WEBINAR Q&A

APMEN TECHTALKS

Hosted by the APMEN Vector Control Working Group (VCWG)

"Larval Source Management: Historical successes, current challenges, and future potential"

31 March 2022, 2:00 PM Singapore Time

Panelists

Kallista Chan

PhD Candidate

London School of Hygiene and Tropical Medicine

Ravindra Jayanetti

Former District Programme Manager

Anti Malaria Campaign, Sri Lanka

Dr Susanta Kumar Ghosh

Former Scientist G and Head

ICMR-National Institute of Malaria Research, India

Moderator

Dr Leo Braack

Co-Chair of APMEN Vector Control Working Group

Senior Vector Control Specialist, Malaria Consortium

Question:

Dr Rajander Sharma	Rice field are potential breeding places for An. culicifacies (Malaria vector) *Culex tritainiorhynchus* (Japanese encephalitis). Under LSM, what method is cost effective and feasible in field
Kallista Chan	Aerial application has been used for more large-scale irrigation schemes and also explore unmanned aerial vehicle, but this is quite challenging for small-scale rice farmer. Rice cultivation practices is another alternative method, farmers can be more responsible for it. An

	example from Tanzania and Rwanda, they mixed Bti with fertilizers for farmers and resulted in good reductions in malaria vectors.

Sheila Ogoma	Could you explain why one has to charactersie the stages of larvae when evaluating?
Kallista Chan	Because some interventions work by reducing larval survival, but not necessarily by preventing other position and also sometimes they work by reducing the developing into late-stage instars and pupae. This has been seen in intermittent irrigation where they satisfy the farmers. Pupae also need to be counted separately because they are the most direct indicators of adult productivity.

Sudhakar Deshpande	Whether fish, chemical larvicides and biological larvicides effective against pupal stages.
Kallista Chan	Thank you for your question! Our review looked at total immatures because many studies did not necessarily differentiate between developmental stages. In the few studies that did separate developmental stages, we saw that these interventions were effective against pupae - sometimes more effective even!

Jeffrey Hii	Have Farmer Field Schools for rice-plant pests and disease vectors been sustained through intersectoral collaboration between agrciulture and health ? any good examples?
Kallista Chan	In Sri Lanka it was a flop because they targeted paddy field ecosystem which is not conducive for malaria vector *An. culicifacies*.

Gashu	Thank you Kallista for the nice presentation. Gashu from Ethiopia. I have one question - How do you see operational challenges of applying larvicides on a large rice field and its cost effectiveness as it is applied weekly? VS the 3F (few, fixed and finable recommendation of WHO?
Kallista Chan	Answered above

Chris Daeyun Kim	Thanks for your talks about mosquito larval control in Sri Lanka, Sir. I wonder whether Acoustic Lavicide device is applicable or not.
Kallista Chan	Sorry I am not aware of the device.
	I think it shows good results in research - when come to application it has a lower pace - cost effectivenes - rural usage- diversity of breeding place.

Dahlia Silitonga	Callista, why you write where hotspot in Indonesia? what does it means? Thank you.

Kallista Chan	Thanks for your question! When I mentioned hotspots, I was referring to previously remaining areas of high malaria transmission - in this case, it is where malaria vectors thrived and in Indonesia (historically), this includes An. aconitus in Bali. I think there has been very effective control against riceland malaria vectors there since the 1980s.

Jeffrey Hii	'@Jayanetti - Is there a role (if any) of automatic siplons and similar environmental enginenering technology in malaria elimination and POR ?
Ravindra Jayanetti	No Jeffrey I don't think. At present there no such risk in rivers/streams.

Nantha Kumar Jeyaprakasam	Question to Dr Ravindra: In your slide, you mentioned LSM can be used as one of the method to control exophilic mosquitoes. However, I was wondering how effective LSM can be for controlling zoonotic simian malaria such as knowlesi malaria which are transmitted by forest dwelling mosquitoes? Finding larval breeding site in a forested can be daunting task.
Ravindra Jayanetti	I doubt the efficacy of LSM in controlling exophilic vectors in forest as these breeding sites are numerous and not found able and transient. I have expeirence in Laos where forest malaria is prevalent. LSM is not practical in containing forest malaria but it can be used may be in forest fringe villages.

Jagdish Paliwal	Larval breeding sources are many during rainy season, when vector density is very high, whether use of larvicides is cost effective? Do we have that much manpower to apply larvicides.
Ravindra Jayanetti	Yes LSM in my opinion should be used focally for specific situations rather than attempting full coverage.

Wilfredo Aure	Thanks Kalista for the informative presentation. How will you handle LSM for puddle, artificial containers & dead streams or intermittent stream which are potential larval habitats of *P. knowlesi* vectors. Thanks
Kallista Chan	Thank you for your question! Unfortunately, this is not my specialty, since I have been studying LSM in rice fields more specifically. However, I think you can get quite a lot of insight from Dr Susanta re urban malaria control to target against artificial containers. Otherwise, my initial thought (and based on my experience in SSA) is that often puddles do not satisfy the 3Fs (few, fixed and findable) and would be logistically challenging. Dry season larviciding or environmental management is worth exploring too - esp in places with dead/intermittent streams.

Gashu Zegeye	Thank you also 2nd presenter and my question is can you verify on the documentation of LSM, what components are taken as a lesson in your documentation to explain for showing an impact. in addtion do you have documented experience that LSM alone have shownan impact? or specific situation?
Ravindra Jayanetti	This is to be answered by taking into consideration of the particular LSM effort. Please send me this question to my e-mail- ravindrajayanetti@yahoo.com

Barnabas Zogo	To Ravindra: Is there any effort in Sri Lanka to generate evidence of impact of LSM (e.g. larviciding) against stephensi?
Ravindra Jayanetti	Unfortunately I left the campaign in 2020. But try to get information from AMC. Please send an email message to me. ravindrajayanetti@yahoo.com

RANJITH DE ALWIS	As I told you earlier it has no place in this country - Water mainly for agriculture and cannot release easily when necessary.
Ravindra Jayanetti	Answered live:

Nelson Chin	Dear Dr Kumar, in your experience, how much percentage the role of LSM compare to adult mosquito control and malaria treatment in their role in malaria control/elimination
Kallista Chan	Answered live: To my knowledge, I think modelling can come in and would be very useful in a rice field setting, large number of vectors in village come from the rice field. It would be interesting to include cost effectiveness in that whole modelling equation and also to see how that affects DALYs within rice farmers.

Krishnamoorthy Kaliannagounder	Can LSM be a strategy to prevent invasion of An. stephensi?
Ravindra Jayanetti	Answered live

sukumaran vinod	whether neem cake is effective for LSM
Kallista Chan	Answered live

Jeffrey Hii	'@Kallista - I suggest you get in touch with Dr A M Yapabandara as she has done a good job introducing FFS in Timor Leste - lots of advocacy, good mud-in-the boots entomlogy, and engagement with rice farmers and cooperation with district entomologists.
Kallista Chan	Thank you Jeffrey!

Fatemeh Nikpour	could you please share any experience about LSM against Aedes
	Answered live

BINA DAS	I just want to add that in India we have discovered one Bio larvicide Chilodonella uncinata formulation which can be used as a tool in LSM to manage anopheline larvae in hoof prints, can be applied in paddy nursery. Can be applied to An stephensi breeding places.. Dr Bina Pani Das
Dr Susanta Kumar Ghosh	Great - thank you Dr Das, been reading your papers!

sukumaran vinod	why some guppy introduced wells in coastel areas shows breeding of An. stephensi?
	Answered live