Household Survey: Baseline

The Republic of the Union of Myanmar

2012AMTR Survey Report

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Acknowledgements

This study was carried out by adapting the ACTwatchHousehold Survey. The authors are grateful to Dr. Megan Littrell, Senior Research Advisortothe PSI Malaria Control & Child Survival Department in Nairobi, Kenya, whoprovided technical support throughout the study,and to Gary Mundy, Regional Researcher, who advised on and reviewed the study design.

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

Dr. Tin Aung	Director, Strategic Information Department, PSI Myanmar, adapted the ACTwatchHouseholdSurvey for use in Myanmar, oversaw all aspects of implementation and management of the study and prepared the report.
Dr.Ye Hein Naing	Facilitated interviewers' training and prepared the report.
Gary Mundy	Regional Researcher, reviewed and advised on the study design
Zaw Win	Research Manager, PSI/Myanmar, facilitatedinterviewers' trainings andsupervised data collection(conducted by Focus Point)
NawEthi Paw	Research officer, PSI/Myanmar ,facilitated interviewers' training, conducted analysis and assisted in in the preparation of the report.
Saw Pa PaNaing	Assisted in preparing the report.
Dr.Hnin Su SuKhin	Deputy Director, ArtemisininMonotherapyReplacement project, PSI/ Myanmar, provided project detail information and advised on study implementation.
Focus Point Research	Research agency, responsible for field work and data entry.

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General Definitions

Term	Definition
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).
Artemisininmonotherapy	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.
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.
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.
Non-artemisinin therapy	An antimalarial treatment that does not contain artemisinin or any of its derivatives.
Oral artemisininmonotherapy	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.
Traditional medicines	The sum of indigenous knowledge, skills and practices used in the maintenance of health, including remedies from local plants.
Modern medicines	A synonym for *manufactured* or *western* medicines. Factory-produced medicines that cover a range of therapeutic actions, included but not limited to: antibiotics, analgesic, antihistamines,antacids, steroids, vitamins and minerals, and antimalarials

Outlet definitions

PUBLIC HEALTH FACILITIES	
Public Hospital	Exist at the township level. A variety of health services (prescription medicines and diagnosis)are offered to people in the hospital catchment area. They are easily identified by signboards saying "Certain Township Hospital". One level above the township hospital is district hospital.
Health Centre	Exist at the commune level. Health Centres are the next level down from the Township Hospitals. A variety of health services are offered to people in their catchment area. Theyare identified by sign boards saying "Urban/Rural Health Centre"
RETAIL OUTLETS	
Pharmacy	The pharmacies required licensefrom the Department of Health.They are required to staff with people with pharmacy or health qualifications. They usually sell only drugs and medical equipments. They can be identified easily by a pharmacy signboard.
Drug store	We call a 'Drug store' when a small shop sells drugs and obviously doesn't have the license as a pharmacy. They usually sell other commodities as well. They are found mostly in rural areas and run by people without any pharmaceutical background. They usually don't put up pharmacy signboard but indicate somewhere that drugs are available.
Grocery/village shops	These are usually small businesses operating at the front of a house. They sell consumer products that a rural household needs every day , including food, beverages,farming equipment and common drugs.
Itinerant drug vendors /Informal providers/quacks	Itinerant drug vendorsare predominantly found in the rural areas. They typically work out of their homes and are willing to go for home visit. They almost never put up any signage but are usually well known by the locals. Some of them have a routine pattern of going to the villages at certain days of the month. The Itinerant drug vendorsfound in this study often worked previously in medical or health facilities and either retired or quit the job and settled in the current places where they are most familiar with.
CLINICS	
Health provider from worksite	Big worksites usually have a clinic or dispensary that providesmedical care to the workers and their families and is part of the respective company or organization. The providers there are company appointees and usually have some kind of medical or health background.
Private clinics (GPs)/hospitals	Private clinics (General practitioners) provide diagnosis, treatment and prescriptive medicines to patients.They are usually run by a qualified physician who has license to treat patients. Private hospitals provide a range of medical care for both in-patients and out-patients.

Sun Quality Health (SQH) Clinics	SQH clinics are private clinics that belonged to PSI's franchised network. As franchisees of the Sun Quality Health network they receive quality products at subsidised rate and therefore charged at much reduced rate to the clients.
HEALTH WORKERS	
Sun Primary Health (SPH)	SPH providers are local people from rural areas that are trained by PSI. They received quality products including ACT at subsidised rate and therefore charged at much reduced rate to the clients.
Community Health Workers	Community health workers are volunteers who are recruited by government and other organizations for various health projects.

List of Abbreviations

--	No data was available
ACT	Artemisinin-based Combination Therapy
AL	Artemether-Lumefantrine
AMTR	ArtemisininMonotherapy Replacement project
Art & CQ	Artemisinin and chloroquine
CHW	Community Health Worker
CQ	Chloroquine
GF	Global Fund
MARC	The Myanmar Artemisinin Resistance Containment Program
MOH	Ministry of Health
PPS	Probability Proportional to Size
PSI	Population Services International
RDT	Rapid Diagnostic Test
SPH	Sun Primary Health
SQH	Sun Quality Health
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 artemisininmonotherapies; limited access to ACTs; co-blistered ACTs that are not co-formulated (facilitating continued use of artemisininmonotherapy); and ubiquitous counterfeit and substandard drugs. Serious efforts to contain drug resistance are currently underway along the Cambodia-Thai border.

The Myanmar Artemisinin Resistance Containment Program(MARC) is a comprehensive set of interventions, including prevention programs, increased testing and treatment through public and non-governmental providers, and replacement of artemisininmonotherapy 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 ArtemisininMonotherapy 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 artemisininmonotherapy 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 this household survey is to monitor treatment-seeking behaviour among fever cases, use of malaria diagnostic testing in fever cases, the proportion of fever cases treated with ACTs; and adherence to the full course of ACT treatment.

To conduct this outlet study PSI/Myanmar adapted the *ACTwatch*Household Survey, one of the components of the*ACTwatch* project. This report presents the results of a cross-sectional survey of households conducted in Myanmar from August to September 2012. A follow up study will be conducted in 2013 to assess the extent of change in treatment seeking, use of malaria diagnosis testing; treatment with ACTs, and adherence to the full course of ACT treatment.

Key findings

1.Seventeen per cent of people with fever in the past two weeks either sought no treatment at all or self-treated at home. 37% of people initially sought treatment from community health workers and 21% sought treatment at pharmacies and other retail outlets.

Fifteen per cent sought treatment at private clinics and another 10% sought treatment at public facilities such as hospital and health centres. ‘At home’ treatments include home remedies, herbs,

traditional medicines and modern medicines left over from previous episodes or bought in anticipation of illness.

2.Only 8.7% of the people with fever in the past two weeks (N=51) reported getting a diagnostic test. Very few people (1%) were tested with microscopy while 6% were tested with an RDT. 2% of respondents could not recall the type of the test used.

3.Among fever cases where treatment was sought, 91% reported that they took modern medicine of some kind, but were unable to verify what this was. 6.1% (N=33) reported receiving an antimalarial of some type, and less than 1% of fever cases (0.7%) reported being treated with an ACT.

4. In many fever cases, including those who received positive diagnostic tests, respondents did not know the drugs that had been taken, and there was no packaging left for the interviewer to verify what these drugs were.

5. Among those who have received diagnostic test for fever in the past 2 weeks (n=51), more than half (57.7%) received the test at Public providers (Health Workers and Public health facilities). However, for respondents who were given antimalarial for fever (n=33), almost two-thirds of them received the drugs at private providers (either clinics or retail outlets). A small portion of patient (5.4%) took antimalarial at home without any diagnostic test.

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 artemisininmonotherapies; limited access to ACTs; co-blistered ACTs that are not co-formulated (facilitating continued use of artemisininmonotherapy); 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 MyanmarArtemisininResistance 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 artemisininmonotherapy in the private sector with ACT. PSI has received funding from DFID and BMGF for ArtemisininMonotherapy 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 artemisininmonotherapy 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 artemisininmonotherapy – 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 artemisininmonotherapy 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.

Prompt and effective 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, despite political or environmental changes in the country.However, it is common practice in the private sector in Myanmar to treat suspected malaria with an incomplete course of artemisininmonotherapy –the worst intervention in terms of controlling the spread of drug resistance. Treatments are often sold by the tablet rather than as a full course, and typical dosages consist of 2-3 tablets if artemisininmonotherapy is dispensed. The sale of incomplete courses is driven primarily by the prohibitive costs of a full course treatment.

The private wholesale market for malaria treatment in Myanmar is highly centralized. A rapid supply chain assessment conducted by PSI in early 2011 at the North Eastern borderfound that one company, AA Pharmaceuticals, dominated the market and accounted for at least 70% of all antemalarials at

wholesale level. AA Pharmaceuticals provides AA Artesunate, a monotherapy that was the most common antimalarial found at all levels of the supply chain.

Program description

PSI has engaged the major private sector supplier of artemisininmonotherapy, AA Pharmaceuticals, in an agreement to purchase highly subsidized, pre-packaged, quality-assured ACTs from PSI. This is expected to rapidly replace artemisininmonotherapy 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 artemisininmonotherapy 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.

This study aimed to collect the baseline data on treatment-seeking behavior and to measure the effectiveness of GF communication campaign. The study population included people living in households in the MARC project area.

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) – this state has the highest migrant population.

Country background

Myanmar, the largest country in mainland South-East Asia with a total land area of676,578 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 1.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 resistantP.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 System[1]

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 July2011.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

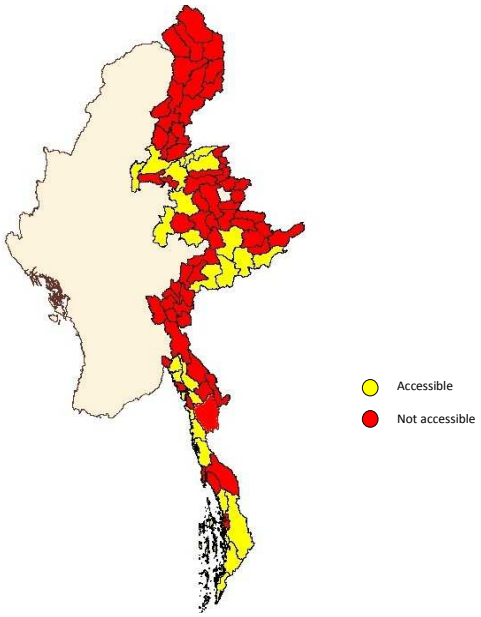
- Prevention and control of malaria by providing information, education and communication up to the grass root level
- Prevention and control of malaria by promoting personal protective measures and/or by introducing environmental measures as principle methods and application of chemical and biological 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

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 focused in 92 townships (See Annex 1) located in the eastern border of Myanmar, with a combined resident population of around 10 million people (Figure 1).

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 can make accessibility difficult. Based on key informant interviews and implementing partners who are working in these areas, 51 townships (housing approximately 38% of the population in these states) are inaccessible due to security reasons. No program activity takes place in these areas, and they were excluded from the study.

Figure 2: Map showing accessible and inaccessible areas in Eastern Myanmar



Study Objectives

The goal of this population-based baseline survey was to establish pre-intervention levels of prompt and effective treatment among people in areas of eastern Myanmar targeted by the MARC program. The information provided by this survey will also be useful to inform communication strategies for optimal uptake of effective antimalarial treatments that will be made more widely accessible through the MARC program.

This study aimed to monitor treatment-seeking behavior by target populations in theArtemisininMonotherapy Replacement(AMTR) project areas. The study will also collect the baseline data to measure the effectiveness of Global Fund (GF) communication campaign.

Specific research objectives are as follows:

1. Determine the proportion of target populations with fever in the past 2 weeks who received prompt and effective treatment
2. Determine the proportion of target populations with fever in the past 2 weeks who have used a malaria diagnostic test (microscopy or rapid diagnostic tests) on the same or next day after fever
3. Determine the proportion of target populations who received quality assured ACT and adhered to the full course
4. Determine where treatment is sought among target populations with fever in the past two weeks
5. Determine the proportion of target populations who can name a nationally approved and quality assured first-line ACT as the most effective treatment for malaria and know the treatment regimen and the source
6. Determine the baseline knowledge related to malaria prevention and treatment

The objective of the HouseholdSurvey is to monitor and evaluatetreatment-seeking behavior by target populations in the AMTR project area. The study also collected baseline data to measure the effectiveness of the Global Fund-supported communications campaign around suspected malaria fever, its diagnosis and treatment. The campaign focused on:i) receiving a nationally approved, quality-assured artemisinin-based combinationtherapy (QA-ACT) within 24 hours of the onset of fever; ii) receiving and completing full course of quality antimalarial; iii) having knowledge on antimalarials with Padonmar Quality Seal; iv)recognizing Padonmar antimalarial is the most effective treatment for malaria; and v) providing knowledge on the Padonmar available outlets.

Methodology

The study design and data collection tools were adapted by PSI/Myanmar from the *ACTwatch*Household Survey, one of the components of the*ACTwatch* project.Data collection was conducted between from 12th August and 2nd September 2012.

A representative sample of residential households in the project area was collected through three-stage cluster sampling. The cluster was defined as wards in urban areas and village tract in rural

areas.The total sample size for the study 4890 was divided by place of residence (urban and rural) in a ratio of 1 to 1.

In the first stage of selection, 13 out of 51project townships of Myanmar were selected randomly using proportionate to population size (PPS). At the second stage, 4 Wards and 4 Village tracts were selected from each selected townships using equal opportunity by systematic random sampling since population size of wards and village tracts were not available. At the next stage, systematic random sampling was used to select one village from each village tract.Therefore, a total of 52 Wards and 52 villages were selected. At the third stage, 45 households were selected from each of the selected wards and each of the selected villages, using systematic random sampling.

In each selected household, the head of house was approached and their consent taken to participate in the study. If an eligible respondent was not available at home at the time of the survey, an appointment was made for interview later on the same day of visit. If no one was available at second visit, the interviewer went to the next nearest household.

The following data was collected from all heads of household participating in the study:

i. **household identification** which included questions such as screening questions and information on number of adults and children living in the household and their ages;

ii. **household background information** which included the basic characteristics of household members with fever in the past 2 weeks, and socio-economic status and ownership of durables;

iii. **malaria related knowledge and exposure to the Global Fund communication campaign** which consisted of questions on knowledge related to malaria, its prevention and treatment and questions on exposure to Powernet and Padonma communication messages;

If any household members were identified as having suffered a fever in the past two weeks, a further set of questions were administered to each of these individuals:

iv. **treatment seeking behaviour and management of fever** which included questions on sources and types of both diagnosis and treatment (***Note:****If any household members suffering fever in the past 2 weeks were aged under 15 years, these questions were instead obtained from the caregiver of that person*); and

v. **malaria related knowledge and exposure to the Global Fund communication campaign** which consisted of questions on knowledge related to malaria, its prevention and treatment and questions on exposure to Powernet and Padonma communication messages (***Note:****This section was asked only if the respondent with fever in the past two weeks was aged 15 or above, and was not the head of the household. If the person suffering a fever was the head of household, then the information had already been collected in section iii listed above*)

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 set wasachieved.Data were analysed using SPSS 15.0.

Sample size calculations

The calculation of sample size is made to monitor the MARC program indicators over time.
The sample size calculation for monitoring purposes is based on the key outcome indicator *"*% target populations with suspected malaria in the last two weeks who completed a full course of a nationally approved, quality-assured ACT within 24 hours of the onset of fever." This indicator s estimated to be 19% at baseline and the study is powered to detect a minimum 20% point increase at endline.

The required sample size for each stratum is therefore calculated using the formula:

Where:
n = desired sample size per stratum
P1 = the hypothesized value of the indicator at baseline - 19% (estimate)
P2 = the expected value of the indicator at end line (minimum 39%)
P= (P1+P2)/2 = 29%
Zα = the standard normal deviate value for an α type I error (1.64)
Z1-β = the standard normal deviate value for a c type II error (0.84)
Deff is the design effect in case of multi-stage cluster sample design = 2.5
Non response rate = 25%

Using these assumptions, a minimum sample of 392 people with fever in the past 2 weeks (196 per stratum, rural: urban) is required. Assuming a fever in past two weeks prevalence of 4%, 4890 individualsper stratum would need to be screened to teach this minimum sample. Assuming the average household sizeas 5, an estimated 1956 households will need to be screened (978 households per stratum).

Results

5385 households were approached to participate in the study, of which 21 refused and a further 578 households were unavailable during the survey period.

The total number of households participating in the study was 4786. The total number of respondents aged 15 and above was 4894; 4786 heads of household, plus a further 108 respondents that were aged over 15 years that were not the head of the household, but who had suffered a fever in the past two weeks. The total number of cases of fever in the past 2 weeks was 609. Of these cases: 122 were under 5 yrs, 176 were aged 5-14 yrs and (311) 15 yrs and above[2].

[2] Due to uncertainty about estimates of the prevalence of fever in the past two weeks, a higher number of households than the 1956 estimated were screened, to ensure that a minimum sample of 392 cases would be met. In the event, the number of fever cases identified surpassed the minimum required by 217 cases.

Initial source of treatment for fever cases in the past two weeks

Seventeen per cent of people with fever in the past two weeks either sought no treatment at all or self-treated at home. 37% of people initially sought treatment fromcommunity health workers and 21% sought treatment at pharmacies and other retail outlets.

Fifteen per cent sought treatment at private clinics and another 10% sought treatment at public facilities such as hospital and health centres.

'At home' treatments include home remedies, herbs, traditional medicines and modern medicines left over from previous episodes or bought in anticipation of illness.

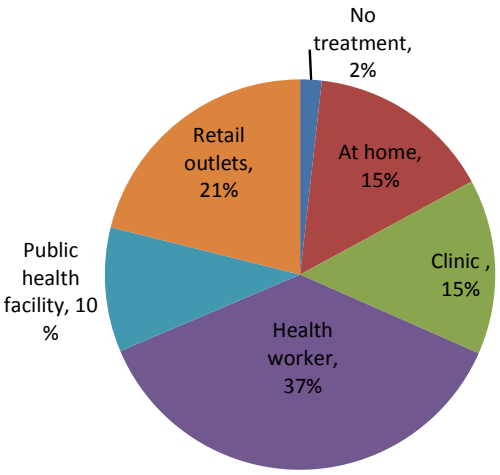


Figure 3: Initial Treatment Source (n=609)

Types of diagnostic testing received for cases of fever in the past 2 weeks

Only 9% of the people with fever in the past two weeks(N=51) reported getting a diagnostic test. Very few people (1%) were tested with microscopy while 6% were tested with an RDT. 2% of respondents could not recall the type of the test used.

These results show the very low prevalence of diagnostic testing for fever: more than 9 in 10 suspected malaria cases are not tested.

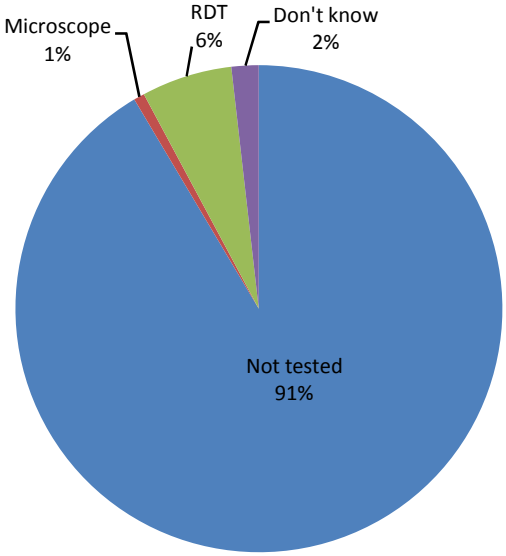


Figure 4: Diagnostic testing for fever (n=609)

Diagnostic test and treatment for fever cases in the past 2 weeks

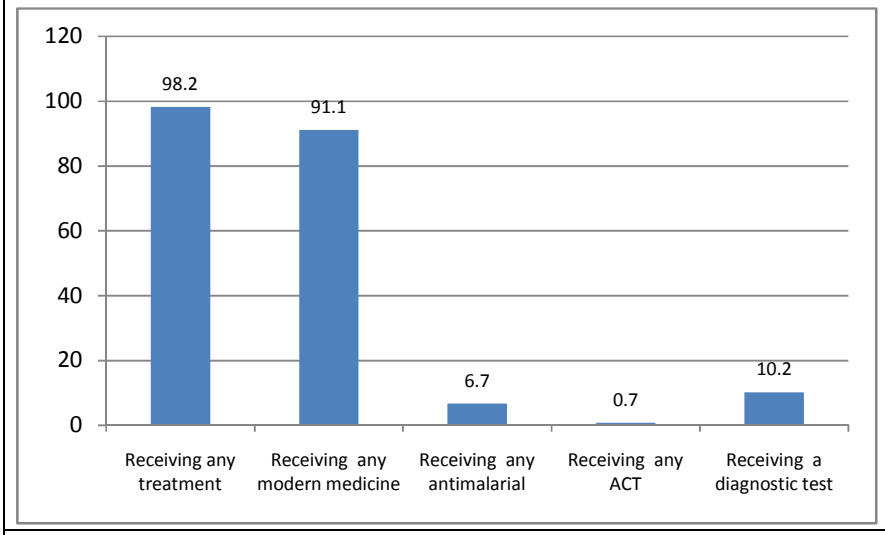
Among the 609 persons that suffered fever in the past 2 week, 8.7% (n=51) received a diagnostic test for malaria and 5.4% (N=33) received an antimalarial of any type.

Figure 5 shows the treatment received by individuals suffering from fever in the past two weeks,98.2% received treatment of any kind, of which 91.1% were treated with modern medicine of some kind, but were unable to verify the contents; 6.7% reported treatment with antimalarial drugs; and 0.7%reported treatment with any ACT. Of those that received any treatment, 10.2% report having received a diagnostic test.

Most of these cases, including those who received positive diagnostic tests, did not know the drugs they had taken, and there was no packaging left for the interviewer to verify what these drugs were.

None of those that received a negative diagnosis test received an ACT, although 5.2% did receive antimalarials other than ACT.

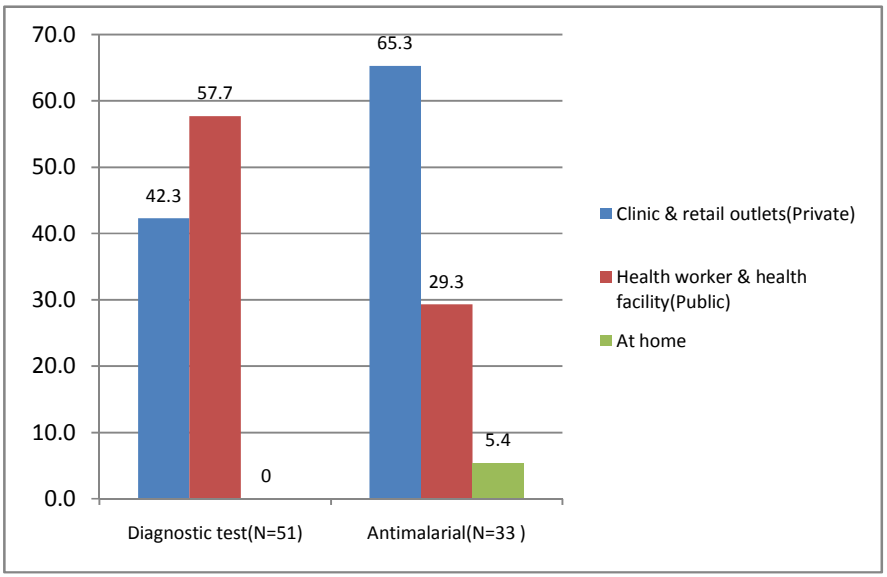
Figure 5: Treatment received for each case of fever in the past two weeks (n=609)



Source of diagnostic services and treatment services for cases of fever in the past two weeks

Figure 6 shows the different places where diagnostic tests and antimalarials, including ACTs, were obtained. Among those who have received diagnostic test for fever in the past 2 weeks (n=51), more than half (57.7%) received the test at Public providers (Health Workers and Public health facilities). However, for respondents who were given antimalarial for fever (n=33), almost two-thirds of them received the drugs at private providers (either clinics or retail outlets). A small portion of patient (5.4%) took antimalarial at home without any diagnostic test (Figure 6).

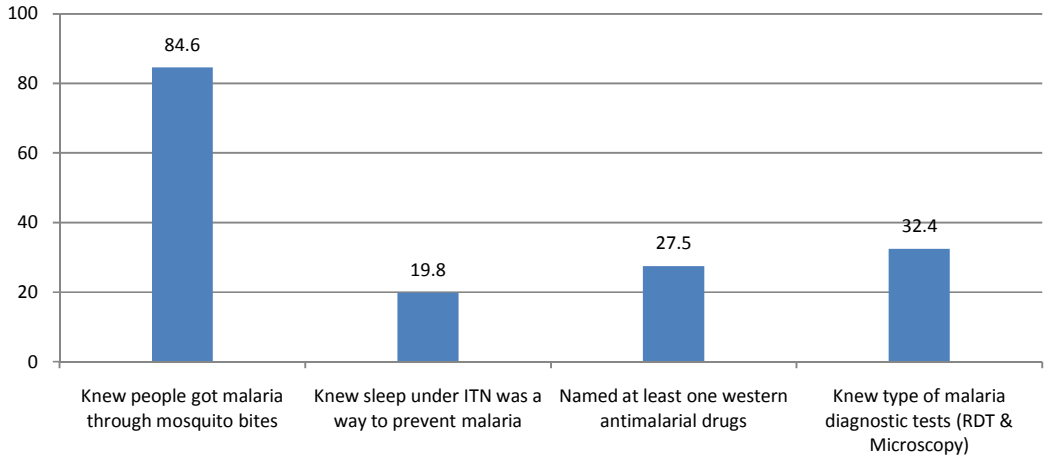
Figure 6: Source of diagnostic test and antimalarial treatment for fever



Knowledge about malaria and exposure to communication messages about powernet and padonma, among all respondents

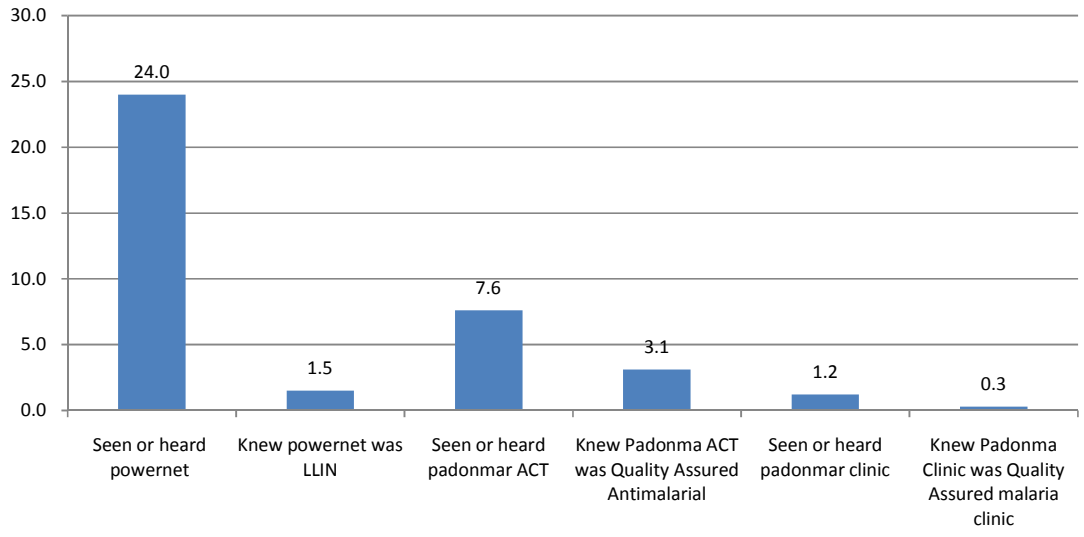
With regards to malaria related knowledge among all respondents (n=4894), ahigh percentage (84.6%) knew that malaria is transmitted through mosquito bites.However only one fifth of respondents (19.8%) knew that sleeping under ITN is the most effective way of preventing malaria. Roughly a third (32.4%) of respondentscould tell the types of malaria diagnostic tests (RDT & Microscopy) and 27.5% of people could name at least one western antimalarial drug.

Figure 7: Respondent's knowledge related to malaria



With regards to exposure on malaria communication messages for Powernet and Padonma, 24% had seen or heard Powernetin the past 3 months among all respondents (n=4894); however only 1.5% knew that Powernet is a long lasting insecticide-treated net. Similarly 7.6% had seen or heard Padonmar ACT and only 3.1% knew that it represented a quality assured ACT. Regarding the Padonmar Clinic,1.2% had seen or heard of it and only 0.3% knew it represented a quality assured clinic for malaria.

Figure 8: Respondent's exposure to communication messages on Powernet and Padonmar



Annex 1: Additional Tables

Table A: Diagnostic testing and results of diagnostic testing by age, strata and SES

	People who received a diagnostic test for fever		Type of diagnostic test				Result of Diagnosis			
			RDT	Micro-scopy	Don't know		Pos+	Neg-	Don't know	
Age (in years)	%	n	%	%	%	n	%	%	%	n
Under 5	7.5	98	*	*	*	*	*	*	*	*
5-14	8.3	150	*	*	*	*	*	*	*	*
15+	12.3	242	80.2	8.0	11.8	27	35.1	64.6	0.3	27
Strata										
Urban	10.1	238	71.5	9.2	19.4	27	7.5	85.8	6.7	27
Rural	10.2	252	70.7	8.4	20.9	24	40.3	59.7	0	24
Wealth Index										
Level 1 Poorest	13.7	90	51.8	19.3	28.9	9	6.3	93.1	0.6	9
Level 2	11.1	111	79.5	1.6	18.9	12	65.1	34.9	0.0	12
Level 3	9.5	98	68.1	0.0	31.9	8	45.7	54.0	0.3	8
Level 4	7.2	102	75.2	22.5	2.3	8	23.1	76.9	0.0	8
Level 5Richest	8.1	89	85.4	6.5	8.1	14	0.9	94.2	4.9	14
All People	**10.2**	**490**	**70.7**	**8.5**	**20.8**	**51**	**37.8**	**61.7**	**0.5**	**51**

*** Number of cases for these cells are less than 5, so excluded from the table.**

Table B: Proportion of patients who were given a diagnostic text and reported test results, with the type and timing of the drug taken, among those who reported a fever in the past two weeks

	Positive diagnostic test	Negative diagnostic test	Not test or tested but don't know the test result	Total
	%	%	%	%
People who took an ACT				
% who took an ACT	17.0	0.0	0.2	0.7
% who took an ACT on the same day/next day	17.0	0.0	0.1	0.7
People who took other antimalarials				
% who took an antimalarial drug	32.7	5.2	5.1	6.0
% who took an antimalarial drug on the same day/next day	16.7	0.7	5.1	5.3
People who took other modern medicine				
% who took other modern medicine	27.5	31.3	32.9	32.6
% who took other modern medicine on the same day/next day	25.9	10.1	29.0	27.9
People who took traditional medicine				
% who took traditional medicine	0.0	0.0	7.7	7.1
% who took traditional medicineon the same day/next day	0.0	0.0	0.0	0.0
People who took unknown drugs				
% who took unknown drugs	22.8	63.5	52.1	51.7
% who took unknown drugson the same day/next day	0.0	14.5	26.3	24.9
Total number of people	**13**	**35**	**561**	**609**

Table C: Number and percentage of people who received different types of treatment for fever in the two weeks preceding the survey, by age, strata and SES

Number and Percentage who received anti-malarials and other treatments and who did not take any drugs, among all people with fever													
# of people with fever		ACT		Other anti-malarials		Other modern medicine		Unknown drugs		Traditional		No treat	
Age (in years)	Total	#	%	#	%	#	%	#	%	#	%	#	%
Under 5 yr	122	1	0	2	1.9	53	50.9	57	42.8	7	3.8	2	0.5
5-14 yr	176	1	0.1	11	9.1	47	25.7	102	58.7	10	5.2	5	1.0
15+ yr	311	2	1.2	16	5.8	96	29.9	166	51.2	23	9.2	8	2.7
Strata													
Urban	301	2	0.5	9	3.6	90	29.5	173	54.8	18	7.6	9.0	4.0
Rural	308	2	0.7	20	6.2	106	32.9	152	51.4	22	7.0	6	1.6
Wealth index													
Level 1	117	0	0.0	4	1.1	27	22.1	70	57.3	13	16.7	3	2.9
Level 2	134	1	1.6	11	9.6	46	35.7	61	42.4	10	8.4	5	2.3
Level 3	120	0	0.0	4	5.5	33	27.1	70	63.1	10	3.1	3	1.2
Level 4	118	2	0.8	7	5.9	42	43.3	62	48.5	3	0.6	2	0.9
Level 5	120	1	0.5	3	5.3	48	37.2	62	55.4	4	1.2	2	0.4
All people	**609**	**4**	**0.7**	**29**	**6.0**	**196**	**32.6**	**325**	**51.7**	**40**	**7.1**	**15**	**1.8**

Note: Number of people who received an ACT among those who received an antimalaria is 4 (12.1% of 33) and table with background characteristics was not presented.

Table D: Number and Percentage of people who received different types of treatment on the same/next day of fever in the two weeks preceding the survey by age, strata and SES

Number and Percentage who received antimalarials orother treatments or no treatment on same or next day of fever:									
	# of people who received treatment same/next day	ACT		Other anti-malarials		Other modern medicine		Unknown drugs	
Age (in years)	Total	#	%	#	%	#	%	#	%
Under 5 yr	90	1	0.1	2	2.8	51	67.8	36	29.4
5-14 yr	120	0	0	11	14.0	42	34.5	67	51.5
15+ yr	182	2	2.4	14	8.6	83	46.6	83	42.4
Strata									
Urban	202	1	0.1	9	5.6	83	40.7	109	53.6
Rural	190	2	1.2	18	9.3	93	48.3	77	41.2
Wealth index									
Level 1	71	0	0.0	4	2.2	24	44.6	43	53.3
Level 2	81	1	2.9	10	14.8	40	53.4	30	29.0
Level 3	75	0	0.0	4	9.1	28	33.7	43	57.2
Level 4	83	2	1.0	6	6.1	39	52.5	36	40.3
Level 5	82	0	0.0	3	8.3	45	51.9	34	39.8
All people	**392**	**3**	**1.1**	**27**	**9.0**	**176**	**47.5**	**186**	**42.3**

Table E: Source of diagnosis acquired for people with fever in the two weeks preceding the survey, among people who received a diagnosis, by background characteristics

	# of people diagnosed	Home	Public Health facility	Clinic			Total clinic	Health workers		Total health worker	Retail outlets			Total retail outlets
		At home	Public Health facility	Health provider from worksite	Private clinics (GP)/hospitals	Sun Quality Health Clinic		SPH	Community health workers		Pharmacy /Drug store	Grocery/ Village shop	Mobile Provider /Quacks	
Age (in years)	n	%	%		%			%			%	%	%	
Under 5 yr	12	-	23.8	-	9.8	-	**9.8**	-	66.4	**66.4**	0.0	0.0	0.0	**0.0**
5-14 yr	12	-	3.9	-	5.1	-	**5.1**	-	40.6	**40.6**	0.0	50.3	0.0	**50.3**
15+ yr	27	-	33.4	-	39.1	-	**39.1**	-	22.0	**22.0**	0.1	0.0	5.4	**5.5**
Strata														
Urban	27	-	28.3	-	69.8	-	**69.8**	-	1.1	**1.1**	0.8	0.0	0	**0.8**
Rural	24	-	24.5	-	23.0	-	**23.0**	-	35.6	**35.6**	0.0	13.4	3.6	**17.0**
Wealth Index														
Level 1	9	-	3.2	-	66.9	-	**66.9**	-	3.7	**3.7**	0.0	26.2	0.0	**26.2**
Level 2	12	-	28.7	-	20.1	-	**20.1**	-	34.2	**34.2**	0.0	17.1	0.0	**17.1**
Level 3	8	-	16.9	-	0.8	-	**0.8**	-	82.0	**82.0**	0.3	0.0	0.0	**0.3**
Level 4	8	-	70.1	-	6.8	-	**6.8**	-	23.1	**23.1**	0.0	0.0	0.0	**0.0**
Level 5	14	-	10.2	-	41.3	-	**41.3**	-	0.0	**0.0**	0.0	0.0	48.5	**48.5**
All people	**51**	-	**24.8**	-	**26.6**	-	**26.6**	-	**32.9**	**32.9**	**0.1**	**12.3**	**3.3**	**15.7**

Table F: Source of antimalarial treatment acquired for people with fever in the two weeks preceding the survey, among people who received an antimalarial, by background characteristics

	# of people treated with antimalarial	Home	**Public Health facility**	Clinic			**Total clinic**	Health workers		**Total health worker**	Retail outlets			**Total retail outlets**
		At home	Public Health facility	Health provider from worksite	Private clinics (GP)/ hosptials	Sun Quality Health Clinic		SPH	Community health workers		Pharmacy /Drug store	Grocery/Village shop	Mobile Provider /Quacks	
Age (in years)	n	%	%	%	%	%		%	%	%	%	%	%	
Under 5 yr	2	0.0	0.0	-	0.0	-	**0.0**	0.0	0.0	**0.0**	64.8	0.0	34.5	**98.0**
5-14 yr	11	0.0	0.0	-	11.4	-	**11.4**	2.8	42.6	**45.4**	0.0	23.8	19.1	**42.6**
15+ yr	16	11.7	7.4	-	24.9	-	**24.9**	0.0	1.4	**1.4**	7.7	41.5	4.3	**48.3**
Strata														
Urban	9	0.0	0.0	-	24.1	-	**24.1**	0.0	26.6	**26.6**	37.3	0.0	12.0	**49.3**
Rural	20	6.4	4.1	-	17.4	-	**17.4**	1.2	18.3	**19.5**	6.3	33.3	13.0	**52.6**
Wealth index														
Level 1	4	0.0	0.0	-	0.0	-	**0.0**	0.0	0.0	**0.0**	100.0	0.0	0.0	**100.0**
Level 2	11	0.0	0.0	-	18.0	-	**18.0**	0.0	15.7	**15.7**	7.1	51.4	7.8	**66.3**
Level 3	4	33.4	0.0	-	11.5	-	**11.5**	6.5	48.6	**55.1**	0.0	0.0	0.0	**0.0**
Level 4	7	0.0	22.5	-	34.7	-	**34.7**	0.0	8.0	**8.0**	0.0	22.5	12.2	**34.7**
Level 5	3	0.0	0.0	-	0.0	-	**0.0**	0.0	0.0	**0.0**	6.0	0.0	94.0	**100.0**
All people	**29**	**6.1**	**3.8**	-	**17.7**	-	**17.7**	**1.2**	**18.7**	**19.9**	**7.9**	**31.6**	**13.0**	**52.4**

Table G: Median price in Kyats paid for a diagnostic test				
	Diagnostic tests			
	RDT	Microscopy	Don't know the type of test	AnyDiagnostic test
Source of treatment				
Public health facility	1000[4]	6000[1]	-	1000[5]
Total public sector	**1000[4]**	**6000[1]**		**1000[5]**
Health provider from worksite	-	-	-	-
Private clinics (GP)/hosptials	0[8]	0[2]	7000[2]	0[12]
Sun Quality Health Clinic	-	-	-	-
Total Clinic	**0[8]**	**0[2]**	**7000[2]**	**0[12]**
SPH	-	-	-	-
Community health workers	**0[1]**	5000[1]	-	-
Total health workers	**0[1]**	**5000[1]**		5000[2]
Pharmacy/Drug store	-	-	-	-
Grocery/Village shop	-	-	-	-
Mobile Provider/Quacks	-	-	-	-
Total Priority Private outlets	-	-	-	-
Tolalrespondens who did notknow theprice	**22**	**3**	**7**	
Total	**35**	**7**	**9**	**51**
[ ] Refers to number of people who dreported the price of diagnostic tests				

Table H: Sources of primary treatment and reasons for seeking treatment among people who seek treatment for fever in the two weeks preceding the survey

	Percentage of people/caregivers*
Source of treatment	%
Treatment at home	15.6
Health provider from worksite	0.5
Public health facility	10.5
Pharmacy/Drug store	9.7
Private clinic(GP)/hospital	13.5
Sun Quality Health Clinic	0.7
Sun Primary Health worker	0.1
Community health workers	37.5
Grocery/Village shop	8.7
Mobile Provider/Quacks	3.1
Number of people	**594**
Reasons for choosing treatment sources outside home	%
Close by or easy to reach/Speed of treatment	69.6
Reputation for quality treatment	23.1
Availability of inexpensive treatment	3.3
Availability of modern medicine	0.4
Provides credit for purchases	0.2
Speed of treatment	2.6
Source equipped to handle severe illnesses	0.7
Employer arranged to receive treatment at this provider/source	0.2
Number of people that sought treatment	**490**

* The decisions were made by self if age of person with feverwas 15+ years and by caregiver if age was 0-14 years

Table I: Respondent's knowledge of malaria including diagnosis and level of exposureamong all household members surveyed *	
	Percentage of people/caregivers (n=4894)
KNOWLEDGE	**%**
Malaria knowledge	
Knew people got malaria through mosquito bites	84.6
Knew sleep under ITN is a way to prevent malaria	19.8
Knowledge of ACTs	
Namedat least one western antimalarial drug	27.5
Knowledge of malaria diagnostic test	
Knew type of malaria diagnostic tests (RDT & Microscopy)	32.4
LEVEL OF EXPOSURE	
Seen or heard powernet pictures	24.0
Knew powernet was LLIN	1.5
Seen or heard PadonmaACT	7.6
Knew Padonma ACT was Quality Assured antimalarial	3.1
Seen or heard Padonma clinic	1.2
Knew Padonma Clinic is Quality Assured malaria clinic	0.3

*** This question was answered by all adult household members aged 15 years and over. The majority of whom (n=4786) were the head of household, with additional respondents (n=108) being adult household members who had suffered a fever in the past two weeks.**

Table J: Characteristics of people with fever in the two weeks preceding the survey (n=609), by age and sex				
	Respondents with feverin the past two weeks (or) Caregivers of children who had fever in the past two weeks			All respondents (n=4894)
	Children under 5 (n=122)	People age 5+(n=487)	Caregivers (n=298)	
	% (n)	% (n)	% (n)	% (n)
Age in years				
Under 1	19.8 (16)	-	-	
1	16.7 (19)	-	-	
2	23.3(28)	-	-	
3	19.5(32)	-	-	
4	20.7(27)	-	-	
5-15	-	33.3(178)	-	
16-24	-	12.0(46)	4.5(17)	9.6 (431)
25-34	-	11.3(47)	32.7(100)	19.6 (916)
35-44	-	13.0(69)	35.0(91)	22.1 (1137)
45+	-	30.3(147)	27.8(90)	48.7 (2410)
Sex				
Male	40.2(53)	44.0(203)	9.8(23)	31.5(1453)
Female	59.8(69)	56.0(284)	90.2(275)	68.5(3441)

Annex 2: Townships in the sampling frame by population and accessibility.

State/Division		Townships	Population	Acccessible
Kachin	1	Naung Mon	11420	No
	2	KaungLanPhoo	14550	No
	3	Tsaw law	6617	No
	4	Chi Pwe	18277	No
	5	Waing Maw	115580	No
	6	Moe Mauk	93146	No
	7	Man Si	68836	No
	8	N' Jan Yan	8658	No
	9	ShweGu	81593	No
	10	Ma Chan Baw	20782	No
	11	Pu Ta O	87194	No
	12	Sum Pra Bo	14835	No
State/Division		**Townships**	**Population**	**Accessible**
Kachin	13	MyitKyi Nar	204102	No
	14	Moe Gaung	134989	No
	15	Ba Maw	108113	No
Kayah	16	Shar Taw	2929	No
	17	Baw la Khe	9856	No
	18	Me Se	12406	No
	19	Phar Saung	34845	No
	20	Loi Kaw	105384	No
	21	De Maw Soe	95499	No
	22	PhaRuSoe	28000	No
Kayin	23	Pha An	501451	Yes
	24	Phar Pon	75217	No
	25	HlaingBwe	292053	No
	26	MyaWady	62327	No
	27	Kyar Inn SeikKyi	181508	No
	28	Kaw KaReik	332438	No
	29	Tan Daung	92459	No
Mandalay	30	Ta BeikKyin	111228	Yes

Mon	31	Yae	240461	Yes
	32	Bi Lin	168852	Yes
	33	Ta Thon	243618	Yes
	34	Kyaik Ma Raw	209698	Yes
	35	Mu Don	207832	Yes
	36	Chaung Zone	153662	Yes
	37	Paung	238956	Yes
	38	KyaikHto	154119	Yes
	39	Than ByuZaYat	161455	Yes
Shan (East)	40	Kyaing Tone	188211	Yes
	41	Tar Chi Leik	118216	Yes
	42	Mong Hsat	77793	Yes
	43	Mong Tone	39692	Yes
	44	Mong Pyin	53700	Yes
	45	Pan Yan	NA	No
	46	Matman	NA	No
	47	Mong Yan	94417	No
	48	Mong La	NA	No
	49	Mong Waung	70514	No
	50	Mong Khat	29526	No
	51	Mong Hpyat	40024	No
State/Division		**Townships**	**Population**	**Accessible**
Shan (North)	52	Man Ton	43924	Yes
	53	Nan Khan	130098	Yes
	54	Mu Se	159628	Yes
	55	Ma Bein	36335	Yes
	56	Nan Ma Tu	153682	Yes
	57	Nan Sam (N)	92215	Yes
	58	KutKhai	203860	Yes
	59	Thein Ni	78137	Yes
	60	Lashio	286720	Yes
	61	Moe Meik	75996	Yes
	62	Thi Baw	175103	Yes
	63	KoneGyan	48509	No
	64	Laukkaing	113334	No
	65	Kyun Lone	151169	No
	66	Ho Pan	112522	No

	67	Mong maw	16017	No
	68	Pan Waing	15216	No
	69	Nar Phan	38841	No
	70	Mong Ye	75297	No
	71	Thant Yan	203181	No
	72	Mum Phant	60947	No
Shan (South)	73	Mong Pan	37017	Yes
	74	YatSaut	133862	Yes
	75	Moe Hne	43098	Yes
	76	Lin Ke	61590	Yes
	77	Mong Kaing	121367	No
	78	Le Char	40331	No
	79	Mong Su	63654	No
	80	Khun Hein	74686	No
	81	Mauk Me	30016	No
	82	kyee Thee	35438	Yes
Ta Nin Tar Yi	83	Ye Byu	157458	Yes
	84	Dawei	218396	Yes
	85	Ta Nin Tar Yi	107484	Yes
	86	BokePyin	67834	Yes
	87	Kyun Su	157024	Yes
	88	Kaw Taung	99586	Yes
	89	Ta YatChaung	175284	Yes
	90	Pa Law	141855	Yes
	91	Long Lone	211951	Yes
	92	Myeik	309352	Yes
		Total	**9975052**	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