Malaria Medicine & Diagnostic Markets in the Greater Mekong Sub-Region

The ACTwatch Group

14th November, 2016

65th Annual Meeting of the American Society for Tropical Medicine and Hygiene

Atlanta, Georgia
Background
Regional Context and Rationale

National malaria elimination goals across the GMS, with urgency due to artemisinin drug resistance.

Malaria market information gaps:

- Private sector readiness, contributions, and performance for appropriate case management and surveillance
- Availability and distribution chain for banned oral artemisinin monotherapy

Outlet surveys address these gaps with standardized information across the region for effective policies and strategies
ACTwatch is a research project implemented by PSI and Ministries of Health in 12 countries

- ~50 malaria outlet surveys conducted between 2008-2016
- Total market approach
- Outlet surveys measure availability, price, and market share in the public and private sectors for malaria medicines & diagnostics
Methods
Study Sites

- **Myanmar** (August 2015-January 2016)
- **Thailand** (February-March 2016)
- **Lao PDR** (November-December 2015)
- **Cambodia** (August-October 2015)

Stratification according to malaria risk and national program design
Outlet Survey Population

Study Population:
- Outlets with antimalarials or with malaria blood testing available

What is an outlet?
- Public health facility
- Community Health Worker
- Private for-profit health facility
- Pharmacy
- Drug store
- General retailer
- Itinerant drug vendor
Sampling

- Representative sample of clusters
- Complete a **CENSUS** of all potentially eligible outlets
- **SCREEN** for antimalarials in stock or malaria blood testing available
Audit: All Antimalarial Products in Stock
Audit: All Antimalarial Products in Stock

Formulation (tablet, syrup, injection, etc.)
Brand/generic names
Strength
Manufacturer
Country of manufacture
Amount distributed in the past week
Retail & wholesale price

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12. Retail selling price
13. Wholesale purchase price
14. Why do you stock this medicine? Do not read list. Circle ALL responses given
15. Comments

Tablet Audit Sheet (TSG)
Results
Availability of Any Antimalarial

Among all screened outlets

Cambodia
N=26,664

Lao PDR
N=7,586

Myanmar
N=28,267

Thailand
N=13,651
Availability of Any Antimalarial

Among all screened outlets

- Cambodia: N=26,664
- Lao PDR: N= 7,586
- Myanmar: N= 28,267
- Thailand: N=13,651
Antimalarial Market Composition

Outlet type, among outlets stocking antimalarials

- **Cambodia**: N=858
- **Lao PDR**: N=679
- **Myanmar**: N=3859
- **Thailand**: N=87

*Public health facilities were not included in the Myanmar outlet census.*
Antimalarial Market Composition

Outlet type, among outlets stocking antimalarials

- **Cambodia**
  - Public Health Facility: 40%
  - Community Health Worker: 30%
  - Pharmacy: 20%
  - Drug Store: 10%
  - Itinerant Drug Vendor: 0%
  - N=858

- **Lao PDR**
  - Public Health Facility: 40%
  - Community Health Worker: 30%
  - Pharmacy: 20%
  - Drug Store: 10%
  - Itinerant Drug Vendor: 0%
  - N=679

- **Myanmar**
  - Public Health Facility: 40%
  - Community Health Worker: 30%
  - Pharmacy: 20%
  - Drug Store: 10%
  - Itinerant Drug Vendor: 0%
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- **Thailand**
  - Public Health Facility: 40%
  - Community Health Worker: 30%
  - Pharmacy: 20%
  - Drug Store: 10%
  - Itinerant Drug Vendor: 0%
  - N=87

*Public health facilities were not included in the Myanmar outlet census*
Summary

The majority of private sector outlets do not stock antimalarial treatment.

The private sector for malaria case management varies across country contexts in the GMS.
Availability
Readiness to test and treat – Public Facilities

Among all screened outlets

Cambodia
N=173

Lao PDR
N=95

Thailand (All PHF)
N=355

% screened facilities

- First-Line Pf
- First-Line Pv
- Confirmatory Testing
- First-Line Pf/Pv & Testing
Readiness to test and treat – Public Facilities

Among all screened outlets

Cambodia
N=173

Lao PDR
N=95

Thailand (MCM)
N=68

% screened facilities

- First-Line Pf
- First-Line Pv
- Confirmatory Testing
- First-Line Pf/Pv & Testing
Readiness to test and treat – Public Facilities

Among all screened outlets

Cambodia
N=173

Lao PDR
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Thailand (MCM)
N=68

% screened facilities

First-Line Pf
First-Line Pv
Confirmatory Testing
First-Line Pf/Pv & Testing
Primaquine
Readiness to test and treat – Private Sector

Among all outlets with at least one antimalarial in stock

Cambodia
N=391

Lao PDR
N=394

Myanmar
N=2596

Thailand
N=19

First-Line Pf
First-Line Pv
Confirmatory Testing
First-Line Pf/Pv & Testing
Primaquine
Summary

- **Public sector readiness** to test and appropriately treat malaria is high in Lao PDR, but gaps exist in Cambodia and Thailand.
  - Gaps in availability of primaquine for *Pf* and *Pv* treatment.

- Major gaps in **private sector readiness** to test and appropriately treat *Pf* and *Pv*, although moderate readiness in Cambodia.
Antimalarial Market Share

Relative sale/distribution of antimalarials in the last week

% volumes distributed

Public | Private | Public | Private | Public | Private
---|---|---|---|---|---
Cambodia | Lao PDR | Myanmar

*Not inclusive of public health facilities (CHWs only)
Antimalarial Market Share

Relative sale/distribution of antimalarials in the last week

% volumes distributed

ACT  Non-artemisinin therapy  Oral AMT  Non-Oral AMT

Public  Private  Public  Private  Public*  Private
Cambodia  Lao PDR  Myanmar

*Not inclusive of public health facilities (CHWs only)
Summary

- The private sector is responsible for the majority of antimalarial distribution in Cambodia, Lao PDR and Myanmar.

- Relative distribution of first-line treatments is high in Cambodia and moderate in Myanmar.
  - More than half of antimalarials distributed in Lao PDR were chloroquine (2nd line treatment).
  - Oral AMT distribution in Myanmar remains a serious problem.
Private Sector Engagement
Supervisory Visit Received in the Last Year

Among private outlets with at least one antimalarial in stock and/or malaria testing available.
Among private outlets with at least one antimalarial in stock and/or malaria testing available.

Caseload Reporting to Government or NGO

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>% Antimalarial/testing outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>737</td>
<td></td>
</tr>
<tr>
<td>Lao PDR</td>
<td>459</td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td>2915</td>
<td></td>
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</tbody>
</table>

Note: The graph shows the percentage of antimalarial outlets available among private and NGO outlets in Cambodia, Lao PDR, and Myanmar.
Summary

- The majority of private sector outlets are not routinely supervised and do not contribute case data to national systems, with notable moderate engagement in Lao PDR.
Conclusions
Private Sector

Most private sector outlets are not providing malaria testing and treatment, but the private sector plays an important role in antimalarial distribution in Cambodia, Lao PDR, and Myanmar.

- Need improved private sector readiness to test and treat for malaria.
- Need to address distribution of chloroquine in Laos, and oral artemisinin monotherapy in Myanmar.
- Need for increased coverage of private sector engagement for providers engaged in malaria care, including passive surveillance to track and respond to all cases.
Public Sector

Progress towards elimination will require:

- Closing gaps in public sector readiness to test and treat.
- Addressing low availability of primaquine for Pf and Pv.
Thank you
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psi.org

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psiimpact.com

FOLLOW US
@PSIimpact

VISIT US
www.actwatch.info

LIKE US
facebook.com/
PSIHealthyLives

FOLLOW US
@PSIimpact

FOLLOW US
linkedin.com/company/
population-services-international
Readiness to test and treat – CHWs

Among all screened outlets

<table>
<thead>
<tr>
<th>Country</th>
<th>First-Line Pf</th>
<th>First-Line Pv</th>
<th>Confirmatory Testing</th>
<th>First-Line Pf/Pv &amp; Testing</th>
<th>Primaquine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>70% ± 5%</td>
<td>70% ± 5%</td>
<td>90% ± 10%</td>
<td>80% ± 10%</td>
<td>0%</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>30% ± 5%</td>
<td>30% ± 5%</td>
<td>40% ± 10%</td>
<td>30% ± 10%</td>
<td>0%</td>
</tr>
<tr>
<td>Myanmar</td>
<td>40% ± 5%</td>
<td>40% ± 5%</td>
<td>50% ± 10%</td>
<td>40% ± 10%</td>
<td>0%</td>
</tr>
</tbody>
</table>

N=430, N=463, N=2737
Among all outlets with at least one antimalarial in stock

**Availability of non-first-line drugs – Private Sector**

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>% Antimalarial-stocking outlets</th>
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<tbody>
<tr>
<td>Cambodia</td>
<td>391</td>
<td></td>
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<tr>
<td>Lao PDR</td>
<td>394</td>
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<tr>
<td>Myanmar</td>
<td>2596</td>
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<tr>
<td>Thailand</td>
<td>19</td>
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</table>

- **Non-First-Line ACT**
- **Chloroquine**
- **Other Non-Artemisinin Therapy**
- **Non-Oral Artemisinin Monotherapy**
- **Oral Artemisinin Monother**
2015/16 Outlet Survey Sample Sizes

Cambodia: 26,664 outlets screened
1,308 met screening criteria
N=1,303

Lao PDR: 7,586 outlets screened
725 met screening criteria
N=724

Myanmar: 28,267 outlets screened
4,416 met screening criteria
N=4,394

Thailand: 13,651 outlets screened
104 met screening criteria
N=104
## Refusal Rates

<table>
<thead>
<tr>
<th>Country</th>
<th>Refused Screening</th>
<th>Eligible, Refused Drug Audit</th>
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<tbody>
<tr>
<td>Cambodia</td>
<td>50 / 27,201 (&lt;0.01%)</td>
<td>0 / 1,308 (0%)</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>10 / 7,662 (&lt;0.01%)</td>
<td>0 / 725 (0%)</td>
</tr>
<tr>
<td>Myanmar</td>
<td>88 / 28,664 (&lt;0.01%)</td>
<td>10 / 4,416 (&lt;0.01%)</td>
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<tr>
<td>Thailand</td>
<td>126 / 13,952 (0.01%)</td>
<td>0 / 104 (0%)</td>
</tr>
<tr>
<td>Country</td>
<td>Pf first-line</td>
<td>Pv first-line</td>
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<tr>
<td>Cambodia 2014</td>
<td>DHA PPQ or ASMQ FDC + PQ</td>
<td>Artesunate IV/IM or Artemether IV/IM</td>
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<tr>
<td>Lao PDR 2013</td>
<td>AL + PQ</td>
<td>Artesunate IV/IM</td>
</tr>
<tr>
<td>Myanmar 2012</td>
<td>AL, ASMQ or DHA PPQ + PQ</td>
<td>CQ + PQ</td>
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<tr>
<td>Thailand 1995</td>
<td>ASMQ non-FDC + PQ</td>
<td>CQ + PQ</td>
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Itinerant Drug Vendors

Cambodia

- Typically currently or previously were employed at a public or private facility or pharmacy, and often have some sort of medical training.
- Operate from their homes, and/or provide mobile services.
- Tend to have testing available, and stock and distribute ACTs.

Myanmar

- Typically do not have medical training or affiliation with a facility or pharmacy.
- Provide mobile services.
- Tend to stock non-artemisinin therapies, and 1 in 5 have oral AMT; nearly half of antimalarials distributed are ACTs.