



Vector Control Working Group (RBM VCWG)  
17<sup>th</sup> Annual Meeting, Session 1: Thursday 3<sup>th</sup> March 2022  
Hosted Online via Zoom

Co-chairs: Corine Ngufor & Justin McBeath  
Secretariat: Konstantina Boutsika  
Technical support: Lina Heltsche  
Rapporteur: Helena Brazal-Monzó

## Session 1: Updates from vector control community

### Co-Chairs: Corine Ngufor & Justin McBeath

#### **Welcome, introductions and meeting objectives- *Corine Ngufor, LSHTM/CREC & Justin McBeath, Bayer***

Corine commenced the meeting by introducing herself. Corine Ngufor is one of the co-chairs of the Vector Control Working Group (VCWG). On behalf of herself and Justin McBeath, the other co-chair of the VCWG who will also host today's session. She wants to thank the attendees to join the 17<sup>th</sup> VCWG meeting to hear the latest updates from the vector control community. Additionally, Corine reminds the attendees about the purpose of the VCWG. The VCWG is one of the Working Groups of RBM Partnership to End Malaria and its purpose is to support the implementation of vector control guidance to move towards malaria elimination targets. This is achieved through dialogue around sharing best practices, especially considering the unique blend of representation that enables the VCWG to achieve this. Furthermore, the VCWG conducts information dissemination, receiving updates from the different parts of the vector control community and aligning views on challenges faced in malaria vector control. Even if today's event is virtual, opportunities for networking will take place due to the representation of the attendees in the vector control community.

The VCWG is organized into three work streams, each of which has outputs. Depending on the relevance of the topic there are task forces that operate within each work stream.

- 1) Work stream one is about enhancing the impact of core interventions.
- 2) The second work stream is about expanding the vector control toolbox.
- 3) The third work stream is about implementing the global vector control response.

Justin explains that today's session will be an update from the vector control community. The work stream leads will run the next session around charting the course for each work stream. In early May, dedicated sessions on each of those work streams will take place. To conclude, he encourages attendees to come to next week's session to learn more about the work streams and have a better understanding of the sessions that will take place in early May. The event organizers have deliberately created a bigger gap between next week's session 2 and the rest of the sessions to give more time for content contribution and development of those sessions in early May.

Justin uses this slide to remind us about the VCWG code of conduct. The whole code of conduct can be seen on the website but he would like to emphasise three words, which are "respect", "consideration" and "collaboration". This mainly needs to be remembered during the second, third, fourth and fifth sessions, since there will be more opportunities for debate.

#### **RBM Partnership to End Malaria: Updates- *Daddi Wayessa and Sara González, RBM Partnership to End Malaria***

Despite the COVID-19 challenges, the global malaria control effort experts keep engaging through RBM partner committees. This has been done through advocacy and mobilization partners (ARMPC); strategy and communication partners (SCPC); and country and regional support partners (CRSPC). In 2021, seven major activities were coordinated through RBM partnership.

- At the country level, the CRSPC provided a platform to engage the RBM community in coordinating the implementation support to countries and also to, sub regional entities such as regional economy communities through elimination and coordination mechanisms. For instance, South Africa is one of the regional coordination mechanisms and elimination programs.
- RBM supports ITNS, IRS and SMC campaigns adapted to be COVID safe and widely rolled out last year. This was similarly achieved on previous years.

- RBM continued to support countries as well as separate entities in design of quality, prioritized programs. This supports regional and subregional entities to achieve important deliverables:
  - Align malaria planning with the broader health and development agenda, and support to resource mobilization.
  - Opportunity to incorporate a mix of new tools and best practices, including strategy to ensure access to everyone (not only countries but also subregions).
  - Enable countries to design policies, set new targets and improve their coordination systems, including incorporation of community rights and gender (CRG) programming.
  - Mainstream malaria in the agenda of the regional economic communities including at Head of State, minister of defence and technical level.

Daddi introduced the impact of COVID-19. RBM also provided support to countries through international and local consultants to address more than 44 implementation related bottlenecks and gaps in 2021, which includes:

- Planning ITN, SMC and IRS campaigns in the context of the COVID-19 pandemic and working to support continuity of care by addressing resource gaps and commodity stock outs.
- Development of communication and behaviour change strategies.
- Launching and implementation of initiatives, such as Zero Malaria Starts with Me campaigns.
- Addressing upsurges and emergencies, where some of the important areas were at to be able to continue to support.

The support provided has enabled the countries and regions to mitigate against the impact of COVID-19 on malaria prevention. However, COVID-19 continues to disrupt malaria control programmes. Some of the impacts include the fact that the delivery times continue to be at least two months longer than they used to be before COVID. Also, countries have faced stockouts for case management as well as delays in campaigns. And, countries are reporting that domestic resources originally committed to malaria have been diverted to the fight against COVID-19. The cost of delivering commodities has increased and we expect commodity prices to increase in 2022, especially for LLINs.

Daddi mentions that, RBM has a global malaria dashboard, for facilitating high-level decision-making to identify the major commodity gaps and the status of malaria control campaigns. RBM's main message in today's meeting is related to this dashboard and therefore, Daddi would like to invite his colleague, RBM data manager to talk a little bit about the RBM dashboard and how relevant it is to the work of the Vector Control Working Group.

Sara González explained that COVID has severely disrupted the health sector. During 2020 and 2021 RBM and other Working Groups have been working to collect different data from countries and started to store them in the malaria database and present them to the public in the form of the dashboard. So indeed part of the success of trying to keep the response on track came from the coordination of many partners to supply data and discuss bottlenecks. In reality, the idea of picking a data initiative on a public dashboard was to track real-time data before there could be pandemic.

Together with partners (e.g. Bill and Melinda Gates Foundation, and PMI), RBM tried to identify what were the major gaps in malaria data. One of the key issues was the fear that there was a big gap at the level of global coordination. Indeed, in the country-side there were very limited opportunities to escalate their bottlenecks and for countries to bring current challenges to the attention of the global stakeholder ecosystem. There was limited visibility, to the community on these near real-time data on the community. This is one of the main reasons why the dashboard was designed. It was considered as one of the strategic enablers of the 2021-2025 RBM strategic plan. The main principles around the data dashboard were to achieve this solution of bottleneck. And the access to the data that were related to these challenges. These principles are:

- 1) Country-centricity: obtain data from countries to escalate their challenges always respecting their data confidentiality. No data is publicly available on the platform only.
- 2) Data ownership: Respect country data ownership.
- 3) Future action orientation: Monitoring with a focus on empowering future country capacities in addition to solving bottlenecks.
- 4) Global Action focus: Data and action-driven response from global stakeholders quarterly.
- 5) Continuous data improvement to continuously improve the data quality and frequency of update.
- 6) Process in constant evolution: Continuously improve dashboards and associated processes.

On the initial list, there were main priorities in the race for all these initiatives. Tier 1 priorities are:

- 1) To secure funding for specific gaps by trying to provide more visibility on where the gaps are at the national level.
- 2) Once the gaps are identified, a more specific plan can be developed to prevent future outbreaks. For example, better weather forecasting.
- 3) Prevent and manage stockouts.
- 4) Make sure campaigns are on track.
- 5) Increase funding absorption. This is particularly related to the Global Fund grants, because you are probably aware that if a country is at the risk of underspending the budgeted amount by the end of the grant, this amount is taken from the national budget form.

Tier 2 priorities:

- 1) Support countries on the path to elimination, mainly in Sub Saharan Africa.
- 2) To support the technical assistance. That is coordinated by RBMs by giving consciousness of the possibility to be part of an online community to communicate with a technical assistant.
- 3) To optimize the utilization of new tools and drugs through.
- 4) Maintain data quality processes.
- 5) To coordinate to try to use the platform as a way to minimize the reporting required to be conducted by country.

There are currently a wide level of publicly available dashboards.

- 1) First we have the two of them that are very much related to vector control. We should say campaigns dashboard. That is throw by to information from countries on the progress on IRS, LLINs and SMC campaigns.
- 2) The second dashboard is very closely related to the supply chain dashboard. The idea is to receive constant updates from countries' commodities to detect shortages and which are the main difficulties and challenges.

These two dashboards are updated quarterly. Now, next week RBM will proceed to a first update on the data for 2022.

- 1) Then we have the barometer financial gap, which is also very much related to this information. Where do you have information by commodity? These gaps are detected from NSP, the diagnosis, vector control, etc.
- 2) The technical dashboard is now showing information on the different technical assistance.
- 3) Short Term Commodities Forecasting (CHAI) to see whether countries are on track or not completed, or postponed. This allows countries to submit or request technical assistance online.
- 4) Global Fund: Where we have information on every single disbursement on the country and the global level. It is also used to develop a proxy comparing core on a quarterly basis and detect which is the initial margin on the budget and how the disbursement compares.

- 5) Epidemiology dashboard to model on the direction of a predictive approach to outbreaks. RBM has started to incorporate a model developed by Clinton Health Initiative to forecast commodities and future consequences on outbreaks which will also be complemented with the world malaria report.

Sara also introduces some facilities that will be coming next on the dashboard. These are:

- 1) Weather forecasting produced by the Columbia Climate International School. In this case, we are particularly focusing on forecasting for the next three months. If the precipitation will be, let's say above 100.50 millimetres a month, what is the probability of mosquito density based on the precipitation during the upcoming months.
- 2) Mass campaign tracker.
- 3) Country malaria elimination targets and achievements. This data comes from the national strategic plan data.
- 4) Development of country specific dashboards to increase geographical coverage.
- 5) The last stage will be to work in improving the visualization platform, which at the moment could be slightly outdated.

Then Sara encourages the attendees to tell people about the success in making all the data publicly available, and that they are going to give soon opportunity to directly download the data in CSV or Excel files.

**WHO Global Malaria Programme: Update on malaria vector surveillance, control and prioritization work- Jan Kolaczinski & Abdisalan Noor, *Global Malaria Programme (GMP) at the World Health Organization***

This mission is to support optimal use of entomology resources for malaria vector control. This will be achieved via three general areas:

- 1) Support generation and reporting of data related to malaria vectors and interventions, including: track status of insecticide resistance and vector control coverage (and effectiveness), including contribution to WMR and global status updates; strengthen WHO, Member State and partner reporting and use of vector surveillance/control data, including development of DHIS-2 entomology module ; manage Vector Control Advisory Group (VCAG); support generation of economic data to improve resource allocation decision making
- 2) Develop or revise evidence-based WHO recommendations and programmatic guidance on vector surveillance and control, including for new tools vector surveillance and control: Develop vector control implementation guidance, and guidance for evaluation of new vector control tools; support evaluation of vector surveillance or control tools, including evaluation of new tools, and associated management of VCAG; integrate economic evidence in WHO vector control guidelines; develop guidance on prioritization of vector control interventions applying principles of health technology assessment
- 3) Support timely dissemination of vector surveillance and control guidance and contribute to its implementation through technical support and capacity building activities based on identified priorities

Jan introduces an initiative to develop a module to enhance collection collation, analysis and interpretation of entomology and vector control data and integration of entomological and epidemiological data. This includes:

- New mosquito laboratory module.
- Adults surveillance module adapted to different data workflows in countries.
- Incorporation of new IR testing procedure and DCs to the resistance monitoring modules (WHO bottle bioassay).

- Improved implementation toolkit and documentation: Bulk Load and Training App (winner of the DHIS2 annual app competition).
- Interoperability with PMI's VectorLink Collect to harmonise modules, the indicators and the data flows. Unfortunately, they have had limited bandwidth to do this and not enough capacity to request technical support but now that the modules and data flows are available they will endeavour to continue the work this year.
- Supported/ing: Ghana, Kenya, Tanzania, Burkina Faso, Botswana, Venezuela, Honduras, Nicaragua.

Jan provided a brief update of the Vector Control Advisory Group (VCAG), managed by Lauren Carrington. They have now seen two intervention classes which completed VCAG evaluation and nine intervention classes with trials planned or ongoing. Additional classes at earlier stages of evaluation. The last meeting (15th VCAG meeting 4-6 October 2021) report is online on the following link: <https://www.who.int/publications/i/item/9789240040854>.

Concerning economic data generation, this is something they start to get much more involved than last year and focus on how other guidelines in addition to the WHO guidelines are actually obtaining and using economic data in the context of guidelines development. Jeff Kenny has developed an internal review to inform on how we could do this in the Global Malaria Programme. They have also looked at what kind of processes are used by countries for resource allocation to possibly adopt some of these and strengthen this area. They also hold a technical consultation to promote the discussions around the application of economic principles to insecticide resistance management, for which a meeting report is now also available on the following link: <https://www.who.int/publications/i/item/9789240042049>.

In terms of WHO recommendations & programmatic guidance, the work on preferred product characteristics (PPC) to correct eristics is still ongoing. Unfortunately, that's progressing a little bit slower than we were hoping for last year. Development of two new PPCs is ongoing (expected to be ready online in about two months) and one new PPC is planned for 2022:

- Indoor residual spraying/ indoor wall treatments (under development).
- Revision of PPC on endectocides (under development).
- Interventions to combat outdoor biting of mosquitoes.

On the vector control evaluation process, they have spent a significant part of last year developing a high level video outlining the content of *Norms, standards and processes underpinning development of WHO recommendations on vector control* (2020) <https://www.youtube.com/watch?v=k94kiQcfv8s>. This video will be translated into Arabic, Chinese, French, and Spanish. They are planning to develop two additional videos for this year, 2022, to provide more detail on the PQT processes, which will be led clearly by colleagues in the recruit patients department, one more in-depth content on New Interventions Pathway.

Companion documents about testing genetically modified mosquitoes have been finalized and updated together with FNIH and TDR it is now online: <https://www.who.int/publications/i/item/9789240025233>.

They have also completed the revision of WHO procedures for insecticide resistance monitoring. The SOP has been finalised and only the layout of the actual document needs to be conducted. Also, they have been advised to integrate DDT position statement into malaria guidelines, which will be published as part of next update, within the next two months. Also, an indoor residual spraying update document is planned to be completed by the end of this year. Updated test procedures for monitoring insecticide resistance in disease mosquito vectors will be published, including:

- Integrates *Aedes* and *Culex* into existing *Anopheles* guidance.
- WHO bottle bioassay: a new procedure developed to monitor resistance in insecticide that cannot be impregnated on filter papers and to test for pyriproxyfen resistance.
- New DCs developed for *Aedes/Anopheles* and some former DCs validated for *Anopheles*.
- SOPs developed for:
  - WHO bottle bioassays.
  - WHO bottle bioassay with pyriproxyfen.
  - Impregnation of filter papers.
  - WHO tube test.
  - WHO tube test for synergist-insecticide bioassays.

High Burden to High Impact (HBHI) approach will be followed by WHO to reaffirm commitment and refocus activities in the highest burden countries to accelerate progress towards GTS goals through four response elements, these are:

- 1) Political will to reduce malaria deaths.
- 2) Strategic information to drive impact.
- 3) Better guidance, policies and strategies.
- 4) A coordinated national malaria response.

The outcome of this multi-sectoral response is the implementation of prioritized operational plans derived from evidence-informed national malaria strategic plans. The basic process was:

- 1) We start with established WHO interventions and strategies.
- 2) Identify criteria for the type of team that has been established.
- 3) Walk through the various layers of data sets so that we can define for each individual the areas that that individual would be most suitable based on the criteria that was developed.
- 4) Then you have your intervention, and for each intervention the interventional units which meet the criteria together with feasibility can be targeted.
- 5) The mathematical models are applied to evaluate the scenarios and precise the impact of different mixed interventions, some of which would need drastic changes.
- 6) Once a position is reached for each intervention, all of it is support together to develop funding requests based on an analysis to calculate the budget needed and available and submit it to e.g. the Global Fund.
- 7) However, developing a strategic plan costing has many challenges, starting with which intervention to prioritize to achieve the highest impact. This can be better achieved with cost-effectiveness analyses conducted by mathematical models to reduce the impact on commodities, reduce coverage targets, achieve better efficiency thresholds and ensure equity.

An example of a country product is the Subnational tailoring of interventions in Nigeria, where an intervention mix was put in place. Stratification was conducted based on the demographics in the different areas. The modern analysis helped to define the difference in front of all of the various scenarios. Analysis to compare the expected impact of four interventions scenarios: Business As Usual (BAU) plan; National Strategic Plan (NSMP); funding request including (with PAAR) or excluding (without PAAR) some SMC areas. As usual, initial (BAU) and National Strategic Plans (NSMP) go into the global plans and submit a funding request and country submits data as part of its analysis which are extremely useful in terms of stratify funding depending on geographical differences.

To support WHO Member States to generate context-specific vector control prioritization, the following steps will be conducted:

- Landscape review of existing decision-making prioritization frameworks was completed in 2021.

- Pilot resource prioritization exercise to be conducted in one malaria high burden country in 2022, based on the application of Socio Technical Allocation of Resources (STAR), combined with the MINT tool to predict epidemiological impact.
- Lessons will be drawn to reflect on the country experience with the use of the piloted prioritization framework based stratification work and the prioritization work mentioned previously.

In terms of dissemination implementations, that area are. The DHS2 modules, which have already been mentioned in the context of data, and action and collation, are also helping in dissemination, including:

- Landscape review of existing decision-making prioritization frameworks was completed in 2021.
- Pilot resource prioritization exercise to be conducted in one malaria high burden country in 2022, based on the application of Socio Technical Allocation of Resources (STAR), combined with the MINT tool to predict epidemiological impact.
- Lessons will be drawn to reflect on the country experience with the use of the piloted prioritization framework.

A lot of work has also been conducted on malaria threats map, including user consultation finalized, new prototypes developed and validated and further enhancements to the platform itself which should be coming online in the course of this year.

Concerning *An.stephensi*, WHO is hoping to launch a regional initiative to provide a much more focused approach to this. Djibouti was visited in November 2021 as requested by WHO country officers. Face-to-face convening in the Horn of Africa provisionally planned for 2022 and dependent on COVID-19. Ongoing work is been conducted to maintain Malaria Threats Map up-to-date based on the vector emerging.

In terms of the Global Vector Control response and its dissemination, this is ongoing work, including:

- Joint Action Group (JAG) meets quarterly.
- GVCR Progress Report 2017-2020 published late 2020 Global Vector Control Response.
- Online SharePoint hub for GVCR focal points.
- Launched 2020.
- Monitor implementation.
- Reports of outputs/ deliverables.
- Interactive PowerBI report (global and regional pages).
- Tracking of VCNA completion.
- WHA interim reporting: five year progress report submitted early 2022.

### **WHO prequalification of Vector Control Products / Interventions Updates- Marion Law, WHO Prequalification – Vector Control Products (PQT/VCP).**

Marion presents some updates and key priorities from WHO prequalification.

Prequalification Submission Workload and Decisions is key in timely access to products. The process to achieve this is:

- 1) Determination of Pathway. This is the start of the process, when WHO looks at every submission that comes into WHO and determines if that is covered by a recommendation and a policy and whether it goes straight to the publication pathway or if otherwise, it needs to go through the new intervention properly. WHO keep a track of these numbers, It can be seen that in 2021, 50 of these outcomes were communicated.
- 2) Pre-submissions meetings with manufacturers or indeed other stakeholders involved in prequalification submissions. 92 of these have taken place this year.

- 3) Application assessments completed. This is important so that when the submission actually comes in, it is a lot easier to, to navigate, to assess and to pull together the science assessment. WHO completed nine study protocols, seven new products, some of which have been prequalified (ReliefNet Reverte, 2GARD, Klypson 500 WG). 33 change submissions have been completed. This is an opportunity for manufacturers to ensure that their database with WHO is kept as current as possible.

Once again, manufacturing specifications is key. This ensures consistent manufacturing on products depending on which manufacturing specifications must be established, and an assessment on the data that goes along with establishing these. At the moment there are 39 WHO specifications published for relevant public health pesticide source materials, 81 source material “products” (AI + Manufacturer combination), 30 different companies/applicants actively involved in getting manufacturing specifications, and 20 source material “products” currently under screening/assessment.

WHO is also aiming to strengthen infrastructure and support process improvements that are already put in place.

- The most important is the development of ePQS and migration of PQT/VCP submission information which involves medicines, vaccine diagnostics, as well, as vector control products.
- The larger ePQS data validation project has developed an electronic system for tracking and validating required data. This has been invaluable during COVID-19.
- This gives the ability to access reports from ePQS to enhance tracking submissions with respect to changes, with respect to possible complaints, and even providing reports to other stakeholders that would want to know particular information about some of them, and then monitoring any information on that submission.
- Initiate a Quality Management System for PQT.
- Publication of the PQ/VCP Overview Document. This is important because if we were sitting in a country as a national regulator, there would be legislation and active regulations to justify that everything WHO does has been overseen and we are not playing war with the system.
- Advancements in remote/virtual assessments. This was challenging at beginning for many reasons, but WHO was never quite adept at it calling in experts when necessary and ensure access. This is also protected because WHO deal with confidential business information to ensure a confidential robust system.
- Development of more templates.
- Initiation of Executive Summaries for the process of pre-qualifying products. If a product is. Is really needed (whether it's to meet, procurement, timelines or for any other reason), and the product is, assessed and the decision made, but it's waiting for a decision document, the decision documents take quite a long time in lodge if you've ever looked at them. Therefore, WHO has now we have adopted the practice to provide an executive summary, which has been successful.

In terms of communication and communication tools, communication continues to be a major priority for the prequalification of vector control products. The main communication tool is on the new PQT Website. WHO also makes sure of their attendance and participation at meetings/convenings/conferences that they get invited to. PQT/VCP targeted meetings and consultations also take place e.g., ITN manufacturers, procurement agencies to ensure manufacturing requirements are met and they are kept on the loop. To ensure direct communication, WHO continuous gets feedback through a Questionnaire sent to stakeholders, from which quarterly Updates are developed based on that feedback. Also, Marion encouraged attendees to watch the video on the WHO vector control product evaluation process. Also, WHO has initiated every second Wednesday or every two Wednesdays a month a Webinar where Marion or Dominic Schuler is available for one hour. She encourages people to register for that, and send questions which will be used to open the session.

Several considerations must be made for the insecticide treated net guideline developed in 2012. There are plans to update this and back there was a revised copy. However, WHO couldn't move ahead with it at that time because a new process was put in place since the science required and the dossier format needed to have that information still needed to be decided, so a revision of the guidelines had to be delayed. However, these guidelines are still very important and, if successful, WHO would follow the same process with other guidelines, including IRS, in the near future. In order to develop new guidelines, the WHO considerations are: no hard copy publication, electronic only, inclusion of an extensive amount of information, must be user friendly and easy to navigate, development during a period of limited interactive discussion and consultation. Approach to strive for excellence and to represent the best possible science and processes, maximise opportunities provided by electronic format, e.g. layout, links, graphics, animation, photographs/ diagrams, etc., make distinction between what (Guideline Document) is required and how (Guidance Documents) to meet these requirements. Work proceeding along different streams with multiple consultants developing content because, even though it's been challenging through the pandemic, connect with the number of experts in the field and allocate different parts of the work of the guidelines is important.

The WHO PQT/ VCP Priorities for 2022 are:

- Assessment of submissions and establishing product manufacturing specifications.
- ITN Guideline Development and consultation. WHO always have to develop specific guidance as required and it's identified. This includes a series of short guidance that we refer to as our manufacturing series.
- Development of specific guidance as identified.
- Aligning the JMPS process with PQT process.
- Outreach to countries.

#### **Global Fund Update- *Htin Kyaw Thu and Kate Kolaczinski, the Global Fund***

Kate presents herself and announces that she will be giving an update together with Htin. They will focus on giving a basic update of what money is going, where what interventions are being supported and how we're working to evolve a process of how we look at what impact that has had. Some questions they want to raise to the group about, querying issues around it and access progress at the moment. And then Kate will hand over to Htin, who will look at some of those other technical areas. The Global Fund is in the grant cycle at the moment. They have now had almost all of their grants for this current grant cycle confirmed. So, the last donut on the right of slide 3 has been updated to show the final figures on the vector control funding for this current grant cycle, these are \$4.4B in total, from which \$1.9B is going for vector control, we can see the same consistent pattern that most of the good fund financing. Most control is going on ITN, although there's still a considerable amount of money going into IRS and an increasing amount of money going into entomological monitoring, which includes durability work as well.

In terms of the types of interventions they are supporting in and outside of Sub-Saharan Africa are: pyrethroid-only ITNs: acceleration away from these products, but they remain a key part of the market. PBO ITNs: considerable scale up in this grant cycle. Dual active ingredient ITNs: supporting as pilots for grants accessing catalytic funding top-ups and expectations around dual active ingredient upcoming funding requests, efforts to improve campaign efficiency: considerable financing of digitization, urban centre / peri-urban/ rural differentiation, and new delivery models: moves from traditional campaign + ANC/EPI distribution to higher throughput continuous or annual channels supported in several countries (school-, community-based).

The map shows when grants were confirmed, but actually things have moved on for a number of countries since then to have been able to use reprogramming or budget space, to actually increase

the acceleration of the move towards pyrethroid only nets. So you will see that in this grant cycle, there's quite a rapid increase in shift to PBO nets. We still have, and you can see from the blue crosses where dual active ingredient are being financed. This has countries purely who are working as part of catalytic projects by which co-payment is provided for them to deploy those nets. That's not through the grant allocations, but as you can see through this grant cycle, there's a number of those countries too. In the next grant cycle we expect that, if the WHO recommendation, there will likely be quite high demand for those products, given that the pricing is relatively similar to PBO at the moment. So we're expecting quite a ramp up in demand and inclusion of those in the funding requests. This will actually quite soon start to be developed for the next grant cycle.

On the operational side, there's been a lot of investment in this grant cycle in things to improve the efficiency of campaigns. So for example, around digitalization, and tailoring how nets are deployed and trying of new delivery models. So in some countries, whilst most countries are still working on the campaign cycles with intermittent continuous distribution through routine channels. There's an increasing number of countries trying out. Alternative delivery models to try and maintain a higher level of coverage instead of having the peaks that we see traditionally with the campaign.

Instead of where the IRS investment is:

- IRS is still limited in scale due to sustainability and cost. Supported (to varying extent) in this grant cycle in 30 countries and three multi-country grants.
- Entomological monitoring and durability monitoring. Supported in 51 countries and three multi-country grants.

The map on slide shows where we have got financing going into grants in those areas. The color variation is just looking at the scale of money variation that goes in. This is all countries where we Global Fund some kind of involvement. So for, I asked for ontological monitoring (whether almost complete or complemented with domestic funding).

Moving to some of the discussion the work that the Global Fund is doing at the moment to try and evolve the way that we will find financing is evaluated in terms of input outcome on impact indicators. Evolving the indicators for the upcoming grant cycle, aims for:

- Greater efficiency of M&E-related processes to reduce burden on PRs, SRs and national programmes.
- Stronger synthesis of data/information to support timely, evidence-based decision-making.
- More focus on outcomes and 'effective coverage'.
- More sub-national granularity.
- Considerable challenges to achieve this.

On financing, the Global Fund publishes a results report each year. There's a focus on looking at what that translates to in terms of key coverage issues. The programmatic results for these programs are 113M Global Fund financed ITNs in 2020, 128M in 2021 and 50-60% of total ITN deliveries. Obviously, attribution to Global Fund financing is very problematic and that's why it's traditionally been so much easier to look up numbers of things The Global Fund have bought. These coverage outcomes are of course driven by the national malaria programs and their working country with partners underpinned to look at lesser extents by Global Fund financing. Certainly, we cannot attribute all these coverage results to Global Fund money, but at least it's useful to look at what is happening in these areas. There is a process happening at the moment that will hopefully be applied in the next one. It can't be applied mid any three-year period. But in the next grant cycle, the Global Fund is trying to look at how to make the indicator work. The MNE work on the grounds, a lot more efficient to reduce the burden on the in-country parties, but also focused on indicators that are key to the programmatic decision-making and not try and overload with grant specific management style indicators.

Technically speaking on the vector control side, the Global Fund is trying to work towards more of a focus on outcome indicators and impact indicators rather than numbers of nets bought by the Global Fund. And another key technical issue that, is not something the Global Fund can drive, but they can be part of the conversation across the partnership is to try and look at how can we track effective coverage. To that extent, the Global Fund is not just looking at who has a net, but who has a net that's actually doing the best kind of job or who has IRS that with an effective insecticide. Therefore, there needs to be a way to track globally used indicators. How many people are sprayed is not going to be detailed enough to look at what countries are achieving and whether the Global Fund financing is being helpful to deliver on those more nuanced plans. Along with that comes the issue of granularity. But needless to say, there are many challenges to achieving that, and of course, that's something that's being discussed across the partnership.

In terms of the percentage of population with access to nets, this is shown on the graph of slide 8. The yellow line represents people with access to ITNs (key indicator for malaria funding) and is plotted against, two key indicators for support for HIV and TB. It can be seen that the key indicator for malaria is, either dropping off or stagnating or stalling, but certainly not continuing to rise as it has been in recent years. The Global Fund will have a conversation about what is the best way to respond to this.

Some of the potential reasons for this are:

- Durability driving large part of attrition.
- Attrition and troughs between campaigns – are these worsening?
- Are more campaigns slipping beyond three years than previously? (Operational & supply challenges)
- Role of allocation methodologies, capping and urbanization?
- Numbers distributed not keeping up with population at-risk growth?

Some of the potential responses would be:

- Understand range of reasons.
- More frequent distributions / higher throughout continuous channels?
- Costs, environmental and person time inputs make this challenging. Options for targeting at areas of highest attrition?

The discussion handed over to Htin Kyaw Thu who will now turn into another important aspect of the implementation quality, where there have been recent questions around the durability and quality of ITNS. Specifically the main concerns rely on:

- ITN durability and contribution to the attrition seen well before the 3rd year.
- Whether ITN quality is sufficiently consistent, and whether current systems/approaches are sufficient.
- Occasional differences between pre-shipment and post shipment testing due to differences in methodology.
- Acknowledgement that there are system spanning issues to be addressed (from manufacturing, finance sales, etc).

Different actors across the system own responsibility to solve these issues. However, the Global Fund is having a unique role in to tackle those concerns by:

- Global Fund financed; Tropical Health led landscaping on ITN bio-efficacy concerns.
- Supporting the Gates and i2i led work on net quality and durability issues.
  - Importance of having an 'external to the system' partner leading durability issues as well as internal dedicated personnel.
- Funding durability monitoring work.

- Funded by PMI through Chemonics – Vector Control Specialist to sit within GF Secretariat, focus to include ITN durability issues including some key analyses.
- Global Fund QA team:
  - Developing new guidelines for pre-shipment testing using more stringent approach.
  - Expanding the capacity of GF's QA Team.

The Global Fund is also looking into *An.stephensi* issues. In particular, they are looking into potential areas of how to tackle these issues through the next cycle catalytic funding. This includes:

- Supporting internal awareness.
  - Briefing on the GMP vector alert, sources of technical advice, key issues to consider in grant management.
- Emphasizing to PRs.
  - Willingness to support reprogramming if necessary for modified control activities, surveillance and/or evaluation costs - if NMC/EPs prioritize these.
  - The need to proactively discuss to ensure plans / interventions are in place and financially covered, in particular when starting NFM4 discussions.
  - The need to keep the *An.stephensi* risk in mind when making decisions around vector control in urban/peri-urban areas, for some relevant settings.

In terms of an update on the role of current catalytic funding, which is called Net transition initiative 2023/2024, this is a 50 million investment from the Global Fund focused on developing evidence from epidemiological data coming from use of ITNs and IRS. This is especially focusing on, continue buying these nets so that, there is a procurement system primed and ready. Once the recommendation comes together, countries can express their interest in pilot scale development. Some countries would then get selected depending on several criteria, such as transmission intensity, PBO resistance, and time feasibility. NMC/EPs determine the deployment approach in a country prioritising areas with high net use given access, and no plans for IRS. For those NNP countries where PBOs are in use, these are automatically enrolled to maintain coverage in those areas.

Concerning current/outcoming evaluation, although there has been some efforts already laid down by the NLP, the Global Fund also considers that it will be a good idea to support additional RCT this NTI grant. Specially, looking into comparison of impact and cost-effectiveness of tools designed to work in areas of pyrethroid resistant vectors. Post-implementation, operational guidance would be applied for entomology measurements and durability of monitoring.

Additionally, the Global Fund is starting to look into other priority areas for better control to be funded under the next Global Fund. The part of the ongoing brainstorming and consultations with partners is to support newer vector control tools, although this is currently still under discussion. The focus areas of these discussions around the vector control toolbox are:

- Build understanding of operational and cost-effectiveness issues around newer vector controls (focus on tools with at least one year of promising epidemiological data to ensure key questions are answered in time for potential WHO policy recommendation).
- Smooth market entry (demand forecasting, financial levers).
- Will support needs around *An.stephensi*: building evidence base around potential for new tools to support *An.stephensi* control; consideration to expand some work into support for *An.stephensi* surveillance / surveillance capacity in peri urban and urban areas.

For this purpose, the Global Fund is thinking of starting a partnership model with Unitaid, either entirely or in part funded by a unity, but these are all, again, part of the ongoing discussions. In terms of the Global Fund support around the COVID-19 mechanism, despite challenges posed by COVID-19, National Malaria Programmes have led adaptation processes to ensure continuity of ITN, IRS and SMC

campaign activities. But support is really targeting to contribute how countries adapt to avoid interruptions in malaria control programmes. There's been some good examples that we can look how support can be really critical to ensure countries can continue the campaign without any further limitation. One example of this in Nigeria, where there has been initial concern around COVID-19 impact since the country has experienced the highest number of malaria cases and death globally. Nevertheless, due to the country ownership, country leadership and funding support from the partners and guidance AMPs, there have been major adaptations, including updating the guidelines to adopt single or double phase door-to-door distribution; PEE, community level representation, information/communication; digitalization; and adapting microplanning (virtual formats, budget for PPE, capacity building activities with COVID measures, etc). The evaluation from these interventions have revealed that there hasn't been any significant decrease or even, in some cases, there have been increases compared to the pre COVID area in terms of ITN coverage and use.

### **Vector control updates from the U.S president's malaria initiative- Seth Irish, U.S. PMI**

Seth commences with the introduction of some of PMI's the new strategic focus areas:

- Reach the unreached.
- Strengthen community health systems.
- Keep malaria's services resilience.
- Invest locally.
- Innovate and lead.

One of the first things in PMI's agenda is *Anopheles stephensi*. PMI has been monitoring *An.stephensi* in Ethiopia since 2018, but there are a lot of aspects to understand about its biology, distribution and medical importance in Africa. Some of the PMI activities that have been completed or are underway include:

- Development of an *An.stephensi* taskforce.
- Development of an action plan to guide responses to *An.stephensi*.
- Commission a modelling report to look at the potential impact that not based even as I might have on malaria transmission in Ethiopia.
- PMI has continued to scale up monitoring for *An.stephensi* in Ethiopia, which is currently the only PMI country, where we found *An.stephensi*.
- Implementation of larviciding to control *An.stephensi* in urban areas.

Almost all this work has been conducted in collaboration with many people in organizations, institutes and university and many others.

Seth continues with a mention to entomological monitoring. There are 252 entomological monitoring sites supported by PMI and 262 insecticide resistance monitoring sites. Entomological monitoring provides answers to specific questions that will allow the improvement of the use of data in our basic control decision-making by design better sampling strategies and making the best use of limited resources.

One of the key questions that we might ask is where, and when did humans become infected with malaria parasites? In past years we've done a good job of monitoring mosquitoes and, and their behaviour, but not so much at looking at human behaviour and that is something we will try to incorporate into the entomological monitoring. Another way that we are looking to improve our entomological monitoring is through the use of community-based monitoring, which was developed in response to the high costs of transporting surveillance technicians to and from monitoring sites. Training of local community members can reduce costs, improve consistency in the collections and strengthen community health systems.

Finally, the data collection methods are being modernized with the VectorLink collect system, now collecting data from both IRS campaigns and entomological monitoring and have worked very closely with WHO to ensure that the collection system and the individual system are harmonized.

Regarding the insecticide treated nets, that are a big part of what PMI does:

- In 2021 nearly 44 million nets were procured and nearly 46 million were distributed in close collaboration with governments and other funders bringing the overall total of nets procured and distributed to 400 million.
- There is an effort to increase the numbers of new nets or PBO nets or dual insecticide treated nets (Even though cost up to a dollar more per net, studies that show better performance). Currently 94% of the nets that are distributed by PMI are new.

Regarding IRS:

- Over 5 million houses have been sprayed in 17 countries in 2021.
- 21. 000 million people protected.
- 33,000 spray personnel trained.
- Two of the new WHO pre-qualified IRS insecticides will be tried in at least one county.
- Continuation of monitoring of insecticide resistance and changes in insecticides used in the IRS campaigns.

It was noted that even with the challenges of COVID, 100% of spray campaigns were completed.

Updates on the operational research and policy included:

- Indoor ATSB- shown effectiveness. In collaboration with IVCC, we will be supporting an experiment trial in Cote d'Ivoire to see whether ATSBs can provide some little levels of control of mosquitoes compared to IRS.
- Housing improvement research study. About to begin a cluster randomized control trial to look at the impact of two different housing improvements. The initial pilot study was done in Uganda.
- Partial spraying is being assessed to see whether this might be something that could be used to reduce the amount of insecticide used and the funding required to conduct an IRS. Promising results so far. The initial hut study and field study were conducted in Ghana. Second study completed in Cote d'Ivoire and a large scale trial is in development.
- Topical repellent use may be promoted by PMI in elimination settings.

### **Staying ahead of resistance and building transformative tools: a quick look at the BMGF portfolio - Helen Jamet, BMGF**

Helen presents herself and thanks the organisation team. She will be talking about the vector control portfolio in the malaria team at the Bill and Melinda Gates foundation.

She begins with some framing comments about the malaria strategy.

The road to malaria eradication will have many challenges along the way:

- Flattening of cases.
- A continued concentration of malaria deaths in the 10 highest burden countries.
- Critical.
- Stagnation of funding, coupled with rising costs of new, more effective tools.
- Increasing threats such as, widespread insecticide resistance, and increased drug resistance.

Data on malaria strategy form 2018 incorporated with learning from other diseases clarify what it will take to eliminate malaria. This includes:

1. Sufficient transmission prevention.
2. Effective case management.
3. Low importation with accurate and timely surveillance.
4. Stay ahead of resistance.

5. New Transformative tools for the toughest places, which will require starting early collaboration in those countries.
6. Coordinated partnerships and maintaining political will is also key.

Investment portfolio for vector control:

1. Insecticide Interventions.
  - Product development - Develop new AI combinations into LLINs and IRS to fight resistance, develop novel products.
  - Existing product category- Active ingredient discovery studies, Implementation of new products that have been pre-qualified.

We need to continue to support the development of novel insecticides and also gain a better understanding of the future role of pyrethroids. Should we aim to switch away from pyrethroids completely or continue to use them with synergists and or other insecticides in combination on that? Development of novel insecticides from discovery to deployment in new vector control products, it's technically challenging, costly, and has a high rate of failure. As a result, there are only a small number of companies capable and willing to develop new public health insecticides. The market's effect to control products remains small. So it's important to continue to implement initiatives, to support these markets. In order to continue the progress eliminating malaria we need fully effective LLINs and IRS products.

The search for alternatives to pyrethroids is generally focused on two approaches. Firstly, the developing a new active ingredient from scratch, which is expensive and lengthy. And repurposing existing, active ingredients, which generally has a shorter time to market, but very few insecticides meet the requirements for an LLIN and chemistry and regulatory packages are often not available. We are investing in both the product development activities, product optimization, scale up, field trials to generate necessary data and public health impact required for establishing a policy. A new product category with WHO.

Other research areas include investigations on long range, synthetic attractors and active ingredients specific to hematophagous insects. Previous work has included investigations on the health impact of Eaves tubes and window screening and the health impact of spatial repellents.

ATSB product concept is that it is a device that presents an attractive sugar meal laced with a lethal toxicant. It uses the natural need of mosquitoes for sugar feeding. Both male and female mosquitoes feeding on sugar baits, and ingest the toxicant. The tool reduces transmission by impacting adult mosquito survival, shifting towards greater proportion of younger uninfected females, and has an outdoor application.

## 2. Genetic Based Vector Control

The genetic based vector control portfolio includes approaches considered as transformative tools. That is the new tools critical to accelerating impact in the most challenging transmission settings. Genetic control is an area of wide approach, as opposed to insecticidal methods that need to be distributed more systematically to achieve the same large area effect.

These genetic approaches are intended to address three main gaps, not covered by products today:

- Regions with high transmission despite intervention scale-up.
- Outdoor biting.
- The prevention of re-introduction in eliminations settings.

This portfolio uses a phased approach intended to both make progressively more impactful constructs and build a gene drive that is acceptable to the public and to, to regulators.

The face regulatory approach includes strain importation, then contained use and an open field release. The phase construct development includes sterile male development for self-limiting strain and self-sustaining gene drive. Self-limited approach is being used by Oxitec for the development of constructs in two different species *An. albimanus* and *An. stephensi*. This technique can control a population in a temporary reversible fashion. The cost of fitness cost causes transgenic mosquitoes to be eliminated from the population and the 5, 10 generations. The self-limited construct in *An. albimanus*, which is a major outdoor biting vector in Haiti is intended for use in an elimination scenario where existing tools are insufficient. Self-limiting construct in the Southeast Asian vector *An. stephensi* is intended to control newly established locally distributed populations, invasive to east Africa.

The gene drive approach is expected to be more powerful than sterile males or self-limited strains because it's designed to be self-perpetuating in the field. As an area wide intervention that spreads geographically it's anticipated that it can be used in hard-to-reach areas, places with poor health system infrastructure and then unstable or conflict areas.

Transmission zero is working on a construct that prevents malaria transmission in mosquito as well Target malaria is working on a construct of decreases fertility without effecting heterozygous carriers. The endectocide portfolio is shared with our medical interventions team. Long acting endectocide is intended to be used to reduce and eliminate residual transmission, which as mentioned often consists of outdoor biting and door resting. In many regions, such as Southeast Asia, the Indonesian archipelago, South America, parts of Africa with dominant transmission from *An. arabiensis*, vectors predominately bite, and rest outdoors. Improved village-based malaria control based on outdoor transmission interaction, both in high transmission areas and in areas seeking elimination is a desired goal.

Ivermectin remains the project effecting, but it's limited by its pharmacokinetics. Laboratory studies suggest that 3-day dosing of ivermectin might kill mosquitos for up to 10 days. However, modelling suggests that a longer duration of activity will be needed to be given currently attainable coverage in mass drug administration. It's anticipated than an endectocide will not be given alone, rather with an antimalarial. The combination of MDA with a three-day ACT, plus and endectocide generally has stronger impact than either MDA or endectocide alone, especially in lower and seasonal transmission settings. Modelling indicates you can trade off larger gaps in coverage by extended duration of killing for those able to complete the therapy.

Long lasting endectocide will enhance the impact of duration of the effect of MDA and seasonal or an elimination setting by pairing transmission reductions from the endectocide with parasite clearance by ACTs. Long acting endectocide has the potential to be a game changer in outbreaks, assistant. Hotspots or other situations amenable to MDA even with the exclusion of under twelves and women of childbearing age.

### 3. Vector Surveillance

Recent surveys on vector surveillance in malaria endemic countries showed it was most heavily limited by strategic planning, with many countries reporting the vector surveillance wasn't seen as a priority. Only a small fraction of countries of an 8% reported having sufficient capacity to implement back to surveillance activities. More efficient surveillance tools and a more complete understanding of back to behaviours and populations will provide a basis for more cost effective and successful malaria control by better enabling interventions to be selected that align with vulnerabilities in fact to behaviours and thus enable more effective control.

Priorities for new techniques:

- Development of novel age grading techniques.
- Development of quantitative methods for active ingredient detection on surfaces.

- Assay development for mosquito species identification and insecticide resistances.
- Cross-cutting benefactor genomics work to better understand population structure and insecticide resistance, that includes sequencing, bioinformatics training and data analysis.

**Questions:**

For Global Fund: There is already a multi-country grant to the whole of Africa for TB. Could there be a model for *An.stephensi*?

Answer:

Several different partners have raised to us, the idea of funding a regional grant for *An.stephensi*. We did have some discussion with a number of those partners, and it felt like there was a need for potential activity in three areas. 1. Regional coordination around activities. 2. Understanding better how to control malaria in *An.stephensi* settings. 3. Funding to scale up surveillance activities to better understand the scale of the problem.

Now the first one it seems to be very well in hand already. The national malaria programs in the horn of Africa are already very advanced with coordinating amongst themselves with the support of GMP and AMRO and Afro, so we certainly don't feel a need for the Global Fund to, to dive into that area. On the issue of control and how best to effectively control malaria in *An.stephensi* settings we think we can build nicely into our proposed upcoming catalytic funding, which we'll be looking at some of the new effect control tools, but obviously to understand those newer back to control tools and the benefit they might bring. They need to be looked at in combination with, or in comparison to some of the existing tools. So there will be pilots happening in a range of different settings to look at how best to control malaria and answer in particular answer some key operational questions about the newer tools. We can take that opportunity to ensure that *An.stephensi* settings are well-represented. It is an important thing to do because some of those newer tools that will likely be looking at HTSP spatial, repellents. One of the potential key added values is for use in areas that *An.stephensi* is a problem. So we think we can provide some help through that catalytic initiative. Then, the surveillance activities are a core programmatic activity and theoretically, the Global Fund grant allocations are where our investment in that area should fit. We do want to try to ensure that the countries in the horn of Africa are getting sufficient funding in the next grant cycle to make sure that they can cover their needs for surveillance. Now that's absolutely not something we can guarantee because it depends on the amount of money that comes in and obviously how it gets split through the allocation model, across the countries. But that's certainly is on the top of our mind to look at the needs for surveillance activities in those countries. Potentially we're going to continue conversations with partners over the next six months or so to also look at how the catalytic funding that I just mentioned about the new tools. Perhaps that could be considered as a vehicle to do some kind of investment around surveillance, build capacity building, or some expanded surveillance activities around pilots. So, we do understand the need and the threats around *An.stephensi* but we don't think a standalone Global Fund financed regional initiative is what's needed when there's so many other partners already leading in that space.

Would you be able to talk a little bit about the reason for the one year in AP data for catalytic funding?

The Global Fund is not the early product development focused. This area has been, certainly be looked at by other partners. So, we believe that when we talk about the tools that we wanted to look into, certainly they have advanced to some stage. The key gap here is after that kind of evidence has been ordered to be built how do we successfully transition into a market ready introduction? So, a short answer is since we're not looking into early product development, we believe that this type of data will suffice in order to accelerate further into scale.

How will the Global Fund measure cost effectiveness or interventions? What will you include? What will you base your decisions on?

If we're talking about the cost effectiveness assessments that we have planned to fund us after the evaluation work, then we'll look at direct impact, so impact on disease outcomes, like the incidents, but probably prevalence as well to compare those. To look at short-term effectiveness, efficacy, it would extend more than just one year, obviously because if we're talking about nets, it's not useful just to know the impact in the first year, it needs to be the next year as well because obviously that declines. You would get an incorrect assessment of cost-effectiveness if you only look to the first year. But I think what we will expect, and hope is that the evaluation partners we work with go beyond that, to consider longer-term benefits of potentially more expensive tools such as avoiding development of insecticide resistance in future. But that's something we will wait to look at how the technical partners move in that space because they're already a number of conversations happening.

### **Supporting countries in local production and introduction of vector control commodities in Africa- Foluke Olusegun, ALMA**

Foluke presented a brief overview of how ALMA supports countries and local efforts to produce or introduce new tools in the continent. Offering some background information on the African Leaders Malaria Alliance, a head of state organization who supports the heads of state in the vision of eliminating malaria from the African continent by 2030. ALMA provides the forum for leaders to discuss and review progress towards attaining targets and addressing the challenges that come along the way. Also implements a continental level Scorecard tool which tracks progress along a number of key indicators for malaria control and elimination and provides management tools for malaria, NTDs and nutrition programmes on country level. Finally, a key mandate of ALMA is the identification and dissemination of lessons on programmes implementation among the countries.

The Chair of ALMA, Uhuru Kenyatta has set an agenda with four priority areas that he sought to really make progress on during his term and firstly being the digitalization of real time data.

1. Digitalization and real time data.
2. Engagement with regional economic blocks.
3. Create more end malaria councils and funds.
4. Youth advisory group.

ALMA focus on continuing to advocate and to support efforts to boost and expand capacity of local manufacturing of products on the continent not only limited to malaria, but to other diseases too.

Local manufacture on the African continent - There are a few challenges identified, including labour costs and lack of available expertise, general disconnect between the industry and research Institutes, taxes imposed on importation of raw materials, unfavourable foreign currency policies, lack of assurance of regional and international markets. So, ALMA efforts to support and advocate for local manufacturing in Africa, seeking to align with the AUDA/NEPAD, MMV and others to support local manufacturing and the implementation of the Pharmaceutical Manufacturing Plan for Africa.

- Support local production of APIs in Africa.
- Technology transfer.
- Support manufactures with prequalification certification.
- Advocation for better policies, such as the removal of duties and taxes and increased investments in the sector by governments and others.

Regulatory frameworks - the regulatory pathway for vector control products it is much more complex and less well defined than for pharmaceuticals. As a result, this presents a barrier to accessing products and hence again, stifles innovation. An initial mapping of the landscape of vector control registration revealed:

- The different Ministries responsible for vector control registration.
- The numbers and levels of assessments that are required and the different types of testing protocols that have been requested.

The African VC registration is a complex landscape, and its assessment has provided deeper understanding of the challenges and opportunities to optimize access to VC with stakeholders.

Overall, the ministries who oversee the process are the Ministry of Environment, Ministry of Health and Ministry of Agriculture. This feeds bottlenecks and extensive delays and can be expensive for local manufacturers. The requirements for registration include additional trials requested by local authorities. Ongoing discussions on the registration requirements.

Regulatory Frameworks and RECs - from a regional perspective there's a lack of standardization in the assessment protocol from one country to another. That presents additional barriers if you're looking to enter the markets beyond your immediate neighbours. An urgent and radical harmonization across the various health products within the country and region are needed. In response to this issue:

- AUC set up a vector control registration working group to develop a vector control registration roadmap.
- Follow up with relevant vector control regulatory groups to discuss the issues, effective access to new tools.
- Learn from success of regional regulatory initiatives (CILSS/ECOWAS).
- Understand key regional vector control regulatory priorities and continuing to explore.
- Update PQ process and discuss ways to facilitate engagement.
- Advocacy- Dissemination of information to countries.

How others facilitate support local production and interim introduction of new tools:

- Highlighting some of the issues.
- Assessing the readiness of national manufacturers and supporting them in the WHO qualification and the prequalification.
- Leverage the advocacy strength to support the ongoing implementation of the PMPA.
- Work with partners to identify opportunities, to address where gaps lie and increase investments in local manufacturing and facilitate technology transfer.
- Promote harmonization of VC products registration through Regional Economic Communities.
- Continue to support the regulation of pharmaceutical and VC tools and disseminating those outcomes emerging from any assessments of regulatory frameworks.
- The End Malaria Councils and Funds are a country led and controlled mechanism to mobilize multisectoral support. Senior leaders from various spheres of influence at the national level, whether in ministries, private sector, trade organizations and civil society organizations they work together with the national malaria control program to move operational bottlenecks or resource gaps.
- Support the rollout of EMC's, provide technical support to establish them and ensure that activities are part of the mandate of the council members. Examples are Kenya's EMC launch and Tanzania manufacturer tech transfer (production of LLINs).

#### **Role of the APLMA/APMEN Vector Control Working Group in Asia-Pacific- Leo Braack, APMEN**

Leo presented a review of the APLMA's work. APLMA stands for Asia Pacific Leaders Malaria Alliance and APMEN Asia Pacific Malaria Elimination Network and were established in 2009 to support member states with their malaria elimination objectives. APLMA comprise 21 member states in the Asia Pacific region with the headquarters in Singapore. Technical support achieved by the three Working Groups:

1. The surveillance and response working group.
2. Vivax working group (MMV).
3. Vector Control working group (Malaria Consortium).

Current mosquito-borne disease status and Asia Pacific:

- Malaria burden is declining in many countries and elimination is indeed achievable by 2030 across the whole of Asia Pacific.
- While malaria is on the decline arboviruses are on the rise. The need for vector specialists and high-level vector surveillance will continue.

#### Vector-related challenges:

- Particularly high diversity of malaria vector species and better clustered in species groups and complexes morphologically indistinguishable (PCR for identification).
- Many outdoor biting species. So IRS and LLINs are not as effective as they are in Africa. Need for alternative vector control methods.
- Many species are zoophilic which makes it easier for them to maintain the high population levels.
- The residual malaria is sustained by Forest-Goers.
- Shortfall in skills for vector surveillance.

#### APMEN VCWG Support Interventions:

APLMA focuses on creating a strengthened capacity, especially in vector surveillance.

1. A two-week intensive surveillance or elimination course with international participation.
2. Online 27 tutorial Vector surveillance course, which has nearly finalized.
3. Periodic ad-hoc courses (GIS, Insecticides susceptibility monitoring, etc).
4. Regular high expertise webinars with very high attendance.
5. Annual APMEN VCWG conference where vector colleagues can get together and share opinions and experience and questions.
6. A website for online resource exchange network for entomology – [www.orene.org](http://www.orene.org)
7. Occasional research. Support for specific projects.
8. Support desk where countries approach us to look for resource people to help with specific needs in developing an insecticide resistance management plan.

Two-week vector surveillance course- Only 20 students across Asia will be accepted to attend the course in Udaipur, India that includes lectures, field training and insectary training.

Online course on vector surveillance will be uploaded onto ORENE (online resource exchange network for entomology) website. Includes 27 tutorials in six self-help and moderated modules. Having done the tutorials, you are presented with a certificate. The TechTalk Webinars and proven to be a particularly popular. Series of 6-8 TechTalks.

The annual conference brings together the Vector Control Community in the Asia Pacific in three days of discussions on particular topics that have been suggested by vector control colleagues in the region. Next in September this year.

ORENE- Online Resource Exchange Network for Entomology- <https://orene.org>. Forum for vector specialists to share experiences in eight areas (outdoor biting vector surveillance, control community issues, funding training, generally issues). In addition:

1. Hands on 2-week experiential courses on various topics, Insecticide Susceptibility Monitoring, PCR assays for mosquito ID.
2. Increasingly urgent and important issue of *An.stephensi* assessment by engaging with colleagues in India and in Africa and in Europe and creating linkages that can support and help each other to find avenues to deal with this serious issue.
3. Production of best practice short video case studies on things like community participation, forest-goers etc.

#### Questions:

1. Has there been any dialogue in the network of countries in ALMA on how PQ and itself or the trials that you've thought of PQ can be considered enough in place of additional local trials?

Answer

It's not an easy one to answer, but it's obvious that existing country registration process and its associated costs are an ongoing challenge in the introduction of any new products. So, clearly there's no accepted golden standard at the country level and regulators often don't have the capacity to check that. Now there are opportunities with WHO prequalification at the continent and regional level. African Medicines Agency is being operated operationalized and countries have gratified its creation. Initiative around how minimization at African Medicines regulatory organization is also approaching the regional academic and economic communities. And now due to COVID preparedness and response African governments are keen to invest and this is definitely positive.

Innovation impact has been noted in terms of working along WHO and defining a process to leverage the WHO prequalification process and to be accepted at the regional level, trying to avoid a parallel system. But it still remains very difficult and varied and it's still a long way to go. Hopefully the discussion goes on.

Countries are looking to build on this industry now, not just for health, but also as an economic driver to development. So again, hopefully this again brings significant changes.

2. How comparable are the bionomics of *An.stephensi* in Asia and the horn of Africa?

Answer

Of course, the *An.stephensi* in the horn of Africa has its origin in Asia, so presumably the bionomics are pretty similar not enough time has passed for great divergence in behavior, etc. Those are questions that still need a bit of probing. Maybe there's somebody in the audience that wants to venture a guess, but my guess is that bionomics must be pretty similar, given the common recent ancestry or genetic linkage.

Comment

The ORENE platform is clearly a good one and linkage to some other platforms would make a lot of sense, especially to foster dialogue within that forum. It is obviously extremely important.

The session has heard about so much from the RBM Partnership and about the malaria dashboard from RBM. Prioritization was being done by GMP, the ITN guidelines being developed by WHO PQ and the work on a catalytic funding from the Global Fund. Updates from the PMI and the vector control portfolio from the Bill and Melinda Gates Foundation and the Vector Control production regulatory process in Africa from ALMA and also the role of AMPEN and APMLA in the Asia Pacific.

It has been very informative session today and we want to thank all our speakers.