

Diverse challenges and solutions for elimination of residual malaria transmission in SE Asia

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Outline

Approach is programmatic, based upon field observations in Myanmar and Indonesia

Four types of 'residual transmission'

- among migratory forest-goers of various types
- among indigenous people who live in forest
- among village based people who perform seasonal work in 'farm huts'
- among people living in lowlands where *Anopheles farauti* spp. are prevalent.

Hard to reach

- Geography shouldn't be an issue
- Some sites – farms huts – accessible via village bureaucracy
- Some sites unreachable by authorities
 - Require engagement with peers











Seasonal brick makers and malaria risk



Gold mines

- Variable levels of organization and legality
- Each requires a customized approach
 - Aceh – provincial intervention
 - Gorontalo – health center advocacy
 - Meratus mountains, Kalimantan – central government advocacy to local authorities



Buru – large mine

- Thousands of migrants from various parts of Indonesia
- A true gold rush







Gorontalo

- Artisanal mines
- Locally operated









Aceh

- Artisanal mines
- Locally owned managed
- Imported labor from west Java

Quasi-legal gold miners in Aceh, Indonesia







Knowlesi patient, her little brother, and Mom

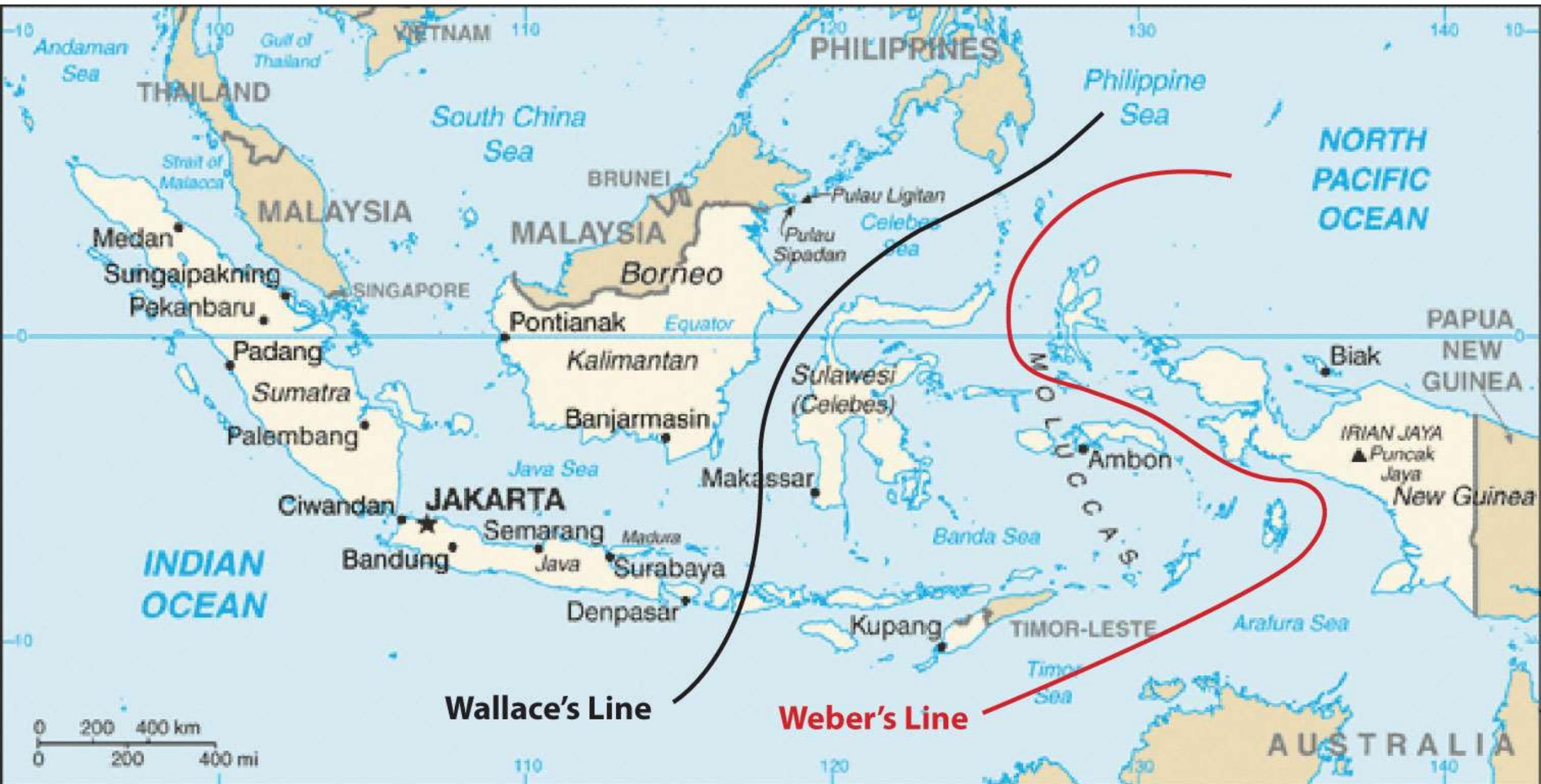


House of *P. knowlesi* patient in Sabang, Aceh



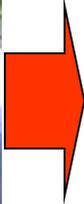
Somewhere east of Wallace's line

- Anthropophilic vectors are more common
- LLINs + case management are insufficient (API in the hundreds in some areas with good coverage of both)
- Other interventions are needed
 - LSM appropriate in some areas
 - VMWs (borrowing from the Mekong, thank you) also being deployed





- Masyarakat melaksanakan pemberantasan tempat perindukan nyamuk secara mandiri dan berkelanjutan.



Drainage works and homemade promotional banners.







RESEARCH ARTICLE

Open Access

Malaria elimination in remote communities requires integration of malaria control activities into general health care: an observational study and interrupted time series analysis in Myanmar



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Abstract





Conclusions - 1

- In elimination contexts – at least in SE Asia – economic forces drive exposure, including:
 - Forest resources
 - Gold mining
 - Farm huts
 - Plantations
 - Seasonal brick making
 - Seasonal variation in price of fish
 - Fruit harvesting season (durian, cashews, ganja, etc.)
- Details of organization of each type of activities matter – is there a supervisory structure? Legal? Quasi-legal? Illegal? Can government approach? Or NGO?

Conclusions - 2

- Malaria elimination in Asia hinges not only in the Mekong, but in lowland areas inhabited by the anthropophilic members of the *Anopheles farauti* complex.
- “Do the basics right” – Sri Lanka. Challenges are not primarily technical, but managerial and political. If subnational staff and communities are given proper support and encouraged to think for themselves, then elimination can be achieved.
- If vector control tools reduce transmission, albeit only somewhat, they should be deployed so long as costs are not too great. Evidence requirements for tools targeting specific populations should not be as stringent as for broadly applicable tools.
- “Do the basics right – quickly!”