



WEBINAR Q&A

APMEN TECHTALKS #8

Hosted by the APMEN Vector Control Working Group (VCWG)

“Homing in on Residual Malaria”

7 July 2021, 1:00 PM Singapore Time

Panelists

Dr. Tanya Russell

Australian Medical Entomologist

Senior Research Fellow, James Cook University, Cairns, Australia

Dr. Daniela Rodriguez Rodriguez

Epidemiologist, Researcher, Engineer

WHO Consultant, Geneva

Dr. Michelle Hsiang

Pediatrics, Malaria Epidemiologist

Associate Professor (Epidemiology and Biostatistics)

Director of Research (Malaria Elimination Initiative) UCSF, United States

Moderator

Dr Leo Braack

Co-Chair of APMEN Vector Control Working Group

Senior Vector Control Specialist, Malaria Consortium

Question:

Maria Endang Sumiwi	Situation you present is quite similar with Papua Indonesia. What's the situation of housing and breeding sites in PNG and if there is experience in improve housing and on larva source reduction?
Dr. Daniela Rodriguez	Leo: House build on stilt (1 meter above the ground) can give reduction in mosquito bites. Historically, people in PNG had understood and

	<p>started sitting on raised platforms when outdoors because it was obvious that there were less bites.</p> <p>Daniela: malaria indicator survey collected this indicator, if the houses are built on stilts and if it makes a difference. In our study sites, at that time, houses were not built on stilts. Some characteristics of the house are more important (windows screening has protective effect). There are lots of components on the house including materials used to build house (traditional and modern materials) that can give protective effect for malaria.</p> <p><i>This question has been answered live</i></p>
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Wilfredo Aure	Since transmission may occur outdoor. Is there any vector control options for outdoor settings?
Himmat Singh	LLINS / ATSB
Dr. Tanya Russell	<p><i>An. farauti</i> is the main vector in Solomon Island, has tendency to bite mainly outdoors and early in the evening. Eventually, mosquito has a chance to take a meal indoors as well and indoor control tools also are still having impact, still need to promote the use of ITN and IRS (core tools). Need to wait some additional evidence-based vector control tools to come out and WHO recommendations.</p> <p><i>This question has been answered live</i></p>

Jeffrey Hii	Its already approx. 10 years since temotu and isbale province embarked on elimination. How successful has a village-based stratification impacted on elimination success in these island provinces? If not how long and how far will they get down to zero cases?
Dr. Tanya Russell	<p>From 2010 to ~2015 the elimination programs were run in Isabel and Temotu. Due to funding restrictions, these intensive programs were discontinued. In Isabel, the extremely low transmission has been maintained until today, and this will be a target province as the Solomon Islands Government gears up to provincial-level elimination programs. Village based stratification based on Passive Case Detection data is possible, and much more feasible now after improvements with internet coverage and the roll-out of DHIS2.</p> <p><i>This question has been answered live</i></p>

Ross Hutton	Daniela / Tanya: Given the layout of the Melanesian coastal villages, do you feel there is a role for presumptive household treatment and/or household cluster IRS in passively detected cases, in identified low / very low transmission communities.
Dr. Tanya Russell	Hi Ross, The Strategic Plan for the Solomon Islands, outlines plans for targeted IRS to rapidly reduce transmission in outbreak areas, and this tool has a lot of potential to provide impact. In low transmission provinces using case-based surveillance and reactive case detection will be a good tool

Tobgyel Tobgyel	Dr, Daniela, any suggestion on indoor biting interventions in your mind?? e.g repellent is one we can issue
Dr. Daniela Rodriguez	Topical repellent does work and what has been the problem is the cost and distribution. In rural communities, most of local shops didn't have any repellents, and if people manage to get it to the main town in pharmacy, it is not affordable for them. Complementary intervention tools are needed for target outdoor transmission including toxic sugar bait as an example. <i>This question has been answered live</i>

Kerre Ann Willsher, PhD	Why is the bed net use so low? Is there discomfort? Chemical smell? Expense? Hard to dispense?
Manuel Hetzel	Interestingly, this question is rarely investigated in detail. Here's one study from PNG: https://pubmed.ncbi.nlm.nih.gov/22995668/ "Indifferent to disease: a qualitative investigation of the reasons why some Papua New Guineans who own mosquito nets choose not to use them"
Diana Timbi	Yes, as Dr Hetzel mentioned above, this question has not been investigated. However, febrile patients seen at our sentinel surveillance health facility in Lemakot (where bed net use is low) when asked why they do not use bed net, they say because it is very hot, and it is uncomfortable to sleep under bed net. I was also thinking that probably the presence and density of mosquitoes will also affect the net use. In the entomology work done by Dr Hetzel and Team, Lemakot had very low level mosquito density compared to another sentinel surveillance site in Sausi where net use is very high.
Dr. Daniela Rodriguez	It might be because of their perception of the usefulness of bed net to prevent malaria. Both 2 areas have similar temperature and humidity (complaining for discomfort reason, hot and air damp inside bed net), one is on the mainland and another one is on an island, perhaps because of different level of understanding/knowledge of what's the benefit of bed net for the community and different exposure of bed net campaign on the health education intervention for behavioural change. <i>This question has been answered live</i>

Gune Dissanayake	@Michelle, Please share your experience regarding the capacity and ability of NMCP's lowest level operating unit to implement rfMDA and RAVC4? How many index cases can they address in a given month with available resources?
Dr. Michelle Hsiang	Although we showed that rfMDA and RAVC worked in this setting in Namibia (API ~50/1000 that year), it was operationally very challenging and I'm not sure it would be feasible for a standard program to do it. We say this in the discussion. In Eswatini (much lower API <5/1000) rfMDA was implemented by the existing RACD program

	and there it was operationally very smooth and feasible. So I think sweet spot would be between 5 and 50/1000 API but I'm not sure where.
Gune Dissanayake	@Thanks Michelle. I agree, the implementation is the real challenge, and we need to find feasible intervention package for NMCP. My opinion is operationally 50/1000 API is very high for the lowest health office or the health center to do rfMDA and RAVC and it could be max 5/1000 API. Thanks again.
Dr. Michelle Hsiang	i should add that in Eswatini, coverage was not perfect. so even with <5/1000 it may be challenging

Dr Susanta Kumar Ghosh	I find overall net use is not even 80% and have high API. <i>An. farauti</i> is the vector. what do you suggest for effective vector control
Dr. Tanya Russell	The two core interventions - ITNs and IRS - both provide significant control of <i>An. farauti</i> . Although <i>An. farauti</i> can have a tendency to feed outdoors and early and the evening, they will eventually come inside on a sequential feeding cycle. So, the efficacy of these tools is attenuated - but coupled with a strong program, prolonged use and active case detection, there is potential to provide significant malaria control

Dr Susanta Kumar Ghosh	@Daniela: What is the biting time of the vector(s) in PNG
Dr. Daniela Rodriguez	Please refer to the following papers https://link.springer.com/article/10.1186/s13071-017-2038-3 https://link.springer.com/article/10.1186/s12936-015-1067-7
Dr Susanta Kumar Ghosh	This means women get more malaria due to their early morning wake up
Dr. Daniela Rodriguez	Not exactly, the study identified the potential risk, but complementary entomological data needs to confirm this. Morning biting vectors have been identified in PNG, therefore there is a possibility.

Ross Hutton	Michelle: With an appreciation of 'you have to start somewhere' What was the determinant in the radius of 500m of index cases for interventions? And could the radius be reduced based on your current knowledge and knowledge of local vectors.
Dr. Michelle Hsiang	Absolutely, radius should be based on local epi and operational issues. 500m was based on prelim data from a similar setting in Eswatini where we saw that risk decreased beyond 500m. But then in Eswatini, when we compared rfMDA to RACD, the program wanted to limit rfMDA in 200m (since the highest risk of infection was in 200m. Hsiang et al. CID, 2019) since they wanted to limit risks of drugs to the population at highest risk of malaria. Should also consider population density.
Ross Hutton	Thanks Michelle. I've looked at satellite images of the villages from Namibia based on our previous communication. It's quite a different layout from our PNG coastal villages. So, a shorter radius may be

	effective in PNG. Hopefully, the researchers will take a closer look at what may work in PNG... :)
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Leo Makita	Michelle, Any suggestions on the bases on which MDA can be conducted?
Dr. Michelle Hsiang	large scale MDA, focal MDA, and reactive focal MDA are all very different and have different roles for different contexts. WHO has guidelines on this? For reactive focal MDA, for which data are limited, I think it needs to be done in low/very low transmission settings where there is evidence that sub-patent infections cluster around index cases, and where standard interventions have been scaled up, and where it is operationally feasible. Usually, a setting that is doing RACD well can do rfMDA well.

Maria Do Rosario De Fatima Mota	Dr Dannie in your study what is your recommendation to the malaria Program in Papua based on your finding to facilitate the program to do they strategy plan specialty in the vector control measure
Dr. Daniela Rodrigue	We need to continue surveillance and build evidence on which targeted control tools work better for outdoor transmission in the PNG setting

Thin Thin Chit	How many times do you trail MDA to community?
Dr. Michelle Hsiang	Is your question about how often we would repeat rfMDA in the same foci? or is your question about what other reactive focal MDA trials we have done?
Thin Thin Chit	Yes, and this rMDA is need in high endemic areas? this rMDA is must need intervention in Elimination?
Dr. Michelle Hsiang	in a high endemic setting, rfMDA is likely to be ineffective as you would still have transmission in the non-intervention areas. So rfMDA should only be considered for low/very low transmission settings

Jenny Kerrison	Hi Tanya, Rotarians Against Malaria is working with Solomon Islands government and WHO in Honiara, on a small project, to train surveillance teams (Nurse and Public Health graduate) for Active Case Detection in Mataniko Settlements, in Honiara. We will work closely with the government to ensure supplies (RDTs, antimalarials). Hope to follow up with you on this.
Dr. Tanya Russell	Hi Jenny, It will be great to hear more about the active case detection pilot in Honiara.

Ali Toilibou	How to implement RMDA and RVC? The activities are hard to implement.
Dr. Michelle Hsiang	strong passive surveillance with immediate case notification, an "on call" team to respond and this "on call" team needs to be appropriately

	staffed for the anticipated # of index cases, drugs and vector control that work and make sense for the local context, community engagement, active pharmacovigilance, funding of course, also strong supervision and local leadership
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Manuel Hetzel	Tanya: what's in the toolbox of Solomon Islands to address the remaining foci apart from LLINs and IRS?
Dr. Tanya Russell	Another major focus will be improved surveillance and response in low transmission provinces using case-based surveillance and reactive case detection
Kerre Ann Willsher, PhD	And pregnant women lose any immunity they have to Malaria.
Dr. Tanya Russell	Immunity is always lost as communities move towards elimination

Dr Susanta Kumar	@Tany: Do you find small sized- <i>An. farauti</i> is more dangerous?
Dr. Tanya Russell	If size is related to fitness and survivorship then small mossees are less likely to live long enough to be infectious

Indra Vythilingam	Daniela: what are the vectors in P&G and what are the peak biting times- any changes over time?
Dr. Daniela Rodriguez	Please refer the following papers https://link.springer.com/article/10.1186/s12936-015-1067-7 https://link.springer.com/article/10.1186/s13071-017-2038-3 For the short answer, the main vectors previously identified in the study sites: <i>An. farauti</i> , <i>An. koliensis</i> mainly.

Barna ZOGO	To Daniela: What are the biting patterns of vectors in the 2 sites?
Dr. Daniela Rodriguez	Please refer to the following papers https://link.springer.com/article/10.1186/s13071-017-2038-3 https://link.springer.com/article/10.1186/s12936-015-1067-7

Dr Susanta Kumar Ghosh	@Tanya: <i>An. farauti</i> is mostly endophagic. How do you find outdoor biting pattern?
Dr. Tanya Russell	In the Solomon Islands, we find that the majority of exposure to mosquito bites occurs in the outdoor peri-domestic areas - mainly kitchens and verandas

Tobgyel Tobgyel	Mechelle What drug did you used for MDA???
Dr. Michelle Hsiang	in Namibia we used AL; in Eswatini we used Dihydroartemisinin piperquine
Tobgyel Tobgyel	At what dose??? You mean standard full course???
Dr. Michelle Hsiang	we used the standard treatment doses. yes 3 days

Tobgyel Tobgyel	Hi Rinzin from Bhutan. In no way we can remove LLIN and IRS based on evidence of outdoor transmission or absence of indoor biting. It will be just catastrophic as Dr. Leo remarked. Let us follow integrated approach.

Ross Hutton	Leo: if WHO continue the primary advisor on NMCPs, we will not likely see sub-national approaches, as they are not permitted to deal with provincial / district levels.

Jaipal Singh	How stratified threshold for eligible for IRS?

Jeffrey Hii	There is a good paper investigating acceptability of ITN in Solomon Islands "A qualitative study on the acceptability and preference of three types of long-lasting insecticide-treated bed nets in Solomon Islands: implications for malaria elimination Jo-An Atkinson, Albino Bobogare, Lisa Fitzgerald, Leonard Boaz, Bridget Appleyard, Hilson Toaliu & Andrew Vallely Malaria Journal volume 8, Article number: 119 (2009)
Jeffrey Hii	A qualitative study on the acceptability and preference of three types of long-lasting insecticide-treated bed nets in Solomon Islands: implications for malaria elimination Jo-An Atkinson, Albino Bobogare, Lisa Fitzgerald, Leonard Boaz, Bridget Appleyard, Hilson Toaliu & Andrew Vallely Malaria Journal volume 8, Article number: 119 (2009)

Manuel Hetzel	Maybe a provocative question, but how often is preference of users considered in net purchasing or net funding decisions?

Jeffrey Hii	@Daniela - Asian countries have a long history of bednets use and vibrant bednet manufacture industry compared to SW Pacific

Maria Endang Sumiwi	@michelle - Hi Michelle, nice to see you. If rfMDA reduced incidence in low endemic, would you think it will also reduce incidence in high endemic setting? We'd like to address asymptomatic cases in high endemic setting however, those asymptomatic cases might not have
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	enough density detectable by RDT. Will rfMDA worth trying in high endemic setting?
Dr. Michelle Hsiang	Hi Dr. Endang. Nice to re-connect! In a high endemic setting, MDA is not recommended as it is likely that in a high endemic settings, standard interventions have not been fully scaled up yet. However, theoretically, MDA in a high transmission setting could bring transmission down quickly, but it would then need to be sustained with a well-thought out and supported program. Imported malaria should also be considered as that would threaten impact and sustained impact. Also to consider for Pv, pre-season MDA may be more effective to remove hynozoites. But there is limited data on MDA for Pv and more data are needed. Happy to talk more offline!

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