Uganda 2015 Private-Sector Fever Case Management Study
Presentation outline

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BACKGROUND
Private sector overview:

- The **private sector** is responsible for more than half of all antimalarial distribution at national level in most countries.
- In some contexts, private-sector outlets are increasingly equipped to appropriately manage suspected malaria.

- **QA ACT availability** > 50% among private-sector outlets in Kenya, Nigeria, Tanzania and Uganda.

- **Malaria blood testing availability** remains low, but is increasing in some countries with very recent initiatives targeting authorized outlets.
Uganda 2015 outlet survey findings:

- 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.

Availability of ACT and malaria blood testing is moderately high in these private-sector outlet types. The Fever Case Management study can help us understand how providers use malaria commodities when patients have signs and symptoms of malaria.
ACTwatch Fever Case Management Study Overview

Fever Case Management (CM) study conducted as part of 2015 outlet survey.

Fever CM study documented 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

Goal:
Inform interventions designed to close gaps between the availability of quality-assured malaria diagnostics and medicines and their routine use in managing clients.
METHODS
Fever CM Study Methods

**Design**
Cross-sectional quantitative survey with a patient consultation observation component and a patient exit interview component.

**Study population**
Patients seeking treatment for fever at eligible private-sector outlets.

**Sampling**
No specific sample size calculations completed for Fever CM study.

- During outlet survey, eligibility for the Fever CM study was determined, and eligible outlets were invited to participate in the Fever CM study.
- All patients meeting eligibility criteria were invited to participate in the study until a quota of one child and one person age five and older participated in the study at a given outlet.
PROCEDURES
Fever CM Study Outlet Eligibility Criteria

1) Outlet was either:
   • Private for-profit health facility,
   • Pharmacy, or
   • Drug store.

2) Outlet had national first-line ACT, artemether lumefantrine (AL), in stock on the day of the outlet survey

3) Outlet had malaria blood testing (malaria RDT or microscopy) available on the day of the outlet survey
Diagram for outlet inclusion in the Fever CM study

Eligible outlets* [1,266]

Outlets visited for the Fever CM study** [1,146]

Outlets that participated in patient screening*** [1,089]

Outlets with completed patient observation and exit interviews [830]

Eligible outlets that were not revisited for the Fever CM study ** [120]

Outlets that did not participate in patient screening [57]

Provider refused [32]
Outlet closed [17]
No patients during study period [8]

Outlets with no eligible patients [259]
Outlets with completed patient observation and exit interviews \((N=830)\)

**Outlet Type**
- Private For-Profit Health Facility: 423
- Pharmacy: 260
- Drug Store: 147

**Outlet Location**
- Urban: 389
- Rural: 441
Patients were invited to participate in the Fever CM 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
Diagram for patient inclusion in the Fever CM study

Patients screened* [9,330]

- Patients without completed observation and exit interview [8,057]
  - Respondent under 18 [574]
  - No fever [6,321]
  - Follow-up visit to same outlet [597]
  - Infant < 2 months [19]
  - Pregnant [101]
  - Severe illness [52]
  - Refusal [389]
  - Completed observation only [4]

Patients with completed observation and exit interview [1,273]
Patients with completed patient observation and exit interviews ($N=1,273$)

### Patient Age

- **0-4 years**: 170
- **5-14 years**: 49
- **15-49 years**: 545
- **50+ years**: 503
- **Unknown**: 625

### Patient Sex

- **Male**: 647
- **Female**: 625
- **Unknown**: 15

Legend:
- **0-4 years**
- **5-14 years**
- **15-49 years**
- **50+ years**
- **Unknown**
Observation checklist

• Completed by a trained observer to document aspects of the provider-patient interaction in the private sector.
• Documented provider compliance with standard practice and procedures and aspects of patient demand for specific products or services. The observer remained silent during the consultation.
Patient exit interview

- Conducted after patient visit was complete.
- Captured information about all medicines prescribed/obtained and assessed patient understanding of the test result(s), diagnosis, and medication regimens prescribed.
## Sample of observation checklist

<table>
<thead>
<tr>
<th>Provider</th>
<th>At any time during the visit, did a provider:</th>
<th>Yes</th>
<th>No</th>
<th>N/A Patient not present</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>O1</td>
<td>Ask about symptoms of the illness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O2</td>
<td>Ask if the patient has fever / history of fever</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O3</td>
<td>Ask about any signs of severe illness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(convulsions, unable to eat or drink, vomiting everything)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O4</td>
<td>Ask for the patient’s weight or age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O5</td>
<td>Weigh the patient using a scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O6</td>
<td>Take body temperature with a thermometer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O7</td>
<td>Recommend/offer a blood test for malaria</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(even if test was refused)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O8</td>
<td>Take blood from the patient’s arm using a needle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O9</td>
<td>Recommend/offer any specific treatment to the patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(even if the treatment was refused)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O10</td>
<td>Give a prescription for medicine to be dispensed at another outlet/facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O11</td>
<td>Dispense/sell any medicine for home use to the patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O12</td>
<td>Given the patient medicine by injection (inject medicine into the patient)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O13</td>
<td>Give the patient medicine or fluid by intra-venous (IV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O14</td>
<td>Refer the patient to another doctor or health facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O15</td>
<td>Give the patient a diagnosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O16</td>
<td>Record the diagnosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Code

- **1** = yes
- **0** = no
- **7** = N/A
- **8** = Observer does not recall

7 = N/A (Diagnosis not given)
8 = Observer does not recall
RESULTS

Among N=1,273 patients with completed observation and exit interviews
Were fever patients present at the outlet for the consultation?
Percent of patients present at the outlet, across patient age

- Patient present at the outlet: 68%
- Patient not present (family/friend seeking treatment): 32%

N=545
Percent of patients present at the outlet, across patient age

- Patient present at the outlet (80%)
- Patient not present (family/friend seeking treatment) (20%)

N=722
Percent of patients present at the outlet, across patient age

- Patient present at the outlet: 26%
- Patient not present (family/friend seeking treatment): 74%

N=1,273
Percent of patients present at the outlet, across outlet type

Private For-Profit Health Facilities

- Patient present at the outlet: 85%
- Patient not present (family/friend seeking treatment): 15%

N=630
Percent of patients present at the outlet, across outlet type

- Patient present at the outlet: 51%
- Patient not present (family/friend seeking treatment): 49%

N=219
Percent of patients present at the outlet, across outlet type

Patient present at the outlet: 65%

Patient not present (family/friend seeking treatment): 35%

N=424
Did fever patients seek previous treatment for this fever at another source of care?
Percent of patients who sought previous treatment for the current illness at a different source of care, across patient age
Percent of patients who sought previous treatment for the current illness at a different source of care, across outlet type.
Percent of patients who reported receiving previous malaria testing and treatment for the current illness at a different source of care, across patient age.
Percent of patients who reported receiving previous malaria testing and treatment for the current illness at a different source of care, across outlet type:

- **Reported Previous Malaria Test**
  - Private For-Profit Facilities
  - Pharmacies
  - Drug Stores

- **Reported Previous Malaria Treatment**
  - Private For-Profit Facilities
  - Pharmacies
  - Drug Stores
Summary:

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.
Did fever patients receive a malaria blood test?
Percent of patients who received a malaria blood test, across patient age

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

N=545
Percent of patients who received a malaria blood test, across patient age

- 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)

N=722
Percent of patients who received a malaria blood test, across patient age

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

N=1,273
Percent of patients who received a malaria blood test, across outlet type

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

N=630
Percent 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)

Pharmacies

- 51%
- 48%

N=219
Percent of patients who received a malaria blood test, across outlet type

- **Received a malaria blood test - mRDT**: 29%
- **Received a malaria blood test - mRDT & microscopy**: 35%
- **Present, did not receive a malaria test**: 1%
- **Not present (did not receive a malaria test)**: 35%

N=424
Percent of patients who received a malaria blood test, across patient age, among patients present at the consultation.
Percent of patients who received a malaria blood test, across outlet type

- **Private For-Profit Facilities**
- **Pharmacies**
- **Drug Stores**
Summary:

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.
Malaria testing results
Percent of patients who tested positive for malaria, among tested patients, across patient age.
Percent of patients who tested positive for malaria, among tested patients, across outlet type

- Private For-Profit Facilities
- Pharmacies
- Drug Stores
Summary:

About 60% of patients tested for malaria had a positive test result.
Did patients who tested positive for malaria receive ACT treatment?
Treatments received by patients who tested positive for malaria, across patient age
Treatments received by patients who tested positive for malaria, across patient age

![Bar chart showing treatments received by patients who tested positive for malaria across patient age. The chart includes categories for Non-Artemisinin Therapy, Artemisinin Monotherapy, Any Antibiotic, and Any Pain/Fever Reducer. The data is stratified by age (Age 0-4, Age 5+, All Patients). The y-axis represents the percent of patients.]
Treatments received by patients who tested **positive** for malaria, across outlet type

<table>
<thead>
<tr>
<th>PERCENT OF PATIENTS</th>
<th>Any Antimalarial</th>
<th>Any ACT</th>
<th>Quality-Assured ACT</th>
<th>Non-Quality-Assured ACT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private For-Profit Health Facilities</td>
<td>Drug Stores</td>
<td>Private For-Profit Health Facilities</td>
<td>Drug Stores</td>
</tr>
</tbody>
</table>

The graph illustrates the percentage of patients receiving different treatments across various outlet types. Antimalarials and ACTs are highlighted, with a distinction between quality-assured and non-quality-assured ACTs.
Treatments received by patients who tested **positive** for malaria, across outlet type

**Non-Artemisinin Therapy**

**Artemisinin Monotherapy**

**Any Antibiotic**

**Any Pain/Fever Reducer**

- **Private For-Profit Health Facilities**
- **Drug Stores**
Summary:

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.
Did patients who tested negative for malaria receive antimalarial treatment?
Treatments received by patients who tested **negative** for malaria, across patient age

![Graph showing percentages of treatments received by different age groups for any antimalarial, any ACT, quality-assured ACT, and non-quality-assured ACT.](image-url)
Treatments received by patients who tested **negative** for malaria, across patient age
Treatments received by patients who tested negative for malaria, across outlet type
Treatments received by patients who tested negative for malaria, across outlet type
Summary:

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.
Did patients who were not tested for malaria receive antimalarial treatment?
Treatments received by patients who were not tested for malaria, across patient age
Treatments received by patients who were not tested for malaria, across patient age

TREATMENT RECEIVED

- Non-Artemisinin Therapy
- Artemisinin Monotherapy
- Any Antibiotic
- Any Pain/Fever Reducer

PERCENT OF PATIENTS

Age Groups:
- Age 0-4
- Age 5+
- All Patients
Treatments received by patients who were not tested for malaria, across outlet type
Treatments received by patients who were not tested for malaria, across outlet type

![Bar chart showing treatments received by patients not tested for malaria, across outlet type.]

- **Non-Artemisinin Therapy**
  - Private For-Profit Health Facilities: 10%
  - Pharmacies: 0%
  - Drug Stores: 10%

- **Artemisinin Monotherapy**
  - Private For-Profit Health Facilities: 0%
  - Pharmacies: 0%
  - Drug Stores: 0%

- **Any Antibiotic**
  - Private For-Profit Health Facilities: 20%
  - Pharmacies: 30%
  - Drug Stores: 30%

- **Any Pain/Fever Reducer**
  - Private For-Profit Health Facilities: 70%
  - Pharmacies: 50%
  - Drug Stores: 70%
Summary:

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.
DISCUSSION POINTS
1) 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 at the consult and some have already been tested for malaria.

2) When patients are present, testing is moderately high in health facilities and drug stores, but very low in pharmacies.
3) Test-positive cases usually receive antimalarial treatment, but not 100% of the time. Only 60% received ACT treatment. Non-artemisinin therapies, like quinine and SP, are still used for test-positive cases, even in outlets that have ACT in stock. In health facilities, 1 in 5 test-positive patients received an artemether injection, despite not having symptoms of severe illness.

4) Test-negative patients usually do not receive antimalarial treatment. However, when they do receive treatment it is usually with an ACT, and this is more common for children under five and patients at drug stores.
5) Antibiotics are given to about half of patients who test either positive or negative for malaria.

6) About half of fever patients who are not tested for malaria receive antimalarial treatment, usually with an ACT.
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Which patients were more likely to receive a malaria blood test?

Method:
- Logistic regression: unadjusted odds ratios for each factor tested

Factors tested:
- Outlet: outlet type and location (urban/rural)
- Patient: sex and age
- Provider: recent CM training
- Testing price (below median, median, and above)
Factors with a significant association with malaria testing included:

- **Outlet type**: patients at drug stores were 27.1 times more likely to receive a test compared with pharmacies, and patients at private for-profit health facilities were 108.7 times more likely to receive a test compared to pharmacies.

- **Patient report of fever during the consultation (prompted or unprompted)**: patients who reported fever to the provider were 3.8 times more likely to receive a test compared to patients who did not report fever.

- **Previous testing**: patients who were not previously tested for malaria for the current illness were 3.4 times more likely to be tested compared with patients who had previously received a malaria test.
Factors that were not significantly associated with malaria testing included:

- Urban/rural location
- Patient sex
- Patient age
- Recent provider case management training
- Price of malaria testing (below median price versus median and above)
Factors with a significant association with quality-assured ACT treatment, among confirmed cases, included:

- **Outlet type**: patients in drug stores were 3.9 times more likely to receive quality-assured ACT treatment compared with patients in private facilities.

- **Price of quality-assured ACT treatment**: patients within outlets where one adult equivalent treatment dose (AETD) of quality-assured ACT treatment was below median price were 1.6 times more likely to receive quality-assured ACT treatment, as compared with outlets where one AETD was the median price or higher.
Factors that were not significantly associated with quality-assured ACT treatment included:

- Urban/rural location
- Patient sex
- Patient age
- Patient report of fever during the consultation (prompted or unprompted)
- Previous treatment-seeking and previous antimalarial treatment for the current illness
- Recent provider case management training
- Provider knowledge of the national first-line treatment
- Provider belief that ACT is most effective for malaria infection