Update on recent, ongoing and future GMP work on malaria entomology and vector control

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15th Annual Meeting of the RBM Vector Control Working Group
5 February 2020
High-level diagram of the Global Malaria Programme’s policy pathway for new products

Better Anticipate
- Unmet public health needs
  - Horizon scanning
  - PPC/TPP* development
  - Product development (external to WHO)

Develop Policy
- Open and transparent process
- Shortened timelines
  - Launch policy development
  - Prequalification application
  - Coordinated prequalification & policy recommendation activities

Optimize Uptake
- Digital dissemination tools
  - Simplified taxonomy & documents
  - Dissemination
  - Implementation
  - Feedback loop

* PPC: Preferred product characteristic
TPP: Target product profile

World Health Organization

Global Malaria Programme
Ten countries in sub-Saharan Africa – Burkina Faso, Cameroon, Democratic Republic of the Congo, Ghana, Mali, Mozambique, Niger, Nigeria, Uganda and United Republic of Tanzania – and India
Horizon scanning

https://www.who.int/research-observatory/monitoring/en/

Preferred Product Development (PPC)

The WHO PPC should inform product developers, regulatory agencies, procurement agencies and funders on R&D and public health priorities. It is intended to facilitate the most expeditious development of products addressing the greatest and most urgent public health need.

Two PPCs under development:

- ITNs designed to provide improved performance against pyrethroid-resistant mosquitoes
- Vector control tools for complex emergencies

Please provide inputs into current draft PPCs to Jane Bonds: jasbonds@gmail.com
Better Anticipate - Horizon Scanning - 2019

A. No. of interventions by disease

- Malaria: 28 (72%)
- Aedes-borne arboviral diseases: 9 (23%)
- Leishmaniasis: 2 (5%)

B. No. of interventions by type

- ITN: 11 (31%)
- Indoor residual wall treatment: 7 (19%)
- Vector traps for disease management: 3 (8%)
- Genetic manipulation of vectors: 2 (6%)
- Systemic insecticides and endosystatics: 2 (6%)
- Attractive targeted baits: 1 (3%)
- Genetic Engineering - Self-limiting male mosquitoes: 1 (3%)
- Housing modification: 1 (3%)
- Larvicides: 1 (3%)
- Microbial control of human pathogens: 1 (3%)
- Peridomestic combined repellent: 1 (3%)
- Peridomestic residual spray: 1 (3%)
- Personal Protection: 1 (3%)
- Space spray: 1 (3%)
- Spatial repellent: 1 (3%)
- Sterile insect technique (SIT): 1 (3%)

C. No. of interventions by stage

- Prototype development: 3 (8%)
- Data generation: 14 (39%)
- Epidemiological trials: 11 (31%)
- WHO assessment: 8 (22%)

Grand Total: 36 (100%)

D. List of interventions

<table>
<thead>
<tr>
<th>Intervention name</th>
<th>Disease</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALO larvicidal trap</td>
<td>Aedes-borne arboviral diseases</td>
<td>Vector traps for disease management</td>
</tr>
<tr>
<td>Aquastrike</td>
<td>Aedes-borne arboviral diseases</td>
<td>Larvicides</td>
</tr>
<tr>
<td>Malaria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATS® mosquitoes</td>
<td>Malaria</td>
<td>Attractive targeted baits</td>
</tr>
<tr>
<td>Axient 440EW</td>
<td>Aedes-borne arboviral diseases</td>
<td>Space spray</td>
</tr>
<tr>
<td>DuraNet Plus</td>
<td>Malaria</td>
<td>ITN</td>
</tr>
<tr>
<td>Fipronil bolus</td>
<td>Leishmaniasis</td>
<td>Systemic insecticides and endosystatics</td>
</tr>
<tr>
<td>Friendly Mosquitoes</td>
<td>Aedes-borne arboviral diseases</td>
<td>Genetic Engineering - Self-limiting male mosquitoes</td>
</tr>
<tr>
<td>Malaria</td>
<td></td>
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</tr>
</tbody>
</table>

https://www.who.int/research-observatory/monitoring/processes/health_interventions/en/
Develop Policy (& Guidance) - 2019

Vector alert: Anopheles stephensi invasion and spread
Horn of Africa, the Republic of the Sudan and surrounding geographical areas, and Sri Lanka

Global Malaria Programme

https://www.who.int/news-room/q-a-detail/new-types-of-insecticide-treated-nets
Vector Control Advisory Group

- VCAG: clarified roles and responsibilities within WHO, off-cycle reviews, updated VCAG ToRs, diversified membership, improved communications & feedback loops
- Currently 16 intervention classes under VCAG review. Epi trials are planned or are under way for 12 out of 16 intervention classes.
- Updating and harmonizing documents on the norms, standards and processes underpinning WHO vector control policy recommendations. Planned publication Q1 2020.
- Next VCAG meeting: 8-10 June 2020.

https://www.who.int/vector-control/vcag/en/
Malaria Threats Map: guiding the deployment of pyrethroid-PBO nets

29 January 2020 – The latest release of the Malaria Threats Map includes maps highlighting sites where local vector populations meet the WHO-recommended criteria for the deployment of pyrethroid-PBO nets. The maps are based on data from the WHO global database on insecticide resistance in malaria vectors, which collates data for 89 countries and more than 4400 geographical locations worldwide.

Malaria Threats Map: deployment of pyrethroid-PBO nets
WHO recommendation on the deployment of pyrethroid-PBO nets
Q&A on new types of insecticide-treated nets
Read more about the database

Cases
228 million
malaria cases worldwide in 2018

Deaths
405 000
malaria deaths worldwide in 2018

Funding
2.7 billion
Resources available for malaria in 2018 (in US$)

https://www.who.int/malaria/en/
Dissemination
- Webinars
- GMP & GVCR website and newsletters
- World Malaria Report
- Updated websites incl. Malaria Threats Map

Implementation & Support
- Malaria Program Reviews
- DHIS 2. See next slide

Feedback loops
- vcguidelines@who.int
- vcag@who.int
- vectorsurveillance@who
Global databases:

- **Insecticide resistance on malaria vectors**: established in 2014 – Contains data for 89 countries from 1955 to 2019 (More info: [https://www.who.int/malaria/areas/vector_control/insecticide_resistance_database/en/](https://www.who.int/malaria/areas/vector_control/insecticide_resistance_database/en/))
Malaria Threats Map
Tracking biological challenges to malaria control and elimination

VECTOR INSECTICIDE RESISTANCE
Resistance of malaria mosquitoes to insecticides used in core prevention tools of treated bed nets and indoor residual sprays threatens vector control effectiveness

PARASITE pfhrp2/3 GENE DELETIONS
Gene deletions among some malaria parasites cause false negative diagnostic test results, complicating case management and control

PARASITE DRUG EFFICACY AND RESISTANCE
Resistance of malaria parasites to artemisinin – the core compound of the best available antimalarial medicines – threatens antimalarial drug efficacy

INVASIVE VECTOR SPECIES
The spread of anophele mosquito vector species and their establishment in ecosystems to which they are not native poses a potential threat to the control and elimination of malaria

https://www.who.int/malaria/maps/threats-about/en/
What’s next?
Better Anticipate – Planned for 2020

Horizon scanning
- Ongoing

Preferred Product Development (PPC)

Public consultation on:
- ITNs designed to provide improved performance against pyrethroid-resistant mosquitoes
- Vector control tools for complex emergencies

New PPCs for 2020:
- Indoor residual spraying / Indoor wall treatments
- Interventions to control outdoor biting
Develop Policy (Guidance) – Planned for 2020

Policy

➢ Guidelines for malaria vector control, V2 / Consolidated Malaria Guidelines
➢ Review and revise WHO Position Statement on DDT
➢ Develop and publish WHO Position Statement on Gene Drive
➢ Review and modify ITN classification and associated evaluation requirements
➢ Update 2017 Information Note on Evaluation Process for Vector Control Interventions & evolve into Norm and Standards Document for Vector Control Policy Making
Develop Policy (& Guidance) – Planned for 2020

How-to guidance

- Full update of Handbook on Practical Entomology in Malaria
- Evolve insecticide-resistance monitoring and management guidance
- Full revision of IRS Manual
- Vector control prioritization using a Socio-Technical Allocation of Resources (STAR) approach (Draft to be developed and piloted)
Dissemination
- Webinars
- World Malaria Report
- GMP & GVCR website and newsletters
- Evolve Malaria Threats Map into decision-support tool (See next slide)

Implementation & Support
- DHIS 2 roll out and support further expanded
- GVCR case-studies
- In-country prioritization exercises

Feedback loops
- Notice of intent (on ITN evaluation)
- Public posting of PPCs
- vcguidelines@who.int
- vcag@who.int
- vectorsurveillance@who

Optimize Uptake – Planned for 2020
Data download feature
To allow download of Drug Efficacy, Insecticide Resistance and Invasive species data and to track the use of it. Data collection associated with download requests will generate better insights on how MTM is being used worldwide, its value for data sharing and to inform decision-making and guiding further development phases.

Maps export feature
- Export feature to allow for easy use of maps in reports and presentations
- Evolve deployment guidance maps for vector control tools

Time slider
to show temporal trends in threat evolution.

Insecticide Resistance and Drug Efficacy status updates
generated automatically as new data comes in and corresponding to / informing Global Reports.

User subscription to threat alerts
to send alert messages to subscribers when a threat expands geographically or a new threat emerges.

Improved collection of user feedback
to help better understand user needs and inform next phases of development.

https://www.who.int/malaria/maps/threats-about/en/
To receive regular updates on WHO’s vector control work:
WHO Vector Control Updates: www.who.int/vector-control