**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:**

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| 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. |

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| 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. |

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| 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! |

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| 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*. |

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| 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 |

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| 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. |

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| 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. |

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| 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. |

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| 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. |

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| 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. |

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| 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. |

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| 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 |

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| 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 |

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| 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: |

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| 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. |

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

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

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| 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! |

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

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| 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! |

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

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**Chat Box**

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