Entomological Monitoring and IVM Work Stream

Thursday 20th February 2014

Auditorium
15:30-17:15

Co-leaders:
Jacob Williams & Raman Velayudhan

Rapporteur: Lucy Tusting
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
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<tbody>
<tr>
<td>15:30 – 15:35</td>
<td>Welcome and Group Introductions</td>
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<tr>
<td>15:35 – 16:15</td>
<td>Scaling Up Effective Vector Control: Facilitating Country Access to Products</td>
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<tr>
<td></td>
<td>• Introduction to subject (3 mins)</td>
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<td></td>
<td>• Experiences on harmonized sub-regional requirements (OCEAC) (10 mins)</td>
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<td></td>
<td>• Perspectives from Industry (5 mins)</td>
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<td></td>
<td>• Update on related activities by WHO (5 mins)</td>
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<td></td>
<td>• Discussion: Strategies to mobilize action (17 mins)</td>
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<td>16:15 – 16:52</td>
<td>Scaling Up Effective Vector Control: Leveraging Multi-Vector Interventions</td>
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<td></td>
<td>• Project Update - Framework for integrated vector control (10 mins)</td>
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<td></td>
<td>• Opportunities to leverage investments in other vector borne diseases for malaria vector control (5 mins)</td>
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<td></td>
<td>• Discussions (22 mins)</td>
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<td>• Brief on WHD and Role of partners in advocacy (10 mins)</td>
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<td>• Discussions (8 mins)</td>
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<td>17:10 – 17:15</td>
<td>Meeting round up and closure (5 min)</td>
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VC Challenges: Changing local disease eco-epidemiology

Human
Risk level changes

Vector
• behavioural
• genotypic
• population dynamics
  (e.g. specie succession)

Environment
• e.g. precipitation, temp changes

Change in Disease Outcome
Key IVM Elements

1. Legislation, Advocacy, social mobilisation

2. Collaboration within health sector and with other sectors

3. Integrated approach

4. Evidence-based decision-making

5. Capacity-building
PART 1

Scaling Up Effective Vector Control: Facilitating Country Access to Products
Challenges: Diminishing arsenal of pesticides

WHO recommended insecticides for indoor residual spraying against malaria vectors

<table>
<thead>
<tr>
<th>Insecticide compounds and formulations (1)</th>
<th>Class group (2)</th>
<th>Dosage (g a.i./m²)</th>
<th>Mode of action</th>
<th>Duration of effective action (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDT WP</td>
<td>OC</td>
<td>1-2</td>
<td>contact</td>
<td>&gt;6</td>
</tr>
<tr>
<td>Malathion WP</td>
<td>OP</td>
<td>2</td>
<td>contact</td>
<td>2-3</td>
</tr>
<tr>
<td>Fenitrothion WP</td>
<td>OP</td>
<td>2</td>
<td>contact &amp; airborne</td>
<td>3-6</td>
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<tr>
<td>Pirimiphos-methyl WP &amp; EC</td>
<td>OP</td>
<td>1-2</td>
<td>contact &amp; airborne</td>
<td>2-3</td>
</tr>
<tr>
<td>Bendiocarb WP</td>
<td>C</td>
<td>0.1-0.4</td>
<td>contact &amp; airborne</td>
<td>2-6</td>
</tr>
<tr>
<td>Propoxur WP</td>
<td>C</td>
<td>1-2</td>
<td>contact &amp; airborne</td>
<td>3-6</td>
</tr>
<tr>
<td>Alpha-cypermethrin WP &amp; SC</td>
<td>P</td>
<td>0.02-0.03</td>
<td>contact</td>
<td>4-6</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>P</td>
<td>0.025-0.05</td>
<td>contact</td>
<td>3-6</td>
</tr>
<tr>
<td>Cyfluthrin WP</td>
<td>P</td>
<td>0.02-0.06</td>
<td>contact</td>
<td>3-6</td>
</tr>
<tr>
<td>Deltamethrin WP, WG</td>
<td>P</td>
<td>0.02-0.025</td>
<td>contact</td>
<td>3-6</td>
</tr>
<tr>
<td>Etofenprox WP</td>
<td>P</td>
<td>0.1-0.3</td>
<td>contact</td>
<td>3-6</td>
</tr>
<tr>
<td>Lambda-cyhalothrin WP, CS</td>
<td>P</td>
<td>0.02-0.03</td>
<td>contact</td>
<td>3-6</td>
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</tbody>
</table>

Increasing insecticide resistance

- Pesticide selection & management
- Vector resistance management
A CHANGING LANDSCAPE: PRODUCT DEVELOPMENT

News from IVCC
7 October 2013
For immediate release

As Insecticide Resistance threatens malaria progress, IVCC is optimistic about new vector control portfolio

Working with its industry partners IVCC has identified more than eight new compounds capable of killing insecticide-resistant mosquitoes and will pick three to move quickly to market amidst fears that rising resistance in Africa will erode recent and dramatic progress against the disease, according to a presentation delivered today at a major global gathering of malaria researchers.

The move by IVCC to develop a trio of new mosquito-fighting chemicals comes as more and more mosquitoes are becoming impervious to available insecticides—particularly the so-called “pyrethroids” widely used in long-lasting insecticide-treated bednets (LLINs) and indoor residual spraying (IRS) operations. The scale-up of these interventions has been given much of the credit for averting 1.1

30 October 2013
For immediate release

New tool for malaria control from IVCC and Bayer CropScience

Long-lasting indoor residual spray with effectiveness of six months

A new polymer-enhanced, long-lasting Indoor Residual Spray for malaria vector control, jointly developed by IVCC and Bayer CropScience, has received a recommendation from the World Health Organization Pesticide Evaluation Scheme (WHOPES). The deltamethrin-based spray represents a viable cost-effective alternative to DDT for malaria control programs. Market introduction across Sub-Saharan Africa and other malaria endemic areas is expected to occur during 2014 once relevant national regulatory approvals are in place.
A CHANGING LANDSCAPE: PRODUCT DEVELOPMENT

11 September 2013
For immediate release

IVCC receives £12 million from the UK Department for International Development (DfID) to develop the next generation of public health vector control tools

IVCC has been awarded £12 million over the next five years by the UK Department for International Development (DfID) to support the development of new insecticides to combat malaria.

This is part of the UK Government’s commitment to combating diseases that place an enormous burden on the world’s poor. £138 million will go to nine product development partnerships for the development of new tools to treat, control and ultimately eliminate some of the world’s deadliest diseases, including malaria.
PREPARING FOR THE CHANGING LANDSCAPE

EG: IVCC

Our current portfolio

New Active Ingredients

- Data mining
- Lead Generation
- Screening

- Modified Pesticide
- LSTM/Bayer

- ACHE inhibitor
- Virginia Tech

- Screening Project
- Syngenta

- Discovery Platform
- Bayer

- Screening
- Opportunities

- Molecular Design

New Formulations

- Proof of Concept

- Lead Optimisation

- Development

- Toxicology

- Registration

- WHOPOS

- Phase I

- Phase II

- Phase III

- Country

- Registration

- LLURS Formulation
- DuPont

- Combination LLIN
- BASF

- LLURS Formulation
- BASF

- Combination LLIN

- Insecticidal Paint
- AkzoNobel

- LLIN/LLURS
- Formulations

- LLIN
- Vestegaard

- Active

- In Preparation

- Opportunities

- Under Negotiation
PREPARING FOR THE CHANGING LANDSCAPE: REMOVING DOWNSTREAM BOTTLENECKS

1. What bottlenecks are within the power of endemic countries to address to facilitate access to VC products?

2. What opportunities exist to address these bottlenecks at the country level?

3. What role(s) can we play in addressing the bottlenecks?
PART 2

Scaling Up Effective Vector Control: Leveraging Multi-Vector Interventions
PREPARING FOR THE CHANGING LANDSCAPE

1. Vector borne diseases like dengue becoming a primary focus of investment for an increasing number of countries
   - SEA and Americas.
   - Africa: vast areas/regions experiencing upsurge in dengue

2. Are there opportunities to leverage country assets for Malaria vector control (synergy)?

3. What practical approaches should be adopted to leverage these assets?
IVM : Conceptual Approach

- Rationalize decision - making
- Maximize resource utilization

Possible VC interventions

Selected VC interventions (single disease)

**Multi-disease intervention (if appropriate)

**Cross-cutting IVM attributes

Conducive policy & legal framework
Conducive institutional framework
National vector control strategy

Vector- borne disease A
Vector- borne disease B

Where, A2 = B2
A4 = B4

Intersectoral collaboration
Subsidiarity/Community involvement
Technical capacity
PART 3