

Question and Answer

Malaria: What happens post-elimination? Prevention of re-establishment

4 April 2023, 12:00-14:00 Bangkok time

Muhammad Farooq Sabawoon	Is there any data/assessment available which inform the countries for adopting their PoR strategies in relation to Climate changes? How far the climate changes may affect these strategies?
Dr Elkhan Gasimov	Climate change is expected to contribute to changes in transmission dynamics as the vectors benefit from longer phenological seasons, and conditions for vector competence improve with rising temperature. This is why continuation of entomological surveillance and maintaining the capacity to respond to possible resurgences with appropriate vector control is extremely important.

Rajander Sharma	How surveillance is possible during and after elimination when entomologists not available with NMCP
Prof Basil Brooke	It is really important to understand how important surveillance is post elimination and so NMCP entomologists need to be employed
Dr Elkhan Gasimov	Entomological surveillance and vector control should be continued after elimination, with emphasis on areas of high malariogenic potential (i.e. receptive areas with a risk of importation). It is really important. The capacity to respond to possible resurgences with appropriate vector control should be maintained. It is necessary to designate a focal person or an institution to oversee the implementation of entomological surveillance and integrated vector management, especially when other vector-borne disease is transmitted in the country. One of the solutions to the issue you raised could be integration - after malaria elimination, it is necessary to integrate the malaria program into other public health programs (usually vector-borne diseases). This will allow to maintain technical expertise, resources and capacity.
Dr David Takudzwa Zinyengere	Very well put indeed.
bsingh	With budget constraints, and the increasing number of dengue fever cases, officers of the Vector Borne Control Programme focus entirely on entomological surveys in the urban areas for Aedes mosquitoes. Even before reduction of malaria cases, entomological surveys were infrequent in Sarawak State, Malaysia. What happens on the ground is different from what is suggested / planned at HQ...

Eshetu Molla	To Dr Elkhan: Is the higher proportion of Pv/Pf a case when we are approaching the elimination phase? If so, what do you say about this? Thank you.
Dr Elkhan Gasimov	In several publications it was indicated that in settings with both Pv and Pf, the proportion of Pv/Pf is changing when you come closer to elimination – Pf is getting eliminated first. It was explained by the fact

	that Pf is evolutionary younger than Pv and survival strategy of Pv is more sophisticated (hypnozoites and etc.).
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Alex Eapen	Elkhan: Refractoriness to Plasmodium infections in Anopheles in Europe and other temperate areas could also be due to the prevailing climatic conditions. Do you foresee any change in these areas in the future due to climate change?
Dr Elkhan Gasimov	Refractoriness is not unique to Europe. In China, it has been well-studied that the most widely distributed vector, <i>Anopheles sinensis</i> , cannot transmit <i>P. falciparum</i> . Laboratory infections have shown that <i>A. albimanus</i> , the vector in the lowlands of southern Mexico, is more susceptible to infection by <i>P. vivax</i> from the lowlands, while <i>A. pseudopunctipennis</i> , a highland <i>Anopheles</i> , is more susceptible to infection by parasites from the highlands. Genomic tools can now reveal the genetic differences between lowland <i>P. vivax</i> populations and those in highland. There is evidence (and the evidence is growing) that climate change is linked to observed changes in VBD, including malaria, endemicity. An increase in average temperature and changing rainfall patterns is likely to further increase the risk of VBDs, as the vectors benefit from longer phenological seasons, and conditions for vector competence improve with rising temperature.

Muhammad Farooq Sabawoon	Which level does the risk and receptivity stratify? Village, town, district, or province level? How is this stratification affected by the country's economy (resources)?
	live answered at this current time

Phyoe Yarzar	Dr. Elkhan, thank you so much for your very insightful presentation. As of 14 Mar 2023 update, WHO Guideline for malaria describes certain interventions in the final phase of elimination and prevention of re-establishment (Section 6). Some of these interventions (such as MTaT, TDA etc) seem too risky in the context of high transmission settings. Could you please clarify whether WHO recommends these interventions in high transmission settings?
Dr Elkhan Gasimov	The recommendations you referred to are for countries or areas that have attained very low to low levels of transmission, for countries approaching elimination. Some of the interventions, e.g. MDA can be applied in high burden settings as well (for burden reduction), others are very specific for very low to low levels of transmission settings.

Alex Eapen	Prof Basil: What are the key potential breeding habitats which contribute to vector density in your study area?
Prof Basil Brooke	There is a wide range from permanent water bodies and irrigation areas that are utilized by mosquitoes all year round to temporary breeding sites such as rain puddles. Pools along riverbanks are important.

Kinley PENJOR	Dr. Basil: How much entomological surveillance is enough or adequate in a malaria setting that has an annual incidence of just 10-20
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	cases with implementation of comprehensive active case surveillance but sharing border with endemic neighboring countries??
Prof Basil Brooke	In this scenario periodic surveillance is necessary to assess risk and receptivity - twice per year may be adequate but foci clearing should also be in place as well as plans for outbreak response
Jeffrey Hii	'@Basil – are ground border checkpoints effective in controlling the entry of infectious mosquitoes? what are the challenges? Would aircraft disinsection methods (or modified method) be effective?
Prof Basil Brooke	We don't use disinsection at border crossings as it is not feasible logistically and financially
Dr David Takudzwa Zinyengere	Dr Rman what do you see as the best strategy to effectively target the last mile in malaria elimination?
Dr Jaishree Raman	Very difficult question as there is no established set of tools that is guaranteed to get a country to elimination - each country as has to try all tools available to see which has the desired impact
Muhammad Farooq Sabawoon	How are the imported cases treated? Considering the origin of importation or the location of diagnosis? Especially in cases where the treatment regimens are different in in country of origin, and in country of diagnosis?
Dr Jaishree Raman	as they are detected in South Africa, they are treated according our malaria treatment guidelines
Lieven Vernaeve	Dr Jaishree: if found positives at the border posts with DBS - asymptomatic, how would you trace these people if found positive? Is this done? Thanks
Dr Jaishree Raman	the challenge is the trying to find them once the lab data are available - this is where the mobile surveillance teams have proved to be very valuable ti tracking the MMPs
Lieven Vernaeve	Thanks! yes, sure, trying to find them back is the main challenge; good it seems to be working with mobile surveillance teams. Does this mean that these teams could be operational countrywide or getting other health care providers involved? Thanks
Priyadarshani Somasekaran	Prof Basil: What is the importance of maintaining sentinel sites for entomological monitoring in PoR phase?
Prof Basil Brooke	Carefully chosen sites in high risk areas are very important, and roving sentinel sites can also be used to ensure that the surveillance system is adaptable
Jeffrey Hii	'@@Jaishree – how would you tackle a spill-over of malaria (imported) from a war-torn country with breakdown of law and order, cessation of health services and driving civilians to neighboring country which is not seeing an abate in the number of cases on their home turf?
Dr Jaishree	a major challenge, neighboring countries have to keep treating them,

Raman	depending on funds and resources available. Really a global response is needed in these cases.
prudence hamade	'@Dr Ramen where is the respose to a malaria case initiated is the swat team based in the district or provincial level and how is it financed
Dr Jaishree Raman	They teams are based at the district level
Bilali Kabula	Thank you for the informative presentation Prof Brooke. It seems the entomological surveillane in south Africa is done by your research institution. How are the data collected used by the malaria program? Can you share your insight of the data sharing with the malaria program for decision making
Prof Basil Brooke	We interact very closely with the malaria programme and share all surveillane data with them. Our mandate is to provide technical advise to the control programmes via coordinated committees
Namo Suksomyos	Dr Jaishree: On cross-border screening, how do see the potentials for RDT as an alternative method in that use case considering its point-of-care application and shorter turnaround time vs testing DBS with PCR? Thanks
Dr Jaishree Raman	Point of care diagnostics are the preferred tool, but the challenge are the limit of detection of RDTs for asymptomatic carriers which generally have low parasite loads.
Phyoe Yarzar	Thanks for great presentation, Dr. Jaishree. I'm curious to know the idea beyond the day 28 follow up to explore further secondary cases. I also wonder whether any application to the duration of critical observal intervals for the two main species (Pf and Pv) of human malaria parasite.
Dr Jaishree Raman	I do not have much experience with Pv, but for PF we are investigation the use of next generation sequencing to help with the identification of related cases ie secondary transmission
Jeffrey Hii	'@Kim - I believe Solomon islands is currently implementing elimination of scabies using oral ivermectin. Data of collateral impact on Pf and Pv malaria is scant - would you know of other situations where this intervention has a beneficial impact on malaria?
Dr Kim Lindblade	Hi Jeffery, there is a roadmap for evaluation of ivermectin as a vector control tool for malaria. https://www.ajtmh.org/view/journals/tpmd/102/2_Suppl/article-p3.xml
Priyadarshani Somasekaran	Prof Basil: How's the receptivity risk stratification used in operational decision-making in the PoR phase?
Prof Basil Brooke	In some high risk areas we use proactive IRS and aim for high/blanket coverage over a wide area. In low risk areas we use targeted spraying, and in very low risk areas we use reactive spraying via the foci clearing protocols

Jui Shah	Thanks for a great series of talks. Curious to know if there are any patient safety challenges/considerations for Dr Jaishree's and Dr Champa's example of border ACD or Dr Kims example of returning worker screenings in Bhutan?
Dr Kim Lindblade	Bhutan has a very organized screening system for migrant workers seeking permits to work in Bhutan, using either public health hospitals or private health facilities contracted by the government.

Duncan Blair	'@Dr Jaishree (and all) - for cross-border and index/home testing have you tried (or considered) using ultrasensitive HRP2 RDT instead of regular RDTs? Given concerns around contribution of low density infection to onward transmission incremental benefit in terms of yield is a possibility.
Dr Jaishree Raman	We did try one a few years ago- but had major challenges during the field testing and they did not perform any better than the standard RDTs. We are planning on testing the new generation of ultrasensitive RDTs soon. Fingers crossed they perform better in the field this time round

Abdul Marsudi Manah	What is your definition for "negligible" of knowlesi malaria? and how WHO can help Malaysia or other countries reporting zoonotic malaria to achieve malaria elimination certification?
	live answered at this current time

dr.sadeed bahar	Thanks for the presentations. I have a question related to first trimester patients. What should we prescribe to them when she is infected to malaria? We are prescribing quinine right now but in WHO guideline its updated that we can use ACT's such as arthemether + lumefantrine ! I want to know the answer why its changed
Dr Jaishree Raman	South Africa uses arthemether-lumefantrine in all trimester of pregnancy.
dr.sadeed bahar	Dr jaishree we still using quinine for first trimester but is there any research on that we should know? Because we didn't see any side effects in patients while using quinine

Maxine Whittaker	'@all speakers. What role do you see or did you (if elimination country) have /do you continue to have (PoR) for communities (like surveillance at community level, local resource mobilization) in final push and keeping malaria elimination. Thank you
	live answered at this current time

drake Zimmerman	Any issues of G6PD with low dose primaquine? Does Primaquine become an issue with higher doses?
	live answered at this current time