HUMAN RESOURCE CAPACITY FOR VECTOR CONTROL AND CAREER PATHWAYS

ENTOMOLOGY AND VECTOR CONTROL FOR MALARIA ELIMINATION REGIONAL MEETING AND WORKSHOP
KASERTSART UNIVERSITY, BANGKOK, THAILAND, NOVEMBER 7 – 10, 2016

DR. CHRISTINA RUNDI
MINISTRY OF HEALTH MALAYSIA
08 NOVEMBER 2016
• Challenges in Vector Control
• Scope of work: Entomologist
• Capacity building in Malaria Elimination
  • Summary
Challenges in Vector Control (1/2)

• Financial:
  - A reduction in financing for malaria will impede further progress (and reverse current achievements) in malaria elimination. (national and global)
  - Many APMEN member countries are recipients of global funding

• Capacity building
  - Lack of public health entomologists – a recognised fact by many APMEN member countries
  - Skilled staff needed
    - to maintain current coverage with current interventions
    - to manage insecticide resistance
    - to develop new paradigms for tackling 'residual' transmission (proper understanding of the local transmission dynamics)
Challenges in Vector Control (2/2)

- Insecticide resistance
- **Outdoor transmission**: outdoor sleeping, night-time activities
- Residual transmission: dominated by vectors that bite outdoors, early biter and rest outdoors.
- **Limited interventions**: IRS & ITN – decreasing number of available and effective insecticides for malaria vector control.
- Secondary vectors: mostly zoophilic and thus thought to be unimportant in transmission; some species have shown unexpectedly high anthropophily, have the potential to augment or extend transmission as they are exophagic and exophilic

- Hybrid “super mosquito” resistant to insecticide-treated bed nets: interbreeding of species, ability to survive exposure to ITN
Malaria Trend in Malaysia, 1961 - 2011

1967-1982 MEP

1982 MCP (Malaria Control Programme)

1995 ITN (Insecticide Treatable Net)

• 2011 Malaria Elimination Programme
Scope of work: Entomologist

A scientist who study insects, including their relationships with other animals, their environments, and human beings.
Scope of work: Entomologist (1/6)

- Entomological surveillance
- Entomological intelligent and investigation
- Pest surveillance
- Expanded pest surveillance and control

Diagram:

- Ento practice in prev of ABD and pest control
- M & E
- Prof Dev
- Lab
- Policy
- Advocacy & Comm
- Monitor usage of equipment, pesticide
- Forensic Entomology
Scope of work: Entomologist (2/6)

- Ensure compliance to standard and SOP (insecticide, equipment)
- Entomological and pest impact assessment
- Monitor the quality of intervention (e.g. TOCOSURE)
- Evaluate effectiveness of intervention
Scope of work: Entomologist (3/6)

- Entomology Laboratory
- Insectarium

- Ento practice in prevention of ABD and pest control
- M & E
- Lab
- Professional Development
- Policy
- Advocacy & Comm
- Forensic Ento
- Monitor usage of equipment, pesticide
Scope of work: Entomologist (4/6)

- Calibrate and verification of equipment, insecticide
- Insecticide Resistance Management and monitoring
- Study on insecticide characteristic and properties (e.g. insecticide toxicology)
Scope of work: Entomologist (5/6)

- Forensic entomology
- Consultation on entomology and vector control
- Regulate and legalize pest and arthropod control measures in government health facilities
- Policy development on entomology and vector control

Diagram:
- Scope
- Entomology practice in prev of ABD and pest control
- M & E
- Lab
- Policy
- Advocacy & Comm
- Forensic Enjo
- Monitor usage of equipment, pesticide
Scope of work: Entomologist (6/6)

- Continuous Professional Development and training
- Development of entre of excellence on entomology and vector control
- Research and Innovation

There are 5 Key Elements in IVM:
1. Advocacy, social mobilization dan legislation.
2. Collaboration within health sector and other sectors
3. Integrated approach
4. Evidence based decision making
5. Capacity building

IMR: Diploma in Applied Parasitology and Entomology

- Professional Development
- M & E
- Policy
- Advocacy & Comm
- Forensic Ento
- Monitor usage of equipment, pesticide
- Lab
- Ento practice in prev of ABD and pest control

Malaria entomology and vector control
Training modules for malaria control
TRAINING MATERIALS

Vector Pocket Guide

MALARIA VECTORS
IN ASIA-PACIFIC COUNTRIES

APMEN
asia pacific malaria elimination network

ANOPHELES DIRUS

IR MAPPER

Explore the VecNet Toolset

VecNet provides a simplified interface to model the impacts of interventions on malaria transmission for control and elimination. Learn more about VecNet.

Information Sharing
VecNet is based on a philosophy of global access: all tools and resources are freely available.

Collaborations
VecNet collaborations include NGOs, universities, industry, and government. Join us!

News
Discover the latest VecNet news and learn about malaria topics.

Digital Library
Contains over 10,000 articles, books, and reports on malaria, its control, and its eradication.

Data Warehouse Browser
Contains over 100 datasets containing weather, vector, and population information.

Transmission Simulator
Models changes in malaria transmission due to interventions or environmental changes.

Subscribe to our newsletter
Other control measures

• “Proper” housing – to further reduce indoor transmission

[Image of a man wearing a mosquito net, children smiling in a village, a book titled "Larval Source Management: A supplementary measure for malaria vector control, an operational manual", and a scene of larviciding.]
1. Malaria Surveillance System
2. Vector Control through IVM approach
3. Early detection and prompt treatment
4. Outbreak preparedness and response
5. Communication and Social Mobilization
6. Capacity Building
7. Research
STRAEGY 1: STRENGTHENED MALARIA SURVEILLANCE

- First class treatment for human malaria
- Case-based surveillance
- PCR testing for all species
- Revision of stratification localities based on incidence (RED, YELLOW, GREEN)
- Grading of “Green” localities based on vulnerability and receptivity
- Prescribed activities for green localities
Target: Elimination of locally acquired malaria in Malaysia by 2020

West Malaysia: elimination by 2015.

Sabah and Sarawak: elimination by 2020.

AREA | CRITERIA
--- | ---
RED | Incidence $\geq$ 1 / 1000 population
YELLOW | Incidence < 1 / 1000 population
GREEN | No local transmission
## STRATEGY 2: IVM – IRS & BEDNETS

<table>
<thead>
<tr>
<th>LOCALITY</th>
<th>CRITERIA</th>
<th>END-GAME</th>
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</table>
| **RED**  | Insidence ≥ 1/1000 population | ▪ IRS – 6 cycles, 100% coverage  
▪ Bednets – 100% houses, retreatment – 6 cycles |
| **YELLOW** | Insidence < 1/1000 population | |
| **GREEN (FOCI)** | No indigenous case | ▪ Focal spraying - 100% coverage  
▪ At least 2 cycles until no new case for a year  
▪ Bednets – 100% houses,  
▪ Retreatment – at least 2 cycles until no new case for a year |

▪ Entomological surveillance
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**RE- STRATIFIKASI : 2008-2010 vs 2013-2015**
NUMBER OF HUMAN MALARIA CASES IN SABAH, 2016 (UNTIL EW 42)

**NUMBER OF CASES**

- **MIXED**
- **P.VIVAX**
- **P.MALARIAE**
- **P.FALCIFARUM**
MALARIA ELIMINATION

FOC1
VULNERABLE
RECEPTIVE
RISK OF RE-INTRODUCTION
DETERMINING THE RISK OF MALARIA RE-INTRODUCTION

<table>
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<th>NAMA WARNA</th>
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<th>SKALA RGB</th>
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<td>SEDERHANA</td>
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<td>Lawn Green</td>
<td>RENDAH</td>
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VECTOR BORNE DISEASES (10+1)

1. Malaria
2. Dengue
3. Japanese Encephalitis (JE)
4. Filariasis
5. Chikungunya
6. Plague
7. Scrub Typhus
8. Yellow Fever
9. Kala azar
10. West Nile Fever
11. Zika
HUMAN RESOURCE CAPACITY

• Definition: A measure to ensure that an organization has a sufficient number of qualified people in the right place at the right time to achieve its objectives.
STRATEGY 5: COMMUNICATION AND SOCIAL MOBILISATION

- Collaborative meetings with Forestry Dept, Wildlife Dept, Education Dept, hunters, off-road travelers
  - Engagement with community, plantations, NGO

Meeting with tour operators (District of Ranau)
COMBI (COMMUNICATION FOR BEHAVIOURAL IMPACT)
[HEALTH PROMOTION UNIT]
SUMMARY

- No single malaria control measure (No silver bullet) – “package of interventions”
- No single person or group is more important than others (No Superman) – “teams’
- Important to build on human resource capacity for elimination and prevention of re-introduction.
- Everyone has a role in malaria elimination....
- Career pathway?
Thank you for your attention.

There's a role for everyone to play in fighting the bad guys. The way we get better is through working collectively.

Frank Torres