

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



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15<sup>th</sup> Annual Meeting of the RBM Vector Control Working Group

5 February 2020

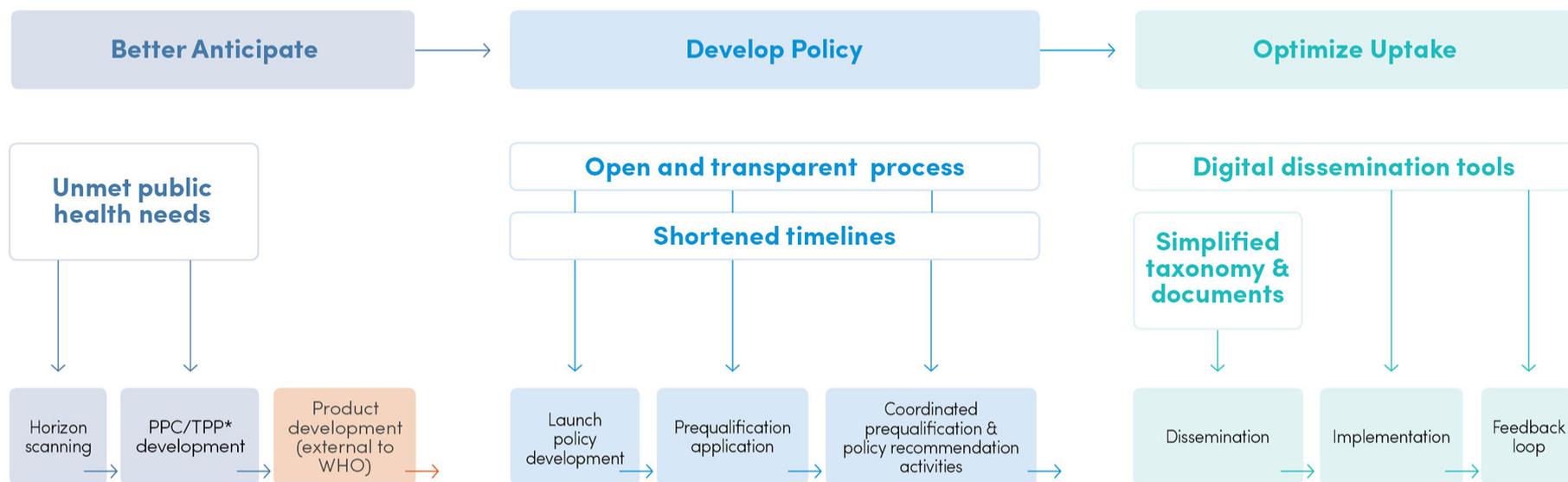
Global **Malaria** Programme



**World Health  
Organization**



## High-level diagram of the Global Malaria Programme's policy pathway for new products



\* PPC: Preferred product characteristic  
TPP: Target product profile



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

## 4 KEY ELEMENTS

There is no standing still with malaria. Continuing with the status quo will take us further off track in the fight against this deadly disease. Key elements of the new “High burden to high impact” response include:



1

### **Political will to reduce malaria deaths**

The approach calls on high burden countries and global partners to translate their stated political commitment into resources and tangible actions that will save more lives. Ownership of the challenge lies in the hands of governments most affected by malaria. Grassroots initiatives that empower people to protect themselves from malaria, like the *Zero Malaria Starts with Me* campaign, can help foster an environment of accountability and action.

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2

### **Strategic information to drive impact**

We are moving away from a ‘one-size-fits-all’ approach to malaria. Through the more strategic use of data, countries can pinpoint where to deploy the most effective malaria control tools for maximum impact. They can also use data to optimize the way tools are delivered to those in need through, for example, improved primary health care, by community health workers and other conduits of delivery.

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3

### **Better guidance, policies and strategies**

WHO will draw on the best evidence to establish global guidance that can be adapted by high burden countries for a range of local settings. This guidance will be continually updated and refined based on country experience and the development of new tools.

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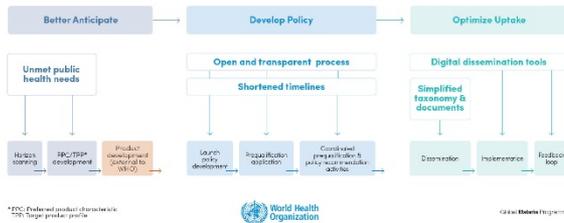
4

### **A coordinated national malaria response**

Key to success is a more coordinated health sector response complemented by other sectors, such as environment, education and agriculture. Aligning partners behind this country-led approach will ensure that scarce resources are used as efficiently as possible.



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## 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:

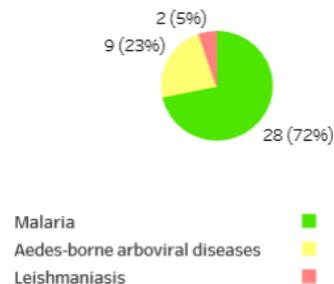
- ITNs designed to provide improved performance against pyrethroid-resistant mosquitoes
- Vector control tools for complex emergencies

Please provide inputs into current draft PPCs to Jane Bonds: [jasbonds@gmail.com](mailto:jasbonds@gmail.com)

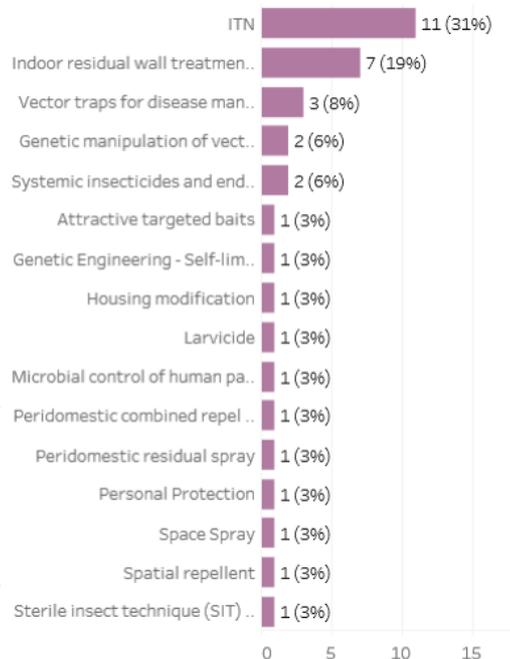
# Better Anticipate - Horizon Scanning - 2019



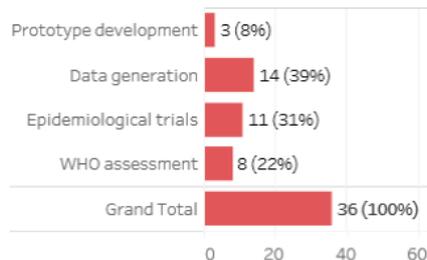
A. No. of interventions by disease



B. No. of interventions by type



C. No. of interventions by stage

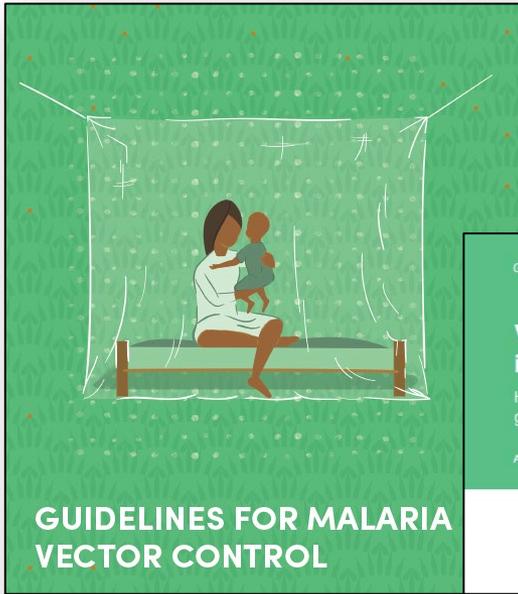


D. List of interventions

Intervention name	Disease	Intervention Type
ALO larvicidal trap	Aedes-borne arboviral di..	Vector traps for disease management
Aquastrike	Aedes-borne arboviral di..	Larvicide
	Malaria	Larvicide
ATSB®, mosquitoes' ..	Malaria	Attractive targeted baits
Axient 440EW	Aedes-borne arboviral di..	Space Spray
DuraNet Plus	Malaria	ITN
Fipronil bolus	Leishmaniasis	Systemic insecticides and endectocides
Friendly Mosquitoes	Aedes-borne arboviral di..	Genetic Engineering - Self-limiting male mosquitoes
	Malaria	Genetic Engineering - Self-limiting male mosquitoes

[https://www.who.int/research-observatory/monitoring/processes/health\\_interventions/en/](https://www.who.int/research-observatory/monitoring/processes/health_interventions/en/)

# Develop Policy (& Guidance) - 2019



Global Malaria Programme

## Vector alert: *Anopheles stephensi* invasion and spread

Horn of Africa, the Republic of the Sudan and surrounding geographical areas, and Sri Lanka

AUGUST 2019 INFORMATION NOTE

**IDENTIFIED THREAT**

*Anopheles stephensi*, a highly competent vector of *Plasmodium falciparum* and *P. vivax*, is considered an efficient vector of urban malaria. In parts of India, two biological forms of *An. stephensi* – “type” and “intermediate” – have also emerged as efficient vectors in rural areas, due to changing agricultural and water storage practices and urbanisation. The third form – “mysorensis” – is considered to be a poor vector, although it has been involved in malaria transmission in certain rural areas in Afghanistan and Iran. Until 2011, the reported distribution of *An. stephensi* was confined to certain countries in South-East Asia and large parts of the Arabian Peninsula. Since then, the vector has been reported from Djibouti (2012), Ethiopia (2016), Sri Lanka (2017) and most recently from the Republic of the Sudan (2019). In the Horn of Africa, the vector seems to be spreading from its first site of detection (Djibouti) to neighbouring countries. *An. stephensi* typically breeds in containers or cisterns with clean water, and the vector appears to quickly adapt itself to the local environment (including cryptic habitats such as deep wells); it also survives extremely high temperatures during the dry season, when malaria transmission usually reaches a seasonal low. In addition, the genetic background of introduced *An. stephensi* seems to confer resistance to multiple insecticide classes, posing potential challenges to its control.

The World Health Organization (WHO) considers the spread of *An. stephensi* to be a major potential threat to malaria control and elimination in Africa and southern Asia. This vector alert has been developed to urge WHO Member States and their implementing partners – especially those in and around the Horn of Africa, the Republic of the Sudan and surrounding geographical areas, and in Sri Lanka – to take immediate action, as outlined below.

World Health Organization

Home / Newsroom / Q&A Detail / New types of insecticide-treated nets

### New types of insecticide-treated nets

15 January 2020 | Q&A

Which types of insecticide-treated nets (ITNs) does WHO consider to be ‘new types’? (+)

Why do WHO guidelines use both the terms long-lasting insecticidal nets (LLINs) and insecticide-treated nets (ITNs)? (+)

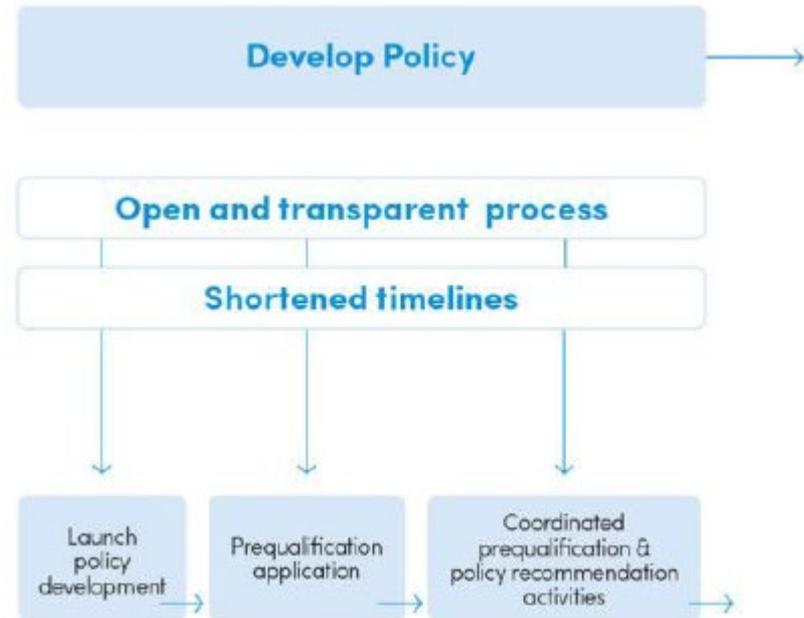
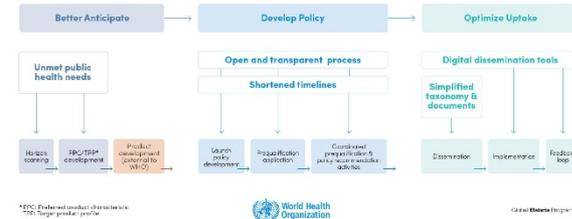
How do these new types of ITNs differ from the traditional pyrethroid-only LLINs? (+)

Are new types of ITNs more effective than pyrethroid-only LLINs? (+)

Are all pyrethroid-PBO nets the same? (+)

Are new types of ITNs more expensive than pyrethroid-only LLINs? (+)

High-level diagram of the Global Malaria Programme’s policy pathway for new products



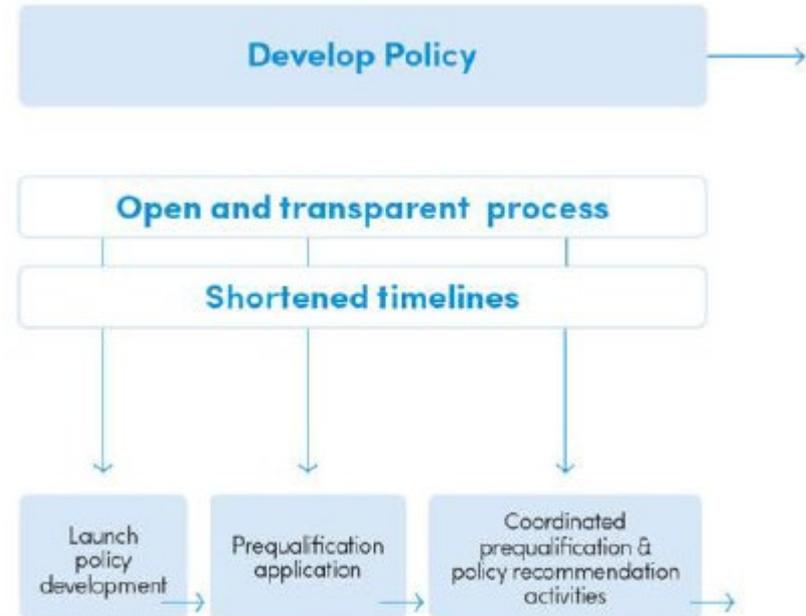
<https://www.who.int/news-room/q-a-detail/new-types-of-insecticide-treated-nets>



## 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

### Malaria Threats Map: guiding the deployment of pyrethroid-PBO nets

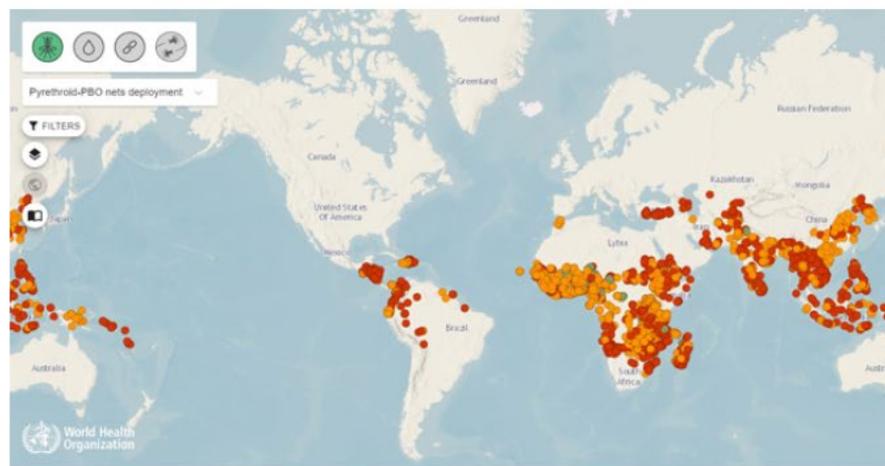
29 January 2020 – The latest release of the Malaria Threats Map includes maps highlighting sites where local vector populations meet the WHO-recommended criteria for the deployment of pyrethroid-PBO nets. The maps are based on data from the WHO global database on insecticide resistance in malaria vectors, 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](#)



WHO

#### 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

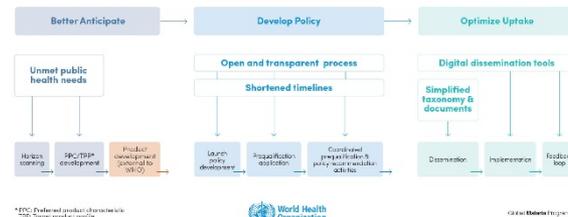
## Implementation & Support

- Malaria Program Reviews
- DHIS 2. See next slide

## Feedback loops

- [vcguidelines@who.int](mailto:vcguidelines@who.int)
- [vcag@who.int](mailto:vcag@who.int)
- [vectorsurveillance@who](mailto:vectorsurveillance@who.int)

High-level diagram of the Global Malaria Programme's policy pathway for new products



# Optimize Uptake – 2019 (continued)



WHO - Standard modules for entomology and vector control

This is a demo of the WHO  
DHIS2 standard modules for  
entomology and vector control

Data collection forms indicators and dashboards for:

- Insecticide resistance monitoring
- IRS campaign results
- IRS residual efficacy
- LLIN campaign results
- LLIN bio efficacy
- Breeding sites mapping
- Adult surveillance

Countries supported for national Implementation

- Mozambique, Madagascar, The Gambia

Integration in national repositories

- Ghana and Uganda

More information in the New Tools New Challenges workstream session

dhis2

Sign in

Username

Password

Login using two factor authentication

Sign in

Test access for english users

Username: EVCDemoEN  
Password:  
EVCMModules2019!

Test access for french speaking  
users

Username: EVCDemoFR  
Password:  
EVCMModules2019!

**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/))
- **Invasive vector species:** established in 2019- for now contains distribution of *An. stephensi*: detections in Somalia, Ethiopia, Djibouti and Sri Lanka.

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## Malaria Threats Map

Tracking biological challenges to malaria control and elimination

English



### 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



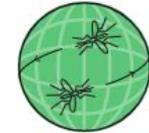
### PARASITE pfrp2/3 GENE DELETIONS

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 anopheline 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?



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## 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:

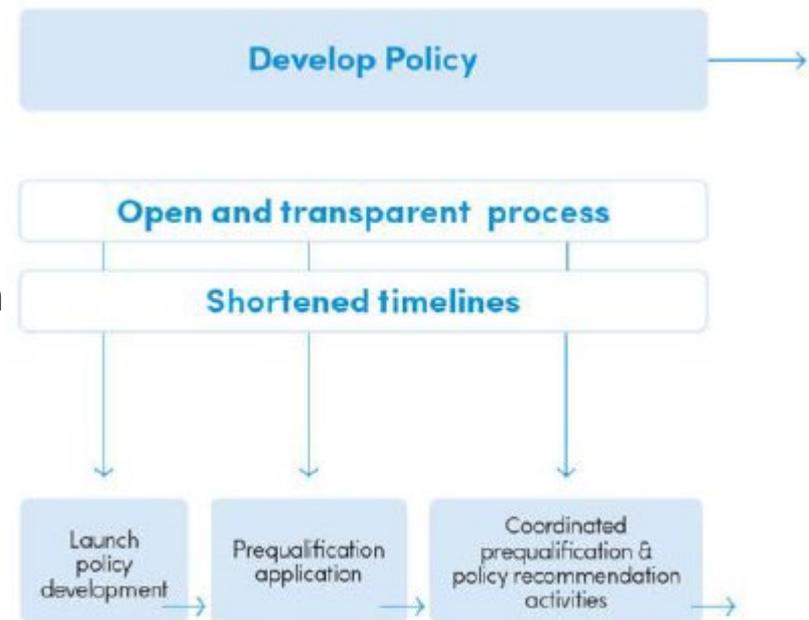
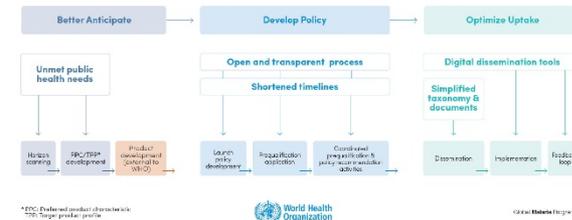
- Indoor residual spraying / Indoor wall treatments
- Interventions to control outdoor biting



## 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

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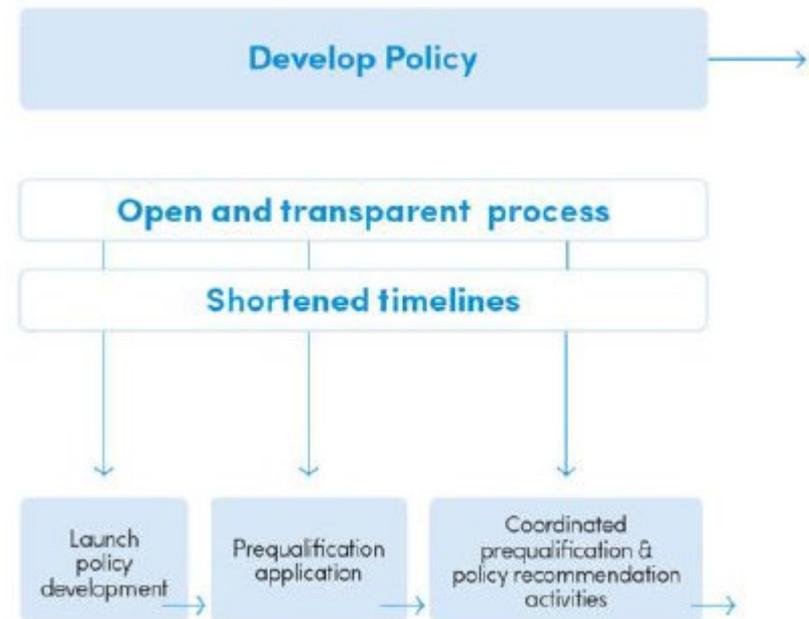
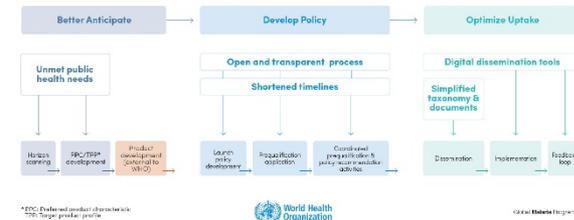




## How-to guidance

- 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)

High-level diagram of the Global Malaria Programme's policy pathway for new products





## Dissemination

- Webinars
- World Malaria Report
- GMP & GVCR website and newsletters
- Evolve Malaria Threats Map into decision-support tool (See next slide)

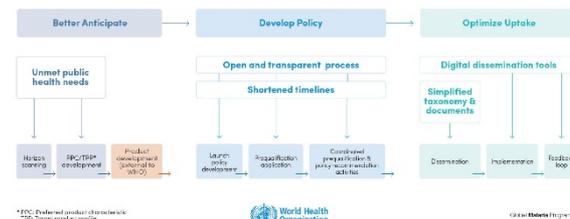
## Implementation & Support

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

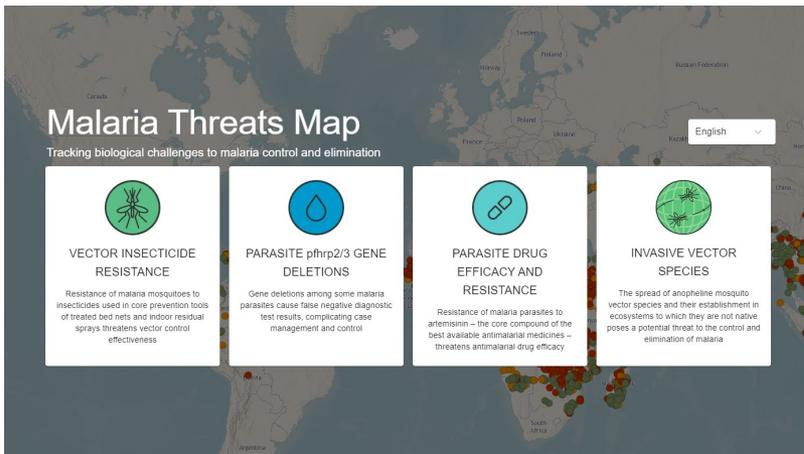
## Feedback loops

- Notice of intent (on ITN evaluation)
- Public posting of PPCs
- [vcguidelines@who.int](mailto:vcguidelines@who.int)
- [vcag@who.int](mailto:vcag@who.int)
- [vectorsurveillance@who](mailto:vectorsurveillance@who.int)

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# Optimize Uptake – Planned for 2020 (continued)



<https://www.who.int/malaria/maps/threats-about/en/>

## 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.



To receive regular updates on WHO's vector control work:

WHO Vector Control Updates : [www.who.int/vector-control](http://www.who.int/vector-control)

GMP Newsletter: [http://www.who.int/malaria/news/sign\\_up\\_form/en/](http://www.who.int/malaria/news/sign_up_form/en/)

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