Update on recent and ongoing GMP initiatives on malaria entomology and vector control



13th Annual Meeting of the RBM Vector Control Working Group
Geneva, Switzerland
7 – 9 February 2018

Global Malaria Programme



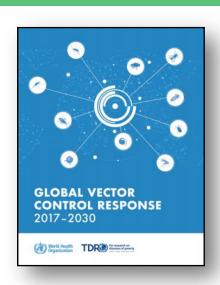
Overview



- 1. Global Vector Control Response 2017-2030
- 2. Malaria Vector Surveillance
- 3. Evaluation of Vector Control Tools
- 4. Implementation Guidance
- 5. Advocacy

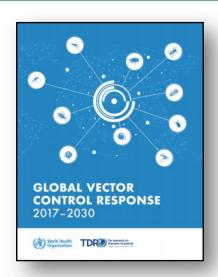


- Draft document and draft resolution discussed at 70th WHA: 31 May 2017
 - Positive interventions made by countries from across all WHO regions, including:
 - 3 regional statements (Africa, Eastern Mediterranean & South-East Asia)
 - 36 country statements
 - Adopted without amendment:
 - Resolution WHA70.16: an integrated approach for the control of vector-borne diseases





- Final GVCR document released:
 - English: October 2017
 - Arabic, Chinese, French, Spanish, Russian: pending (draft only)
- Other supporting documents:
 - Lancet commentary: June 2017
 - Advocacy brochure: September 2017
 - Online Q&As: September 2017



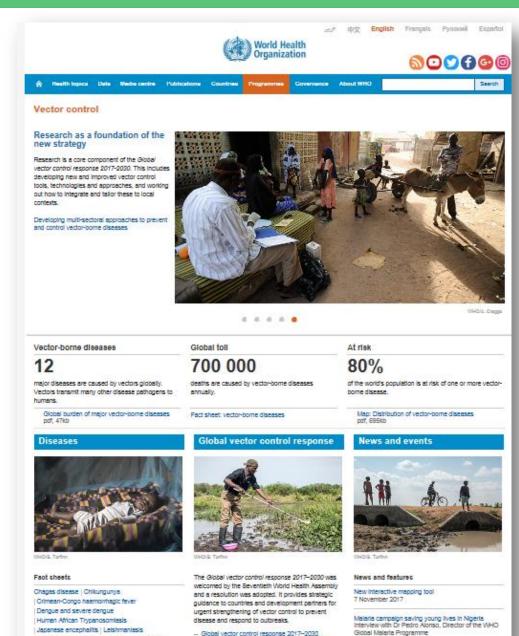






www.who.int/vector-control

- Thematic webpage that consolidates all links and resources across vectorborne diseases
- Includes disease outbreak notifications



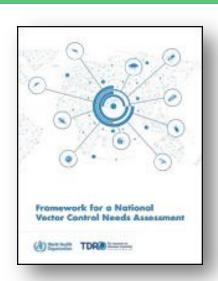
- Framework for a national vector control needs

20 October 2017

Lymphatic filariasis | Majaria | Onchocerclasis



- Framework for a National Vector Control Needs Assessment
 - English version published November 2017
- Updates anticipated
 - To be revised based on experience from operational use and from GVCR implementation and progress
- Translations to be considered following revision





- National IR monitoring & management framework released:
 - English: March 2017
 - Spanish: June 2017
 - French: July 2017
- Webinars held:
 - English: July 2017
 - Spanish: July 2017
- Other supporting documents released:
 - Key points (English, French, Spanish): July 2017
 - Q&As (English, French, Spanish): July 2017
 - Presentation (English, French, Spanish): July 2017







- Malaria Threats Map Application:
 - Vector insecticide resistance
 - hrp2/3 gene deletions
 - Drug efficacy and resistance
- Beta application online live:
 - English, French, Spanish: October 2017
 - who.int/malaria/maps/threats
- Feedback requested:
 - Online form to capture functionality/data issues and suggestions for improvement
- Consultations ongoing:
 - To define specifications for Phase II development





- Malaria surveillance, monitoring and evaluation: An operational manual
- Chapter 5 Entomological surveillance and response
 - Describe entomological indicators for monitoring and evaluation of vector control interventions.
 - Consideration for entomological surveillance by transmission settings – burden reduction, elimination and prevention of reestablishment.
 - Emphasis on evidence based decision in vector control

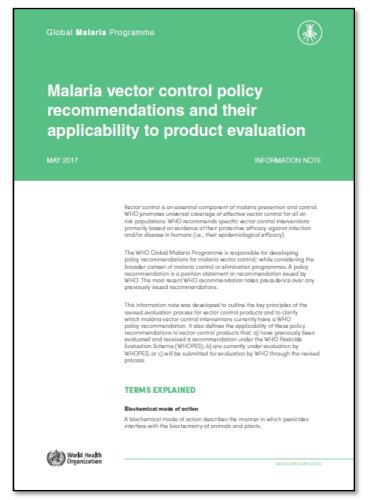
Malaria surveillance, monitoring and evaluation

An operational manual

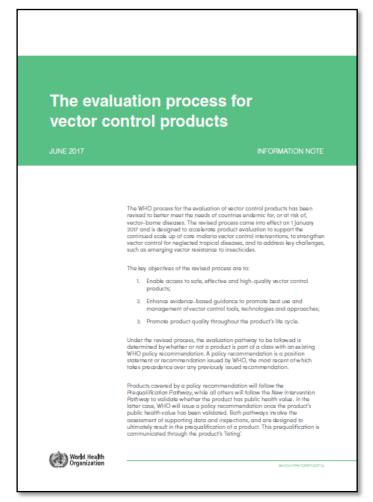








http://www.who.int/malaria/publications/atoz/vector-control-recommendations/en/

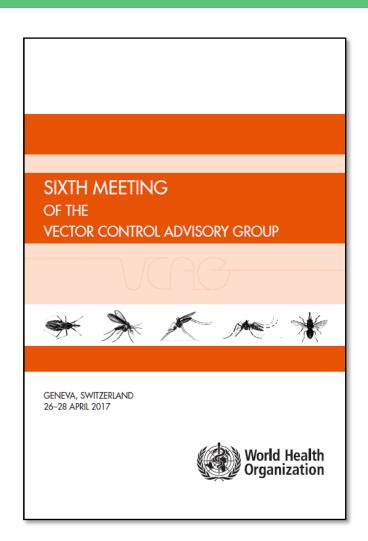


http://www.who.int/malaria/publications/atoz/e valuation-process-vector-control-products/en/





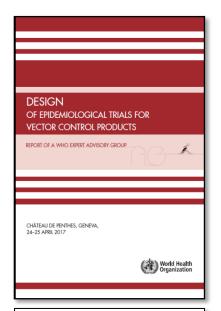
- Vector Control Advisory Group (VCAG)
 advise WHO on public health value of
 new tools, technologies and
 approaches for vector
- 6th VCAG convened 26-28 April 2017
- 7th VCAG convened 24-26 Oct 2017
- Evidence Review Groups under VCAG
 - Trial Design 24-25 April 2017

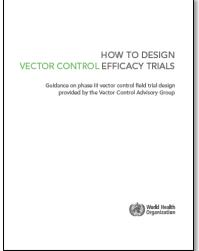






- ERG on epidemiological trials for vector control products: recommendations on hierarchy of trial designs, consideration for randomisation, endpoints, and measurement of cost effectiveness.
 Report published July 2017
- WHO manual on Design Vector Control Efficacy Trials: Guidance on Phase III vector control field trial design provided by VCAG
 Manual published December 2017









- ERG on pyrethroid-PBO nets reconvened in June 2017 to review new evidence from a cluster randomized controlled trial in Muleba, Tanzania, on the comparative impact of a pyrethroid-PBO net when compared to a pyrethroid-only LLIN
- Revised recommendations published September 2017 / December 2017

Conditions for deployment of mosquito nets treated with a pyrethroid and piperonyl butoxide BACKGROUND Mosquito nets that include both a pyrethroid insecticide and the synergi piperonyl butoxide (PBO) have become available. PBO is a synergist that acts by inhibiting certain metabolic enzymes (e.g., mixed-function oxidases) within the mosquito that detaxify or sequester insecticides before they can have a toxic effect on the mosquito. Therefore, compared to a pyrethroid-only net, a pyrethroid-PBO net should, in theory, have an increased killing effect on malaria vectors that express such resistance mechanisms. However, the entomological and epidemiological impact of pyrethroid-PBO nets may vary pending on the bioavailability and retention of PBO in the net, and on the design of the net (i.e., whether only some or all panels are treated with PBO) Five pyrethroid-PBO net products were evaluated under the WHO Pesticide Evaluation Scheme (WHOPES) to determine whether they met the criteria established for classification as a pyrethroid-treated long-lasting insecticidal net (LLIN).1 WHOPES evaluation focused on assessing the physical durability of the net, and the biological activity and wash-resistance of the pyrethroid treatment but not the PBO component, All five pyrethroid-PBO nets underwent experimental hut2 evaluations, and two are currently undergoing In accordance with the revised WHO evaluation process for vector contro products, current WHOPES recommendations for the five products4 are being converted into a WHO prequalification listing.5 The current recommendation is as a pyrethroid-only LLIN, in line with the evaluations undertaken, In 2014, the WHO Vector Control Advisory Group (VCAG) also reviewed one of the pyrethroid-PBO nets (PermaNet® 3.0)6 for a claim of increased efficacy against malaria vectors with cytochrome P450-based metabolic pyrethroic resistance. The public health value⁷ of PermaNet[®] 3.0 against vectors with cytochrome P450-based metabolic pyrethroid resistance, however, could not be established due to insufficient epidemiological data.





- WHO recommends that NMCPs consider deployment of pyrethroid-PBO nets in areas where the main malaria vector(s) have:
 - confirmed pyrethroid resistance of intermediate level (10-80% mortality) conferred (at least in part) by monooxygenase-based resistance mechanism
- WHO endorsed pyrethroid-PBO nets as a new class of vector control product

Global Malaria Programme



Conditions for deployment of mosquito nets treated with a pyrethroid and piperonyl butoxide

SEPTEMBER 2017

RECOMMENDATIONS

BACKGROUND

Mosquito nets that include both a pyrethroid insecticide and the synorgist piperory! butoxide (PBO) have become available. PBO is a synergist that cats by inhibiting certain metabolic enzymes (e.g., mixed-function axidasse) within the mosquito that advaicify or sequester insecticides before they can have a taxic effect on the mosquito. Therefore, compared to a pyrethroid-only net, a pyrethroid-PBO net should, in theory, have an increased stilling effect on malaria vectors that express such resistance mechanisms. However, the entomological and epidemiological impact of pyrethroid-PBO net smoy any depending on the bioavailability and retention of PBO in the net, and on the design of the net (i.e., whether only some or all panels are treated with PBO).

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In accordance with the revised WHO evaluation process for vector control products, current WHOPES recommendations for the five products are being converted into a WHO prequalification listing. The current recommendation is as a pyrethroid-only LLIN. In line with the evaluations understoken. In 2014, the WHO Vector Control Advisory Group (VCAG) also reviewed one of the pyrethroid-PBO nets (PermoNel® 3.0)* for a coli mol increased efficacy against malaria vectors with cytochrome P450-based matabolic pyrethroid resistance. The public health value of PermoNel® 3.0 against vectors with cytochrome P450-based matabolic pyrethroid resistance, however, could not be established due to insufficient epidemiological data.



WHO/HTM/GMP/2017.17





ERG held September 2017 to:

Part 1

- To advise WHO on data requirements and methodology to determine whether existing WHO policy for a class of products can be extended to recommend deployment of a new vector control intervention that is not part of the class
- To apply criteria formulated under objective 1 to the assessment of SumiShield® 50 WG

Part 2

- To advise WHO on data requirements and methodology to determine whether new vector control products that enter an established class should be assessed for similar or better performance than the first-in-class product.
- To advise WHO on the data requirements and methodology to assess products with two active ingredients and process to establish a new product class
- ERG presented to MPAC in October 2017
- SumiShield® 50 WG prequalified in November 2017
- Recommendations published December 2017

Global Malaria Programme Data requirements and methods to support the evaluation of new vector control products BACKGROUND WHO's process for the evaluation of vector control tools, technologies and approaches has been revised to better meet the needs of countries endemic for, or at risk of, vector-borne diseases. Under the revised process, the evaluation pathway to be followed is determined by whether or not a product is part of a product class with an existing WHO policy recommendation for its use. Products covered by an existing WHO policy recommendation will follow Prequalification Pathway, while all new tools, technologies and approaches will follow the New Intervention Pathway, supported by the Vector Control Advisory Group (VCAG), VCAG will validate whether the intervention under assessment has public health value.² Once public health value has been demonstrated, WHO will issue a policy recommendation. Following a request from the Malaria Policy Advisory Committee (MPAC) in March 2017. WHO is reviewing the data requirement associated with the evaluation of new vector control interventions to ensure that these can be deployed as soon as possible, while also ensuring that policy recommendations to quide deployment remain evidence-based. control products, WHO must also guide assessment of products that clearly fall within an established intervention class, but that differ in product specification and/or design (e.g. location of insecticide or synergists on panels of mosquito nets) from the first-in-class product that established the class and for which epidemiological data are available. For such new products WHO requires reassurance of similar performance (for disease or vector control) to provide normative guidance to vector control programmes faced with the challenge of selecting a reliable product. Examples of such



4. Implementation Guidance



- Universal Coverage Recommendations:
 - Revision initiated after March 2017
 VCTEG meeting to include new finding on user preferences and ITN use.
 - Presented to MPAC in October 2017.
 Published December 2017

Global Malaria Programme



Achieving universal coverage with long-lasting insecticidal nets in malaria control

MARCH 2014 (REV. 1)

RECOMMENDATION

Long-lasting insecticidal nets (LLINs) have played an important role in the remarkable success in reducing malaria burden over the past decade. They are a core prevention tool, and widely used by people at risk of malaria. WHO recommends:

- Universal coverage² remains the goal for all people at risk of malaria.
- 2. In order to maintain universal coverage, countries should apply a combination of mass free distributions and continuous distributions through multiple channels, in particular antenated and immunisation services. Mass campaigns are a cost-affective way to rapidly achieve high and equitable coverage, but coverage agas start to appear almost immediately post-campaign through net deterioration, loss of nets, and population growth, requiring complainematory confinious distribution channels.
 - For mass campaigns, one LLIN should be distributed for every two persons at risk of malaria.
 - However, for procurement purposes since many households have an odd number of members, the calculation needs to be adjusted when quantifying at the population level. Therefore, an overall ratio of 1 LLIN for every 1.8 persons in the target population should be used.⁴
- Mass campaigns should be repeated normally at an interval of no more than three years unless there is reliable observational evidence that a longer interval could be appropriate.
- Continuous distribution channels should be functional before, during, and after the mass distribution campaigns to avoid any gap in universal access to LLINs.

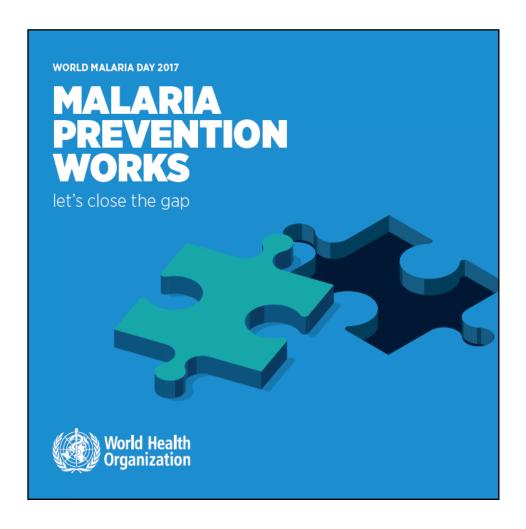


WHO/HTM/GMF/3613.mv. 2016



5. Advocacy



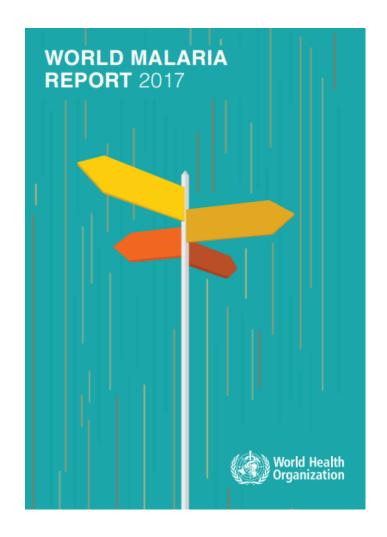


http://who.int/malaria/publications/atoz/malaria-prevention-works/en/



5. Advocacy





World Malaria Report 2017

 After an unprecedented period of success in global malaria control, progress has stalled.

Mobile app



The content of the World malaria report is available through a mobile application.

Download the app for iOS devices ☐

Download the app for Android devices ☐

http://www.who.int/malaria/publications/world-malaria-report-2017/en/





Ongoing & Planned Work, 2018/19



- Support to development of regional action plans:
 - South-East Asia Region
 - Eastern Mediterranean Region
 - African Region
- Support to development of country Vector Control Needs Assessments
 - Work ongoing in Greater Mekong Subregion (6 countries)
- Insecticide impregnated papers and WHO test kits for insecticide resistance monitoring
 - Comprehensive assessment of impediments to timely production, supply and quality
 - Development of prioritized and costed solutions to overcome these impediments





- Malaria Threats Map Application
 - Phase II development, incl mobile app
 - Data update
- Malaria surveillance, monitoring & evaluation manual
 - 1st edition to be published March 2018
- Development of DHIS 2 entomological surveillance module
- Global status report on insecticide resistance
 - Undergoing editing. Publication May 2018
- Expanding on guidance for elimination settings
 - ERG on assessing and using receptivity (Q3 2018)
- Manual on practical entomology in malaria (1975)
 - Comprehensive revision to be undertaken during 2018





Vector Control Advisory Group (VCAG)

- Manager recruited: Likely start date April 2018
- WHO PQT now part of the VCAG secretariat
- Communication and process to be enhanced during 2018
- Membership composition evolving: Gene drive and regulatory expert to join as of next meeting. Product development expert not yet identified.
- Next meeting 14-16 May 2018

Evaluation process

Update documentation to reflect implementation experience to date

Evidence Review Group

• ERG to determination of non-inferiority planned for 2018. Background work on methodology started.

Prioritization

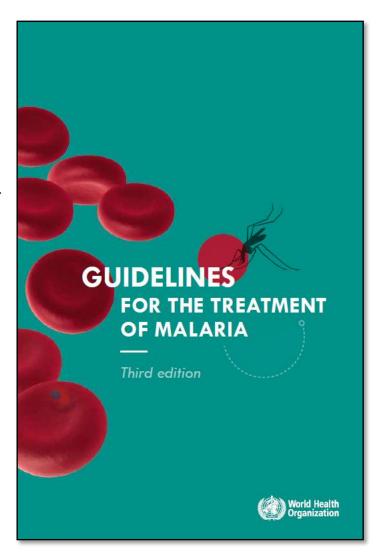
- Background work on economics inititated
- Guidance on collection of cost data alongside trials to be developed & included in trial design manual



4. Implementation Guidance



- Guidelines for prevention of malaria through vector control:
 - Modelled on guidelines for the treatment of malaria
 - Development following WHO Handbook for Guideline Development
 - 1st edition undergoing editing in preparation for MPAC and GRC
 - Likely publication mid-2018
 - Work on 2nd edition to be initiated including:
 - Systematic review of non-RCT evidence on IRS
 - Detailed review and update of economics literature and preparation of GRADE table sections on resource use





5. Advocacy



- WHO technical consultation on universal access to core malaria interventions
 - 12-15th February 2018
- World Malaria Report 2018

Thank you!



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