Contribution of larviciding within the High Burden to High Impact initiative in Africa.

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BIG CHALLENGES FOR VECTOR CONTROL

1. TO SPREAD OF INSECTICIDE RESISTANCE.

2. CHANGE IN VECTOR FEEDING AND BITING BEHAVIOUR (An. arabiensis).

3. RESIDUAL MALARIA TRANSMISSION.

4. ADAPTATION OF MOQUITOES TO POLLUTED WATER.
IMPORTANCE OF LARVICIDING AT A GLANCE

1. It is an effective preventive action.
2. To control of high quantity of mosquitoes larvae in one round of application.
3. It is very effective against indoor & outdoor mosquito biting.
4. Successful activity to control the Residual Malaria Transmission.
5. Help to reduce the spreading of chemical resistance.
6. Strengthen the vector control national strategy.
Evaluation of long-lasting microbial larvicide for malaria vector control in Kenya

Yaw A. Afrane1,2, Nixon G. Mwereza3, Christine L. Wanjala4, Thomas M. Gilbreath III3, Guoaf Zhou3, Ming-Chieh Lee3, Andrew K. Githeko2 and Guiyun Yan3

Abstract

Background: Outdoor malaria transmission is becoming an increasingly important problem in malaria control in Africa. Larval control is a promising intervention as it can target both indoor and outdoor biting mosquitoes. However, the currently available biolarvicidal formulations have a short effective duration, and consequently larval control incurs a high operational expense due to the requirement for frequent re-treatment of larval habitats. Formulations of biolarvici...
Coordinated National Malaria Response

INTEGRATION WITH ENVIRONMENT

EDUCATION & AGRICULTURE.

HBHI Initiative

POLITICAL WILL – Countries Led Malaria Response

Better Guidance-Policy-Strategies) (LARVICIDING)

NATIONWIDE

Strategic information to drive impact (quality data ex. Epidemiological)

COMMUNITY INVOLVED

Coordinated National Malaria Response

INTEGRATION WITH ENVIRONMENT+

EDUCATION & AGRICULTURE.
ENTOMOLOGICAL OUTCOMES

1. TO REDUCE MORE THAN 90% OF MOSQUITOES LARVAE.
2. TO REDUCE MORE THAN 75% OF MOSQUITOES ADULTS.

CLINICAL OUTCOME

1. IT MAY CONTRIBUTE WITH A REDUCTION (25-50%) IN THE BURDEN AREAS.
HOW CAN BE IMPLEMENTED LARVICIDING IN AFRICA?

"Madness is doing the same thing over and over again hoping to get different results."

EINSTEIN

POLICY-FUNDS-CAPACITY BUILDING
OPERATIONAL STRUCTURE FOR LARVICIDING IMPLEMENTATION AT COUNTRYWIDE.

Procedure & Guidance for larviciding, Training, Supervision, M&E of larviciding activities from regional to local level.

MOH
POLICY & FUNDS FOR LARVICIDES PURCHASE & IMPLEMENTATION

NMCP & Researches Institutions /POLICY, TRAINING, M&E

REGIONS DISTRICTS (OFICCERS & VECTOR CONTROL)

COUNCILS (OFICCERS & VECTOR CONTROL TEAM)

SUB-COUNTIES/VILLAGES LARVICIDING EXECUTION

Planning, Implementation, Monitoring & Evaluating the health services according to EPIDEMIOLOGICAL STRATA

Entomological, Epidemiological and Ecological Data collection and General Field Information,
METHODOLOGY OF LARVICIDING

WHAT CAN BE APPLIED?

WHERE CAN THEY BE APPLIED?

WHEN CAN THEY BE APPLIED?

HOW CAN THEY BE APPLIED?

MACRO-STRATIFICATION TO MICRO-STRATIFICATION

KIBAHA

VISIGA (WARDS)
### SOME RESULTS OF LARVICIDING IN AFRICAN COUNTRIES

<table>
<thead>
<tr>
<th>Country</th>
<th>Total of treated Breeding Sites /month</th>
<th>% of larval Reduction (30 days)</th>
<th>Reapplication time (days)</th>
<th>% of Adults Mosquitoes Density</th>
<th>% EIR</th>
<th>% of Reduction Malaria Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola (Luanda)</td>
<td>3550</td>
<td>90.2</td>
<td>28 to 45</td>
<td>80</td>
<td>0.9 to 0.04</td>
<td>25-57</td>
</tr>
<tr>
<td>Zambia</td>
<td>1749</td>
<td>92</td>
<td>50</td>
<td>76</td>
<td></td>
<td>52</td>
</tr>
<tr>
<td>Ghana</td>
<td>570</td>
<td>90</td>
<td>35 to 45</td>
<td>86</td>
<td></td>
<td>53,57</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>1214</td>
<td>93</td>
<td>30 to 45</td>
<td></td>
<td>0.10 to 0.04</td>
<td>17</td>
</tr>
<tr>
<td>Nigeria (RS)</td>
<td>2971</td>
<td>98</td>
<td>35 to 50</td>
<td>93</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1185</td>
<td>97</td>
<td>40</td>
<td>82</td>
<td></td>
<td>38,23</td>
</tr>
<tr>
<td>Níger</td>
<td>100</td>
<td>96</td>
<td>30</td>
<td>80</td>
<td></td>
<td>High reduction</td>
</tr>
<tr>
<td>Gabón</td>
<td>520</td>
<td>95.8</td>
<td>30 to 45</td>
<td></td>
<td></td>
<td>27.4 (Libreville 2014)</td>
</tr>
</tbody>
</table>

### COST VS EFFECTIVENESS

- **USD per treated hectare of breeding sites**: 2.12
- **USD per travelled Km**: 36.28
- **USD per inhabitant benefit**: 0.69
ENTOMOLOGICAL RESULTS OBTAINED DURING LARVICIDING EXECUTION

Anopheles gambiae s.l, Anopheles coustani Culex quinquefasciatus, Cx annularis, Cx tigripes and Aedes Albopictus, Anopheles funestus
TECHNICAL GRANTS OF LARVICIDING

The activities of the team and the entire Project are as follows:

SUPPLIED PRODUCTS

<table>
<thead>
<tr>
<th>Product</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baitlocine</td>
<td>17,586 units</td>
</tr>
<tr>
<td>Chlorpyriphos</td>
<td>1,720 litres</td>
</tr>
<tr>
<td>Total</td>
<td>42,436,006</td>
</tr>
</tbody>
</table>

LARVICIDING

- Local Government and Health Department
- Pesticide Spray
- Larviciding
- Vector Control

The success of the project is due to the collaboration between the Ministry of Health and the local community. The project has been successful in reducing the population of Aedes aegypti and Culex spp., which are known to be vectors of dengue fever and malaria.

CERTIFICATION OF THE INTEGRATED MALARIA VECTOR CONTROL PROJECT RESULTS, 2010

February 17th, 2011

This report contains the final results of the integrated malaria vector control project in the region of Kwanza, from 2007 to 2010. The project was successful in reducing the mosquito population and eliminating malaria cases in the region.

MINISTÉRIO DA SAÚDE
RESOLUÇÃO NACIONAL DE CONTROLE DE PESTES E DOENÇAS TROPICAIS
CONSELHO NAÇIONAL DE CONTROLE DE PESTES E DOENÇAS TROPICAIS

February 17th, 2011

This resolution recognizes the efforts of the project team in controlling vector populations and preventing the spread of malaria and dengue fever in the region of Kwanza.

The project was funded by the technical grants of larviciding and has been successful in reducing the population of mosquito vectors. The Ministry of Health is proud of the achievements of the project team.

Dr. Nâdia Dondi Lamba
Dr. Conrado Vazquez Matilla
Coordinators, Malaria Elimination Project

With the approval of

Minister

MINISTÉRIO DA SAÚDE
SECRETÁRIO DE SAÚDE
ACCIDENTE EDO. DE UBAI

February 17th, 2011

This resolution is in recognition of the efforts of the technical grants of larviciding in controlling malaria and dengue fever in the region of Kwanza.

The project team is commended for their hard work and dedication in reducing the mosquito population and preventing the spread of malaria and dengue fever in the region.

Tanzania Biotech Products Limited

Certificate of Recognition

Agric. Coop. Reg. of Tanzania

For

Biological efficiency of BACTIPEC - Batch: 051404

The effectiveness of the Bactericide - BACTIPEC, produced by Tanzania Biotech Products Limited, has been evaluated in controlled field trials in the region of Kwanza. The results indicate a high level of effectiveness in controlling malaria and dengue fever vectors.

Regional Food Fund

TANZANIA BIOTECH PRODUCTS LIMITED

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CHALLENGES

- There is not a local VC structure. (VC Teams)
- Lack of minimal resources to apply larvicides.
- There are not enough funds.
- Poor or not real entomological & epidemiological data (number, area, localization & characterization of breeding sites & identification of mosquitoes species)
- There is not a clear guidance and methodology at the country level.
TO INTRODUCE LARVICIDING AS PART OF MALARIA PREVENTION ACTIVITIES WITHIN HBHI INITIATIVE.
“We need to change course and improve how we combat malaria, particularly in those countries with the highest burden. The status quo will take us further off track and have significant negative socio-economic consequences beyond malaria.”

Dr Tedros Adhanom Ghebreyesus, WHO General Director
THANK YOU