Progress of Malaria Elimination Efforts in the Greater Mekong Subregion 2016

WHO MPAC BRIEFING

GENEVA 14th September 2016

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Outline

Summary Outcomes

Strategy

Regional Coordination

Country Progress

Challenges

Transition
ERAR Framework transition to Elimination Strategy

• Since 2008: Artemisinin resistance containment and elimination
  • Thailand and Cambodia border
• April 2013: WHO launched ERAR framework for GMS
  • To contain artemisinin resistance in the GMS
  • ERAR established as regional hub to coordinate containment strategies
• MPAC, Sep 2014: Elimination of *P. falciparum* in the GMS by 2030
• 2016: Transitional year for the ERAR hub
  • Support national strategic plans to accelerate towards elimination
• 2017 onwards: ERAR hub will evolve into GMS Malaria Elimination hub
  • With strong national and leaner regional presence
Malaria Case Reporting in GMS [2012-15].

**Confirmed Malaria Cases by Country (2012-2015)**

- **Cambodia**
  - 2012: 40,476
  - 2013: 21,309
  - 2014: 25,618
  - 2015: 33,314

- **Laos**
  - 2012: 46,140
  - 2013: 39,582
  - 2014: 50,698
  - 2015: 36,059

- **Vietnam**
  - 2012: 19,638
  - 2013: 17,101
  - 2014: 15,440
  - 2015: 9,331

- **Thailand**
  - 2012: 36,254
  - 2013: 32,408
  - 2014: 16,114
  - 2015: 8,290

**Myanmar Confirmed malaria Cases (2012-2015)**

- 2012: 480,586
- 2013: 333,871
- 2014: 205,658
- 2015: 182,616

**China (Yunnan) Confirmed malaria Cases (2012-2015)**

- 2012: 663
- 2013: 466
- 2014: 409
- 2015: 613
GMS Strategy overview

Goals

• To eliminate malaria by **2030 in GMS**
  • eliminate *P. falciparum* malaria by **2025** (considering the urgency of multidrug resistance)

• To maintain malaria-free status and prevent reintroduction (where transmission has been interrupted)

Objectives

1. Interrupt transmission of *P. falciparum* in areas of multidrug resistance by **2020**, and in all areas of the GMS by **2025**.
2. Reduce malaria burden in high-transmission areas (<1/1000 pop) and initiate elimination by **2020**
3. Prevent malaria reintroduction where interrupted.
Regional level priorities

- Interrupt transmission in areas with multidrug resistance in the border (Cambodia and Thailand);
- Reduce burden in high transmission areas (Myanmar);
- Control malaria in areas of resurgence.

Country level priorities

- Eliminate malaria in areas of multidrug resistance;
- Reducing burden in areas of transmission;
- Local analysis and better targeting of measures to high risk groups (MMP)
GMS Strategy 2015-2030: Milestones and targets

**Low transmission:**
- surveillance for elimination

**High transmission:**
- Universal coverage
- systems strengthening (case & ento. surv.)

**Malaria elimination policies/ NSPs developed/updated**

**2015**
- Malaria transmission interrupted in 60% of districts in Thailand

**2016**
- Policies/ NSPs developed/updated

**2017**
- Elimination of P.f. malaria in all GMS countries;
- Malaria eliminated in Cambodia and Thailand

**2020**
- P.f. transmission interrupted in all areas of MDR
- P.f malaria eliminated in Cambodia;
- Malaria eliminated in Yunnan;
- All 1st level subnational areas in GMS in elimination mode

**2025**
- Malaria eliminated in all GMS

**2030**
- Malaria eliminated in all districts in GMS

World Health Organization
Case detection and management

- Universal access to quality diagnosis (public, private sector and community)
- Treatment with ACTs, primaquine for both *P. falciparum* (single dose) and *P. vivax* (anti-relapse therapy)
- Management of severe cases and imported cases to prevent deaths

Disease prevention in transmission areas

- Vector control
- Drug based approaches

Malaria case and entomological surveillance

- Mandatory notification
- Case based malaria surveillance
- Case, foci investigation and response
- Entomological surveillance
- Outbreak detection and response
- Vigilance

Supporting elements

- Innovation and research
- Enabling environment, including HSS, multi sector engagement and governance
## Status of national malaria elimination planning, 2016

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<td>Completed</td>
<td>2016-2020</td>
<td>141,351,385</td>
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<td>Launched in 1/2016</td>
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<td>7,936,507</td>
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<td>97,030,000</td>
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<td>Launched 25 Apr 2016</td>
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<td>2016-2020</td>
<td>147,434,138</td>
<td>82,114,620</td>
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Source: GMS national malaria programs
GOAL
• Five year strategy to reduce malaria morbidity and mortality by 85%, and 75% respectively by 2020 relative to 2015 baseline figures.
• Maintain malaria free status and prevent re-establishment of local transmission in States/Regions where transmission has been interrupted.
• Eliminate *Plasmodium falciparum* malaria by 2025 and ALL malaria from Myanmar by 2030.

VISION
A Malaria Free Myanmar by 2030
Regional coordination: Tracking progress, surveillance

• Data elements and indicators agreed
  • Burden reduction and elimination phases
  • New additions: elimination, cross-border, migrant and mobile populations, private sector, gender and community

• Regional Hub Database- DHIS2
  • Burden reduction-elimination
  • Replicate same to all countries
  • Monthly and subnational data sharing
  • Bulletin and reports
  • Mapping

• Country level:
  • Malaria elimination database and Case-based surveillance
    o Cambodia – starting in one out of 18 OD
    o Myanmar- 52/284 township (MS Access, others- Excel→ DHIS2)

• Data managers being recruited in countries
  • Cam, Lao, MMR,

• Collaboration with Global Fund – RAI
## Tracking historical data: monthly, subnational

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<tr>
<th>Country</th>
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<th>2011</th>
<th>2012</th>
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<td>District</td>
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<td>District</td>
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There are currently five ACTs recommended by WHO: AL, ASAQ, AS-MEF, ASSP and DHA-PIP. A sixth ACT, artesunate-pyronaridine, was given a positive scientific opinion by the European Medicines Agency (EMA) under article 58 and is being considered for recommendation by WHO. By default, artesunate-sulfadoxine-pyrimethamine (ASSP) is considered having a high failure rate in the region as quadruple and quintuple dhfr and dhps mutations are fixed.
SUMMARY of Therapeutic Efficacy Studies 2010-16

• TES results provided evidence for the revision of national malaria treatment guidelines in Cambodia and Thailand.
• Informed the operational response for prioritization of malaria elimination efforts in areas of multi-drug resistance including ACT resistance.
• Falciparum malaria in the GMS is becoming increasingly resistant to antimalarial medicines (decreasing to <90% cure rates to AL, AS-MEF and DHA-PIP in southern Lao PDR, Thailand and Cambodia, respectively, in the last 6 years)
• Piperaquine resistance (DHA-PIP treatment failures ranging from 10% to 65%) has emerged in Western Cambodia and expanded considerably in proportion of strains affected as well as in geographical area;
• limited treatment options in Cambodia; ASAQ is currently being tested and Pyramax™ needs to be tested in eastern Cambodia.
Summary Results and challenges

• molecular studies with Kelch 13 have confirmed that artemisinin resistance has emerged independently in all countries of the GMS.
  • with several variants from the eastern and western parts of the region;
• Majority of cases in the GMS who have delayed parasite clearance still clear their infections provided that the ACT partner drug remains effective even in area of high prevalence of K13 mutants (i.e. China, Myanmar),
  • except in the presence of concomitant resistance to the partner drugs (i.e., PIP in Cambodia and southern Viet Nam, MEF in Thailand).
• Declining number of cases in some study sites, hence longer study period to meet required sample size,
  • expand to more remote sites, and more
  • logistical and HR constraints, also affecting
  • WHO logistic and administrative approvals
Areas of suspected resistance to artemisinins (where >10% of enrolled patients still have parasites 72 hours after start of treatment)

Areas of confirmed resistance to artemisinins

GMS, 2008 - 2012

- Champassak, Laos, 2014
  - 22% D3(+), 90% ACPR
  - 54% C580Y, 23% R539T

GMS, 2012 - 2015

- Viet Nam, 2014
  - Binh Phuoc: 30% D3+, 64% mutations
  - DakNong: 29% D3+, 74% K13
  - Gia Lai: 23% D3+, 46% K13 mutations
  - Note: all 3 sites had 100% ACPR

Yunnan (China), 2012-2014
- <5% day 3+, >95% ACPR
- 64% K13 mutations (70% F446I and 4% C458Y, C447S, P574L, F483S, A676D, G495C)

Sources:
Myanmar results as reported from the TEG, May 2014
Malaria Vectors and Entomology Priorities

An dirus

An minimus
Rapidly changing ecology and transmission risk areas

Cambodia forest cover

2000

2014

Legend:
- Water
- Cloud
- Dense Forest
- Mixed Forest
- Non Forest

Source: Open-development Cambodia https://opendevelopmentcambodia.net/
Efficient primary vectors; numerous secondary vectors.
Insecticide Resistance Monitoring

No evidence of resistance in *An dirus* throughout GMS

**Lao PDR**: *An. minimus* and *An. maculatus, An. philippinensis* sensitive to deltamethrin and permethrin; resistant to DDT.

**Vietnam**: possible *An. minimus* pyrethroid resistance on China border; *An. epiroticus* high pyrethroid resistance in southern delta.

**Cambodia**: only *An. barbirostris* with pyrethroid resistance.

**Myanmar and Thailand**: no evidence of vector resistance.
Entomology Priorities:

- Vector identification and mapping with rapidly changing ecology

- Facilitate development of personal protection for outdoor transmission.

- Systems Strengthening: posts, training, career opportunities and support for field staff
Regional coordination

<table>
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<tr>
<th>Domain</th>
<th>Status</th>
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</table>
| Capacity building & technical collaboration | • GMS elimination and surveillance training (Thailand, China)  
• Elimination operation manual (draft)  
• Expert consultation (New Delhi) |
| Cross border collaboration       | • Cross-border initiatives: Lao-Thailand, Cambodia-Thailand, China-Myanmar, Myanmar-India/Bangladesh  
• MMP strategy and toolkit developed, in country MMP pilots |
| Product quality                  | • WHO Collaborative registration procedure and workshop on WHO Prequalification Programme conducted  
• Medicines quality issues have been discussed at the ASEAN  
• Improved collaboration between national stakeholders  
• Country workplans developed, incl oAMT elimination and surveys |
| Priority research                | • Priority GMS research agenda defined (2013), update in progress  
• Support of several ongoing research projects  
• Regional Research Coordination group established (11/2014) |
| Surveillance, M& E               | • Regional data sharing platform (DHIS2)-pilot launched and rollout to countries ongoing  
• Case-based surveillance using DHIS 2 being field-tested (in Cambodia)  
• Intense TES monitoring through networks (GMS and beyond) |
| Coordination and governance      | • Monitoring of mosquito vectors—Networks developed-ongoing  
• Leading and supporting GMS strategy and NSP developments  
• Coordination of Containment to Elimination efforts in GMS  
• Facilitate regional and partner coordination (annual forum)  
• Tracking/engaging in resource mobilization  
• Advocacy & communication (website, newsletter) |
Country updates: Cambodia

- NSP: MEAF 2016 – 2020 launched
  - Cost $143.2m 2016-2017 is $49m
- Study: low dose primaquine
- Technical support: forecasting, registration, procurement and management of antimalarials
- TES:
  - DHA-PPQ: >60% failure in Siem Reap,
  - 30-40% in Oddar Meanchey, Stung Treng and Battambang provinces
- Elimination in 18 Ods
- Case-based surveillance being field tested (initiated)
- limited entomology capacity at sub-national level
Country updates: Cambodia – CNM and Partners

In MEAF, CNM lays out various partner coordination structures to achieve malaria elimination.
Country updates: China

- **39 local cases nationwide, Yunnan, 23 indigenous cases in 2015**
- Preparing for certification
- Updated national elimination strategy & Yunnan elimination strategy (2015)
- Yunnan surveillance training
  - Conducts international trainings
- Cross border collaboration meeting between Myanmar and China, 3/2016
- Evaluation of border malaria ports planned

![Yunnan (China) Monthly Confirmed Cases (2015-Jun 2016)](chart.png)
Country updates: Lao People’s Democratic Republic

- No. of malaria cases reversing rapidly from the outbreak years (2012-2014)
- NSP 2016 – 2020 completed, planned launch, October 2016;
- Interventions for MMPs started
- Expand work with private sector
- Integration of malaria data into DHIS2
  - Training rolled out in 5 Southern Provinces
- National slide bank established (Mic)
- TES completed in Sekong (ACPR 86%) and Champasak (ACPR 90%) provinces.
- No significant resistance to pyrethroids, some to DDT in secondary vectors
Country updates: Myanmar

- Decrease in incidence
  - 2013 vs 2014: Cases-38%, Deaths 68%
  - 2014 vs 2015: Cases 41%, (<180,000)
- Increased testing with RDT
- Malaria Programme Review completed
- NSP and costing Completed
- Concept Note GF (NFM, RAI), June 2016
- Cross border meetings: China and SEA countries
- Mapping of complex partners (>25) and interventions coverage completed
- Surveillance: (>70 additional M&E staff), MIS and DHIS ongoing
- Primary Vectors still susceptible to Pyrethroids
- Strengthen coordination (6 TSG meetings in 2015)
Country updates: **Thailand**

- **NSP for malaria elimination (2017-2026),** launched, 25 April 2016
- **Drug policy changed in Q2/2015 to DHA-PIP,** rollout in 2016
- **Premamaquine roll out**
- **P.f API= 0.02/1000 pop**
- **Strengthening of microscopy QA**
- **Surveillance Web-based established Business Intelligence (BI)**
- **Shortfall of malaria staff**
  - requires integration into general service
- **Evaluation of DOTs ongoing**
- **Strong system of entomology at central and provincial level as well as in university. Strong OR on outdoor transmission**
Country updates: Viet Nam

- Cases reduced significantly
  - 2013 vs 2015: 46% (17,123 to 9,331)
- Premaquine
  - Single dose-ongoing
  - Radical cure-compliance
- 21% of pharmacies still selling oAMT
  - 94/445 pharmacies (survey, 5 provinces, 2014)
- Costed NSP developed
- Mapping of MMPs completed in 1 province
- Expansion of malaria posts (access for MMPs) - RAI
  - 140 posts already established.
- Expanding resistance to ACT (PPQ) - revise guide line
- Retreatment of conventional nets from market with ICON 2.5CS

High national entomology capacity for national institutes
Policy and Implementation Challenges

- Country ownership
- Interventions in hard to reach populations
  - Measuring the magnitude
  - Accessing the risk groups
- Cross border collaboration
  - Definition of the focus
  - Joint work plans
  - Tracking and documentation
- Complex partners landscape
  - Fragmentation and stakeholder coordination
- Expanding drug resistance
- Delays in rollout of policies and guidance
  - Drug policy change (ACT rotation, primaquine, etc.)
  - Choice/targeting of VC interventions
- Elimination- largely new concept
  - Implications on HR, structures
  - Re-orientation, change mind-set
  - More domestic funding & commitment
- Weaknesses of health systems
  - Leadership & governance, HR, HIS, health financing, PSM, health technologies incl mic)
Way forward

Achieve impact:
- Eliminate *P. falciparum* malaria from the GMS by 2025 or earlier
- Elimination malaria from the GMS by 2030

Reorient the Regional Hub from containment to elimination

I
Promote high level and **multi stakeholder engagement** to keep malaria elimination high on the agenda and ensure mutual accountability

II
Strengthen existing malaria surveillance systems in their transition towards malaria case-based and entomological surveillance as core intervention

III
Coordinate and synergize case detection and management, disease prevention and vector control interventions in-country and across programs and sectors

IV
Plan and implement **capacity strengthening** activities (training, mentoring and supervision)

V
Keep an **independent score** of sub regional progress in malaria elimination, including **drug & insecticide resistance and cross border collaboration**

**World Health Organization**
A field visit in Sanya to investigate a malaria case