Quality of reported data is a significant challenge in Myanmar

### QUALITY OF REPORTED DATA

<table>
<thead>
<tr>
<th>METRICS</th>
<th>QUALITY</th>
<th>IDENTIFIED GAPS OR PROBLEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF MALARIA CASES AND DEATHS</td>
<td><img src="image" alt="Circle" /></td>
<td>Cases of malaria appears to be under-reported, with the WHO estimating that there are actually over three times more cases and thirteen times more deaths than reported each year:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Myanmar has an important informal health sector that is poorly included in the reporting because of a lack of regulation or enforcement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- The Myanmar surveillance system does not ensure complete and timely reporting from all health actors (public facilities, private sector, NGOs, defense health services/police health services ...) into NMCP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- “In 2016, PSI started involving the private sector and now more than 10% of reported cases come from the informal private sector.” PSI, Myanmar, Malaria Elimination 2</td>
</tr>
<tr>
<td>BURDEN OF OTHER INFECTIOUS DISEASES CAUSING FEVER</td>
<td><img src="image" alt="Circle" /></td>
<td>Only limited data was found on other infectious diseases.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data on infectious diseases collected by the Burmese authorities are generally unreliable due to methodological weaknesses, missing data, and numerical discrepancies.</td>
</tr>
<tr>
<td>ANTIMICROBIAL RESISTANCE</td>
<td><img src="image" alt="Circle" /></td>
<td>Myanmar is enrolled in GLASS (Global Antimicrobial Surveillance System) as well as in ATLASS (Assessment Tool for Laboratories and AMR Surveillance Systems) but data are not centralized and reporting is of questionable quality.</td>
</tr>
</tbody>
</table>

Sources: WHO, Advention
FOCUS ON MALARIA SITUATION

API* OF Pf (2016)  
API* OF Pv (2016)  
CONFIRMED CASES  
PER 1,000 POP

TEST POSITIVITY IN PUBLIC HOSPITALS

Governmental data | 2005 | 2010 | 2015
--- | --- | --- | ---
Share of suspected cases tested (RDT or microscopy) | ~58% | ~80% | ~100%
Test positivity (RDT or microscopy) | ~35% | ~35% | ~10%

MALARIA EPIDEMIOLOGICAL PROFILE (2016)

Parasite prevalence per 1,000 (2015) | <1
--- | ---
Population in area: | Malaria free | Low transmission (0-1 case per 1,000 pop) | High transmission (>1 case per 1,000 pop)
- 21.8M (40%)
- 23.6M (44%)
- 8.5M (16%)

Major plasmodium species | P. falciparum: 66% ; P. vivax: 34%

Drug resistant malaria | Yes in some areas, mostly along the border

Estimated tested cases | 664K

Reported confirmed cases (health facility) | 78K

Estimated cases* | 240K [170K-340K]

Reported deaths | 37

Estimated deaths* | 490 [27-980]

60% of the population of Myanmar is living in an at-risk transmission zone

While the reported positive rate dramatically decreased between 2010-2015, the reported share of suspected cases tested was close to 100% in 2015

Note: (*) estimated by the WHO. Sources: WHO, Adventon
**NATIONAL MALARIA STRATEGY PLAN AND SURVEILLANCE**

<table>
<thead>
<tr>
<th>DECISION-MAKERS</th>
<th>OTHER MALARIA INFLUENCERS (LOCAL)</th>
<th>OTHER MALARIA INFLUENCERS (INTERNATIONAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MoHS</td>
<td>Asian Collaborative Training Network for Malaria (ACTMalaria)</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>Vector Borne Disease Control Unit</td>
<td>Myanmar Medical Association</td>
<td>USAID</td>
</tr>
<tr>
<td>NMCP</td>
<td></td>
<td>The Global Fund</td>
</tr>
</tbody>
</table>

**TARGET**

- **By 2020** – reduce the incidence of malaria to less than one case per 1,000 population at-risk in all states/region
- **By 2025** – interrupt transmission of and eliminate indigenous Pf
- **By 2030** – eliminate all indigenous malaria in a phased manner and prevent the re-establishment of local malaria transmission due to importation in all areas where it has been eliminated

**KEY INTERVENTIONS TO ACHIEVE TARGET**

- Provide universal coverage for diagnosis and treatment in health facilities and at community level
- Reduce the parasite reservoir through effective radical treatment of all cases
- Focus on detecting, protecting, and providing access to diagnosis and treatment for priority population groups
- Detect and treat asymptomatic parasite carriers by screening appropriate populations using rapid and highly sensitive diagnostic tools
- Reinforce and scale up quality microscopy and access to quality assured RDTs
- Strengthen malaria programme management, to ensure that it is operating optimally at all levels of the health system
- Engage formal and informal private sectors to improve the availability of quality-assured products

**MALARIASURVEILLANCE**

The surveillance system is transitioning to District Health Information System 2 (DHIS-2) for routine reporting, Demographic Health Survey, and Malaria Indicator Survey

The goal is the integration of malaria data from public, private, NGOs and community sectors into one comprehensive national malaria information system

Systematic data collection and data transmission have been reinforced throughout the training of NMCP staff as well as of basic health staff in surveillance and computer literacy

**Myanmar aims to eliminate malaria by 2030**

Sources: WHO, PMI, Advention
# Malaria Epidemiology and AMR Landscape in Priority Countries

## Malaria Epidemiological Profile

<table>
<thead>
<tr>
<th></th>
<th>VIET NAM</th>
<th>CAMBODIA</th>
<th>S. AFRICA</th>
<th>INDIA</th>
<th>PAKISTAN</th>
<th>MYANMAR</th>
<th>THAILAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parasite prevalence per 1,000 population</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>1.7</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Population living in malaria free area</td>
<td>25.1M (26%)</td>
<td>4.7M (29%)</td>
<td>51M (90%)</td>
<td>87.9M (7%)</td>
<td>3.3M (2%)</td>
<td>21.8M (40%)</td>
<td>34M (50%)</td>
</tr>
<tr>
<td>Population living in low transmission area</td>
<td>63.9M (67%)</td>
<td>3.6M (23%)</td>
<td>3.4M (6%)</td>
<td>1,100M (81%)</td>
<td>136.7M (69%)</td>
<td>23.6M (44%)</td>
<td>28.5M (42%)</td>
</tr>
<tr>
<td>Population living in high transmission area</td>
<td>25.1M (7%)</td>
<td>7.7M (48%)</td>
<td>2.3M (4%)</td>
<td>162.5M (12%)</td>
<td>57M (29%)</td>
<td>8.5M (16%)</td>
<td>5.4M (8%)</td>
</tr>
<tr>
<td>Proportion of <em>P. falciparum</em></td>
<td>64%</td>
<td>58%</td>
<td>90%</td>
<td>62%</td>
<td>21%</td>
<td>66%</td>
<td>42%</td>
</tr>
<tr>
<td>Proportion of <em>P. vivax</em></td>
<td>35%</td>
<td>41%</td>
<td>5%</td>
<td>37%</td>
<td>78%</td>
<td>34%</td>
<td>58%</td>
</tr>
</tbody>
</table>

## Malaria Cases and Death

<table>
<thead>
<tr>
<th></th>
<th>VIET NAM</th>
<th>CAMBODIA</th>
<th>S. AFRICA</th>
<th>INDIA</th>
<th>PAKISTAN</th>
<th>MYANMAR</th>
<th>THAILAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country’s reported tested cases</td>
<td>2.6M</td>
<td>168K</td>
<td>56K</td>
<td>125M</td>
<td>6.5M</td>
<td>664K</td>
<td>1.1M</td>
</tr>
<tr>
<td>Country’s reported confirmed cases</td>
<td>4.5K</td>
<td>36K</td>
<td>22K</td>
<td>0.8M</td>
<td>351K</td>
<td>78K</td>
<td>8K</td>
</tr>
<tr>
<td>WHO’s estimated cases</td>
<td>5.5K</td>
<td>208K</td>
<td>22.5K</td>
<td>9.6M</td>
<td>956K</td>
<td>240K</td>
<td>52K</td>
</tr>
<tr>
<td>Country’s reported deaths</td>
<td>6</td>
<td>1</td>
<td>301</td>
<td>0.2K</td>
<td>113</td>
<td>37</td>
<td>33</td>
</tr>
<tr>
<td>WHO’s estimated deaths</td>
<td>9</td>
<td>345</td>
<td>274</td>
<td>16.7K</td>
<td>805</td>
<td>490</td>
<td>&lt;50</td>
</tr>
</tbody>
</table>

## AMR Landscape

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average DDD**/person in 2015 (Avg in LMICs is 4.9)</td>
<td>11.5</td>
<td>–</td>
<td>9.2</td>
<td>4.9</td>
<td>7.1</td>
<td>–</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Notes: (*) Last available year; (**) Defined Daily Dose allowing for cross-country comparison. Sources: WHO, World Bank, GF, interviews, Advention
### Other Infectious Diseases Causing Fever

<table>
<thead>
<tr>
<th>Disease</th>
<th>Endemicity</th>
<th>Surveillance Systems</th>
<th>Cases Per Year*</th>
<th>Interest for an RDT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dengue</td>
<td>Endemic in all regions</td>
<td>National detection programme with referent laboratories in each region</td>
<td>&lt;30K</td>
<td>Strong demand for an RDT targeting a common pathogen</td>
</tr>
<tr>
<td>Chikungunya</td>
<td>Probably endemic in all regions</td>
<td>Detection only possible at the National Health Laboratory</td>
<td>n.a.</td>
<td>Moderate demand for an RDT as the reported case load is low</td>
</tr>
<tr>
<td>Zika</td>
<td>Probably endemic in all regions</td>
<td>Detection only possible at the National Health Laboratory</td>
<td>n.a.</td>
<td>Moderate demand for an RDT as the reported case load is low</td>
</tr>
<tr>
<td>Melioidosis</td>
<td>Local transmission confirmed, possibly endemic, lack of data</td>
<td>No formal surveillance system, referral of clinical diagnoses to region authorities</td>
<td>&lt;100</td>
<td>Moderate demand for an RDT as the reported case load is low</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>Local transmission confirmed, possibly endemic, lack of data</td>
<td>No formal surveillance system</td>
<td>n.a.</td>
<td>Low demand for an RDT as the pathogen’s endemicity is uncertain</td>
</tr>
<tr>
<td>Scrub typhus</td>
<td>Local transmission confirmed, possibly endemic, lack of data</td>
<td>No formal surveillance system</td>
<td>n.a.</td>
<td>Low demand for an RDT as the pathogen’s endemicity is uncertain</td>
</tr>
<tr>
<td>Murine typhus</td>
<td>Local transmission confirmed, possibly endemic, lack of data</td>
<td>No formal surveillance system</td>
<td>n.a.</td>
<td>Low demand for an RDT as the pathogen’s endemicity is uncertain</td>
</tr>
</tbody>
</table>

A wide range of infectious pathogens causing febrile illnesses are endemic in Myanmar
However, very limited surveillance and low reported case load limit interest in RDTs for most pathogens

Note: (*) Best data available, reported data. Sources: MoHS, Advention
ANTIMICROBIAL RESISTANCE (AMR)

THE GOVERNMENT HAS TAKEN ACTIONS TO TACKLE AMR

| 2007-2008 | Nation-wide survey found that 4.2% and 10% of cases in new and previously treated TB cases respectively were multidrug-resistant (MDR) |
| 2011 | Signature of the Jaipur Declaration on AMR that recognizes that it is imperative that the national governments accord utmost priority to this problem to preserve the efficacy of antibiotics in the fight against microbial diseases. |
| 2016 | National Strategic Plan for Health Laboratories: NSPHL 2017-2022 with National surveillance for AMR |
| 2017 | National Action Plan for AMR |
| 2018 | National Multi-sectoral Steering Committee (NMSC) for combating AMR with 19 members supporting the ‘One Health’ approach to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes |

Myanmar has called on countries in the Mekong basin region to cooperate in combating antimicrobial resistance under a regional health security project

…BUT WORK REMAINS TO BE DONE

- Myanmar is at the early stage of surveillance set up, and surveillance guidelines have been developed but not fully implemented. AMR surveillance data exist but are not centralized, with limited analysis and representativeness

Regional Workshop on AMR in South East Asia of 26-28 March 2018 recommended to:
- Establish a systematic, standardized process to collect, assess and share data, maps and trends on AMR hazards
- Promote establishment of the One Health surveillance based on coordination between human and animal health
- Insert AMR knowledge in undergraduate and post graduate medical, nursing and basic health teaching curriculum

AMR has been identified as a global health issue but structuring an adequate answer will require more cooperation for a One Health approach

Sources: WHO, National Health Laboratory, Adventen