Leadership & Delivery

Advocacy for Larval Source Control

Taking it to Scale

(Communicate, Advocate, Lobby, Mobilize & Finance)

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Angola Malaria Control Program

Manuel Lluberas
Global Public Health Entomologist

Bart Knols
Soper Strategies

Mariane Ngoulla,
ECOWAS Special Adviser on Health

Chioma Amajoh
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John Govere
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Content

• Leadership and Champions
• Racing against malaria
• Soper and Kligler end elimination of An. arabiensis
• Concepts-evidence-Experience
• WHO position on LSM
• WHO reporting on LSM- Coverage and quality
• Financing of LSM-Institutions & Associations
• Historical Paradigm shift
Towards *Freedom from Malaria Parasites-PF* in the Southern Africa Development Region.

Freedom from *Anopheles arabiensis*?

**Southern Africa Racing Against Malaria Rally (RAM-II)**

April 13-25, 2014

World Malaria Day

Accelerate to Zero Now ?? 2015-2020-2025

Kaka Mudambo
RBM-Southern Africa Regional Network (SARN)

Making the case and advocacy for LSM for elimination
Deliverables for Service Delivery

Focus on the mobilization of **deliverables for service delivery** to target border districts and make sure individuals, families and communities are free of malaria parasite in their body -

- **Community Health Workers & Malaria Mobile teams:** Bicycles, Motor bikes Motor vehicles 4X4,

- **Information and Communication Technology:** Mobile smart phones, Air time. GIS and computer equipment

- **Diagnostic tools:** RDTs, microscopes, PCR equipment and reagents

- **Treatment courses:** ACTs, primaquine

- **Prevention tools:** IRS chemicals and hand compression pumps, Larval Source Management Products & long lasting insecticide treated mosquito nets, etc.
Fred Soper

Eliminated *Anopheles gambiae* from a 54000 km$^2$ area of northern Brazil nine years after it was detected there and in 18 months and $\sim$ $\text{US6 million in 2014 currency}$
Time limited elimination of *Arabiensis* from Brazil
Israel Kligler

Eliminated *Anopheles gambiae* from a “Mandate Palestine” (now Israel) in 16 – 18 months
Concept-Evidence-Experience
Conceptual Framework
on deployment of Vector Control intervention

Full coverage
IRS and LLINs

IRS and LLINs
Residual foci
Low receptivity

Larvicides

Preparation
Implementation
Case based surveillance

Environmental management, house proofing/improvement, social/economic development

Indicative time line
years

Analysis

Malaria burden

Attack
Consolidation
Elimination
Maintenance
Certification
WHO Position & Recommendations

Need & Demand

Evidence & Experience

Results & Accountability
Pesticides and their application for control of vectors and pests

• **Larviciding** can be a useful method for malaria control, particularly in areas where

• **Breeding sites are accessible and relatively limited in number and size.** These criteria are often met in urban areas, where larviciding in a central area can be combined with indoor residual spraying in a barrier zone of houses around the periphery of the town or city.

• **Many vector breeding sites as possible should be eliminated through environmental management, to reduce the number to which larvicides need to be applied**

Source: WHO
The two most powerful and most broadly applied interventions are insecticide-treated nets (ITN) and indoor residual spraying (IRS). In some specific settings and circumstances (if the breeding sites are few, fixed, and easy to identify) these core interventions may be complemented by other methods such as larval control or environmental management. (Global Malaria Report 2009)
• **Larviciding**
  This is indicated only for vectors which tend to breed in permanent or semi-permanent water bodies that can be identified and treated, and where the density of the human population to be protected is sufficiently high to justify the treatment with relatively short cycles of all breeding places.
• In a few specific settings and circumstances, *WHO recommends* that the core vector control interventions of IRS and ITNs be complemented by other methods (e.g. mosquito larval source control, including environmental management). Larval control is appropriate and advisable only in settings where mosquito breeding sites are few, fixed and findable (i.e. easy to identify, map and treat).
# Malaria Programs Delivery and Performance 2012-—MDG 2015

<table>
<thead>
<tr>
<th>Region</th>
<th>Transmission Countries</th>
<th>LSM</th>
<th>On track 75% Reduction</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>African Region</strong></td>
<td>43</td>
<td>6</td>
<td>8</td>
<td>Botswana, Cape Verde, Eritrea, Namibia, Rwanda, Sao Tome and Principe, South Africa and Swaziland and the island of Zanzibar (United Republic of Tanzania)</td>
</tr>
<tr>
<td><strong>South East Asia</strong></td>
<td>10</td>
<td>5</td>
<td>7</td>
<td>Bangladesh, Bhutan, the Democratic People’s Republic of Korea, Nepal and Sri Lanka</td>
</tr>
<tr>
<td><strong>Western Pacific Region</strong></td>
<td>10</td>
<td>4</td>
<td>8</td>
<td>Cambodia, China, Malaysia, Philippines, Republic of Korea, Solomon Islands, Vanuatu and Viet Nam.</td>
</tr>
<tr>
<td><strong>Eastern Mediterranean Region</strong></td>
<td>10</td>
<td>4</td>
<td>3</td>
<td>Islamic Republic of Iran, Iraq and Saudi Arabia</td>
</tr>
<tr>
<td><strong>Americas</strong></td>
<td>21</td>
<td>7</td>
<td>13</td>
<td>Argentina, Belize, Bolivia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Honduras, Mexico, Nicaragua, Paraguay and Suriname;</td>
</tr>
<tr>
<td><strong>European Region</strong></td>
<td>8</td>
<td>4</td>
<td>8</td>
<td>All countries</td>
</tr>
</tbody>
</table>
LSM 2012-World Malaria Report

- 30 malaria endemic countries engaged in more than one type of larval control activity.
- 15 countries reported activities involving habitat manipulation (temporary changes to vector habitats),
- 6 reported some form of habitat modification (long-lasting physical transformations to reduce vector larval habitats).
- 18 countries through chemical larviciding
- 13 countries reported through biological larviciding
Financing LSM & Institutional Polices and Practice

Financing & Delivery to a need and demand

Sanitation & Hygiene problem
Mosquito problem
Disease problem
Service delivery and performance
GF New Funding Model-2013-2014

• National Malaria Program Reviews
• National Malaria Strategic Plans
• National Malaria Concept Note

• WHO Policies & Position
• RBM harmonization working group
• RBM vector control working group
Multilaterals & Bilateral

• World Bank and African Development Bank support what countries request as investments in economic and social development - Ministries of Finance

• USAID, DFID, Aus AID, EU ????
Institutions & Associations

- Angola and SADC
- Tanzania and ECA
- African Union and African Leaders against Malaria
- Pan African Mosquito Control Association
- European Mosquito Control Association
- Swiss Tropical Institute- Zanzibar (Unguja & Pemba)
- Cuba- Venezuela- ECOWAS
ECOWAS leaders determined to eliminate malaria from the region so as to free the enormous resources currently expended on battling the scourge for socio-economic development, the President of Ghana, His Excellency John Dramani Mahama has said.

In his address, the President of the ECOWAS Commission His Excellency Kadré Desire Ouédraogo said the Accra ceremony, the third and last in a series following those in Cote d’Ivoire and Port Harcourt, Nigeria, “gives concrete expression to our leaders’ resolve and determination to eliminate malaria from our region” since the launch of the Campaign in Accra in July 2011.
Historical Paradigm Shift
Product Development to Delivery

Disease Vector Control and Mosquito Control & Elimination & Environmental Sanitation
Imperil India

PORT TOWNS
EMM Technology

1926
Severe outbreak of malaria in Alexandria Dock Bombay

1927
Covell, G made in depth study of outbreak and recommended Species sanitation - concept of control of An. stephensi

1928
BOMBAY ACT PASSED

A. Development of legislative Measures aimed at prevention of stephensi breeding in

i) Overhead tanks
ii) Ground level tanks
iii) Wells
iv) Swimming pools
v) Cellars/sumps of WC/floors of building under constructions
vi) Roof gutters of buildings

B. Larvivorous fish

i) Stocking of ornamental/ fire fighting tanks and textile mill ponds with Gambusia fish

C. Weekly dry day observations

All domestic/peridomestic containers to be emptied scrubbed and refilled.

ADMINISTRATIVE HEADQUARTERS
EMM Technology

1913 - 1936-39
Construction of Imperial city of New Delhi Malaria Control in Delhi

1. Appointment of malaria standing committee for regulated development of Delhi/New Delhi

2. Selection of healthy site for New Delhi by a Malarialogist. Original site was represented by Coronation pillar area in Delhi

3. Development of Integrated Disease Vector Control approach

i) Drainage schemes
   (Contour & Vertical drainage, lidos)
ii) source reduction

4. Legislative measures to prevent mosquitoigenic potential during building activities. Storage of water in mosquito proof cisterns/ tanks (Bombay Act 1928)

5. Biological control agents (fishes)

6. Chemical control (paris green)

7. Weekly dry day in all organised sectors

8. Quinine therapy

Combination- Integration

• Primary or Secondary
  • IRS and-LLIN
  • LLIN and IRS

• Supplementary
  • LSM

• Integrated malaria control
  • Vector control and parasite control

• Integrated vector control
Entomological Surveillance and Entomological Survey
Implementación de un sistema de vigilancia entomológica.

Fonte: Laboratório entomológico de referencia nacional.
Malaria control and IRS is labour intensive and all about good planning and management and so is LSM.
Acciones de control de vectores con gestión ambiental ejecutadas a partir de la sensibilización comunitaria.
Conclusion

• LSM has potential as tertiary and supplementary vector control tool.
• LSM is applicable where Anopheles breeding sites are limited and accessible.
• Can become part of nuisance general mosquito control

• Large scale larval source control can become feasible in malaria vector control only where the appropriate water points and breeding sites are few and can be well demarcated in relation to human habitations. In some ecological areas such as desert fringe and savannah areas with limited rainfall water points and breeding sites are limited year round and can be well demarcated. In other areas all water points and breeding sites shrink during the winter or dry season.