

SMRU.



Tools for Malaria Elimination

**Relative contribution of generalized access to early diagnosis and treatment
and of hotspot-targeted mass drug administration**

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Context: Eastern Karen state, Myanmar



Malaria Elimination Task Force:

- started in April 2014
- target area: 4 townships, 1500 villages, 365,000 persons
- partnership of 8 community-based organizations in charge of health in the target area

P. falciparum elimination strategy

1) Generalized access to early diagnosis and treatment by community-based Malaria Posts (RDT, Artemether-Lumefantrine+single dose Primaquine) {symptomatic infections: \approx 15% of Pf infections}

→ Evidence of impact on incidence and prevalence of *P. falciparum* from multiple settings

including Southeast Asia: **Maude et al, PloS One 2012 & Malaria J. 2014 in Cambodia; Carrara et al, Plos Medicine 2006 in Thailand...**

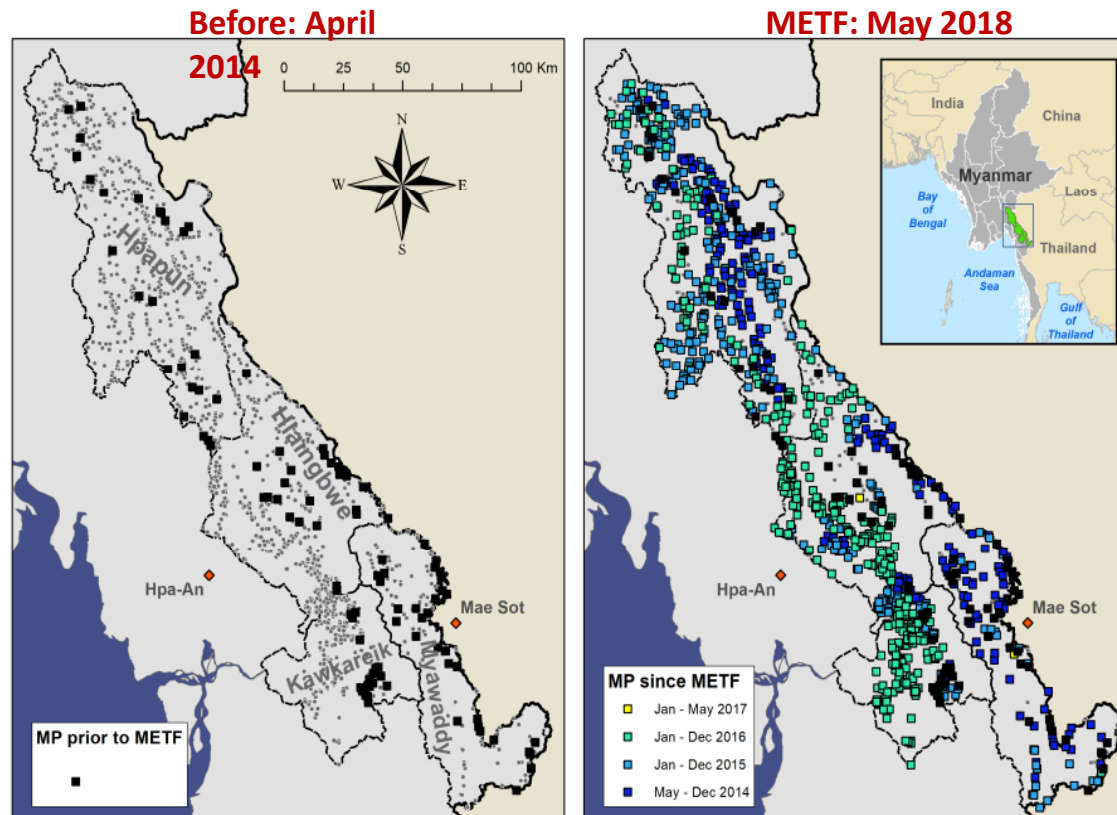
• 2) Detection of prevalence hotspots (qPCR surveys) + Mass drug administration (DHA-Piperaquine, single dose Primaquine, monthly over 3 months) {asymptomatic carriers: \approx 85%}

→ Pilot studies in Southeast Asia: **Lwin et al, Malaria Journal 2015, Landier et al, Wellcome Open Research 2017; Peto et al, CID 2018**

→ Impact on: prevalence, incidence, entomological inoculation rate

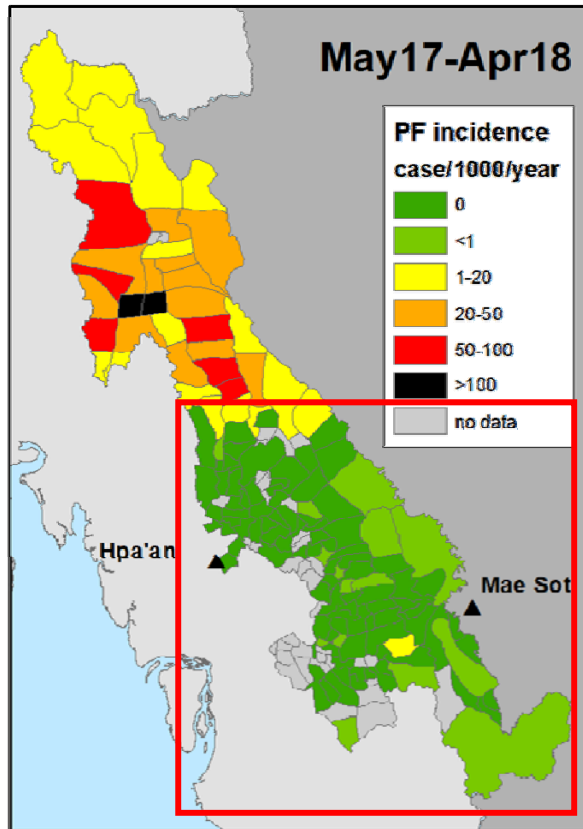
Results: generalized access to EDT

- **1220** (80%) villages in target area equipped with Malaria Posts between April 2014 and June 2016



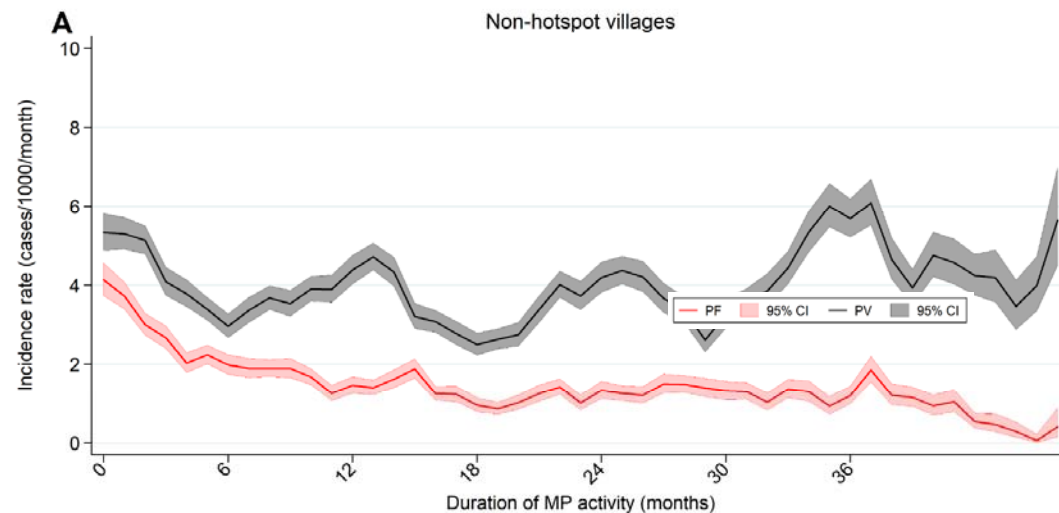
- **Requisites:**
 - Trained worker
 - Constant supply of RDT and ACT
 - Available at all times (ensures any fever case addressed within 2 days of initial onset)
 - Reports activity for near real time surveillance and reaction.

A specific impact of Malaria Posts on *P. falciparum* incidence at village level



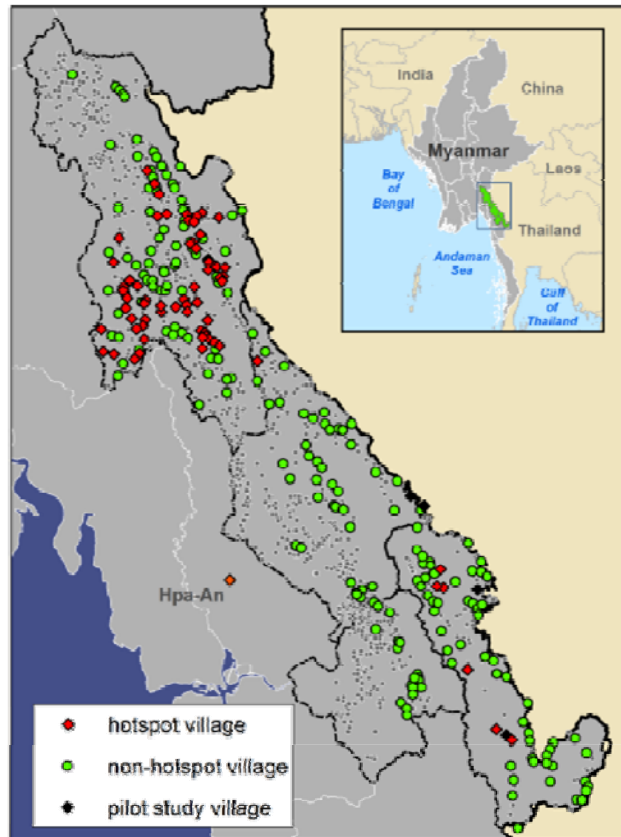
In areas where submicroscopic reservoir low (non hotspot): MP alone ensures steady decrease of Pf caseload. 4 years of weekly data show 16% Pf incidence decrease each 3 month of MP existence. Exclusively Pf.

- South half: 94% village tracts Pf API < 1.



Updated with Year 4 form Landier et al. Lancet 2018

Results: detection of hotspots & MDA



Baseline prevalence surveys in 272 villages

69 Hotspots identified

definition: villages with >40% malaria prevalence by ultrasensitive qPCR survey, including 20% of PF among positives

61 Hotspots treated with MDA (in 6 waves)

- 5% of villages
- ~14,000 persons (3.7% of population)
- Participation to ≥ 1 round: 92%
- Participation to 3 rounds: 62%

***Community engagement

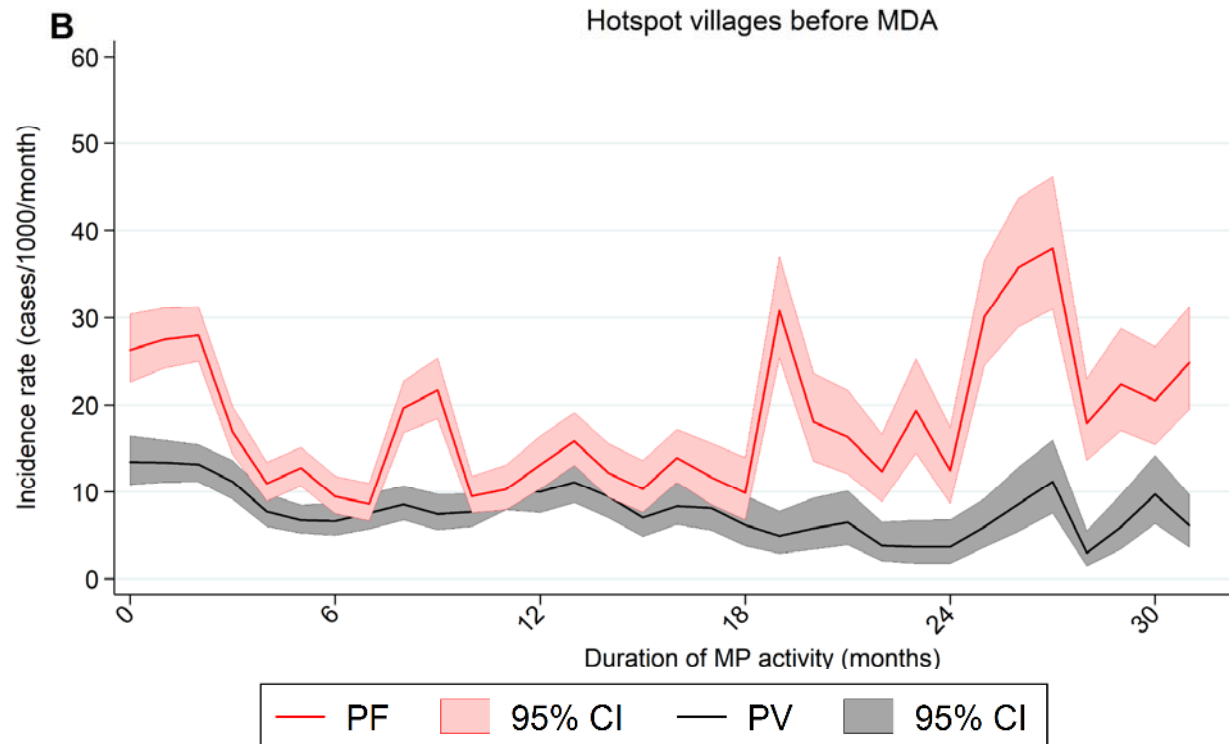
Koenig A et al, Wellcome Open Research
2018

A specific impact of Malaria Posts on *P. falciparum* incidence, but not in hotspots

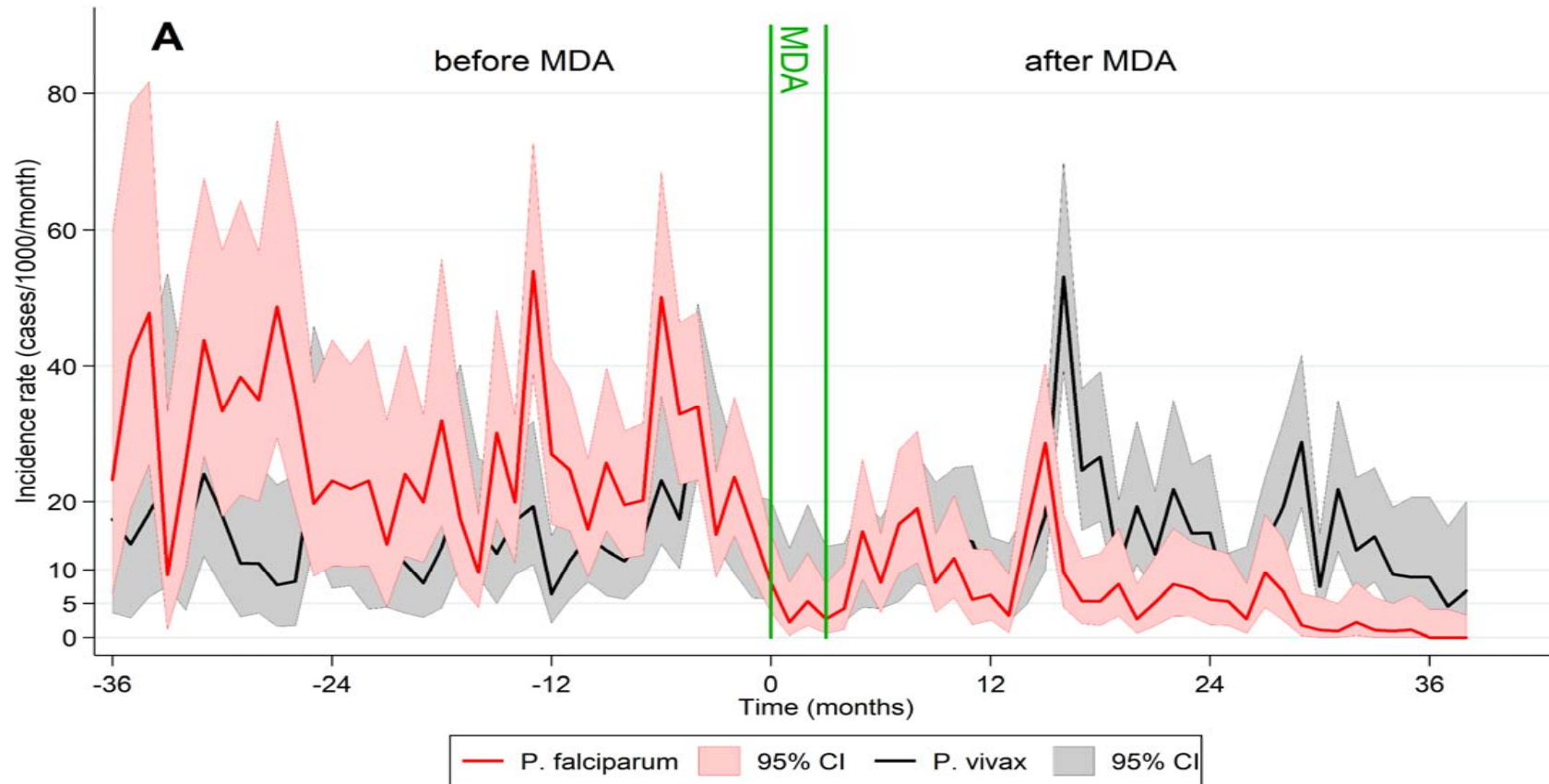
3-fold higher incidence in hotspot than in non-hotspot (IRR hotspot/non hotspot=2.4 (1.6-3.7))

Slower & more heterogeneous decrease in PF incidence with Malaria Post activity

(IRR per quarter=0.92 (0.87-0.97))



Impact of MDA on *P. falciparum* incidence in reservoir hotspots



75% decrease in PF incidence after MDA compared to before

(IRR after/before=0.28 (0.22-0.35))

Updated with year 4 from Landier et al, Lancet 2018

Discussion

- Operational program
- Significant impact achieved on *P. falciparum* malaria in <4 years

Malaria Posts: Easy access to quality, community-based early diagnosis and treatment

+

Targeted Mass Drug Administration: trigger/accelerate decrease in a limited number of hotspots (<4% of target population)

- Way forward: maintain MP network, mass screening and treatment approaches (against hotspot and reactive), vector control tools for outdoors transmission.

Thank you



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Results: regional impact on *P. falciparum* incidence

