Development of a
Global vector control response

GMP/NTD/TDR
Background
High level acknowledgement of the importance of vector control

... above all, the spread of Zika, the resurgence of dengue, and the emerging threat of Chikungunya are the price being paid for a massive policy failure that dropped the ball on mosquito control in the 1970s.

Margaret Chan
Director-General World Health Organization

Opening Address at World Health Assembly 69th session
May 2016
## Global burden of vector-borne diseases

<table>
<thead>
<tr>
<th>Vector</th>
<th>Disease</th>
<th>Estimated or reported annual cases</th>
<th>Estimated annual deaths</th>
<th>Estimated annual DALYs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mosquitoes</td>
<td>Malaria</td>
<td>214 000 000</td>
<td>438 000</td>
<td>55 111 000</td>
</tr>
<tr>
<td></td>
<td>Dengue</td>
<td>96 000 000</td>
<td>9110</td>
<td>1 143 000</td>
</tr>
<tr>
<td></td>
<td>Lymphatic filariasis</td>
<td>43 850 000</td>
<td>NA</td>
<td>2 022 000</td>
</tr>
<tr>
<td></td>
<td>Chikungunya (Americas)</td>
<td>693 000</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Zika virus disease (Americas)</td>
<td>500 000</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Yellow fever (Africa)</td>
<td>130 000</td>
<td>500</td>
<td>31 000</td>
</tr>
<tr>
<td></td>
<td>Japanese encephalitis</td>
<td>42 500</td>
<td>9250</td>
<td>431 552</td>
</tr>
<tr>
<td>Blackfly</td>
<td>Onchocerciasis</td>
<td>16 956 400</td>
<td>NA</td>
<td>1 180 000</td>
</tr>
<tr>
<td>Sandfly</td>
<td>(Muco) cutaneous leishmaniasis</td>
<td>3 915 000</td>
<td>NA</td>
<td>42 000</td>
</tr>
<tr>
<td></td>
<td>Visceral leishmanias</td>
<td>114 000</td>
<td>62 500</td>
<td>4 242 000</td>
</tr>
<tr>
<td>Triatominbe bugs</td>
<td>Chagas disease</td>
<td>9 434 000</td>
<td>10 600</td>
<td>339 000</td>
</tr>
<tr>
<td>Tick</td>
<td>Lyme borreliosis (USA)</td>
<td>85 500</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Tick-borne encephalitis (North Eurasia)</td>
<td>14 000</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Tsetse fly</td>
<td>Human African trypanosomiasis</td>
<td>19 700</td>
<td>6900</td>
<td>390 000</td>
</tr>
<tr>
<td>Various</td>
<td>Rift Valley fever, O'nyong nyong virus, Mayaro virus, Crimean-Congo haemorrhagic fever, rickettsial diseases, plague</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Global Malaria Programme | Department of Control of Neglected Tropical Diseases | Special Programme for Research and Training in Tropical Diseases
Combined global distribution of malaria, dengue, lymphatic filariasis, leishmaniasis, Japanese encephalitis, yellow fever and Chagas disease.

Today more than **80% of the world’s population is at risk** from at least one VBD, with more than half at risk from two or more.

Golding et al. (2015) PLoS NTDs
Major gains made against malaria through vector control

- A cumulative 1.2 billion fewer malaria cases and 6.2 million fewer malaria deaths resulted globally between 2001 and 2015 relative to 2000.
- Yet current activities are insufficient to eliminate malaria from SSA – need for improved implementation, additional tools & strategies

In sub-Saharan Africa, 70% of reductions were attributed to interventions. Of this, 69% was attributed to ITNs, 21% to ACTS, and 10% to IRS.
**Aedes-borne diseases: an increasing challenge**

Global map of the predicted distribution of *Ae. aegypti*. (Kramer et al. 2015)

- Due to unplanned urbanization, movement of people and goods, climate change
- Underscores the need for delivery of *broad, preventive* health services, particularly in urban areas
- Traditional vector control can be made more effective, but novel tools are needed
Challenges

- **Systemic**: insufficient public health entomological capacity including human and infrastructural
- **Structural**: strong central programme lacking, synergies not leveraged and resources utilization not optimized
- **Informational**: weak evidence-base and poor linkage of entomological, epidemiological and intervention data
- **Environmental**: unpredictable, uncontrollable and complex changes
- **Political and financial**: limited funds committed and sustained beyond malaria
Opportunities

- **Development**: align with Sustainable development goals
- **Recognition**: importance exemplified in existing regional and global VBD strategies
- **Expansion**: build on successes of malaria, onchocerciasis and lymphatic filariasis control
- **Optimization**: re-align across multiple vectors, diseases, sectors, partners
- **Adaptation**: build flexible systems to address specific conditions and challenges
- **Innovation**: new tools, technologies and approaches on the horizon
- **Technology**: advances in data collation aid planning and implementation
Rationale for a global vector control response (1)

- Major vector-borne diseases account for an estimated 17% of the global burden of all infectious diseases, and disproportionately affect poor populations.
- These diseases impede economic development through direct medical costs and indirect costs such as loss of productivity and tourism.
- Social, demographic and environmental factors have caused increases in many vector-borne diseases in recent years, with major outbreaks of dengue, malaria, chikungunya, yellow fever and Zika virus disease since 2014.
- Most vector-borne diseases are preventable by vector control if well implemented. Strong political commitment and significant investments have led to major reductions in malaria, onchocerciasis and Chagas disease.
Rationale for a global vector control response (2)

- The full impact of vector control has yet to be achieved owing to inadequate delivery of interventions and limited investments resulting from a dire lack of public health entomology capacity, poor coordination within and between sectors, weak or non-existent monitoring systems and few proven interventions.
- Flexible vector control delivery and monitoring systems that support approaches tailored to local contexts are urgently needed along with new tools and approaches. This will necessitate re-alignment of national programmes as well as enhanced capacity and funding.
Full uptake implementation of IVM has generally been poor due to:

1. Complexity of communicating IVM
2. Limited human capacity to advocate, plan and implement
3. Fragmented global and national architecture that restricts multi-disease approach (e.g. disease-specific strategies and financing)
4. Insufficient political buy-in for reorientation and harmonization

= GVCR will go beyond IVM, and will be simple, practical and actionable
Development of a global vector control response (GVCR)

Led by:

WHO Global Malaria Programme
WHO Department for Control of Neglected Tropical Diseases
Special Programme for Research and Training in Tropical Diseases
Development timeline

**Status:** Fourth draft (v.4.3) currently being updated based on feedback from the online Executive Board 140th session (held 28 January 2017)

### Drafts available
- Zero draft
- First draft
- Second draft
- Third draft
- Fourth draft
- Final

### Consultations
- MPAC, STAG, STAC, Regional
- Online consultation

### Submission and review
- Executive Board
- World Health Assembly
# Involved in Development Thus Far

<table>
<thead>
<tr>
<th>Lead</th>
<th>GMP, NTD, TDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steering Committee</td>
<td>Co-Chairs: Prof. Thomas Scott, Dr Ana Carolina Santelli Other leading experts</td>
</tr>
<tr>
<td>WHO regional focal points</td>
<td>AFRO, EMRO, EURO, PAHO, SEARO, WPRO</td>
</tr>
</tbody>
</table>

**Presented for discussion at:**
- Initial consultation on response, Johannesburg
- Asia-Pacific Malaria Elimination Network meeting, Bangkok
- African Network for Vector Resistance meeting, Brazzaville
- DDT expert group meeting, Geneva
- Global Collaboration for Development of Public Health Pesticides meeting, Geneva
- Pan-African Mosquito Control Association 3rd meeting, Lagos
- International Congress of Entomology, Florida
- WHO Vector Control Advisory Group meeting, Geneva
- PAHO Vector Control Strategic Advisory Group, Washington
- Information session for Member State missions, Geneva

**Online consultation**
Responses from Member States, research/academia, private sector, donor agencies, other UN agencies, NGOs (n = 80)
Global Vector Control Response
4th draft

**Vision:** A world free of human suffering from vector-borne diseases.

**Aim:** Reduce the burden and threat of vector-borne diseases through effective locally adapted and sustainable vector control.
## Goals

<table>
<thead>
<tr>
<th>Goals</th>
<th>Milestones</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce mortality due to vector-borne diseases globally relative to 2016</td>
<td>At least 30%</td>
<td>At least 75%</td>
</tr>
<tr>
<td>Reduce case incidence due to vector-borne diseases globally relative to 2016</td>
<td>At least 25%</td>
<td>At least 60%</td>
</tr>
<tr>
<td>Prevent epidemics of vector-borne diseases*</td>
<td>In all countries</td>
<td>In all countries without transmission in 2016</td>
</tr>
</tbody>
</table>

* Rapid detection of outbreaks and curtailment before spread beyond country.

- Apply to all major vector-borne diseases of humans
- It is anticipated that countries will set their own national or subnational targets. Region-specific targets may also be set.
Resilient and sustainable vector control systems require:

- Enhanced vector control capacity and capability within all locally relevant sectors (including human, infrastructural, and health systems);
- Increase basic and applied research, and innovation.
Pillars of action

- Strengthen intra- and inter-sectoral action and collaboration;
- Enhance vector surveillance, and monitoring and evaluation of vector control interventions;
- Scale up and integrate tools and approaches;
- Engage and mobilize communities.
Enabling factors

- Country leadership;
- Advocacy, resource mobilization and partner coordination;
- Regulatory, policy and normative support.
Framework overview

Reduce the burden and threat of vector-borne diseases that affect humans

Effective locally adapted sustainable vector control

Pillars of action

1. Strengthen inter- and intra-sectoral action and collaboration
2. Enhance vector surveillance and monitoring and evaluation of interventions
3. Scale up and integrate tools and approaches
4. Engage and mobilize communities

Foundation

A. Enhance vector control capacity and capability
B. Increase basic and applied research, and innovation

Enabling factors

Country leadership
Advocacy, resource mobilization and partner coordination
Regulatory, policy and normative support

Global Malaria Programme | Department of Control of Neglected Tropical Diseases | Special Programme for Research and Training in Tropical Diseases
Priority activities for 2017 – 2022* (1-5 of 10)

- National and regional vector control strategic plans developed/adapted to align with draft *global vector control response*
  
1. National vector control needs assessment conducted or updated and resource mobilization plan developed (including for outbreak response)
2. National entomology and cross-sectoral workforce appraised and enhanced to meet identified requirements for vector control, including for epidemic response
3. Relevant staff from health ministries or supporting institutions trained in public health entomology
4. National and regional institutional networks to support training and/or education in public health entomology and technical support established and functioning

*To be revised and updated for the subsequent period of 2023–2030.*
Priority activities for 2017 – 2022* (6-10 of 10)

5. National agenda for basic and applied research on entomology and vector control established and/or progress reviewed

6. National inter-ministerial task force for multisectoral engagement in vector control established and functioning

7. National vector surveillance systems strengthened and integrated with health information systems to guide vector control

8. National targets for protection of at-risk population with appropriate vector control aligned across vector-borne diseases

9. National plan for effective community engagement and mobilization in vector control developed

* To be revised and updated for the subsequent period of 2023–2030.
Status

- Third draft (version 3.1) used in online consultation 1 – 30 November 2016
  - Downloaded by > 200 people
  - Detailed feedback provided by 80 individuals/institutions including Ministries of Health, research/academia, donor agencies, NGOs, private sector, other UN agencies (VCWG).

- Fourth draft currently available online
  - Considered by WHO Executive Board 28 January 2017 – currently being updated to reflect requests and comments by Member States

- Fifth draft to be considered by World Health Assembly in May 2017
Concluding points

- Country leadership of prevention and control efforts is critical.
- Policies and activities should not be limited to the health sector and should always be evidence-based.
- Action within countries and between countries should be harmonized and strengthened.
- Adoption of novel tools when validated for operational use is encouraged.
- Aim is to ensure all countries can achieve success, irrespective of their current disease burden, capacities and resources.
- Emphasis on integrated, community-based approaches.
THANK YOU FOR ALL THE SUPPORT
RBM VCWG
2nd IVM, Evidence and Capacity Work Stream Meeting

WHO Global vector control response
## Priority activities for 2017 – 2022* (1-5 of 10)

<table>
<thead>
<tr>
<th>Priority activity</th>
<th>Contribution</th>
</tr>
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<tbody>
<tr>
<td>1. National and regional vector control strategic plans developed/adapted to align with draft <em>global vector control response</em></td>
<td>Technical support provided in the development process - Business plan development</td>
</tr>
<tr>
<td>2. National vector control needs assessment conducted or updated and resource mobilization plan developed (including for outbreak response)</td>
<td></td>
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| 5. National and regional institutional networks to support training and/or education in public health entomology and technical support established and functioning | Exchange programmes  
Stronger linkages with AMCA  
Spray equipment and insecticide manufacturers to provide training to ensure quality implementation  
Capitalise on established networks eg. VC working groups in regions, E8, leadership (ALMA, APLMA)                                                                                         |                                                                                                                                                                                                                                                                                                                                              |
| 6. National agenda for basic and applied research on entomology and vector control established and/or progress reviewed                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                              |
| 7. National inter-ministerial task force for multisectoral engagement in vector control established and functioning                                                                                                    | Expertise provided for state-of-art integrated ento surveillance systems.  
Leverage established systems (eg. E8)                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                              |
| 8. National vector surveillance systems strengthened and integrated with health information systems to guide vector control                                                                                           |                                                                                                                                                                                                                                                                                                                                              |

*To be revised and updated for the subsequent period of 2023–2030.*
**Priority activities for 2017 – 2022* (1-5 of 10)**

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<td>9. National targets for protection of at-risk population with appropriate vector</td>
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<td>control aligned across vector-borne diseases</td>
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<tr>
<td>10. National plan for effective community</td>
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<td>engagement and mobilization in vector control developed</td>
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