only comprised substantial fractions of the market share in private health facilities and among health workers.

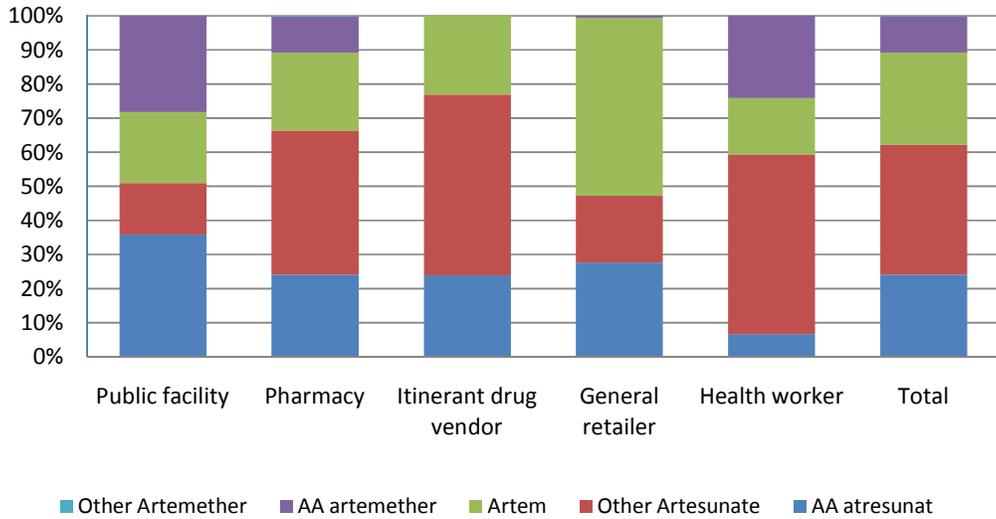
Figure 6. Market share of AETDs sold/distributed in the past week (7 days) within each outlet type



DISTRIBUTION OF MARKET SHARE OF ORAL ARTEMISININ MONOTHERAPY, BY BRAND:

Figure 6b presents the market share of different oral artemisinin monotherapy sold/distributed in the 7 days before the survey, within each outlet type. Artesunate and Artemether had roughly 60% and 40% market share. AA Artesunate (24%) and AA Artemether (10%) distributed by AA Medical Products Co. Ltd together captured 34% of the share of oral artemisinin monotherapy market.

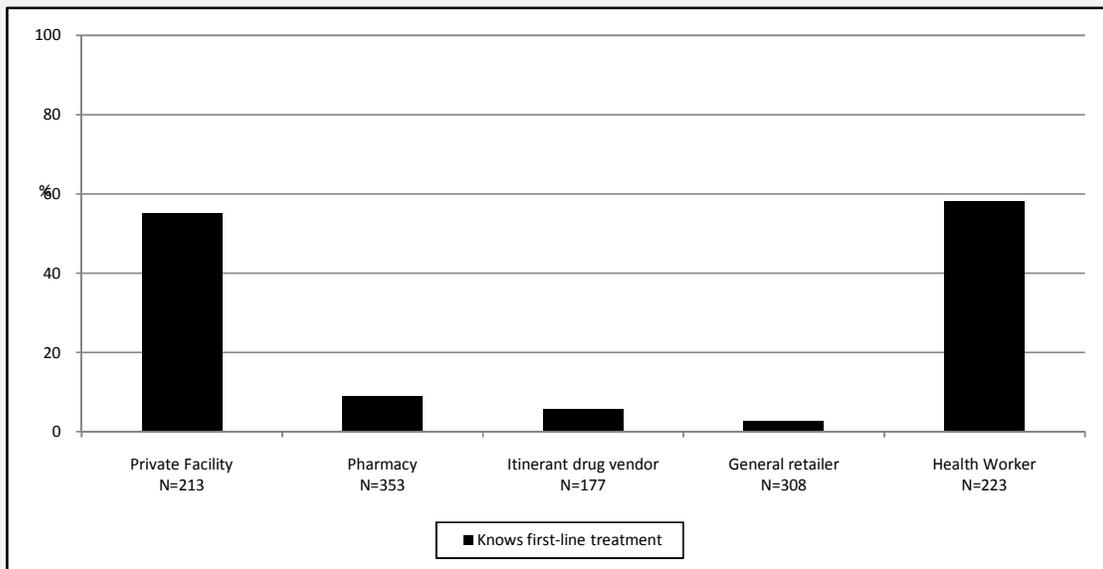
Figure 7. Oral artemisinin monotherapy market share within outlet types, by brand



PROVIDER KNOWLEDGE:

Overall, 22% of providers interviewed were able to correctly state AL as the recommended first-line treatment for uncomplicated malaria in Myanmar. Providers in private facilities and health workers reported significantly higher knowledge than the retailers in pharmacies or itinerant drug vendors or general stores.

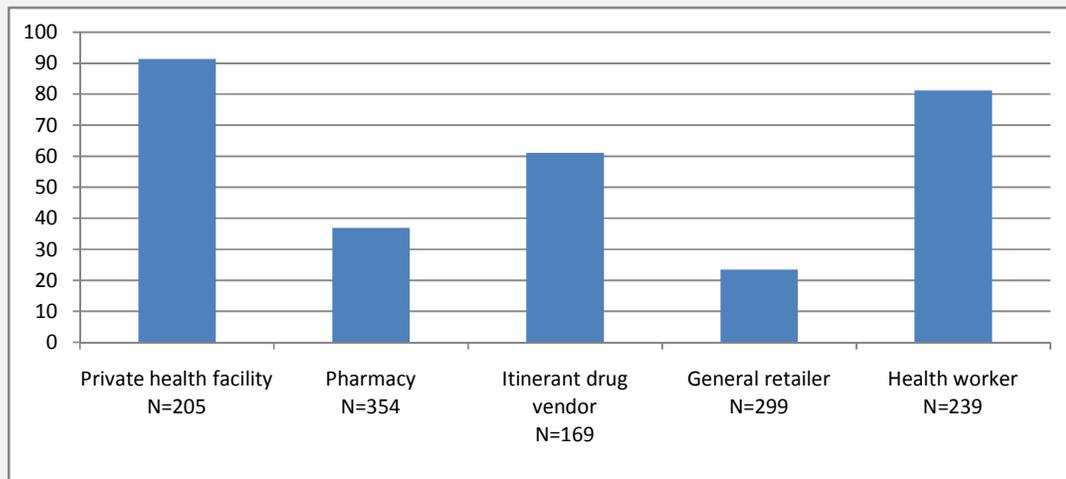
Figure 8. Provider knowledge of recommended first-line treatment and dosing regimens



PROVIDER PRACTICE:

The practice of cutting the strip and selling partial pack or individual tablets is more common at pharmacies and general stores. Over 90% of the private health facilities and 80% of health workers reported that they did not cut out blisters or sell partial doses.

Figure 9. Provider's practice of not cutting blisters or selling partial packs in last month



Background

Overview of the Research Project

Artemisinin resistance

Financing for malaria control has increased substantially over the last decade, facilitating significant progress towards international targets for prevention and treatment. Increased coverage of at-risk populations with vector control as well as effective case management with artemisinin combination therapy (ACT) is contributing to substantial reductions in malaria cases and deaths. The spread of artemisinin resistance in *P. falciparum* malaria parasites would threaten recent malaria control progress across endemic countries. Alternative antimalarial medicines with equivalent levels of efficacy are not expected to become available for at least seven to eight years.

P. falciparum resistance to artemisinin derivatives has already begun to emerge; the first case was confirmed in Cambodia, near the Thai border (Pailin province) in 2009. There is now evidence of artemisinin-resistant *P. falciparum* parasites in southern Myanmar and along the Chinese-Myanmar border. This pattern is alarming as it follows previous patterns of global diaspora of antimalarial drug resistance (e.g. chloroquine resistance).

Factors believed to be contributing to emerging drug resistance include the unregulated sale of artemisinin monotherapies; limited access to ACTs; co-blistered ACTs that are not co-formulated (facilitating continued use of artemisinin monotherapy); and ubiquitous counterfeit and substandard drugs. Serious efforts to contain drug resistance are currently underway along the Cambodia-Thai border. However, unless artemisinin resistant malaria is also contained in Myanmar, there is a real threat that resistant strains will develop and spread to sub-Saharan African. This represents an imminent threat to Roll Back Malaria and Millennium Development Goal targets, potentially undermining years of progress in malaria control and placing millions of lives at risk.

The Myanmar Artemisinin Resistance Containment Program (MARC)

To tackle this problem, Myanmar has developed the Myanmar Artemisinin Resistance Containment Framework (MARC) which is a comprehensive set of interventions, including prevention programs, increased testing and treatment through public and non-governmental providers, and replacement of artemisinin monotherapy in the private sector with ACT. PSI has received funding from DFID and BMGF for Artemisinin Monotherapy Replacement Malaria Project (AMTR Project) for 3 years to contribute the goal of MARC. Within the MARC framework, PSI will work with private sector suppliers and providers throughout Myanmar to rapidly replace widely available artemisinin monotherapy with highly subsidized, quality assured ACTs. Broad reaching behavior change communications (BCC) targeting both consumers and providers will support supply chain activities and together will halt the spread of artemisinin resistance in the region.

Study context: Malaria in Myanmar

Myanmar accounts for most of the malaria burden found in the Greater Mekong sub-region. Factors contributing to high malaria burden include: 1) a relatively large population living in or near forested areas; 2) poor health services, especially in rural areas; and 3) low investment in malaria control compared to neighboring countries. Out of the estimated 55.4 million people in Myanmar, 40 million live in malaria endemic areas, and 17 million live in particularly high transmission zones. The estimated annual number of malaria cases is 4.5 million. The highest risk of artemisinin resistance is confined to the eastern part of Myanmar.

The early and correct treatment of malaria in Myanmar is constrained by limited access to high quality, affordable health care, diagnostics and drugs. The private sector is well-placed to address the

problems of access to malaria treatment as this sector has been the first place that the majority of the population turns to for fever treatment. Additionally, private sector outlets continue to operate with complete access, despite political or environmental changes in the country. However, the current standard practice in the private sector in Myanmar is often to treat suspected malaria with an incomplete course of artemisinin monotherapy – absolutely the worst intervention in terms of controlling the spread of drug resistance. Treatments are often sold by the tablet rather than by the full course, and typical dosages consist of 2-3 tablets if artemisinin monotherapy is dispensed. Sale of incomplete courses is driven primarily by the prohibitive costs of a full course treatment.

The private market for malaria treatment in Myanmar is highly centralized. A rapid supply chain assessment conducted by PSI found that one company, AA Pharmaceuticals, dominates the market and accounts for at least 70% of national sales. AA Pharmaceuticals provides AA Artesunate, a monotherapy that was found to be the most common drug found at all levels of the supply chain.

Study site: Eastern Myanmar

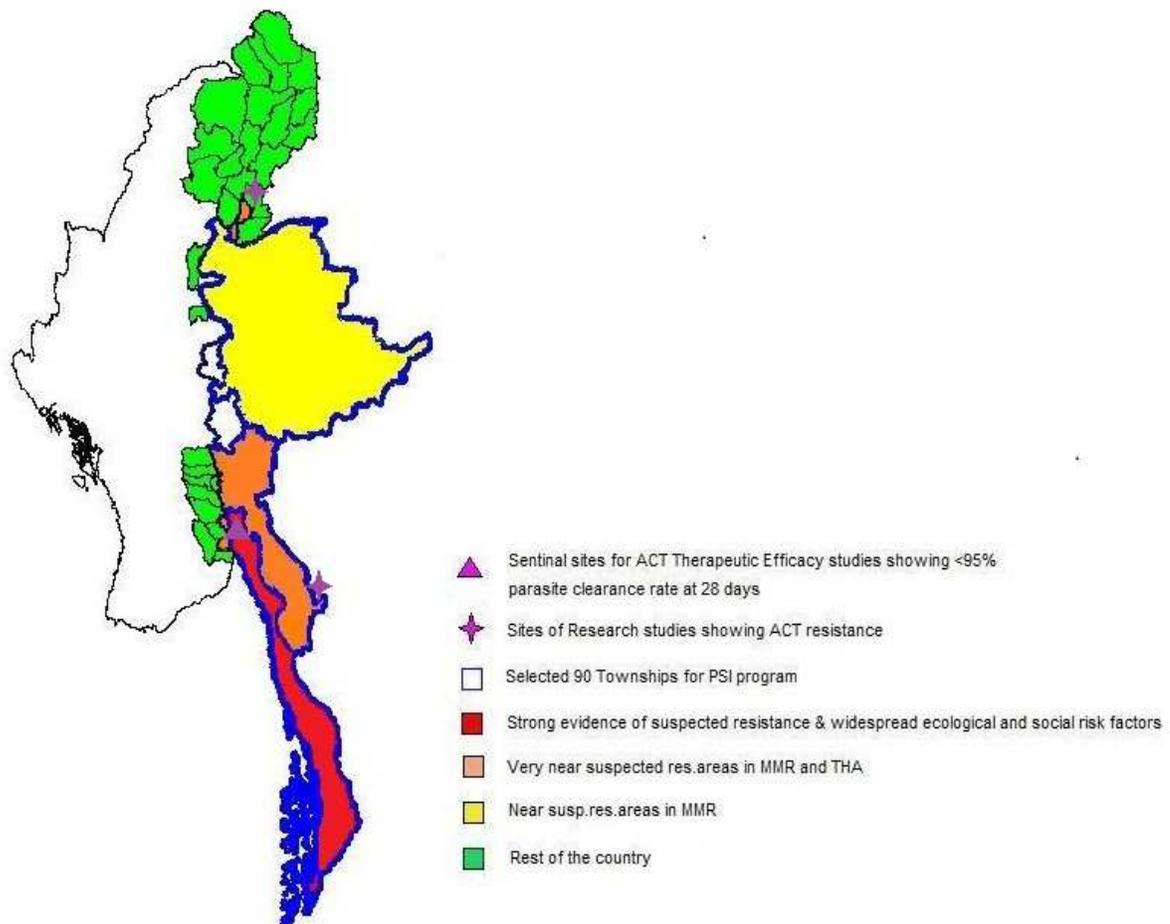
Out of 55.4 million people in Myanmar, 40 million live in malaria endemic areas, with 17 million residing in particularly high transmission zones in forest or forest-fringe habitats (where the most efficient mosquito vectors thrive). The highest risk of artemisinin resistance is confined to the eastern part of Myanmar. These are the areas with highest malaria burden as well. Therefore, PSI/Myanmar’s intervention will focus in 92 townships (List of townships is attached in Annex) located in the eastern border of Myanmar, which together have an estimated population of 10 million people (Fig 1). Besides, in Myanmar, the risk of malaria is related to: short and long-term population mobility for economic pursuits, and eastern part of Myanmar, particularly Thai-Myanmar border (Mon and Kayin State) has the highest migrant population.

The geographical area of eastern Myanmar with the highest burden of disease includes areas of the country that are hard to reach and often politically sensitive. These combined factors cause constant changes in accessibility. Based on key informant interviews and implementing partners who are working in the areas, about 51 townships where around 38% of population is residing is inaccessible due to security reason, and those areas will be excluded from the study.

Table 1: Townships selected for MARC project

No.	State/Division	Accessible		Inaccessible		Total	
		Tsp	Pop	Tsp	Pop	Tsp	Pop
1	Ta Nin Tar Yi	10	1,646,224	0	0	10	1646224
2	Kayah	0	0	7	288,919	7	288919
3	Kayin	1	501451	6	1036002	7	1537453
4	Mon	9	1,778,653	0	0	9	1778653
5	Kachin	0	0	15	988,692	15	988692
6	Shan (North)	11	1435698	10	835033	21	2270731
7	Shan (East)	5	477612	7	234481	12	712093
8	Shan (South)	4	275567	6	365492	10	641059
9	Mandalay	1	111,228	0	0	1	111228
	Total	41	6,226,433	51	3,748,619	92	9,975,052

Figure 1: Map showing PSI/Myanmar's project area



Intervention description

PSI has engaged the major private sector supplier of artemisinin monotherapy, AA Pharmaceuticals, in an agreement to purchase highly subsidized, pre-packaged, quality-assured ACTs from PSI. This is expected to rapidly replace artemisinin monotherapy in at least 70% of all private sector malaria treatment providers in Myanmar. Approximately 9 million courses of ACT will be sold through AA Pharmaceuticals over three years. PSI will complement this with a BCC campaign targeting providers and consumers in high-risk eastern border areas. Communications will focus on the importance of testing and the need to complete a full course of ACT.

As ACTs become widely promoted and accessible, ACT treatment for fever is expected to increase among people living in project areas. The proportion of malaria cases treated with artemisinin monotherapy in target areas is expected to decline to less than 10% in year 2 of the project. As a result, parasite clearance rates at sentinel sites will hold steady or improve, indicating no spread of resistance.

In 2008, Population Services International (PSI) in partnership with the London School of Hygiene and Tropical Medicine (LSHTM) launched a five-year multi-country research project called *ACTwatch*. The

project is designed to provide a comprehensive picture of the antimalarial market to inform national and international antimalarial drug policy evolution.

The methods used to measure availability, market share and price of ACTs and monotherapies for the *ACTwatch* program, were then used for the independent evaluation of the AMFm project and will continue to be used for the second phase of the *ACTwatch* program. These methods are being employed here to monitor expected changes in the availability of ACTs among private sector outlets in Myanmar as a result of the AMTR project. The survey will be repeated in July/August 2013, with findings reported by January 2014.

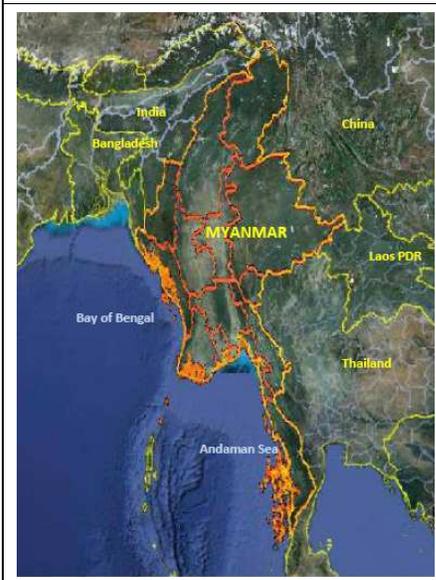
This report presents the results of a cross-sectional survey of outlets conducted in eastern Myanmar between March and May 2012.

Country background

Overview of the country

Myanmar, the largest country in mainland South-East Asia with a total land area of 676,578 square kilometers, stretches 2200 kilometers from north to south and 925 kilometers from east-west at its widest point. It is approximately the size of France and England combined. It is bounded on the north and north-east by the People's Republic of China, on the east and south-east by the Lao People's Democratic Republic and the Kingdom of Thailand, on the west and south by the Bay of Bengal and Andaman Sea, on the west by the People's Republic of Bangladesh and the Republic of India.

Figure 10. Location of Myanmar



The population of Myanmar in 2010-2011 is estimated at 59.78 million with the growth rate of 1.1 percent. About 70 percent of the population resides in the rural areas, whereas the remaining are urban dwellers. The population density for the whole country is 88 per square kilometers.

The Republic of the Union of Myanmar is made up of (135) national races speaking over 100 languages and dialects. The major ethnic groups are Kachin, Kayah, Kayin, Chin, Bamar, Mon, Rakhine, Shan and there are 12, 9, 11, 53, 9, 1, 7, 33 races respectively in each group.

The current health situation in Myanmar is needed to scale up all three dimensions in terms of breadth, depth and height. According to the National Health Accounts data (2008 and 2009), health expenditures by financing agents taken into account for: Ministry of health 10%, other Ministries 0.8% to 0.9%, social security board 0.15%, private household out of pocket 82% to 85% and Nonprofit

Institutions serving household 4% to 6%.

Malaria remains a leading cause of morbidity and mortality in Myanmar. Considerable progress has been made over the past 20 years in reducing the burden. However, the disease is still a priority public health problem in the country. It is a re-emerging public health problem due to climatic and ecological changes, population migration, development of multi-drug resistant *P.falciparum* parasite, development of insecticide resistant vectors and changes in behavior of malaria vectors. Drug resistant malaria has been detected along the international border areas particularly Myanmar Thai border and in some pocket areas in other parts of the country. Emerging of resistance of *Plasmodium falciparum* to artemisinin in Mon State, Tanintharyi and Bago Regions is seriously threatening the progress in malaria control.

Myanmar Health Care System¹

Myanmar health care system evolves with changing political and administrative system and relative roles played by the key providers are also changing although the Ministry of Health remains the major provider of comprehensive health care. It has a pluralistic mix of public and private system both in the financing and provision. Health care is organized and provided by public and private providers.

In implementing the social objective laid down by the State, and the National Health Policy, the Ministry of Health is taking the responsibility of providing promotive, preventive, curative and rehabilitative services to raise the health status of the population. Department of Health one of 7 departments under the Ministry of Health plays a major role in providing comprehensive health care throughout the country including remote and hard to reach border areas. Some ministries are also providing health care for their employees and their families. They include Ministries of Defense, Railways, Mines, Industry, Energy, Home and Transport. Ministry of Labour has set up three general hospitals, two in Yangon and the other in Mandalay to render services to those entitled under the social security scheme. Ministry of Industry is running a Myanmar Pharmaceutical Factory and producing medicines and therapeutic agents to meet the domestic needs. The private, for profit, sector is mainly providing ambulatory care though some providing institutional care has developed in Yangon, Mandalay and some large cities in recent years. Funding and provision of care is fragmented.

Antimalarial Policies and Regulatory Environment

The Myanmar Artemisinin Containment (MARC) framework was developed through extensive consultation process during mid 2010 – early 2011, which is in line with WHO Global Plan of Artemisinin Resistance Containment (GPARC). MARC framework was endorsed in April 2011 and the National Malaria Control Program (NMCP) together with implementing partners initiated immediate containment actions in July 2011. Aims and objectives of the National Malaria Control Program are reduction of malaria morbidity and mortality by 50% of the level in 2000 by 2010 and to achieve MDG by 2015 (To achieve MDG Goal 6 Target 8 - have halted by 2015, and began to reverse the incidence of malaria and other major diseases). The major approaches are (i) increasing accessibility to quality diagnosis and appropriate treatment according to national treatment guideline and (ii) scaling up the LLIN (Long Lasting Insecticidal Nets) and ITN (Insecticide Treated Net) program throughout the country. These major approaches are supported by Information, Education and Communication program and strengthening of health system through capacity building and program management.

¹ Health in Myanmar 2012, Report of the Department of Health of the Republic of the Union of Myanmar

National Malaria Control strategies:

- Prevention and control of malaria by providing information, education and communication up to the grass root level
- Prevention and control of malaria by promoting personal protective measures and/or by introducing environmental measures as principle methods and application of chemical and biological methods in selected areas depending on local epidemiological condition and available resources
- Prevention, early detection and containment of epidemics
- Provision of early diagnosis and appropriate treatment
- To promote capacity building and program management of malaria control program (human, financial and technical)
- To strengthen the partnership by means of intrasectoral and intersectoral cooperation and collaboration with public sector, private sector, local and international non-governmental organizations, UN agencies and neighboring countries
- To intensify community participation, involvement and empowerment
- To promote basic and applied field research

Methods

Sampling

The target sampling units of the outlet survey was all types of private outlets that sold or provided antimalarials. The outlets were classified into:

- Private Health facility (including private hospital, poly clinic, general practitioner's clinic);
- Health Workers providing treatment outside the public health facilities (Retired or currently employed nurses, midwives, other community health workers and Sun Primary Health workers are included);
- Pharmacy;
- Itinerant drug vendor (Informal health providers and travelling or mobile drug suppliers); and
- General retailer (General store, villages stores and groceries)

A cluster sampling approach was adopted. All outlets found in a selected cluster were included in the sample. Clusters were geographical areas such as wards and village tracts.

For subsequent surveys tracking changes from the baseline, all indicators will be reported separately for intervention and control areas. Each of these areas will be further sub-divided into urban and rural sites², giving four domains in total: i) rural intervention areas; ii) rural control areas; iii) urban intervention areas; iv) urban control areas. Sample size calculations were powered to detect changes in indicators between baseline and follow up surveys, in each of these four domains.

Sampling frames of all townships included in the project areas (intervention) and non-project areas (control) were developed³. Thirteen townships in each area were selected using PPS. In each selected township, a sampling frame of wards and village tracts were then developed. Five wards and five village tracts were then selected again using PPS⁴. If the selected township has only 4 wards then all 4 wards were selected. All the townships selected have at least 4 wards and 5 village tracts. A census of all outlets in the private sector with the potential to sell or provide antimalarials to individuals was conducted.

Sample size and Sampling Strategy

The outlet survey is designed to measure differences in key indicators over time. The following paragraphs summarize the methodology for determining the overall sample size needed to detect statistically significant changes over time in proportions.

The sample size calculations were based on the need to estimate the proportion of outlets that sell QAACTs, with the denominator being outlets that have stocks of any kind of antimalarials at the time of the survey. Sample size calculations are based on the need to detect a future 15 percentage point increase in QAACT availability, assuming a baseline estimate of 17%.

Sample size determination

The required sample size was calculated in 2 steps:

² The program was designed in a way that BCC activities targeting the providers emphasizing the importance of RDT testing and completing full course using medical detailing methodology will be focused at project areas, i.e., 92 townships in eastern part of Myanmar where artemisinin drug resistance is highly suspected while distribution of subsidized quality assured ACTs are nationwide. Therefore, the impact of the BCC activities (the changes in providers' knowledge and attitude between intervention (92 townships) and control (i.e., other townships outside of 92) will be measured in this study.

³ 51 inaccessible townships were excluded from the sampling frame.

⁴ Data collection for the outlet survey occurs in the same clusters as those selected for the malaria household survey.

1. Estimate the required number of number of outlets with antimalarials in stock on the day of the survey; then
2. estimate the number of wards and village tracts that must be visited to arrive at this number of outlets (operational sample size).
3. Assuming the same sample size for the baseline survey, the required sample size for a single domain was calculated using the following formula:

$$n = \frac{Deff \times \left(Z_{1-\alpha} \sqrt{2P(1-P)} + Z_{1-\beta} \sqrt{P_1(1-P_1) + P_2(1-P_2)} \right)^2}{(P_1 - P_2)^2}$$

where:

- n = desired sample size for the baseline survey
- P1 = the hypothesized value of the indicator at year 1 (time 1 or baseline survey) (17%)
- P2 = the expected value of the indicator at year 2 (32%)
- P = (P1+P2)/2 = 24.5
- Z1- α = the standard normal 1- α quintile corresponding to an α (type I) error with a one-sided test; replace α by $\alpha/2$ if a two-sided test is desired (1.64)
- Z1- β = the standard normal 1- β quintile corresponding to the power of the test (0.84)
- Deff = the design effect for cluster sampling (estimated at 2.5)

It was estimated that a sample of 277 outlets stocking any kind of antimalarial at the time of the survey would be needed in each of the four domains, giving a total sample of 1108 outlets. Using the assumption that 28% of outlets will stock any kind of antimalarials, a total of 3957 outlets were screened.

Number of wards and village tracts: sampling

To convert the gross sample size into the number of wards/village tracts and townships, we applied the estimated average number of outlets with antimalarials per ward/village tract based on findings from a rapid assessment. The rapid assessment study showed that there were on average 36 outlets per ward/village tract, and 6 outlets with antimalarials. By applying these estimated parameters, the ultimate number of wards/village tracts required to reach the estimated number of outlets would be 32 wards in the urban domain and 32 village tracts in the rural domain in both intervention and control areas, giving a total of 128 wards and village tracts required. We chose 5 wards and 5 village tracts per township. We visited 13 townships in intervention and 13 in control areas.

Questionnaire

The outlet survey questionnaire comprised 3 modules: a screening module for all outlets; an audit module (the antimalarial audit sheets and RDT audit sheets) for outlets with antimalarials in stock on the day of interview; and a provider module for all eligible outlets, including those with no antimalarials in stock on the day of interview but who had stocked antimalarials in the past three months. Audit sheets were based on the Health Action International questionnaire for essential medicines, developed with the World Health Organization.

The **screening module** was used to record the type and location of all outlets and to identify outlets that were eligible for the audit and provider modules. The **audit module** was used to collect data relating to each antimalarial product an eligible outlet had in stock on the day of interview. This information came from the antimalarial packaging: brand name, generic name and strengths, package type and size; and from provider recall: amount sold or distributed in the last 7 days, retail selling

price, and the outlet's wholesale purchase price. Audit sheets in the audit module were also used to collect the characteristics, retail and wholesale prices, and sales/use data on RDTs, in outlets that had RDTs in stock on the day of interview. The **provider module** was used to collect information on outlet demographics (e.g. number of staff, health qualifications of staff), provider knowledge of the first line treatment, and provider perceptions.

Paper questionnaires were administered during data collection. The questionnaire was finalised in English and translated into local Myanmar language versions. During data collection, questionnaires were administered in a local Myanmar language, with numbers recorded in their Arabic form (i.e. 1, 2, 3, etc). Prior to finalisation and training, the questionnaire was pilot-tested to assess the appropriateness of question wording as well as to verify the skip patterns and interviewer instructions.

Data collection

Procedures

In selected clusters survey teams undertook a full census of all outlets with a potential to sell or provide antimalarials. Maps were used to help identify the cluster boundaries and demarcate areas that interviewers would visit. In addition, during the survey a snowball sampling technique was used where providers would be asked to identify other outlets within the local area.

Screening questions were used to ascertain inclusion of the outlet into the study; 1) Do you have any antimalarial medicines in stock today? 2) Are there any antimalarial medicines that are out of stock today, but that you stocked in the past 3 months? Outlets that did not have antimalarials on the day of survey and/or have not had them in the three months preceding the survey do not meet the inclusion criteria. For ineligible outlets information related to the outlet type and location was noted and the interviewer continued to the next potential outlet.

For outlets that met the inclusion criteria, the field worker gave information on the study and asked to the outlet owner (or the person at the outlet with most authority) to interview the main provider or pharmacist, given this person is most likely to be able to provide reliable information related to volumes and stock-outs. After obtaining agreement from the outlet owner, the interview took place with the person recommended by the outlet owner as the most senior or main provider. If there were multiple providers working in a single outlet, the main provider was asked to complete the interview provided that he/she was 18 years and above. If he/she was unavailable, the next most senior provider was invited for interview. Prior to administering the questionnaire, the provider⁵ was asked to give informed verbal consent. Once consent had been given, the provider and audit modules were administered. In case an outlet was closed or the provider was too busy, the interviewer arranged to come back at another time. Up to one call back was made. Show cards were used to help identify the interviewers and the providers the type of antimalarials.

Below are the inclusion and exclusion criteria for the study.

INCLUSION CRITERIA	EXCLUSION CRITERIA
Staff aged 18 and above	Staff aged younger than 18
Agreed to participate in the study	Who do not give consent to participate in the study
Private providers that provide antimalarials for profit at the time of survey or in the past three months	Public providers that provide antimalarials not for profit

Research team

Five teams of field workers with permanent and part-time staff of PSI/Myanmar were formed to collect data. Each team consisted of 2-4 members. Team leaders and assistant team leaders were responsible for checking recorded information and ensuring that it was valid and correct during the data collection, in addition to ensuring a full census of all outlets with a potential to sell antimalarials was conducted. Supervision of the field work was provided by a project manager who oversaw quality control.

⁵ Based on Rapid Assessment Supply Chain Study conducted in 2010 and 2011, it is anticipated that main providers/pharmacists are 18 years old and above.

Training

All staff underwent a six-day training on how to identify antimalarial medicines, including the differences between ACTs and non-ACTs, brands and generic names, drug packaging and strength. The training addressed the purpose of the study, the importance of consent and how to administer both the consent forms and questionnaires.

Pilot study

A pilot study was conducted in clusters different from those selected for the study. The objectives were to estimate the time taken to do the survey in an outlet, test the questionnaire and explore team management and organization. The pilot would also identify and address any unanticipated challenges for the full study. Verbal informed consent was obtained from all participants participating in pilot test. The same procedure of administering verbal consent form was applied as the main study. The pilot study was taken place after the training for a period of two days.

Data processing

Data were double entered into a CSPro database system designed with in-built checks for consistency and range values. Verification of the first and second entries was performed, and corrections on records that did not match done until a final consistent dataset was achieved.

Data analysis

Analysis Plan

Data analysis was conducted in Stata 11.0 (Stata Corp College Station, TX) and included descriptive summaries and comparisons between urban and rural, and intervention and controls areas. Indicators were also calculated by outlet type, as presented in this report. Survey settings and sampling weights were used to account for the clustered design and to allow estimation of national estimates. Indicators were calculated according to an analysis plan that defined numerators and denominators; key indicators included availability of antimalarials, price of antimalarials, volumes of antimalarials sold/distributed in the last one week, and knowledge and provider perceptions on antimalarial treatment.

Availability and stock-outs

The availability of any antimalarial was measured as the proportion of surveyed outlets that had at least one antimalarial in stock among all surveyed outlets. Only outlets with at least one antimalarial (of any type and dose) were considered to have antimalarials available. Drugs intended solely for malaria chemoprophylaxis were not included. Cotrimoxazole was also excluded, as it is very rarely used as an antimalarial.

Stock-out information was collected through both the drug audit and provider interviews. For each drug found in stock, providers were asked if the drug, specific to the brand, and dose, had been out of stock at any point over the past three months. Providers were also asked to list all drugs that were not currently in stock, but had been in stock during the previous 3 months. These two measures were combined to calculate the proportion of outlets with a reported stock-out of at least one drug, amongst those that had recently stocked such drugs (defined as stocking today or in the last 3 months). This information measures the ability of outlets to maintain supply rather than provide a particular treatment at a given point in time.

Volumes and retail price

The volume and price of antimalarials recorded in the audit module were standardized using the adult equivalent treatment dose (AETD) to allow meaningful comparisons between antimalarials with different treatment courses. One AETD is defined as the amount of the drug, in milligrams (mg), that a 60kg adult would need in order to receive a full course of treatment, based upon WHO, peer reviewed, or/and manufacturer guidelines, in that order. The price per package was scaled to be equivalent to one full AETD course, while the number of packages distributed (volumes) was scaled to the equivalent number of AETD courses sold in the previous week. For combination antimalarials, one drug in the combination was selected for these calculations. For ACTs, this was always the artemisinin-derivative component (e.g. the artemether component of artemether-lumefantrine).

Classification of antimalarials

For the purpose of analysis, antimalarials were split into three policy-relevant categories: non-artemisinin therapy, artemisinin monotherapy, and artemisinin combination therapy (ACT). ACTs were further sub-divided as follows:

- quality assured ACTs (QAACTs), which divide into:
 - first-line, quality assured ACTs (FAACTs),
 - non first-line quality assured ACTs (NAACTs)
- Other ACTs

These categories are described in more detail on page *vi*.

Results - Outlet survey

Characteristics of the sample

Figure 3.1.1: Survey flow diagram

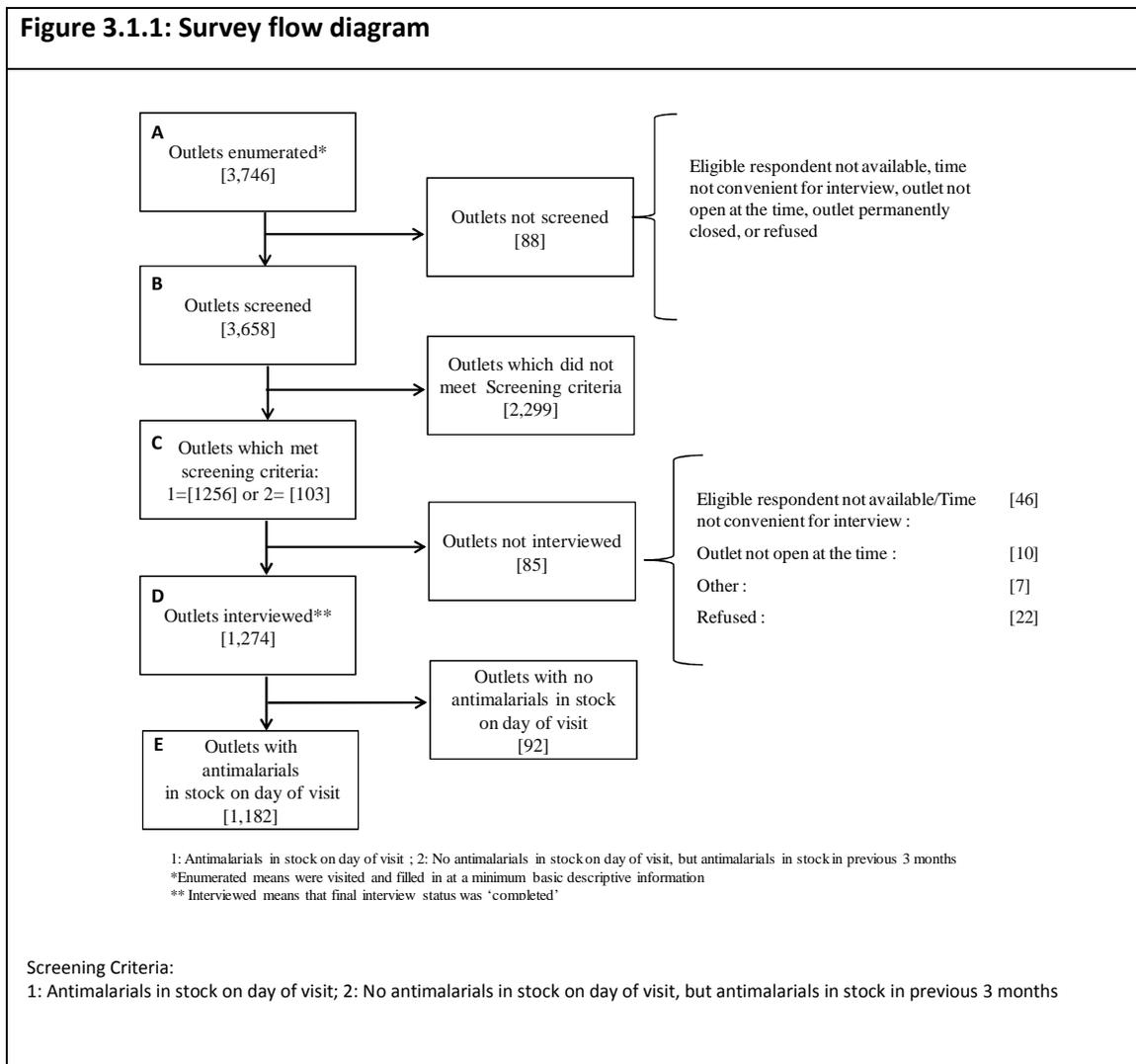


Table A.1: Availability of antimalarials, by outlet type

	Private health facility	Pharmacy	Itinerant drug vendor	General retailer	Health Worker	TOTAL Outlets
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets that had:	N=273	N=454	N=290	N=2,293	N=348	N=3,658
Antimalarials in stock at the time of survey visit	82.2 (71.7, 89.4)	78.8 (64.5, 88.4)	55.0 (46.1, 63.6)	14.7 (9.8, 21.5)	72.7 (63.3, 80.4)	31.9 (27.7, 36.4)
Any ACT	54.1 (42.6, 65.2)	12.9 (6.6, 23.6)	4.0 (1.7, 9.1)	0.4 (0.2, 1.2)	54.2 (44.3, 63.9)	8.9 (6.9, 11.5)
Quality Assured ACT (QAACT)	44.2 (30.6, 58.8)	5.4 (1.6, 16.7)	4.0 (1.7, 9.0)	0.4 (0.1, 1.2)	53.8 (43.9, 63.5)	8.2 (6.2, 10.8)
First-line (FAACT)	44.2 (30.6, 58.8)	4.0 (1.4, 11.1)	4.0 (1.7, 9.0)	0.3 (0.1, 1.2)	53.8 (43.9, 63.5)	8.1 (6.1, 10.6)
Other ACT Classifications						
Nationally Registered ACT	51.2 (38.7, 63.5)	10.9 (5.0, 22.2)	2.6 (1.1, 6.2)	0.4 (0.2, 1.2)	53.2 (43.2, 63.0)	8.4 (6.5, 10.9)
Any non-artemisinin therapy	55.5 (41.2, 69.0)	42.3 (30.4, 55.2)	42.8 (34.8, 51.2)	7.4 (4.7, 11.4)	45.9 (36.1, 56.0)	19.2 (16.2, 22.7)
Chloroquine	22.2 (13.8, 33.8)	32.3 (21.2, 45.8)	20.3 (15.1, 26.6)	5.7 (3.5, 9.1)	33.9 (25.5, 43.5)	12.5 (10.1, 15.3)
Sulfadoxine-pyrimethamine (SP)	0.8 (0.3, 2.7)	4.0 (1.5, 10.0)	4.7 (2.3, 9.3)	0.7 (0.3, 1.6)	1.0 (0.3, 3.1)	1.4 (0.9, 2.2)
Any artemisinin monotherapy	48.0 (37.4, 58.8)	69.3 (51.8, 82.6)	24.5 (17.5, 33.2)	11.8 (7.3, 18.4)	26.5 (20.1, 34.0)	18.8 (14.8, 23.6)
Oral artemisinin monotherapy	34.5 (22.8, 48.4)	66.6 (48.7, 80.8)	15.5 (10.5, 22.2)	11.6 (7.2, 18.3)	12.4 (8.2, 18.2)	15.5 (11.7, 20.2)
Non oral artemisinin monotherapy	34.7 (25.2, 45.5)	36.6 (26.8, 47.6)	14.5 (8.5, 23.7)	1.2 (0.6, 2.3)	18.3 (13.1, 24.9)	7.4 (5.8, 9.6)

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

	Private Health Facility	Pharmacy	Itinerant drug vendor	General retailer	Community Health Worker	TOTAL Outlets
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets that had:	N=273	N=454	N=290	N=2,293	N=348	N=3,658
Antimalarials in stock at the time of survey visit	82.2 (71.7, 89.4)	78.8 (64.5, 88.4)	55.0 (46.1, 63.6)	14.7 (9.8, 21.5)	72.7 (63.3, 80.4)	31.9 (27.7, 36.4)
Among outlets with an antimalarial in stock, proportion of outlets that had:	N=194	N=342	N=136	N=269	N=218	N=1159
Any ACT	66.8 (55.2, 76.7)	16.7 (9.3, 28.3)	7.9 (3.2, 18.0)	3.1 (1.2, 7.9)	76.6 (68.7, 83.0)	29.4 (23.2, 36.5)
Quality Assured ACT (QAACT)	54.6 (40.3, 68.2)	7.0 (2.2, 20.1)	7.7 (3.2, 17.8)	2.8 (1.0, 7.9)	76.1 (68.2, 82.5)	27.2 (20.9, 34.5)
First-line (FAACT)	54.6 (40.3, 68.2) (6.3, 26.3)	5.2 (1.9, 13.4) (6.1, 16.1)	7.7 (3.2, 17.8) (0.0, 1.0)	2.2 (0.5, 8.3) (0.1, 0.7)	76.1 (68.2, 82.5) (0.7, 3.9)	26.7 (20.4, 34.1) (1.8, 4.2)
Other ACT Classifications						
Nationally Registered ACT	63.2 (50.7, 74.1)	14.2 (7.0, 26.5)	5.1 (2.0, 12.2)	2.9 (1.1, 7.8)	75.2 (67.0, 82.0)	27.8 (21.9, 34.7)
Any non-artemisinin therapy	68.5 (54.1, 80.1)	54.9 (41.7, 67.4)	83.8 (74.6, 90.1)	51.6 (39.6, 63.4)	64.9 (53.1, 75.0)	63.7 (56.7, 70.2)
Chloroquine	27.5 (16.4, 42.3)	41.9 (29.4, 55.5)	39.7 (31.3, 48.8)	39.6 (28.0, 52.5)	48.0 (36.7, 59.4)	41.3 (34.8, 48.1)
Sulfadoxine-pyrimethamine (SP)	1.0 (0.3, 3.4)	5.1 (2.0, 12.8)	9.2 (4.5, 17.7)	5.1 (2.2, 11.3)	1.4 (0.5, 4.2)	4.7 (3.1, 7.2)
Any artemisinin monotherapy	59.3 (43.1, 73.7)	89.8 (79.2, 95.4)	48.1 (36.6, 59.8)	82.1 (71.4, 89.4)	37.4 (28.3, 47.6)	62.3 (54.1, 69.9)
Oral artemisinin monotherapy	42.6 (26.5, 60.4)	86.3 (74.0, 93.4)	30.3 (21.8, 40.5)	81.2 (70.5, 88.6)	17.5 (11.3, 26.1)	51.4 (42.7, 59.9)
Non oral artemisinin monotherapy	42.8 (29.8, 56.9)	47.4 (37.7, 57.3)	28.4 (17.3, 42.9)	8.4 (4.7, 14.5)	25.8 (18.6, 34.7)	24.6 (19.6, 30.4)

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

	Private Health Facility	Pharmacy	Itinerant drug vendor	General retailer	Community Health Worker	TOTAL Outlets
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets that had:	N=204	N=353	N=166	N=285	N=239	N=1247
No disruption in stock in the past 3 months among outlets that stock any AM at the time of survey visit or in the past 3 months	82.0 (75.6, 87.0)	54.3 (46.2, 62.2)	51.8 (40.6, 62.8)	74.2 (66.0, 81.0)	71.5 (62.6, 79.0)	66.2 (60.9, 71.1)
	N=97	N=12	N=14	N=10	N=175	N=308
No disruption in stock of first-line quality assured ACT (FAACT) in the past 3 months, among outlets that have stocked FAACT in the past 3 months	89.5 (81.3, 94.3)	73.8 (31.6, 94.5)	78.3 (39.7, 95.2)	69.4 (16.2, 96.4)	83.4 (75.0, 89.3)	83.1 (75.5, 88.6)
	N=156	N=281	N=63	N=167	N=150	N=817
Expired stock of any antimalarial ⁶	20.5 (8.0, 43.5)	26.2 (14.3, 43.1)	22.2 (10.5, 40.8)	17.4 (9.5, 29.8)	39.6 (26.6, 54.1)	25.9 (19.2, 34.0)
	N=91	N=10	N=10	N=9	N=152	N=272
Expired stock of first-line quality assured ACT (FAACT)	13.4 (3.2, 42.3)	47.5 (18.5, 78.2)	37.2 (8.4, 79.2)	34.8 (10.0, 71.9)	31.3 (20.7, 44.4)	29.7 (20.3, 41.3)
	N=199	N=354	N=150	N=289	N=216	N=1,208
Acceptable storage conditions for medicines ⁷	93.5 (82.7, 97.8)	87.1 (80.8, 91.5)	91.6 (86.1, 95.1)	87.1 (78.9, 92.5)	91.1 (85.0, 94.8)	89.6 (85.4, 92.6)

⁶ Information on expired drug was missing for 30% of cases (n=342 missing cases). Missing values were particularly common for itinerant drug vendors (54%; n=73 missing cases), then general retailers (38%; n=102 missing cases) and health workers (32%; n=68 missing cases)

⁷ Information on acceptable storage conditions was missing for 5% of cases (n=66 missing cases)

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

	Private HF	Pharmacy	Itinerant drug vendor	General retailer	Community Health Worker	TOTAL Outlets
	%	%	%	%	%	%
Proportion of first-line quality assured ACT distributed free of cost (by volumes of AETDs)	51.2	0.0	0.0	32.3	84.2	75.9
Median price of a tablet AETD:⁸	Median [IQR] (N of Antimalarials)					
Any ACT	1500 [400-3000] ⁽¹⁴³⁾	2300 [0-3375] ⁽⁵⁹⁾	0 [0-0] ⁽¹¹⁾	2500 [0-9000] ⁽¹⁴⁾	0 [0-0] ⁽³⁶⁴⁾	0 [0-0] ⁽⁵⁹¹⁾
Quality Assured ACT (QAACT)	1000 [0-2000] ⁽¹¹⁵⁾	0 [0-1500] ⁽¹¹⁾	0 [0-0] ⁽¹⁰⁾	2500 [0-9000] ⁽¹²⁾	0 [0-0] ⁽³⁵⁸⁾	0 [0-0] ⁽⁵⁰⁶⁾
First-line (FAACT)	1000 [0-2000] ⁽¹¹⁵⁾	0 [0-1500] ⁽⁹⁾	0 [0-0] ⁽¹⁰⁾	1500 [0-7200] ⁽¹¹⁾	0 [0-0] ⁽³⁵⁸⁾	0 [0-0] ⁽⁵⁰³⁾
Other ACT Classifications						
Nationally Registered ACT	1400 [400-3000] ⁽¹²⁵⁾	1500 [0-3000] ⁽³⁵⁾	0 [0-1500] ⁽⁸⁾	2500 [0-9000] ⁽¹³⁾	0 [0-0] ⁽³⁵⁴⁾	0 [0-0] ⁽⁵³⁵⁾
Any non-artemisinin therapy	500 [420-1412] ⁽⁵⁴⁾	200 [120-484] ⁽¹⁵²⁾	150 [30-968] ⁽²⁵⁾	484 [194-500] ⁽⁷⁶⁾	0 [0-0] ⁽⁹¹⁾	194 [0-500] ⁽³⁹⁸⁾
Chloroquine, the most popular antimalarial ⁹	0 [0-290] ⁽⁸⁾	194 [145-300] ⁽⁸⁹⁾	484 [250-968] ⁽¹²⁾	484 [300-500] ⁽⁴⁹⁾	0 [0-200] ⁽²⁸⁾	250 [145-484] ⁽¹⁸⁶⁾
Sulfadoxine-pyrimethamine (SP)	500 [500-500] ⁽²⁾	60 [51-60] ⁽¹⁴⁾	30 [0-150] ⁽⁸⁾	75 [60-150] ⁽¹³⁾	0 [0-500] ⁽²⁾	60 [30-150] ⁽³⁹⁾
Oral artemisinin monotherapy	2720 [2080-3200] ⁽⁴⁸⁾	2880 [2240-3520] ⁽⁵³⁰⁾	3200 [2880-3840] ⁽³⁷⁾	3840 [3200-5760] ⁽²⁷⁹⁾	2880 [1920-3840] ⁽⁴⁷⁾	3680 [2720-4800] ⁽⁹⁴¹⁾
Oral Artesunate ⁹	2400 [1920-2880] ⁽³⁸⁾	2400 [1920-2880] ⁽³⁰⁹⁾	3200 [2560-3840] ⁽²⁶⁾	3840 [2880-3840] ⁽¹⁵⁶⁾	2720 [1920-3840] ⁽³⁶⁾	2880 [2400-3840] ⁽⁵⁶⁵⁾

⁸ A total of 3,206 antimalarials were found in 1,159 outlets. Of these, 1,930 antimalarials are included in the pricing analysis; price indicators are based on tablet-formulation AETDs. Free antimalarials were found in 16% of outlets with antimalarials, and 510 of the 2,493 antimalarials for which price information was recorded were available for free.

⁹ Chloroquine was the most popular *non-artemisinin therapy* by volume sold/distributed in the past week. The market share for oral artesunate was very similar to that for chloroquine and thus both are shown here as they could be considered equally 'popular'.

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

	Private HF	Pharmacy	Itinerant drug vendor	General retailer	Community Health Worker	TOTAL Outlets
Median price of a tablet AETD relative to oral artesunate:	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Any ACT	0.6	1.0	n/a	0.7	n/a	n/a
First-line quality assured ACT (FAACT)	0.4	n/a	n/a	0.4	n/a	n/a
Median price of a tablet AETD relative to CQ:	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Any ACT	n/a	11.9	n/a	5.1	n/a	n/a
First-line quality assured ACT (FAACT)	n/a	n/a	n/a	3.1	n/a	n/a
Median price of a tablet AETD relative to the minimum legal daily wage (\$2.22; 1931kyats)¹⁰	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Any ACT	0.78	1.19	n/a	1.29	n/a	n/a
First-line quality assured ACT (FAACT)	0.52	n/a	n/a	0.78	n/a	n/a
	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
Median price of a first-line quality assured tablet AETD relative to the international reference price (\$1.42; 1235 kyats) ¹¹	1.21	0.0	0.0	0.49	0.0	0.0
	%	%	%	%	%	%
Proportion of outlets that:	N=205	N=353	N=169	N=300	N=240	N=1,267
Offer credit to consumers for antimalarials	12.8 (4.1, 32.7)	15.2 (9.6, 23.2)	37.0 (27.5, 47.6)	21.5 (13.9, 31.8)	7.7 (4.5, 12.7)	20.3 (15.9, 25.7)

¹⁰ Minimum daily wage information taken from United States Department of State, 2010. *Country Reports on Human Rights Practices*. Available at: <http://www.state.gov/g/drl/rls/hrrpt/2010/index.htm>. Conversion to kyats at a rate of \$1 = 870 kyats.

¹¹ International reference price taken from Management Sciences for Health, 2010. *International drug price indicator guide*. Available at: http://erc.msh.org/dmpguide/pdf/DrugPriceGuide_2010_en.pdf. \$1.42 is the median listed supplier price for 24 tablets of AL 20mg/120mg.

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

	Private HF	Pharmacy	Itinerant drug vendor	General retailer	Community Health Worker	TOTAL Outlets
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of outlets that had:	N=206	N=356	N=169	N=303	N=240	N=1,274
Any diagnostic test	54.3 (39.7, 68.2)	10.3 (5.3, 19.0)	7.4 (3.3, 16.0)	1.8 (0.5, 5.9)	70.3 (59.8, 78.9)	25.1 (18.6, 33.0)
Microscopic blood tests	4.4 (2.3, 8.3)	0.0 --	0.1 (<0.1, 0.6)	0.0 --	0.6 (0.1, 2.4)	0.4 (0.2, 1.0)
Rapid diagnostic tests	53.1 (38.9, 66.8)	10.3 (5.3, 19.0)	7.4 (3.2, 15.9)	1.8 (0.5, 5.9)	70.0 (59.4, 78.8)	24.9 (18.4, 32.8)

Table A.7: Provider knowledge, by outlet type

	Private Health Facility	Pharmacy	Itinerant drug vendor	General retailer	Community Health Worker	TOTAL Outlets
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers that:	N=206	N=356	N=169	N=303	N=240	N=1274
Correctly state the recommended first-line treatment for uncomplicated malaria ¹²	54.9 (40.2, 68.7)	8.9 (3.5, 20.8)	5.6 (2.4, 12.4)	2.6 (0.9, 7.5)	58.2 (47.1, 68.4)	21.6 (17.1, 26.9)
	N=206	N=356	N=169	N=303	N=240	N=1274
Can list at least one health danger sign in a child that requires referral to a public health facility ¹³ :	38.1 (26.6, 51.1)	13.5 (8.2, 21.5)	24.8 (16.2, 35.9)	7.6 (4.3, 13.2)	43.1 (32.0, 54.9)	23.5 (19.0, 28.6)
• Convulsions	11.9 (4.6, 27.7)	2.9 (1.1, 7.6)	6.8 (3.6, 12.5)	1.2 (0.3, 4.8)	14.3 (6.9, 27.2)	6.8 (4.2, 10.7)
• Vomiting	4.1 (0.9, 17.1)	1.5 (0.4, 5.7)	6.2 (3.2, 11.6)	1.3 (0.52, 3.3)	9.1 (5.2, 15.4)	4.7 (3.1, 7.0)
• Unable to drink / breastfeed	1.8 (0.4, 7.3)	0.9 (0.2, 3.5)	2.5 (1.0, 5.9)	1.3 (0.3, 4.8)	4.9 (2.4, 9.5)	2.5 (1.4, 4.3)
• Unconscious / coma	34.7 (23.5, 47.9)	9.9 (5.5, 17.2)	17.5 (11.4, 25.4)	5.6 (2.7, 11.3)	31.7 (22.3, 43.0)	17.5 (13.3, 22.7)

¹² Information on proportion of providers that correctly state the recommended first-line treatment for uncomplicated malaria was missing for 4 cases [n=1,270].

¹³ Information on proportion of providers that correctly state at least one health danger sign was missing for 2 of cases [n=1, 272].

Table A.8: Provider perceptions, by outlet type

	Private HF	Pharmacy	Itinerant drug vendor	General retailer	Community Health Worker	TOTAL Outlets
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Proportion of providers that:	N=206	N=356	N=169	N=303	N=240	N=1274
Agree with the statement, "Customers often request an antimalarial by name." ¹⁴	3.2 (1.0, 9.7)	69.3 (57.2, 79.3)	11.4 (6.6, 18.8)	71.6 (55.1, 83.8)	8.9 (4.2, 17.9)	36.2 (26.6, 47.0)
Agree with the statement, "I generally decide which antimalarial medicine customers receive." ¹⁵	99.1 (97.8, 99.7)	58.6 (39.4, 75.5)	96.6 (91.4, 98.7)	39.6 (27.4, 53.3)	98.4 (95.7, 99.4)	75.2 (67.6, 81.4)
Proportion of providers that state the following reasons for stocking antimalarials:	N=206	N=356	N=169	N=303	N=240	N=1274
• Most profitable	0.0 --	0.7 (0.2, 2.6)	2.9 (0.8, 9.7)	2.0 (0.4, 10.4)	0.0 --	1.42 (0.5, 3.9)
• Recommended by government	23.1 (13.9, 35.8)	6.6 (1.9, 19.7)	3.6 (1.6, 7.8)	1.7 (0.5, 5.6)	58.8 (47.6, 69.0)	18.8 (14.9, 23.3)
• Lowest priced	5.8 (2.21, 14.5)	3.9 (1.5, 9.6)	16.1 (7.7, 30.5)	2.6 (1.3, 5.3)	5.1 (1.2, 20.1)	6.8 (4.2, 10.9)
• Consumer demand	6.4 (2.42, 15.8)	66.0 (57.0, 73.9)	22.9 (12.6, 37.9)	80.7 (73.4, 86.3)	6.4 (3.1, 12.7)	41.3 (32.1, 51.1)
• Easily available	12.7 (7.1, 21.8)	20.9 (13.0, 31.8)	36.6 (25.5, 49.4)	12.3 (6.1, 23.5)	9.1 (4.4, 17.6)	18.4 (13.2, 24.9)
• Drug company	1.1 (0.35, 3.5)	7.9 (3.8, 15.4)	1.0 (0.2, 6.1)	4.6 (1.6, 12.8)	0.3 (<0.1, 1.8)	2.8 (1.3, 5.8)
• Brand reputation	0.8 (0.3, 2.3)	7.7 (4.5, 12.9)	6.1 (2.0, 17.4)	6.7 (3.1, 14.1)	1.8 (0.3, 9.2)	5.1 (2.6, 9.7)
• Dosage form	0.0 --	0.5 (0.1, 2.1)	0.0 --	0.2 (<0.1, 1.3)	0.1 (<0.1, 0.4)	0.1 (<0.1, 0.4)
• Frequently prescribed	7.4 (3.4, 15.1)	16.3 (10.0, 25.3)	3.52 (1.04, 11.3)	3.3 (1.8, 6.0)	9.9 (4.3, 21.1)	6.9 (4.4, 10.2)
• Effectiveness	46.5 (34.6, 58.9)	28.1 (18.7, 39.8)	69.9 (56.4, 80.7)	10.1 (5.3, 18.2)	28.4 (15.9, 45.3)	33.6 (24.8, 43.7)
• Other reasons	9.3 (3.75, 21.4)	2.2 (0.9, 4.9)	6.3 (3.1, 12.2)	2.6 (1.1, 6.1)	6.4 (2.1, 17.3)	4.8 (3.0, 7.7)
• Don't know	0.4 (0.1, 1.8)	4.3 (1.01, 16.5)	1.7 (0.32, 8.8)	3.0 (1.1, 7.5)	0.4 (0.1, 2.2)	2.0 (1.0, 3.8)

¹⁴ Information on indicator was missing for 14 cases [private health facility 2, pharmacy 2, and general retailer 10].

¹⁵ Information on indicator was missing for 35 cases [pharmacy 18, and general retailer 17].

Table B.1: Market share by antimalarial category within each outlet type

	Private HF	Pharmacy	Itinerant drug vendor	General retailer	Community Health Worker	TOTAL Outlets
Each antimalarial category as a proportion of the total volume of all antimalarials (AETDs) sold or distributed within a given outlet type in the past week. ¹⁶	%	%	%	%	%	%
Any ACT	48.9	5.4	1.9	4.2	60.1	22.8
Quality Assured ACT (QAACT)	45.1	0.0	1.3	4.2	60.1	20.2
First-line (FAACT)	45.1	0.0	1.3	2.2	60.1	19.9
Non first-line (NAACT)	0.0	0.0	0.0	2.0	0.0	0.4
Non-quality Assured ACT	3.7	5.3	0.6	0.0	0.0	2.6
Other ACT Classifications						
Nationally Registered ACT	48.2	2.6	1.9	4.2	60.1	21.7
Any non-artemisinin therapy	26.9	39.2	44.9	62.2	20.1	38.1
Chloroquine	0.3	32.7	7.1	30.6	9.0	19.7
SP	0.8	4.0	31.7	23.8	0.3	9.0
Mefloquine	8.0	1.0	0.0	2.0	0.2	2.1
CQ+Primaquine co-packaged (for <i>P.vivax</i>)	16.7	0.0	0.0	0.0	4.1	3.6
Other nAT	1.2	1.5	6.1	5.8	6.5	3.6
Any artemisinin monotherapy	24.2	55.4	53.2	33.6	19.8	39.1
Oral artemisinin monotherapy	18.1	47.5	38.2	31.9	16.8	32.9
Non oral artemisinin monotherapy	6.1	7.9	15.0	1.7	3.0	6.2

¹⁶ Any ACT subgroups are not mutually exclusive: Any ACT subdivides fully into QAACTs and Non-quality Assured ACT; QAACTs decompose fully into FAACTs and NAACTs; nationally registered ACTs are either QAACTs or non-QAACTs. Row and column totals exhibit minor rounding errors.

Appendices

Oral Artemisinin Monotherapy

Oral Artemisinin Monotherapy found in Myanmar May-June, 2012

Active ingredient	Formulation	Strength	Manufacturer	Manufacture Site	Brand Name
Artemether	Tablet	50mg	Mekophar for AA Medical Products Ltd	Vietnam	AA - Artemether
Artemether	Tablet	50mg	KPC - Kuming Pharmaceutical Corporation	China	Artem
Artemether	Tablet	40mg	Kuming Pharmaceutical Corporation	China	Artem
Artemether	Tablet	40mg	Chongging Holley Pharmaceutical Co., Ltd	China	Artemether
Artesunate	Tablet	50mg	Mekophar for AA Medical Products Ltd	Vietnam	AA - Artesunat
Artesunate	Tablet	50mg	Guilin Pharmaceutical Co., Ltd	China	Artesunate
Artesunate	Tablet	50mg	Zhangfeng Pharmaceutical Co., Ltd	China	Artesunate
Artesunate	Tablet	50mg	Zhejiang Holley Nanhu Pharmaceutical Co., Ltd	China	Arthesis
Artesunate	Tablet	50mg	AUROCHEM(I) PVT.LTD	India	Falcinate
Artesunate	Tablet	50mg	Tatmadaw Pharmaceutical Factory	Myanmar	Artesunate
Artesunate	Tablet	50mg	MEDIPLANTEX	Vietnam	Artesunate
Artesunate	Tablet	50mg	TRAPHACO	Vietnam	Traphasunat

Non-oral Artemisinin Monotherapy

Non-oral Artemisinin Monotherapy found in Myanmar May-June, 2012

Active ingredient	Formulation	Strength	Manufacturer	Manufacture Site	Brand Name
Artemether	Liquid Injection	150mg/2ml	THEMIS	India	EMAL
Artemether	Liquid Injection	80mg/1ml	Strides Arcolab Ltd	India	Arcomether
Artemether	Liquid Injection	80mg/1ml	Ipca Laboratories Ltd	India	Larither
Artemether	Liquid Injection	150mg/2ml	Ipca Laboratories Ltd	India	Betamotil
Artemether	Liquid Injection	80mg/1ml	Coral Laboratories Ltd	India	Artim 80
Artemether	Liquid Injection	80mg/1ml	Dafra Pharma Ltd	Belgium	Artesiane 80
Artemether	Liquid Injection	80mg/1ml	KPC - Kuming Pharmaceutical Corporation	China	Artem
Artemether	Liquid Injection	80mg/1ml	KPC - Kuming Pharmaceutical Corporation	China	Artemedine
Artemether	Liquid Injection	80mg/1ml	Guilin Pharmaceutical Co., Ltd	China	Glinther
Artemether	Liquid Injection	80mg/1ml	Gold Leaf Pharma Ltd	UK	Artemether
Artesunate	Powder Injection	60mg	Guilin Pharmaceutical Co., Ltd	China	Artesun / 60mg
Artesunate	Powder Injection	60mg	Guilin Pharmaceutical Co., Ltd	China	Artesunate for Injection

Final sample

List of clusters (*wards/village tracts*) sampled, Myanmar, 2012

Region/State	Township	Ward/Village tract	
Shan (North)	Lashio	Aung Min Ga Lar Ward	
		Aung Myit Tar Ward	
		Myanmar Khar Yoe Ward	
		Myo Wan Ward	
		Aung Thidar Ward	
		Man Pyin village tract	
		Ho Hko village tract	
		Ei Naing village tract	
		Nan Paung village tract	
		Hseng Lai village tract	
		Theinine	Ward(1)
			Ward(2)
			Ward(3)
		Ward(4)	
		Mong Li village tract	
		Pein Hsar village tract	
		Nar Sawt village tract	
		Kone Naung village tract	
		U Yin Hmu village tract	
	Moe Meik	Taung Paing Ward	
		Myauk Paing Ward	
		Let Khoke Tan Ward	
		Haw Kone (Haw Nan) Ward	
		Let Hkoke Pin village tract	
		Ma Gyi Pin village tract	
		Moe Hauk village tract	
		Nam Hput village tract	
		Sin Kin village tract	
	Nan Sam	Man Hkaik Ward	
		Man Mai Ward	
		Moe Ge Ward	
		Myo Lel Ward	
		Nam Waw Ward	
	Ah Nauk Kin village tract		
	Hpa Yar Gyi village tract		
	Long Tauk village tract		
	Man Kan village tract		
	Man Long village tract		
Shan (South)	Moegnai	Lwe Pyay Ward	
		U Yin Ward	
		Nawng Kyawt Ward	
		Nar Hawng Ward	
		Pawt Mong Ward	
		Nawng Myaing village tract	
		Nam Maw Sum village tract	
	Nar San village tract		
Region/State	Township	Ward/Village tract	
		Wan Hay village tract	

		Mike Hie village tract
	Taunggyi	Chan Thar Ward
		Haw Kone Ward
		Mingalar Oo Ward
		Pyi Taw Thar Ward
		Sao San Tun Ward
		Hpar Mun village tract
		Mingalar village tract
		Mine Thaw(West) village tract
		Nawng Kar village tract
		Than Te village tract
	Pindaya	No (1) Ward
		No (2) Ward
		No (3) Ward
		No (4) Ward
		No (5) Ward
		Pway Hla village tract
		Thein Kone village tract
		Yae Hpyu village tract
		Taung Shey village tract
		Shar Pyar village tract
	Nyaungshwe	No (1) Ward
		No (2) Ward
		No (3) Ward
		No (4) Ward
		No (5) Ward
		Inn Hlyar Kyaing Hkam village tract
		Inn Tein village tract
		Nan Thea village tract
		Nawng Taw village tract
		Taung Poet Gyi village tract
Shan (East)	Kengtung	Ward(1)
		Ward(2)
		Ward(3)
		Ward(4)
		Ward(5)
		Pang Mat village tract
		Mong Lan village tract
		Nawng Tawng village tract
		Kat Hpa village tract
		Mong Zin village tract
Tanintharyi	Laung Lone	(Ka Gyi) Ward
		(Kha Gway)Ward
		(Ga Nge) Ward
		(Ga Gyi) Ward

<i>Region/State</i>	<i>Township</i>	<i>Ward/Village tract</i>
		San Hlan village tract
		Za Lut village tract
		Ka Myaw Kin village tract
		Ka Dak Nge Seik village tract
		Kyauk Hsin village tract
	Thayetchaung	Maw Shi Kone Ward
		Kyauk Myaung Ward
		Thar Yet Chaung Ward
		Pan Taw Ward
		Sin Hpyu Pyin Ward
		Yae Cho Chaung village tract
		Auk Tha Yet Chaung village tract
		Kin Shey village tract
		Pa Dat Chaung village tract
		Son Sin village tract
	Dawei	Bon Maw Ward
		Htein Thit Ward
		Ka Nyon Ward
		Pein Hne Taw Ward
		Sin Seik Ward
		Myay Khan Baw village tract
		Shan Ma Twin village tract
		Tha Byar village tract
		Za Har village tract
		Za Lun village tract
	Myeik	Kan Khaung Ward
		Myeik (South) Ward
		Myit Nge Ward
		Seik Nge Ward
		Zay Tan Ward
		In Ga Maw village tract
		Min Than village tract
		Pin Oh village tract
		Ta Nyak (Kayin) village tract
		San Da Wut village tract
Mon	Kyaik Hto	Zay Yar Mun Ward
		Myauk Paing Ward
		Kawt San Naing Ward
		Taung Paing Ward
		Kant Kaw Ward
		Bo Yar Gyi village tract
		Kyaik Pi village tract
		Pi Ti village tract
		Sit Taung village tract
		Kaw Htin village tract
	Paung	Ka Dar Ward
		Ka Don See Ward
		Moe Naing Ward

<i>Region/State</i>	<i>Township</i>	<i>Ward/Village tract</i>
		Paung Ward
		Ah Hauk village tract
		Kawt Htaung village tract
		Kya Khat Ngu village tract
		Ywar Tan Shey village tract
		Pan Kone village tract
	Mu Don	Myoma (1) Ward
		Myoma (2) Ward
		Myoma (3) Ward
		Myoma (4) Ward
		Hpea Do village tract
		Ka Lawt Thawt village tract
		Kawt Kha Pon (Ywar Haung) village tract
		Tar Pa Thun village tract
		Taung Pa village tract
Bago	Bago	Hin Thar Kone Ward
		Myo Twin (East-Ka Gyi) Ward
		No (1) Ward
		No (2) Ward
		Pan Hlaing Ward
		Bu Lel Inn village tract
		Kun Paung village tract
		Let Pan Khon village tract
		Ma Yin village tract
		Tha Yet Kone village tract
	Kyauktaga	Kwin (West) Ward
		Sar Taik Ward
		Zay Paing Ward
		Kwin (South) Ward
		Kwin (North) Ward
		Gyo Chaung Gyi village tract
		Har Ree village tract
		Kyun Chaung village tract
		Nan Za village tract
		Yin Taik Kone village tract
	Oktwin	Me Kone Ward
		Ka Thit Tan Ward
		Zay Ward
		Bago Lan Ward
		Kyet Thun Khin (1) Ward
		Kan Ka lay village tract
		Kywei Gan village tract
		Taung Nyo village tract
		Thar Ga Ya village tract
		Zee Hpyu Thauing village tract
	Tantapin	Bo Gyoke Ward
		Pyi Taw Thar Ward

<i>Region/State</i>	<i>Township</i>	<i>Ward/Village tract</i>
		Tha Khin Mya Ward
		Wun Gyi Gyoke Ward
		Tha Ma Ta Ward
		Inn Kyaw village tract
		Lay Thit village tract
		Nat village tract
		Ohn Pin village tract
		Za Yat Gyi village tract
	Pauk Khaung	No (1) Ward
		No (2) Ward
		No (3) Ward
		No (4) Ward
		No (5) Ward
		Bant Pyin village tract
		Chaung Kaung village tract
		Ma Soe Yein village tract
		Taung Let Gyi village tract
		Tha Hpan Cho village tract
Mandalay	Pyinoolwin	Yat Kwet Gyi (1) Ward
		Yat Kwet Gyi (2) Ward
		Yat Kwet Gyi (3) Ward
		Yat Kwet Gyi (4) Ward
		Yat Kwet Gyi (5) Ward
		Inn Yar village tract
		Lun Kaung village tract
		Pway Kauk village tract
		Thin Ga Ton village tract
		Yae Nge village tract
	Mogoke	Lel U Ward
		Min Ta Dar Ward
		Myo Ma Ward
		Shaw Li Waing Ward
		Yae Pu Ward
		Ka Paing village tract
		Ka Thea village tract
		Ho Weik village tract
		Li Shaw Lel U village tract
		Phyu Young village tract
Sagaing	Katha	Ah Lel Paing Ward
		Myauk Paing Ward
		Pein Hne Kone Ward
		Tha Hpan Saing Ward
		Thu Htay Gone Ward
		Auk Wea Gyi village tract
		Kone Thar village tract
		Man Lwe village tract
		Moe Dar (Middle) village tract
		Ngar Te village tract

<i>Region/State</i>	<i>Township</i>	<i>Ward/Village tract</i>
	Wuntho	Shwe Wun Thi Dar Ward
		Saw Bwar Gyi Ward
		Kya Maing Ward
		Sit Ke Gyi Ward
		Ahr Ma Khan village tract
		Lwin Gyi village tract
		Nan Khan village tract
		Thet Kei Kyin village tract
		Tinn War Chaung village tract
	Tigyaing	San Pya Ward
		Aung Zay Yar Ward
		Wi Thar Khar Ward
		Ba Yint Naung Ward
		Doe Pin village tract
		Kun Baung village tract
		Kyauk Aik village tract
		Lay Thar Kone village tract
		Ni Tar village tract

Survey team

List of staff members involved in the survey, Myanmar, 2012.

Team Leaders

Dr. Ye Hein Naing
Dr. Chaw Su Su Win
Dr. Nyo Me Aye
Naw Ethi Paw
Sandar Oo

Additional quality control and supervision

Zaw Win
Moe Aung

Interviewers

Saw Win
Thet Swe
Hlain Myint Htun
Nay Lin Tun
Pyae Phyo Aung
Phoo Phoo Soe
Zaw Min Htet Bo
Aye Aye Khine
Dr. Ei Ei Khine
Dr. Wai Hlaing Soe
Han Zaw
Dr. Swe Min Htet
Dr. Kyaw Zaya
Dr. Ei Ei Han
Dr. Tin Aung Lwin
Dr. Myo Zaw Win
Dr. Ye Htwe Hlaing
Dr. Aung Myo Paing
Dr. Kyaw Soe Linn
Dr. May Thazin Oo

Description of outlet types visited for this survey ¹⁷

Private-for-Profit Sector		
Private health facilities	(N=283)	Description
Clinic	251	Only private-for-profit clinics were included in the study. Most of the clinics are small and owned by the physicians that run the clinic. These physicians may or may not hold a government job. Some clinics are members of SQHC (SUN quality health clinic) network.
Poly clinic	23	These clinics are usually larger and staffed by multiple physicians specializing in different disciplines. The owner of the clinic is a businessman in many cases but may be one of the physicians in some cases. They usually have a medicine sales counter at the front of the clinic.
Private hospital	9	These are non-governmental health facilities. The distinguishing feature from a poly clinic is that hospitals accept in-patients. They usually have a medicine sales counter at the hospital.
Registered Pharmacies	(N=450)	Description
Pharmacy	450	Registered pharmacies are licensed by the Municipal with recommendation from the Department of Health. They sell both prescription medicine and over the counter drugs at commercial prices. The licensing process required them to hire pharmacists. Their customers include individual users as well as health providers.
General Retailers	(N=2297)	Description
General stores / Village stores / Grocery stores	2297	These outlets sell all sorts of goods including grocery, hardware, and common drugs. In some rural areas one village may have only one shop that sells everything. In urban areas some general stores may be very big. In the urban areas convenience stores or corner stores are often situated close to the residential areas. Although grocery stores sell mainly groceries, some do also sell common drugs.
Itinerant drug vendors	(N=304)	Description
Informal health providers / travelling drugs suppliers	304	Informal health providers or healers are persons that move around and visit homes to provide treatment for some ailments. Travelling drug suppliers are persons that visit to a workplace to sell drugs to the group as a whole or to individuals.
Community Health Workers	(N=323)	Description
Sun Primary Health providers	32	Individuals trained by PSI Myanmar on malaria control and treatment. They come from different backgrounds. Many of them are midwives, auxiliary midwives and other types of health worker; others are housewives and farmers.
Nurses, midwives and other health workers	291	Individuals were trained by different public health programs. They may have retired from their public health positions or their programs had completed. Some may still be operational, providing treatment for profit.

¹⁷ In total, 3,746 outlets were enumerated during data collection. 3,658 outlets were successfully screened, however the outlet classification was missing for 6 cases and they are excluded from the breakdown presented here.

Clinic



Poly clinic



Private hospital



Pharmacy



General stores / Convenient stores / Grocery stores



Sun Primary Health providers



Questionnaire

Malaria Outlet Survey (Baseline) 2012

Section I: Census Information (Interviewer to complete this section for all outlets)

Outlet ID				
Interviewer-Township-Ward/Village tract-Outlet Code:		[]-[]-[]-[]-[]-[]-[]-[]-[]-[]		
C1. Today's date (DD/MM/YYYY)		[]-[]-[]-[]-[]-[]-[]-[]-[]-[]		
C2. Interviewer's name [_____]		C2a. Interviewer's code []-[]		
C3. Division/State [_____]		C3a. Division/State code []-[]		
C4. Township [_____]		C4a. Township code []-[]		
C5. Ward/Village tract [_____]		C5a. Ward/Village tract Code []-[]-[]		
C6. Village [_____]		C6a. Village code []-[]-[]		
C7. Name of outlet [_____] <i>If no name, record "no name" or owner's name</i>		C7a. Outlet code []-[]-[]		
Outlets				
1a. Private Hospital	2. SPH	6a. General store/Convenient store		
1b. Poly Clinic	3. Government Health Staff (Specify): [_____]	6b. Village shop		
1c. Non-SQHC Clinic (GP)	4. Informal Provider (Quack)	96. Other (specify) [_____]		
1d. SQHC clinic	5. Pharmacy/drug shop (specify): <i>(circle only one)</i> 5a. mainly whole sale 5b. mainly retail			
Interviewer enters outlets. Hello, My name is [interviewers name], and I work for PSI/Myanmar. We are conducting a study on the availability of antimalarial medicines. The results will be used to improve the availability of appropriate antimalarial treatment in Myanmar. I would like to ask you a few questions to see if you could be part of the study. (Interviewer to read the verbal consent form aloud to the participant here.)				
Screening				
Sr	Questionnaire	Response	Code	Skip
S1	Observe if the outlet has Padonma logo posted at a visible location or not.	Yes No	1 0	
S2	Do you have any antimalarial medicines in stock today? <i>If necessary, prompt with common antimalarial names. If necessary, prompt those antimalarials are for provision/sale to patients.</i>	Yes No	1 0	<i>Provide information on study and gain consent. Record start time in C10, then go to Section II. 0 → go to S3</i>
S3	Are there any antimalarial medicines that are out of stock today, but that you stocked in the past 3 months?	Yes No Don't know	1 0 99	<i>Provide information on study and gain consent. Record start time in C10 and go to Q13a. 0,99 → Go to C10 and complete Result of Visit, then record details in Ending the Interview.</i>

Section II: Antimalarial Audit (Interviewer to follow instructions outlined on this page)

A1. Can you please show me the full range of antimalarials that you currently have in stock.
Do you currently have any of the following antimalarials in stock?

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

- Artemisinin combination therapies, such as *Coartem, Arfloquin, Arco, Artecom, Co-Artesun, Lumiter, Piperamisnin*
- Artemisinin monotherapies, such as *AA-Artesunat, Artesunate (Vietnum), Falcinate, Arthesis, Traphasunat, Artem capsule/tablet, AA-Artemether, Artemether soft capsule*
- Chloroquine, such as *Chloroquine Phosphate*
- Quinine, such as *Quinine dihydrochloride, Quinine sulphate*
- Mefloquine, such as *Mefloquine, Mephaquin*
- Primaquine tablet
- Other antimalarials tablets
- Injectables, such as *Artemether injection, Artesunate injection*
- Other forms of antimalarial drugs such as syrups, suspension, power, suppository etc.

If the outlet has no antimalarials in stock, go to Question 13

Interviewer to 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.**

Interviewer to proceed to the drug audit.

Different Drug Audit sheets should be used to record the product information based on the dosage form of the medicine.

If additional audit sheets are needed 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.

Product Number [][] [][] [][] [][]	1. Generic name _____ _____ _____ _____	2. Strength [][][][]-[][]mg [][][][]-[][]mg [][][][]-[][]mg	3. Dosage form 1 = Tablet 2 = Suppository 3 = Granule	4. Brand name 	5. Manufacturer 	5a. Country of manufacturer [][][][]	6. Is this antimalarial expired? 1 = Yes 0 = No 99 = Don't know	6a. Does this product have an Padonna logo (quality seal)? 1 = Yes 0 = No 6b. Does this product have an AMFm logo? 1 = Yes 0 = No	
	7. Package size (Fill in number) There are a total of [][][][][] tablets / suppositories / granule packs in each (circle type): 1 = Package 2 = Pot/tin	8. Quantity in stock (Record total # of packages or tins described in Q7) There are a total of [][][][][] packages / tins / granule packs of this antimalarial in stock at this outlet. Refused = 9997; Don't know = 9998	9. Amount sold/distributed in the last 7 days (Record # of tins or packages described in Q7 OR record the total # of tablets / suppositories / granule packs sold) 9a. In total [][][][][] packages or tins (or) [][][][][] tablets, suppositories or granule packs 9b. To individual consumers [][][][][] packages or tins (or) [][][][][] tablets, suppositories or granule packs 9c. To small scale sellers [][][][][] packages or tins (or) [][][][][] tablets, suppositories or granule packs N/A = 995; Refused = 997; Don't know = 998		10a. Has this AM been stocked out in the past 3 months? 1 = Yes Go to 10b 0 = No Go to 11 99 = Don't know (Go to 11)	10b. Within the past 3 months, was this drug out of stock for more than one week? 1 = Yes 0 = No 99 = Don't know	11. Retail selling price [][][][][] tablets, suppositories or granule packs cost an individual customer [][][][][][][]Kyats Free = 00000; Refused = 997/99997; Don't know = 998/99998	12. Wholesale purchase price For the outlet's most recent wholesale purchase [][][][][][][] tablets, suppositories or granule packs cost [][][][][][][]Kyats Free = 00000; Refused = 9997/ 99997; Don't know = 9998 / 99998	12a. Comments

Product Number [] []	[] [] [] [] [] [] [] []	1. Generic name	2. Strength [] [] [] [] . [] mg /[] [] [] [] . [] mL [] [] [] [] . [] mg /[] [] [] [] . [] mL [] [] [] [] . [] mg /[] [] [] [] . [] mL	3. Dosage form 4= Syrup 5 = Suspension 6 = Liquid Injection 7 = Powder injection 8 = Other <i>specify</i> []	4. Brand name	5. Manufacturer	5a. Country of manufacture [] [] [] []	6. Is this antimalarial expired? 1 = Yes 0 = No 99 = Don't know
<p>6a. Does this product have an Padonma logo (quality seal)? 1 = Yes 0 = No</p> <p>6b. Does this product have an AMFm logo? 1 = Yes 0 = No</p>	<p>7. Package size <i>(Fill in number)</i> There are a total of [] [] [] [] [] [] mL (or mg for powder injections) in each (<i>circle type</i>): 1 = Bottle 2 = Ampoule / Vial</p> <p><i>Refused = 9997; Don't know = 9998</i></p>	<p>8. Quantity in stock <i>(Record total # of bottles or ampoules described in Q7)</i> There are a total of [] [] [] [] [] [] bottles / ampoules of this antimalarial in stock at this outlet.</p> <p><i>Refused = 9997; Don't know = 9998</i></p>	<p>9. Amount sold / distributed in the last 7 days 9a. In total [] [] [] [] bottles, ampoules or vials</p> <p>9b. To individual consumers [] [] [] [] bottles, ampoules or vials</p> <p>9c. To small scale sellers [] [] [] [] bottles, ampoules or vials</p> <p><i>N/A = 995 Refused = 997; Don't know = 998</i></p>	<p>10a. Has this AM been stocked out in the past 3 months? 1 = Yes <i>Go to 10b</i> 0 = No <i>Go to 11</i> 99 = Don't know (<i>Go to 11</i>)</p>	<p>10b. Within the past 3 months, was this drug out of stock for more than one week? 1 = Yes 0 = No 99 = Don't know</p>	<p>11. Retail selling price [] [] [] bottles, ampoules or vials cost an individual customer [] [] [] [] [] [] Kyats <i>Free = 00000; Refused = 97 / 99997; Don't know = 98 / 99998</i></p>	<p>12. Wholesale purchase price <i>For the outlet's most recent wholesale purchase</i> [] [] [] [] [] [] bottles, ampoules or vials cost [] [] [] [] [] [] Kyats <i>Free = 00000; Refused = 9997/ 99997; Don't know = 9998 / 99998</i></p>	<p>12a. Comments</p>

Sr	Questionnaire	Response	Code	Skip
13	Are there any antimalarial medicines that are out of stock today, but that you stocked in the past 3 months ?	Yes No Don't know	1 0 99	0,99→Q14
13a	Do you know the names of these treatments? (Use Show Card to help the provider to memorize)	Yes [_____ [_____ [_____ No	1 0	<i>Specify below, record one medicine per line. Will accept generic or brand names.</i>
Microscopy				
14	Is malaria microscopic testing available here today?	Yes No	1 0	0→Q15
14a	Please show me the microscopic test that is available in this outlet. (<i>Ask for the permission to see the microscopic test.</i>) Interviewer: Is the microscopic test observed?	Yes No	1 0	
14b	How much do you charge for a microscopic test for malaria?	[_____]Kyats 00000 = Free; 99999 = Don't know		
14c	How many microscopic tests for malaria were conducted in this outlet over the past 7 days?	[_____] 999 = Don't know		
14d	Including the owner and yourself, have any staff members in this outlet been trained to prepare a blood slide and read the results of a microscopic test for malaria?	Yes No	1 0	
Section III: RDT Audit				
Sr	Questionnaire	Response	Code	Skip
15	Are malaria rapid diagnostic test kits (RDTs) available here today?	Yes No	1 0	0→Q15b
15a	Please show me 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. 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.	SD Bioline P.f/P.v SD Bioline P.f/Pan Care Start Accurate Clungene ParaHit Others (specify) [_____]	1 2 3 4 5 6 96	

RAPID DIAGNOSTIC TEST AUDIT SHEET (RDT)

[][]-[][]-[][][][]-[][][][]

Product Number [][]	1. Brand name [][][][] Do not write here	2. Manufacturer [][][][] Do not write here	3. Country of Manufacture [][][][] Do not write here	4. Amount sold / distributed / used in the <u>last 7 days</u> to individual consumers (Record the total number of tests) This outlet sold / distributed / used [][][][][] tests in the last 7 days Refused = 9997; Don't know = 9998
	5. Has this test been out of stock at any time over the past <u>3 months</u>? 1 = Yes 0 = No 99 = Don't know	6. Retail selling price For 1 test, you charge [][][][][] Kyats Free = 0000; Refused = 9997; Don't know=9998	7. Wholesale purchase price For the outlet's most recent wholesale purchase [][]/[][]/[][] tests cost [][]/[][]/[][]/[][]/[][] Kyats Free = 000000; Refused = 999997; Don't know=999998	8. Comments

Product Number [][]	1. Brand name [][][][] Do not write here	2. Manufacturer [][][][] Do not write here	3. Country of Manufacture [][][][] Do not write here	4. Amount sold / distributed / used in the <u>last 7 days</u> to individual consumers (Record the total number of tests) This outlet sold / distributed / used [][][][][] tests in the last 7 days Refused = 9997; Don't know = 9998
	5. Has this test been out of stock at any time over the past <u>3 months</u>? 1 = Yes 0 = No 99 = Don't know	6. Retail selling price For 1 test, you charge [][][][][] Kyats Free = 0000; Refused = 9997; Don't know=9998	7. Wholesale purchase price For the outlet's most recent wholesale purchase [][]/[][]/[][] tests cost [][]/[][]/[][]/[][]/[][] Kyats Free = 000000; Refused = 999997; Don't know=999998	8. Comments

RDT Audit Sheet [][] of [][]

Sr	Questionnaire	Response	Code	Skip
15b	Are there any RDTs that are out of stock today, but that you stocked in the past 3 months ?	Yes No Don't know	1 0 99	0,99→Q P1
15c	Do you know the names of these RDTs?	Yes [_____] [_____] [_____] No	1 0	Specify below, record one RDT per line.

Section IV: Provider Questionnaire

Sr	Questionnaire	Response	Code	Skip
P1	What is your job at this outlet? <i>Do not read list. Multiple responses allowed.</i>	Medical doctor Owner Nurse Clinic assistant Shop assistant Relative of the owner Other (specify) [_____]	MR 1 2 3 4 5 6 96	
P1a	For how many years have you worked in this outlet? <i>If less than 1 year, enter "01"</i>	[__ __] years		clinic → go to P4
P2	(Do not ask this question if the outlet is clinic) Do you know <i>P.falciparum</i> and <i>P.vivax</i> malaria?	Yes No	1 0	1 → P3 0 → P2a
P2a	In your opinion, for treating uncomplicated malaria, what is the most <u>effective</u> antimalarial medicine? <i>Looking for either Generic name or Brand name. Ask provider to show you the medicine if in stock.</i>	[_____] Cocktail Don't know	1 99	
P2b	What antimalarial medicine for treating uncomplicated malaria, do you most often <u>recommend</u> to customers? <i>Looking for either Generic name or Brand name. Ask provider to show you the medicine if in stock.</i>	[_____] Cocktail Don't know	1 99	any answer → P5
Sr	Questionnaire	Response	Code	Skip

P3	<p>(Do not ask this question if the outlet is clinic) In your opinion, for treating uncomplicated <i>p. falciparum</i>, what is the most <u>effective</u> antimalarial medicine? <i>Looking for either Generic name or Brand name. Ask provider to show you the medicine if in stock.</i></p>	<p>[_____]</p> <p>Cocktail Don't know</p>	<p>1 99</p>	
P3a	<p>(Do not ask this question if the outlet is clinic) In your opinion, for treating uncomplicated <i>p. vivax</i>, what is the most <u>effective</u> antimalarial medicine? <i>Looking for either Generic name or Brand name. Ask provider to show you the medicine if in stock.</i></p>	<p>[_____]</p> <p>Cocktail Don't know</p>	<p>1 99</p>	
P4	<p>What antimalarial medicine for treating uncomplicated <i>p. falciparum</i>, do you most often <u>recommend</u> to customers? <i>Looking for either Generic name or Brand name. Ask provider to show you the medicine if in stock.</i></p>	<p>[_____]</p> <p>Cocktail Don't know</p>	<p>1 99</p>	
P4a	<p>What antimalarial medicine for treating uncomplicated <i>p. vivax</i>, do you most often <u>recommend</u> to customers? <i>Looking for either Generic name or Brand name. Ask provider to show you the medicine if in stock.</i></p>	<p>[_____]</p> <p>Cocktail Don't know</p>	<p>1 99</p>	
P5	<p>How do you typically decide which antimalarials to stock? <i>Read list. Multiple responses allowed.</i></p>	<p>Most profitable Recommended by government Lowest priced Drug company/sales rep influence Consumer demand Brand reputation Dosage form Easily available Prescribed most often by doctors Provided by PSI More effective Other (specify) [_____] Don't know</p>	<p>MR 1 2 3 4 5 6 7 8 9 10 11 96 99</p>	

Sr	Questionnaire	Response	Code	Skip
P5a	Which antimalarials provide a good profit margin for you? <i>Looking for either Generic name or Brand name.</i>	[_____] [_____] [_____] All antimalarials are the same Refuse to answer Don't know	1 2 99	
P6	Do your customers know what antimalarial they want in advance and ask for this by name? <i>Read list. One response only.</i>	Yes No No, they have a written prescription Don't know	1 0 2 99	1 → P6a 0 → P7 2 → P6b 99 → P7
P6a	What are the three most common antimalarial drugs that people ask for by name? <i>Looking for either Generic name or Brand name or Cocktail. Ask provider to show you the medicine if in stock. 99 if don't know.</i>	[_____] [_____] [_____]		
P6b	What are the three most common antimalarial drugs that were prescribed by providers (came to you through prescription notes)? <i>Looking for either Generic name or Brand name or Cocktail. Ask provider to show you the medicine if in stock. 99 if don't know.</i>	[_____] [_____] [_____]		
P7	Do you normally decide which antimalarial medicines customers receive? <i>Read list. One response only.</i>	Yes No No, they have a written prescription Don't know	1 0 2 99	
P8	In the last month , have customers bought antimalarials on credit?	Yes No Don't know	1 0 99	0,99 → P9
P8a	In the past month , how many customers have bought antimalarials on credit?	[_] [_] [_] [_] <i>999 = Don't know</i>		
P9	In the past month , did you ever cut blister packs or sell partial courses of antimalarials?	Yes No Don't know	1 0 99	0,99 → P10

Sr	Questionnaire	Response	Code	Skip
P9a	What is/are the reason(s) that you cut blisters or sell partial courses? <i>Do not read list. Probe for anything else. Multiple response.</i>	Customers/Patients' request Cut/partial is sufficient I have small / insufficient stock Customers/Patients cannot afford full blister/pack Makes it easier for the patient to take medicine Other(specify)[_____] Don't know	MR 1 2 3 4 5 96 99	
P10	Please name the first-line medicine recommended by the government (National Malaria Program/VBDC) to treat uncomplicated <i>p. falciparum</i> malaria?	[_____] Don't know	99	
P11	In what condition do you refer your customers/ patients with suspected malaria to the nearest health facility? <i>Don't read answers. Multiple responses allowed.</i>	Don't refer Pregnant mother Children under age of 1 year Fever not subside when I think severe malaria Loss of consciousness/ Coma In Fits (Convulsion) Unable to sit/ eat/ drink Frequent vomiting Restlessness Jaundice or very pale Black color urine or little or no urine Other (<i>specify</i>) [_____] Don't know	MR 0 1 2 3 4 5 6 7 8 9 10 11 96 99	
P12	Who is most at risk of getting malaria in Myanmar? <i>Don't read answers. Multiple responses allowed.</i>	Forest related worker Migrant people/worker Plantation worker Gold/jade/gem miner Pregnant woman Children under 5 Other (<i>specify</i>) [_____] Don't know	MR 1 2 3 4 5 6 96 99	
P13	Which methods do you use to decide whether or not to sell a client an antimalarial drug?	Use blood test result Other methods	1 2	
P14	How often do you test people who have fever for malaria using a blood test?	Always Most of the time Sometimes Rarely Never	1 2 3 4 5	1 → P16 2,3,4,5 → P15

Sr	Questionnaire	Response	Code	Skip
P15	What is the main reason that you would not test a client with fever for malaria using a blood test? (circle one)	Do not have tests in stock Do not think is necessary Customers do not want a test Customers cannot afford a test Other (specify) _____	1 2 3 4 96	
P16	Did the last patient you provided an antimalarial to also receive a malaria diagnostic test from this outlet?	Yes No Don't know	1 0 99	
P17	In your opinion, how important is it for a person with fever to get tested to confirm malaria before treatment?	Very important Somewhat important Not very important Not at all important Don't know	1 2 3 4 99	1, 2, 99 → P19 3,4 → P18
P18	(if above is 3 or 4, ask: Why do you think it is not important to provide a test for a person with fever before giving malaria treatment?)	[_____]		
P19	How confident are you that the results of rapid diagnostic tests for malaria are accurate – give the correct diagnosis?	Very confident / RDTs always accurate Somewhat confident / RDTs are sometimes accurate Somewhat unconfident / RDTs are rarely accurate Very unconfident / RDTs are never accurate Don't know	1 2 3 4 99	
P20	Are some antimalarial drugs are banned in Myanmar? One response only.	Yes No Don't know	1 0 99	0,99→ P22
P21	Which antimalarial drugs are banned in Myanmar? Looking for either Generic name or Brand name. If "Don't know", enter "99" on the first line.	[_____] [_____] [_____]		

Sr	Questionnaire	Response	Code	Skip
P22	Have you heard/seen any messages or information about malaria in the past month?	Yes No	1 0	0→P25
P23	Where did you see or hear these messages/information? <i>(Multiple response)</i>	TV Radio Billboard Pamphlet Newspapers/ Journals Health Talk Sales representative from AA pharma PSI detailer Others (Specify) (_____)	MR 1 2 3 4 5 6 7 8 96	
P24	What type of malaria messages or information did you see or hear? <i>(Multiple response)</i>	Importance of giving full course of treatment Using the quality assured ACT Using diagnostic test Selling price Not to cut the strips AM monotherapy is dangerous Monotherapies are not recommended by WHO/NMCP Monotherapies are replaced by ACTs ACTs are recommended drug for malaria by WHO/NMCP ACTs are more effective ACTs have more attractive profit margin Quality seal logo on drug/facility Messages not related to ACT Do not remember	MR 1 2 3 4 5 6 7 8 9 10 11 12 13 99	
P25	What does this logo on this drug mean? <i>(Podonma Show card)</i>	correct answer (<i>Quality malaria drug</i>) incorrect answer DK	1 2 99	
P26	What does this logo at this drug shop/facility? <i>(Podonma Show card)</i>	correct answer (<i>That facility/shop provide quality malaria services</i>) incorrect answer DK	1 2 99	
P27	Someone from PSI had ever visited you?	Yes No	1 0	0→P30
P28	Someone from PSI had visited you in the last month?	Yes No	1 0	0→P30
Sr	Questionnaire	Response	Code	Skip

P29	What kind of messages/information did he/she share with you? (Multiple response)	Importance of giving full course of treatment Using the quality assured ACT Using diagnostic test Selling price Not to cut the strips AM monotherapy is dangerous Monotherapies are not recommended by WHO/NMCP Monotherapies are replaced by ACTs ACTs are recommended drug for malaria by WHO/NMCP ACTs are more effective ACTs have more attractive profit margin Quality seal logo on drug/facility Messages not related to ACT Do not remember	<u>MR</u> 1 2 3 4 5 6 7 8 9 10 11 12 13 99	
P30	In the past year, have you attended any trainings or workshops about malaria, such as how to dispense medicines; proper dosing of medicines; case management; diagnosis of illness? One response only.	Yes No Don't know	1 0 99	
P31	Including the owner and yourself, how many people work here? If outlet has multiple dispensaries, record number of workers at this dispensary only.	[] [] Don't know	99	
P32	Of all the people who work here, how many prescribe or dispense medicines?	[] [] Don't know	99	
P33	What is the highest level of education among the people working in this outlet? (Prompted. Circle <u>one</u> response)	No schooling Monastic or primary grade Middle Grade High Grade Passed matriculation Diploma or degree Post-grad	1 2 3 4 5 6 7	
P34	Does anyone working in this outlet have a health-related qualification?	Yes No Don't know	1 0 99	0,99→ P36
P35	How many people working in this outlet (including the owner) have the following types of health qualifications? Read list. Enter '00' if the answer is 'none.'	Pharmacist Laboratory technician Health assistant Medical doctor Nurse /Midwife PHS Compounder Pharmacist trained by private agency Other (specify) [] []	[] [] [] []	

Sr	Questionnaire	Response	Code	Skip
P36	Do you have a license/temporary license to sell drugs?	Yes No	1 0	0→P38
P37	Interviewer observes the license and record response based on observation.	Yes, license physically observed No, license not physically observed	1 0	
Section V: Cocktails				
P38	(Do not ask this question to clinic) Does this outlet provide 'cocktail', for the treatment of patients with uncomplicated malaria?	Yes No	1 0	0 → P42a
P39	(Do not ask this question to clinic) Can you tell me, in this outlet are the 'cocktail': Interviewer read out responses. One response possible	Pre-made Prepared at the time when customers come for treatment Both	1 2 3	2,3 → P41
P40	(Do not ask this question to clinic) Where do you obtain these 'cocktail'? Interviewer read out responses. Multiple responses possible.	Pharmacy Made in this outlet Other (<i>specify</i>) [_____]	MR 1 2 3	
P41	Please show me the 'cocktail' you sell, or that you would prepare to sell, for adult man with symptoms of malaria and please tell me what are those?. Interviewer to observe what the provider offers	[_____] [__] Tab [_____] [__] Tab		

Source of Supply of Antimalarials				
In the last 3 months, from whom did you obtain or purchase antimalarial drugs? (Please list the two places where this outlet most frequently buys AM drugs)				
Sr	Questionnaire	Response	Code	Skip
P42 a	<u>First source:</u> Type of supplier (Prompted. Single response):	Drug wholesaler drug store drug distributor PSI Other NGOs Government Other (specify): [_____] Refuses Don't know	1 2 3 4 5 6 96 88 99	4 → P42al
	Name of business:	[_____] Refuses Don't know	88 99	
	Town:	[_____] Refuses Don't know	88 99	
	Physical address or location identifiers:	[_____] Refuses Don't know	88 99	
	Telephone number:	[_____] Do not have Tel: Refuses Don't know	0 88 99	
	How do you receive your antimalarials from this provider? (Prompt, one response only)	Supplier delivers to you You collect from supplier Both Refuses Don't know	1 2 3 88 99	
	Is this a supplier of malaria test kits? (Do not ask if provider answered "No" to question 15 in Section III. Select "82 = Not applicable.")	Yes No Not applicable Don't know	1 0 82 99	
P42a 1	Is there another antimalarial supplier?	Yes No	1 0	1 → P42b 0 → P43
P42b	<u>Second source:</u> Type of supplier (Prompted. Single response.):	Drug wholesaler drug store drug distributor PSI Other NGOs Government Other (specify): [_____] Refuses Don't know	1 2 3 4 5 6 96 88 99	4 → P43
	Name of business:	[_____] Refuses Don't know	88 99	
	Town:	[_____] Refuses Don't know	88 99	

Sr	Questionnaire	Response	Code	Skip
	Physical address or location identifiers:	[_____] Refuses Don't know	88 99	
	Telephone number:	[_____] Do not have Tel: Refuses Don't know	0 88 99	
	How do you receive your antimalarials from this provider? (<i>Prompt, one response only</i>)	Supplier delivers to you You collect from supplier Both Refuses Don't know	1 2 3 88 99	
	Is this a supplier of malaria test kits? (<i>Do not ask if provider answered "No" to question 15 in Section III. Select "82 = Not applicable."</i>)	Yes No Not applicable Don't know	1 0 82 99	
P43	<i>Do not ask the following 3 questions. Observe and circle the appropriate response in each case.</i> Are medicines stored in a dry area?	Yes, stored in a dry area No, not stored in a dry area Did not observe medicines	1 0 8	
P44	Are medicines protected from direct sunlight?	Yes, protected from direct sunlight No protections from direct sunlight Did not observe medicines	1 0 8	
P45	Are medicines kept on the floor?	Yes, they are kept on the floor No, not kept on the floor Did not observe medicines	1 0 8	
Section VI: Products tracking sheet				
1	Total number of Tablet, Suppository and Granule Products Audited	[_ _ _]		
2	Total number of Non-Tablet Products Audited	[_ _ _]		
3	Total number of RDT Products Audited	[_ _ _]		

Thank the provider for their participation.

Return to question C10 to record final status of interview and time of completion, then complete the section Ending the Interview.

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