

**New Tools New Challenges Workstream: 2018/2019 Workplan**

**Date: 9 October 2018**

**Co-leaders: Fredros Okumu & Allison Tatarsky**

<b>Project #1: Identification of <i>Anopheles</i> vectors – ONGOING (continuation of Project #1 from 2017/2018 Workplan)</b>						
Resolving current challenges on identification of malaria vectors in residual transmission settings. Their work so far focused on both morphological and molecular identification.						
#	Activity description	Timeline	Status	Responsible project manager	Support required	Comments
1	To address the question of morphological and molecular identification of <i>Anopheles</i> mosquitoes, several experts (Smithsonian, NHM (UK), University of Witwatersrand) were contacted for their views on how best to link morphologically and molecularly identified mosquitoes. All agreed that a correct morphological identification of mosquitoes was essential to the determination of the CO1 and ITS2 sequences for that species. Storage of the voucher specimens (with sequencing done from a leg or from other mosquitoes of the same brood) in museums was also considered important. Next steps for the assignment include the determination of a list of the <i>Anopheles</i> species in sub-Saharan Africa (as described in the literature), a list of the CO1/ITS2 sequences from <i>Anopheles</i> species from this region that do not correlate with known species at a 98% or higher rate, and the <b>development of a protocol that researchers can use to ensure that they are correctly associating sequences with mosquito specimens.</b>	Reported at ASTMH, Baltimore MD, Nov 2017 and updated Jan 2018;	Ongoing	Dr. Seth Irish (CDC-Atlanta, USA) and Dr. Neil Lobo (University of Notre Dame USA)	\$0	An update was provided during the NTNC workstream at the VCWG-13 meeting Feb 2018  Will continue for another 2 years at least  Meeting held in New Orleans by Seth Irish, Neil Lobbo, Alison Tartasky and Fredros Okumu  Decision: Put together a comprehensive protocols for mosquito collection and processing
2	Planned work by Prof. Maureen Coetzee updating of current keys for sub-Saharan African mosquito identification and improving capacity for taxonomy and vector identification.	No definitive timeline provided  It has been suggested that Maureen should be	Ongoing	Maureen Coetzee, Basil Brooke (Univ of Wits, NICD South Africa)	Currently looking for funding for workshops	Requesting Contributions / sharing of experiences on mosquito taxonomy and identification, and sharing of sequence data and information on new species.  GMP has indicated they

		provided with student support to drive the task				will be updating the WHO 1975 Practical Manual for Entomology
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**Project #2: Definition of residual transmission – COMPLETED (from 2017/2018 Workplan)**

During the VCWG-13 meeting, the current WHO definition of Residual Malaria Transmission (RMT) was widely discussed. It was pointed out that the definition assumes maximum coverage of major tools, so remaining transmission can be considered as residual. It says the mosquitoes must be susceptible to those tools, thus the residual malaria concept becomes very difficult to define in areas with high insecticide resistance. It was also pointed out that the main purpose of RMT is to have a practical tool to guide programmes, and that there can be a number of explanations for the transmission remaining after LLIN/IRS scale up. While insecticide resistance is one explanation, outdoor transmission is another, so it would be desirable to have a definition that did not exclude any possible cause behind RMT.

#	Activity description	Timeline	Status	Responsible project manager	Support required	Comments
1	Following the VCWG-12 meeting, a small panel, led by Dr. Nakul Chitnis (SwissTPH, Switzerland) and others was formed to convene experts and provide recommendations for this subject. Nakul and team held various consultations, which culminated in a side event during the recent residual malaria transmission meeting in Dar es Salaam, Tanzania: Workshop on Residual Malaria Transmission; conducted on 28th-30th November 2017 (convened jointly by WHO-TDR, WHO-GMP and Ifakara Health Institute, Tanzania) where the issue was discussed in great detail.	Feb-Nov 2017	Completed	Nakul Chitnis (Swiss TPH), Florence Fouquet (WHO-TDR), Tessa Knox (WHO-GMP), Fredros Okumu (IHI)	\$0	The discussion revealed different interpretations of the meaning of residual malaria transmission. The discussion also highlighted discrepancies in the definition presented in two World Health Organization documents.  A summary of the Workshop on Residual Malaria Transmission (Nov 2017) was provided during the NCNT workstream at the VCWG-13 meeting Feb 2018.
2	Tessa Knox from WHO GMP worked with WHO colleagues to update the definition, which was presented at the APMEN VCWG in September 2018 meeting and will replace the existing terminology.	2018	Completed	Tessa Knox (WHO-GMP)	\$0	Tessa has provided additional info on latest GMP update on the definitions as follows:

						<p>“WHO <i>Malaria Terminology</i> (last update: June 2018): <b>transmission, residual</b> Persistence of malaria transmission following the implementation in time and space of a widely effective malaria programme  <i>Note: The sources of and risks for “residual transmission” may vary by location, time and the existing components of the current “effective malaria programme”.</i></p>
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<b>Project #3: Consolidated evidence on New Challenges and New Tools in Vector Control – COMPLETED (from 2017/2018 Workplan)</b>						
#	Activity description	Timeline	Status	Responsible project manager	Support required	Comments
1	The UCSF team conducted an in-depth review, including a systematic literature review, on Expanding the Vector Control Toolbox for Malaria Elimination. This project also included work to estimate the spatial distribution of residual transmission across sub-Saharan Africa.	March 2018	Completed	Allison Tatarsky and Yasmin Williams (UCSF), Lucy Tusting (LSHTM), Fredros Okumu (IHI)	\$0	<p>Findings were presented at the RBM VCWG meeting 2017.</p> <p>Systematic review published in March 2018: <a href="https://www.ncbi.nlm.nih.gov/pubmed/29530309">https://www.ncbi.nlm.nih.gov/pubmed/29530309</a></p> <p>Additional publications in 2017: <a href="https://gh.bmj.com/content/2/2/e000211">https://gh.bmj.com/content/2/2/e000211</a></p> <p><a href="https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0187680">https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0187680</a></p> <p>Research briefs on all research activities included here:</p>

						<a href="http://www.shrinkingthemalariamap.org/what-we-do/vector-control">http://www.shrinkingthemalariamap.org/what-we-do/vector-control</a> The publication on mapping of RMT is forthcoming ~Q4 2018/Q1 2019
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<b>Project #4: Develop draft guidelines for measuring residual malaria transmission and its drivers – ONGOING (continuation of Project #1 from 2017/2018 Workplan)</b>						
#	Activity description	Timeline	Status	Responsible project manager	Support required	Comments
1	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 standardized guidelines to quantify the transmission and its drivers across settings.	2019	Standardized guidelines will be developed after all the studies are completed and the results compared. At the moment there are still differences in how people study the subject, but groups like JHU, which started after others have greatly improved methods above what earlier teams used.	April Monroe (JHU), Fredros Okumu (IHI)	\$0	<p>See Project #2. This activity formed part of the larger convenings around RMT study findings.</p> <p>All TDR-funded Residual Transmission studies have now been completed except one. A joint publication on the subject is expected.</p> <p>Additional PMI Supported initiatives currently ongoing in Tanzania, Ghana and Ethiopia</p> <p>At least two publications from Tanzania and Zanzibar have been drafted on the subject and will be submitted for publication</p> <p>TDR is planning a journal supplement in 2019 on the subject, which will bring together data from all the sites funded by TDR to study residual transmission (Personal Communication: Florence Fouque, GMP/TDR)</p>