

## **Annual Updates on New Challenges New Tools for Vector Control**

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### **Summary**

Vector control has been the single biggest contributor to the extensive gains accrued against malaria since 2000, but these efforts are evidently reaching their limits, and will unlikely be adequate for malaria elimination. Moving forward, a key message remains that universal coverage of indoor interventions such as long-lasting insecticide-treated nets (LLINs) and/or indoor residual spraying (IRS) remain a priority and all other methods are supplementary in reducing malaria and achieving elimination. However, there is an urgent need to generate local evidence on the magnitude of outdoor/residual transmission. Besides, industry partners and the academic community and all other players are encouraged to develop new vector control tools to address residual transmission

In line with the agenda for the WHO Global Technical Strategy for Malaria and RBM Vector Control Working Group, a new work stream on New Tools and New Challenges for Vector Control was established in January 2016. This new work stream primarily examines the limitations of our current approaches to malaria vector control, but we also examine the potential of various new tools and strategies, which may effectively complement current best practices across different eco-epidemiological settings.

Emphasis is placed on the following aspects:

1. Identification and improved understanding of current and future challenges related to malaria vector control,
2. Development and evaluation of new tools for malaria vector control
3. Improved understanding and quantification of residual malaria transmission, including the components that occur outside human dwellings in different settings. This includes generating the evidence and estimating the risk attributed to residual transmission across endemic settings,
4. Establishing regional networks to facilitate mutual learning between expert groups, countries and region, on the subject of challenges and tools for malaria vector control

In the VCWG Work stream on New Challenges and New Tools, we provide a platform for exchanges on the key challenges, progress and new tools are available to tackle these challenges.

## Updates Since February 2016

Here below we provide in tabular form, some updates on our work plan, covering the period between Feb 2016 and today

#	Name of Activity	Expected end date	Status	Responsible	Actual end date
1	Consolidating Evidence on New Challenges and New Tools for Malaria Vector Control	October 2016	This was taken up by our UCSF partners. The UCSF team has completed an in-depth review on “Expanding the Vector Control Tool Box for Malaria Elimination”. This review also included a large online survey with various experts across the globe. The work includes a comprehensive review of up to 22 vector control tools other than IRS and LLINs. A final report will be published in 2017. The team will present findings during the VCWG Meeting in Geneva in February 2017.	UCSF Team  (Allison Tartasky, Yasmin Williams, Lucy Tusting) and Fredros Okumu	Feb 2017
2	Mutual learning and idea sharing between south-east Asia and Africa	December 2016	<p>Engagement was initiated with the help of Drs. Mike McDonald (Baltimore) and Jeffrey Hii (Bangkok). Work stream lead (Fredros Okumu) participated and presented the African perspective on new challenges and new tools during the Joint International Tropical Medicine Meeting in Bangkok in December 2016. Discussions were held with Jeffrey and team. The Asian team has been invited to join the discussions in Geneva in February 2017.</p> <p>Separately there are groups in south east Asia already working actively on residual malaria transmission, including outdoor biting. Plans are underway to conduct a joint meeting for all groups, including those in Africa and Asia studying residual malaria transmission, under the auspices of TDR (ATTN: Florence Forque)</p> <p>Travel support was contributed by Ifakara Health Institute; through a Wellcome Trust Fellowship &amp; by Mahidol University, Bangkok</p>	Fredros Okumu, Michael Macdonald and Jeffrey Hii	Dec 2016
3	Engagement with and Support for	Dec 2016	This activity was planned for 2016 but was not completed. However, some minimal complementary work on this was started	Mike Reddy & Fredros Okumu	Unknown

	I2I		in collaboration with LN work stream, looking at indicators for assessing new-generation bed nets. During a meeting held in Atlanta between the leaders of VCWG-NTNC and VCWG LN working groups; a tentative agreement was reached that engagement with I2I should be primarily handled by the LN work stream, especially given the processes around second generation LLINs.	(There was a plan include Lois Rossi from IVCC). Members are encouraged to discuss this aspect durin the February Meeting in Geneva	
4	Symposia on New Tools and New Challenges during the PAMCA conference side meeting	Sept 2016	<p>Contacts were initiated with PAMCA organizing committee in July 2016; permission to hold the symposium was obtained from PAMCA</p> <p>We put forth an invitation to all members seeking presentations. Reviews of these applications (which included abstracts and reference letters) were reviewed independently by at least 4 reviewers selected from among the VCWG membership. Two students were offered travel funding suppor (Bernard Abon'go and Emmanuel Kaindoa). We received funding support from SDC, through Konstantina's Budget at SwissTPH to cover the two selected students and one co-chair of the workstream. Additional funding support was provided by UCSF (Samson Kiware, presented on behalf of UCSF). IVCC provided funding for Silas Majambere</p> <p>The VCWG-NTNC symposium was largely very successful, and covered not only the new tools (for example the Ivermectin presentation by Bernard Abongo), but also current challenges such as insecticide resistance. On the last day of PAMCA, we held a second symposium, focusing on the role of PAMCA in addressing these Vector-Control Challenges. Outline of presentations was as follows</p> <p>A Keynote address was provided by Dr. Abdoulaye Diabate (IRSS, Burkina Faso) on Targeted Aerial Space Spraying of</p>	Fredros Okumu, Charles Mbogo, Silas Majambere, Samson Awolola and Mike Reddy	Sept 2016

			<p><i>Anopheles</i> mosquito Swarms</p> <p>There were three other presentations on new challenges and new tools for malaria vector control. As follows:</p> <ol style="list-style-type: none"> <li>1. Emmanuel Kaindoa (Ifakara Health Institute, Tanzania); Dominance of <i>Anopheles funestus</i> in malaria transmission in East Africa</li> <li>2. Bernard Abongo (Kenya Medical Research Institute, Kenya): Potential of ivermectin for Malaria Control</li> <li>3. Presentation from University of California, San Francisco (by Dr. Samson Kiware).</li> </ol> <p>After the presentations we held a round table discussion on New Tools and New Challenges. This debate focused on what the major challenges currently are, and also what are the possible high value new tools that we could use. The discussion will be moderated by Fredros Okumu but panelists will included: Abdoulaye Diabate (IRSS), Charles Mbogo (PAMCA), Samson Kiware (UCSF), Delphine Thizy (Target Malaria) and Silas Majambere (IVCC)</p> <p>All participants were invited to contribute in the discussion</p> <p>A full report on PAMCA has already been circulated by Prof. Charles Mbogo's Team at PAMCA</p>		
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5	Develop draft guidelines for measuring residual malaria transmission and its drivers.	November 2017	<p>The plan by members here was to examine methods used in past, current and new studies on residual malaria transmission in Africa and Asia, and develop draft standardizable guidelines to quantify the transmission and its drivers across settings.</p> <p>Discussions on this subject were completed during the VectorWorks Annual Work Planning Meeting (18<sup>th</sup>-19<sup>th</sup> July 2016); in Baltimore, attended by both Konstantina and Fredros. During this meeting, a proposals to do this in support of and in partnership with VectorWorks program at JHU, was made and adopted. Given that VectorWorks JHU has overlapping interests, it was reasonable to merge these activities and optimize outcomes.</p> <p>We are aware that TDR is planning a similar effort in 2017, so we expect to engage also with TDR during the February 2017 Geneva meeting. The expectation is that a joint meeting of all groups working on residual malaria transmission will be held somewhere in Africa, (or as a side meeting to a pre-scheduled meeting) sometime in late 2017.</p> <p>During the forthcoming VCWG-12 meeting, Ms. April Monroe (from JHU) will provide a presentation on general progress of residual transmission work (including measures of indoor and outdoor biting; and human behavioural determinants)</p>	April Monroe & Mike Reddy & Fredros	Late 2017; no specific dates set
6	Establish a blog on new challenges new tools in partnership with Malaria World platform	November 2016	This activity was cancelled due to lack of bandwidth.	Fredros Okumu	Not specified