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Overview of ACTwatch

ACTwatch is a multi-country research project implemented by Population Services International (PSI). Standardized tools and approaches are employed to provide comparable data across countries and over time. ACTwatch is designed to provide timely, relevant, and high-quality antimalarial and malaria diagnostic testing market intelligence, including information on artemisinin-based combination therapies (ACT), the most effective treatment for malaria. The project was launched in 2008 with funding from the Bill and Melinda Gates Foundation (BMGF) and is currently funded through 2016 by the BMGF, UNITAID, and the Department for International Development (DFID).

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

What are the project goals and objectives?

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

The objectives include:

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

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

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

4) Reach policy-makers, donors, and programmers with timely evidence to inform policy, strategy, and funding decisions.

Why is ACTwatch relevant?

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

From 2008 to 2015, ACTwatch market monitoring in Uganda has been implemented in the context of national strategies designed to improve coverage of appropriate malaria case management. These efforts include:

• Scale up of quality-assured ACTs in the public and private sectors through mechanisms, including the Global Fund co-payment mechanism piloted under the AMFm.

• National efforts to improve availability of malaria blood testing and confirmatory testing prior to antimalarial treatment.

• Efforts to extend malaria blood testing and antimalarial treatment to the community level through integrated community case management of malaria delivered through Village Health Team (VHT) members.
Case Management Study Overview

Fever case management quality of care in the private sector was monitored using a set of research tools designed to measure aspects of the interaction between providers and clients. As part of the 2015 outlet survey, ACTwatch integrated research tools into the Ugandan outlet survey, and the study was implemented among private-sector outlets providing malaria testing and treatment. Key findings from the 2015 outlet survey include:

- Among private for-profit health facilities and pharmacies stocking antimalarials, over 80% were stocking ACTs.
- Among drug stores stocking antimalarials, over 80% were stocking ACTs.
- Among private for-profit health facilities, pharmacies, and drug stores stocking antimalarials, over 30% had malaria blood testing available.

The availability of ACT and malaria blood testing is moderately high in these private-sector outlet types. The case management study was designed to measure how providers use these malaria commodities when managing suspected and confirmed cases. The study also documented key interactions between private-sector providers and patients seeking fever treatment, including two CM outcomes:

1. Confirmatory malaria blood testing
2. Appropriate treatment according to test result

This research complements available evidence currently used to track progress in malaria case management. The ACTwatch outlet surveys track trends in malaria rapid diagnostic tests (mRDT) and antimalarial availability, price, and market share. The Fever Case Management research component documents the extent to which recent and current efforts to improve availability of key malaria commodities are sufficient for facilitating appropriate management of suspected malaria cases. This research will provide information to inform interventions designed to close gaps between availability of quality-assured malaria diagnostics and medicines and their routine use in managing clients.

**Goal:**

*Inform strategies to close gaps between the private-sector availability of malaria commodities and their appropriate use in case management.*
methods

Case Management Study Setup

Design

The study was a cross-sectional quantitative survey with a patient consultation observation component and a patient exit interview component. The Fever Case Management survey was concerned with the management of fever cases, including for children younger than five and people age five and older. Both of these groups were included in the study.

Study population

The study population included providers and patients seeking fever treatment at private-sector outlets, including private for-profit health facilities (hospitals and clinics), pharmacies, and drug stores. As part of the outlet survey, a census of all outlets with the potential to provide malaria testing or treatment was completed within 14 urban and 34 rural sub-counties. In Uganda, censused outlet types included public health facilities, community health workers (e.g. VHT workers), private not-for-profit health facilities, private for-profit health facilities, pharmacies, and drug stores. Outlets with malaria testing and/or treatment available on the day of the survey or within the past three months were eligible for a full interview. The interview included an audit/inventory of all available antimalarial medicines, malaria rapid diagnostic tests, and malaria microscopy services. The interview also included a provider module to assess fever case management knowledge and practices. The study was designed to provide national, urban, and rural estimates for malaria testing and treatment availability, price, and market share.

Private-sector outlets identified during the outlet survey that met study eligibility criteria were included in the fever case management study. Out of 1,266 eligible outlets, 830 were included.

Sampling

While there were no specific sample size calculations conducted for the Fever Case Management study, a series of calculations was completed to identify minimum sample size requirements for the outlet survey. During the outlet survey, eligibility for the case management study was determined, and eligible outlets were invited to participate in the study. All patients visiting eligible outlets were screened to determine eligibility for the case management study, and the aim was to complete one eligible child under five and one eligible patient age five or older in each outlet.

Of 9,330 patients screened, 1,273 eligible patients completed the observation and exit interview for inclusion in the study.
Case Management Study Eligibility

Outlet eligibility criteria

Private for-profit health facilities, pharmacies, and drug stores were eligible for the study if:

- They had national first-line ACT, artemether lumefantrine (AL), in stock on the day of the outlet survey.
- AND
- They had malaria blood testing (malaria RDT or microscopy) available on the day of the outlet survey.

All private-sector outlets, that did not have ACT and malaria blood testing available were excluded from the study. The study included observation and interviews with patients seeking treatment for fever.

Patient eligibility criteria

Patients were invited to participate in the study if they met the following eligibility criteria:

- Respondent age 18 or older
- Patient at least 2 months of age
- Illness that includes fever or history of fever
- Presenting for treatment for this illness at this outlet for the first time
- Uncomplicated illness (not severe or life threatening)
- Not currently pregnant
- Provides consent to participate in the study
Data Collection

Data collection

Interviewers, supervisors, and quality controllers received training that included an orientation to the study, questionnaire, classroom training on completing observation and exit interviews, and a field exercise. Following training, data collection was implemented from May 20 to August 3, 2015.

The Fever Case Management survey team typically revisited eligible outlets identified during the outlet survey within a few days after completing the outlet survey, and the team spent one day screening patients at the outlet. Following informed consent procedures, a structured observation checklist was completed by an interviewer observing the interactions that the patient had with providers as she/he was provided with services at the outlet. The observation was concerned primarily with provider behaviors, including assessment, proper RDT administration, and counseling for treatment with ACT.

A brief exit interview was completed with the patient after his/her visit was complete. The exit interview was concerned with capturing information about all medicines prescribed/obtained and assessing patient understanding of the test result(s), diagnosis, and medication regimens prescribed.

If the primary provider (responsible for diagnosis and treatment of the patient) was not interviewed as part of the outlet survey, then he/she was asked a brief series of questions to assess provider demographic characteristics, qualifications, training, and knowledge of the first-line treatment. Providers who were interviewed as part of the outlet survey had already completed these questions as part of the outlet survey.

Data analysis

Data collection was paper-based. Double data entry was completed using an Access database (©Microsoft, Redmond, WA). All data cleaning and analysis was completed using Stata 13.1 (©StataCorp, College Station, TX). Sampling weights were applied to account for variations in probability of selection and standard error estimation accounted for clustering at the sub-district levels.
4 results

Results reflect data from 1,273 patients who completed the consultation observation and exit interviews.

All 1,273 patients included in the study sought treatment for fever at an eligible private for-profit facility, pharmacy, or drug store.

Results examined:

- Patients present at the outlet
- Patients who sought previous treatment for the current illness
- Patients who reported receiving previous treatment and testing for the illness
- Patients who received a malaria blood test
- Patients who tested positive for malaria
- Treatments received by patients who tested positive for malaria
- Treatments received by patients who tested negative for malaria
- Treatments received by patients who were not tested for malaria

All results are reflected in percentages and calculated across both patient age and outlet type.

Were fever patients present at the outlet for the consultation? and Did fever patients seek previous treatment for this fever at another source of care?

1. Overall, about 1 in 4 fever patients were not present at the consultation. Therefore, malaria testing could not be completed.

2. Being absent for the consultation was particularly common for patients at pharmacies, and more common for children under five than for older children and adults.

3. About 1 in 5 fever patients had already sought care for the fever from another source before the study visit. This was more common at pharmacies compared to drug stores and facilities.

4. Previous malaria testing for the current illness was generally not common. However, 1 in 4 patients presenting at pharmacies had already been tested for malaria.
About one-quarter of all patients seeking fever treatment reported seeking treatment at another source of care prior to study visit (23%). Previous treatment seeking was reported in the public sector among 10% of patients and in the private sector among 14% of patients. Levels of previous treatment seeking were similar among children under five as compared with people age five and older.

More than one-third of patients seeking care at pharmacies reported seeking previous treatment for the current illness (38%), as compared with one-quarter (25%) of patients seeking care at drug stores and 21% of patients seeking care at private for-profit facilities. Previous treatment-seeking in the public sector was more common among patients seeking care at pharmacies (18%) and drug stores (13%), as compared with patients seeking care at private facilities (6%).
9% of patients reported receiving a malaria blood test and 13% reported receiving antimalarial treatment from another source of care prior to the study visit. Previous malaria testing and treatment was similar among children under five and people age five and older.

One-quarter (26%) of patients seeking care at pharmacies reported receiving a malaria blood test at another source of care prior to the study visit, as compared with 10% of patients seeking care at drug stores and 7% of patients seeking care at private for-profit facilities. Data trends suggest higher reports of previous antimalarial treatment received among patients seeking care at drug stores (13%) and private for-profit health facilities (13%) compared with patients seeking care at pharmacies (7%).
**Did fever patients receive a malaria blood test?**

1. *Fever patients are most likely to be tested at private for-profit health facilities. Among those present, about 3 in 4 were tested. About half of testing was done by mRDT and half by microscopy.*

2. *Testing is very low in pharmacies. Half of patients were not present for the consult and could not be tested. Among those present, only 3% were tested.*

3. *At drug stores, nearly half of patients present were tested, and testing was done by mRDT.*

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**PERCENTAGE OF PATIENTS WHO RECEIVED A MALARIA BLOOD TEST, ACROSS PATIENT AGE**

- **Age 0-4**
  - Received a malaria blood test - mRDT: 32%
  - Received a malaria blood test - mRDT & microscopy: 28%
  - Received a malaria blood test - microscopy: 13%
  - Present, did not receive a malaria test: 25%
  - Not present (did not receive a malaria test): 13%
  - **N=545**

- **Age 5+**
  - Received a malaria blood test - mRDT: 20%
  - Received a malaria blood test - mRDT & microscopy: 29%
  - Received a malaria blood test - microscopy: 35%
  - Present, did not receive a malaria test: 13%
  - Not present (did not receive a malaria test): 3%
  - **N=722**

- **All Patients**
  - Received a malaria blood test - mRDT: 26%
  - Received a malaria blood test - mRDT & microscopy: 29%
  - Received a malaria blood test - microscopy: 30%
  - Present, did not receive a malaria test: 13%
  - Not present (did not receive a malaria test): 2%
  - **N=1273**
PERCENTAGE OF PATIENTS WHO RECEIVED A MALARIA BLOOD TEST, ACROSS OUTLET TYPE

- Received a malaria blood test - mRDT
- Received a malaria blood test - mRDT & microscopy
- Received a malaria blood test - microscopy
- Present, did not receive a malaria test
- Not present (did not receive a malaria test)

**Private For-Profit Health Facilities**

- 15% received mRDT
- 31% received mRDT & microscopy
- 22% received microscopy
- 5% present, did not receive a malaria test
- 27% not present (did not receive a malaria test)

**N=630**

**Pharmacies**

- 51% received mRDT
- 48% received mRDT & microscopy

**N=219**

**Drug Stores**

- 35% received mRDT
- 29% received mRDT & microscopy
- 1% present, did not receive a malaria test
- 35% not present (did not receive a malaria test)

**N=424**
Among patients who were present during the consultation, 74% who were managed at private for-profit health facilities received a malaria blood test, as compared with 46% at drug stores and only 3% at pharmacies.

Among patients who were present during the consultation, 60% received a malaria blood test. Data trends suggest that testing was more common among children younger than five (64%) compared to patients age five and older (57%).
Malaria testing results

About 60% of patients tested for malaria had a positive test result.

Among patients who were tested for malaria, 59% had a positive test result. The percentage of patients who tested positive for malaria was similar among children younger than five (59%) and people age five and older (58%).

Among patients who were tested for malaria, data trends suggest a higher percentage of patients at drug stores tested positive (68%), as compared with patients in private for-profit health facilities (54%) and pharmacies (54%).
Did patients who were not tested for malaria receive antimalarial treatment?

1. Among patients who tested positive for malaria, 80% received an antimalarial and 60% received an ACT. Half received QA ACT.

2. Other antimalarials received included non-artemisinins like quinine and sulfadoxine-pyrimethamine (SP), or artemether injections (used for severe malaria). Note that all patients in this study were uncomplicated cases, without signs of severe illness.

3. About half of the patients received an antibiotic.

4. ACT treatment was higher in drug stores than in facilities. In drug stores, 3 in 4 positive patients received an ACT compared to half in facilities.

5. Facilities were more likely to treat with artemether injections (1 in 5 positive patients) and antibiotics compared to drug stores.
Non-artemisinin therapies received were primarily quinine injections, tablets, and syrups, as well as Sulfadoxine Pyrimethamine (SP) tablets and a few chloroquine tablet treatments.

15% of all positive patients received an artemisinin monotherapy, and these were primarily artemether injections (indicated for the treatment of severe malaria cases).
Data trends suggest that antibiotics were more commonly received by positive patients at private facilities (47%) compared with patients at drug stores (35%), as well as that pain- and fever-reducing medications were more commonly received at drug stores (88%) compared with private facilities (73%).
Did patients who tested negative for malaria receive antimalarial treatment?

1. Among patients who tested negative for malaria, 1 in 5 children under 5, and 1 in 10 older children and adults, received antimalarial treatment.

2. Antimalarial treatment for those who tested negative was usually ACT treatment.

3. The percentage of those who tested negative treated with an antibiotic was similar to that of those who tested positive and were treated with an antibiotic: about half.

4. Drug stores were more likely to treat negative cases, treating 1 in 4 with an antimalarial compared to facilities where 1 in 10 were treated with an antimalarial.
Antibiotics were received by 55% of negative patients. These included amoxicillin, ampicillin, erythromycin, sulfamethoxazole and trimethoprim tablets and suspensions, metronidazole and ciprofloxacin tablets, and a variety of other antibiotics. More than half of patients were treated with a pain- or fever-reducing medication (61%), such as acetaminophen.
Data trends suggest that antibiotics were more commonly received by negative patients at drug stores (65%) compared with patients at private facilities (51%), as well as that pain- and fever-reducing medications were more commonly received at private facilities (72%) compared with drug stores (58%).
Did patients who were not tested for malaria receive antimalarial treatment?

1. About half of patients not tested for malaria received antimalarial treatment, usually with an ACT.

2. Antimalarial treatment was higher for those not tested in drug stores and pharmacies (just over half) compared to facilities (less than half).

3. Antibiotic treatment was relatively low for this group—about 1 in 4.
Treatment of patients who were not tested for malaria was generally similar for children younger than five compared with people age five and older.

Data trends suggest slightly higher antimalarial treatment for people age five and older (54%) compared to children younger than five (47%). 45% of people age five and older received a non-quality-assured ACT compared with 39% of children younger than five.
Antibiotic treatment for people who were not tested for malaria was similar across outlet types. Data trends suggest higher treatment with pain- and fever-reducing medications among patients seeking care at drug stores (67%), as compared with pharmacies (56%) and private facilities (61%).
The Private-sector Fever Case Management Study was conducted in Uganda to understand how private for-profit facilities, pharmacies, and drug stores manage fever patients. The study was conducted among these private-sector outlets when they had the first-line ACT and malaria testing (mRDT or microscopy) available. The study examined if fever patients were tested and how antimalarial treatment was used based on test results. Patients in this study were experiencing fever and did not have signs or symptoms of a severe disease.

The results show that when patients are present at the outlet, testing is moderately high in health facilities (74%) and drug stores (46%), but very low in pharmacies (3%). Not all patients seeking fever treatment in the private sector can or will be tested for malaria. This is because some patients are not present for the consultation. In this study, about 1 in 4 patients were not present, including about half of all patients presenting at pharmacies. Additionally, some patients previously sought treatment for their fever before seeking treatment at these private-sector outlets, and in some cases they had already received a malaria test. About 1 in 4 patients seeking care at pharmacies had already received a malaria blood test; however, this was not common for patients seeking treatment at health facilities and drug stores.

Patients who tested positive for malaria usually received antimalarial treatment (>80%). However, only 60% received ACT treatment, and only half received quality-assured ACT treatment. Although all study outlets had first-line ACT available, non-artemisinin therapies were still used for test-positive cases. These therapies included quinine and SP. In private health facilities, 1 in 5 test-positive patients received an artemisinin monotherapy injection, typically artemether. These injections are indicated for treatment of severe malaria only. However, all patients in this study were uncomplicated cases; any patient with signs of a severe illness or who was admitted to inpatient care was excluded from the study.

Patients who tested negative for malaria typically did not receive antimalarial treatment (>80%). However, when they did receive antimalarial treatment, it was usually with an ACT. Antimalarial treatment for test-negative cases was more common for children under five (about 1 in 5) compared with people age five and above (about 1 in 10).
Antimalarial treatment for test-negative cases was also more common for patients at drug stores (nearly 1 in 5) compared with patients at health facilities (less than 1 in 10).

Antibiotics were given to about half of patients who tested positive for malaria (43%) and patients who tested negative for malaria (55%), but only given to 24% of patients who were not tested. A variety of antibiotics were used to treat patients, including but not limited to amoxicillin, ampicillin, erythromycin, sulfamethoxazole and trimethoprim tablets and suspensions, and metronidazole and ciprofloxacin tablets.

Overall, just over half (56%) of fever patients seeking treatment in the private sector did not receive a malaria blood test. Among these patients, about half received antimalarial treatment, and this treatment was usually an ACT. Antimalarial treatment for patients who were not tested was higher in drug stores (54%) and pharmacies (55%) compared with health facilities (43%).

In summary, results of this study show that in many instances, private providers who stock first-line ACT and malaria blood testing often use available commodities to appropriately manage patients. However, gaps persist in ensuring all fever patients receive a confirmatory test and all confirmed cases receive treatment with a quality-assured ACT. There is a need to further promote confirmatory testing and first-line ACT treatment among patients and private-sector providers, as well as to discourage the use of non-artemisinin therapies and inappropriate use of injectable artemisinin monotherapies for uncomplicated cases.
acknowledgments
ACTwatch is funded by the Bill and Melinda Gates Foundation, UNITAID, and the UK Department for International Development. This study was implemented by Population Services International Uganda (PACE).

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

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