

RBM Partnership to End Malaria
Vector Control Working Group (RBM VCWG)

Special Session: Engaging the Private Sector in Vector Control.
The Strategies, Experiences, Successes, and Lessons Learned

18th October 2022

Hosted Online via Zoom

Coordinator: Konstantina Boutsika

Rapporteur: Laura Paris

Workstream 1: Enhancing the Impact of Core Interventions (IRS and ITNs)

Task Team 3: Capacity building, localization, and private sector involvement for sustainable vector control

Work Stream 1 Task Team 3 Co-leads: Sam Asiedu, AngloGold Ashanti (Ghana) Malaria Control & Jessica Rockwood, International Public Health Advisors

Duration: 150 minutes

Welcome participants, meeting overview, introduction of TT3 Co-leads

Mary Kante & Allan Were – VCWG Workstream 1 Co-leads

Mary Kante welcomed participants and briefly spoke about the rising malaria cases and deaths in developing countries and the growing need to reinforce prioritization of interventions. She explained that this session is an initial session and that she is grateful for all speakers and participants. She also highlighted that those who are on the call today are not the only people involved in this initiative and how she is looking forward to further exploring this subject area in Ghana in February.

Finally, she gave thanks to all who were involved in organizing this event with a special mention to Konstantina and the Swiss TPH GlobMal Project for the funding.

Allan Were then introduced himself, gave thanks to attendees and speakers and mentioned that questions at any point are welcome in the chat. Speakers and facilitators may respond to these questions in the chat where attendees are also more than welcome to introduce themselves should they wish.

Allan then introduced Samuel Asiedu and Jessica Rockwood as Task Team 3 Co-leads and leaders for the session.

Samuel gave thanks for the kind introduction and thanked Jessica for her support in the programme. Jessica thanked everyone for attending the call today and highlighted that she briefly wanted to give an overview of TT3 objective and missions.

The vision of the TT3 is active involvement of the private sector in sustainable vector control towards malaria elimination. The objective is to support VCWG members in their efforts to foster sustainable ITN and IRS interventions through capacity strengthening of NMCPs, local partners, and the private sector.

In the May meeting, the vision and objectives were highlighted and some exciting examples of malaria control programmes with the private sector were shared. The last meeting also had lengthy discussions on the topic of engaging the private sector to fill gaps in malaria control. Gap filling can take various forms such as finance, HR, logistics and resource provision.

Jessica then went on to briefly mention the below examples of malaria control programmes with private sector involvement, which demonstrate the variety of interventions that can be supported by private sector.

Examples of Malaria Control Programs With Private-Sector Involvement

Country	Organization	Intervention
Malawi	Illovo Sugar	IRS
	Mulanje Mission Hospital	IRS and LLINs- for hospital catchment area
Ghana	AngloGold Ashanti	IRS, bed net distribution, environmental management, insecticide resistance management, education, surveillance
	Benso Oil Palm Plantation	IRS and LLINs for staff on its plantation
Uganda	Uganda National Oil Company -UNOC	VC for its work force
	Quality Chemicals, with guidance from the NMCP	IRS -New initiative in collaboration with the NMCD, IRS will be implemented on a full recovery basis - commercial purpose project
DRC	Tinke Fungurume Mine	IRS and LLINs for mine workers
Brazil	Mineração Novo Astro S/A	Vector control and surveillance services, investments in staff, provision of equipment
Mali	Société d'Exploitation des Mines d'Or de Sadiola	IRS, larviciding, breeding site removal, household malaria education
Zambia	Zambia Sugar	IRS, malaria case management, IPTP, education and behaviour change communication
	Konkola Copper Mines, Mopani Copper Mines	IRS, malaria case management, IPTP, education and behaviour change communication
	Roan Antelope, Mufulira, Nkana-Kitwe, and Nchanga mines	IRS, malaria case management, IPTP, education and behaviour change communication
Chad, Angola, Cameroon	ExxonMobil, Petronas, Chevron	Insecticide-treated bed nets, chemoprophylaxis among nonimmune workers
Equatorial Guinea	Marathon Oil	IRS, bed net distribution, ACT introduced free of charge to children and pregnant women, IPTP, training of medical staff, communication campaign
Philippines	Shell	IRS, insecticide-treated bed net distribution, diagnostic and treatment provision, capacity building

The next steps to consider are to define the private sector, consider how to engage the private sector in vector control, support the need by helping private sector to develop programmes, conduct mapping or landscaping analysis of the current context and roles of the private sector in vector control, capitalize on the core strengths of the private sector, assess national capacities to engage private sector, build on national strengths and build necessary capacity to involve private sector, define key success factors, document challenges and finally discuss and implement actions on how to fill the gaps. She gave an example of a value chain analysis currently taking place in Uganda.

Jessica then went on to give a brief overview of the meeting agenda. She highlighted that the session today will consider the landscape of private sector engagement in vector control with a historical perspective and guidance for future.

Desktop Review of Private Sector in Vector Control

Andrew Saibu & David McGuire - IVCC

David McGuire gave a brief overview of his experience and insights in engaging private sector in terms of vector control.

IVCC have been working for the last seven years on expanding access to novel vector control tools. For the last 30 years David has been working on expanding access to a range of products and services in vector control through public-private partnerships. Although his focus has primarily been on malaria, he has also worked on private-public partnerships to address other areas of health, such as HIV and reproductive health.

What can we learn from past experiences and what can we do in future to maximize private-public partnerships for malaria? The private sector represents half of all health services across Africa and is

in a better position to reach the rural poor. He described Africa as a region where public resources are limited, and the private sector is already a significant player. Around 60% of healthcare financing in Africa comes from private sources, and about 50% of total health expenditure goes to private providers. Most of the populations living in the region are poor in both rural and urban areas and rely quite heavily on private healthcare. He reiterated this fact by stating that a poor woman with a sick child is as likely to go to a private hospital or clinic as to a public facility. The private sector is often perceived to be serving only the rich, but this often is not the case. Private sector providers including for-profit and social enterprises fill an important medical need for poor and rural populations underserved by the public sector.

He then went on to explain why we need to develop new routes to market. The 2021 world malaria report demonstrated that malaria cases were up to 14 million in 2020 and resulted in up to 47,000 deaths over 2019. The total annual resources needed were estimated to be \$6.8 billion in 2020 and the total funding for malaria control and elimination in 2020 was estimated at \$3.3 billion demonstrating a funding gap of \$3.5 billion. Only 50% of the vulnerable populations in sub-Saharan Africa (SSA) had access to ITNs in 2020 and since 2017 indicators for ITN access and use in SSA have been declining. Feedback from NMCP country partners explains that there are not enough campaign nets to cover all members of households, the nets often require replacements, and that people are more likely to use nets if they are larger, conical, polyester and available in different colors. The average cost of all nets including new ones continues to follow an increasing trend due to the need for new raw materials and shipping cost increases, which limit capacity to maintain desired volumes. He reiterated that unless something changes, maintaining existing coverage will be very difficult, let alone expansion of activities.

Engagement with the private sector is proposed as an opportunity to increase funding and expand coverage. Despite the private sector having extensive coverage when it comes to health, it has very limited involvement in vector control. Over 50% of health services in SSA are provided by private sector (source: World Bank) and his experience with the NgenIRS project showed great potential in delivering vector control through extractive industries such as AGAMal and have included GoodBye Malaria, Pilgrim Africa and mission hospitals. Business cases have been developed to demonstrate potential extractive industries, banks, telecoms and agricultural estates, which represent the largest employers and investors in Africa. The thriving consumer insect control market also provide local services through commercial and public sector channels as supplementary interventions to reach those not covered by mass campaigns. There are many examples of the private sector supporting and complementing the provision of other health products and services, so why not malaria? Prior consumer research and market experience indicates willingness to pay for LLINs from \$4.70 to \$6.00 for a significant number of consumers.

The strategic framework for scaling up ITNs was created by RBM in 2002 before Global Fund, PMI and others started investing in their universal coverage strategy and programmes were more dependent on a nuanced approach to meet needs within funding constraints. How can this strategy be revived in a time where resources and finances are limited?

There are many ways to constructively partner with the private sector. Product development partnerships, like IVCC, work with research and development companies, product developers and manufacturers to develop new technologies and vector control tools that would otherwise be ignored. Combining the technical capacity of industry to facilitate and de-risk product development

has led to the successful introduction of multiple vector control tools including resistance-breaking IRS and LLINs. This work continues with a long-term view of continual introduction of new tools for rotation of nets and IRS as well as the introduction of new VC tools such as spatial repellents.

Corporate social responsibility is another way to attract private sector companies that have prioritized malaria and other VBDs both in Africa and internationally. Cause-related marketing is a way to raise funds for vector control whilst also promoting products or services of a private company. For example, USAID partnered with ExxonMobil in early 2000s to raise funds for LLINs in Zambia through a campaign that attracted customers to petrol stations with the aim to take a percentage of profits to the supply nets to orphanages. Social marketing can be used to promote the use of vector control tools and expand distribution of vector control channels through time limited subsidies. Africa has an extensive network of textile and other manufacturing companies which can be utilized for involvement of development of vector control tools such as A to Z Textiles in Tanzania for production of vector control products. Pest control operators can also play a role in expanding the sustainable supply of vector control tools. The consumer market for vector control tools in Africa is growing and catalyzing investment in commercially viable and profitable endeavors with public health impact. Enabling/empowering NGOs who have played a key role in delivering vector control tools to highly vulnerable persons such as displaced persons in camps is also a key component to vector control success.

Extractive industries such as oil & gas and mining companies are some of the biggest industries in Africa and employ high numbers of people, where their success depends on a healthy workforce and therefore malaria is a priority. AGAMal in Ghana has been one of the industry leaders in malaria control as a private sector partner and is currently working with IVCC and others to make business cases for design implementation and evaluation of vector control tools in Africa. It is a major employer in Africa and their success depends on a healthy workforce. Therefore, taking care of their staff and their families/communities has a huge impact on malaria control in the areas that they operate in. Mission Hospitals provide as much as 30% of medical care across Africa and more in some countries like DRC. IVCC has excellent experience engaging them in Malawi to expand IRS coverage. Pest control operators serve mostly wealthier urban populations, but they have the potential to expand and create local capacity to implement VC on behalf of public sector whilst also expanding services on a local basis to reach those not covered by ITN or IRS campaigns. Banks and telecoms reach most Africans and some market leaders have expressed interest in supporting vector control work of others as part of their corporate social responsibility.

Textile manufacturers have also historically been involved in product development and are a private sector industry worth considering. Although there are many challenges, local manufacturing can reduce supply chain risk, create local ownership, improve access and create jobs. Sprays and coils are also widely used across Africa and introduction of proven malaria prevention products through these networks and well-developed channels on a subsidized or commercial basis could play a major role through expanding access beyond those currently reached through campaigns whilst also playing the role of a safety net when campaigns are halted, delayed or being phased out.

In addition, we are now working to expand vector control through partnerships with private sector in Ghana, DRC, Mozambique and Uganda and began the process of identifying countries back in 2020 and since then have been going through mapping and engagement activities. Country specific business cases have been developed to implement largescale IRS campaigns and then scale up

introduction of other tools such as ATSBs, repellents and new IRS products. The purpose of these partnerships is for the government to create a suitable environment for the private sector to facilitate duty free procurement and offer other services.

Ultimately, we hope to continue the scope of new routes to market to achieve 25% in vector control coverage by 2027 in partner countries. IVCC is currently building a network of private industry partners with a focus on IRS which is currently being de-emphasized by several countries and donors due to funding constraints and increased cost of new LLINs. This expanded network will also be used to disseminate new vector control tools as they emerge. We must also look at the potential for local manufacturing and use of consumer distribution channels for expansion of coverage where appropriate. In doing so this reduces reliance on donor funding, strengthens local ownership and strengthens sustainability across the malaria endemic world.

Using donor funding to catalyse investment in malaria prevention in Ghana

Lucy Paintain, LSHTM

Lucy thanked everyone for the opportunity to present results of her analysis. The intervention was the private sector malaria prevention project which was a 3-year pilot project with 3 key components: Supporting retail sector, supporting workplace partnerships in addition to advocacy and resource mobilization which were carried out in the following ways:

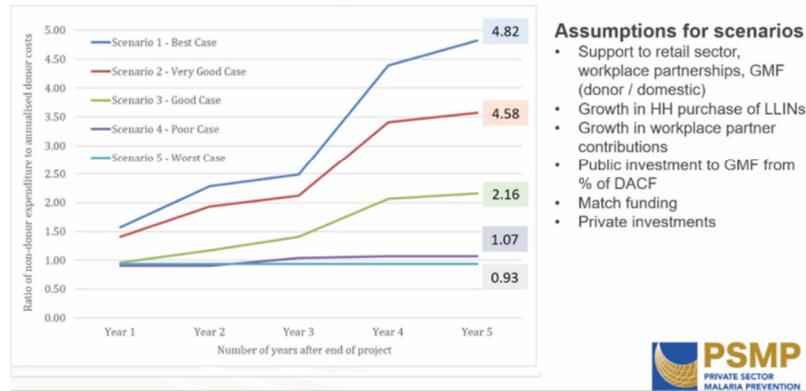
1. Supporting the retail sector through market analyses, both baseline and endline. Conducting human centered study to understand consumer preferences and WTP for non-standard LLINs. Provision of LLIN seed stock and generic LLIN demand generation through the “NetLife” campaign.
2. Supporting workplace partnerships was achieved through facilitated procurement of LLINs with initial subsidies and technical support for distribution, seminars and data collection.
3. Advocacy and resource mobilization was conducted through raising media profile of private sector involvement and award ceremonies. They also supported broader resource mobilization goals of NMCP including a resource mobilization strategy (2019-2023) for the Ghana Malaria Foundation.

Two thorough market analyses were conducted where workplace partnerships were supported through facilitation of procurement of LLINs with initial subsidies. The unit costs per LLIN distributed were quite high and the average annual economic donor cost per LLIN distributed through the retail sector was USD 21. With an average of 1.78 years useful lifespan. The average actual economic donor cost per LLIN distributed through workplace partners was USD 7.55 with the same lifespan.

She then moved onto describe a value for money analysis which aimed to model a 5-year post-project time horizon. Relevant donor costs were considered as investment costs and were considered across the lifespan of the project and 5 years post-project. They also considered recurrent annual non-donor expenditure which included workplace partner costs of malaria prevention activities and household costs in purchasing LLINs from retail outlets. Domestic resource mobilization was also factored in and based on expert opinion (public sector financing and private investors). Some small minimal recurrent annual donor expenditure was also included for the first 2 years. Annual ratios of projected non-donor expenditure to annualized donor costs were modelled

and alternative scenarios were constructed to explore future scenarios. The results of this modelling activity are as described in the graph below.

Ratio of annual non-donor to donor expenditure for 5 years after project end



Return on investment was projected for different scenarios. It should be of note that in all but the worst-case scenario, the level of expenditure achieved by donor investment was always over one. She reiterated that there is a lot more detail in the paper of the different scenarios and specifics of the modelling exercise.

In summary, it was concluded that the unit cost per net delivered was high reflecting the considerable initial investment costs and relatively low volumes of LLINs sold during the short duration of the project. However, taking a longer time horizon and a broader perspective on the consequences of the complex catalytic intervention suggests that considerable domestic resources for malaria control could be mobilized exceeding the value of initial donor investment. It is important to consider that this will require some level of recurrent expenditure to support private sector engagement. For example, advocating for new companies to adopt malaria prevention activities, technical support for SBC activities, high level advocacy to support implementation of the resource mobilization strategy will be important.

She then gave acknowledgement to colleagues at LSHTM, JHUCCP, DFID, NMCP and PSMP.

Private sector resource mobilization and program implementation

Sherwin Charles, Nandos/Goodbye Malaria

Sherwin Charles gave thanks and expressed gratitude for the number of persons on the call. He expressed that for Nandos/GBM - the private sector approach takes a slightly different approach.

He raised the question: How do we have a big impact across the countries that we work in?

The challenge in the private sector and malaria community is how to ensure that the engagement is sustainable, brings a contribution that is of value, and that it has longevity. The challenge in the world of malaria is that you can't stop until you get to zero. He is not a believer that private sector

should just be involved in malaria prevention activities at surface level but believes that we should get to a stage where we ensure that private sector is fully engaged and part of the collective effort in getting to zero, all the way to the end. One of the things we are finding is that the cost of getting to zero does not decrease as malaria burden comes down. In fact, sometimes they increase. Interventions change from vector control to surveillance, diagnostics and treatment.

How does the private sector remain involved all the way to zero? That's where we find ourselves after a number of years of malaria control in countries like Mozambique, Eswatini and South Africa. How can we continue to engage this sector without generating fatigue? Critical thinking from private sector on value, data and sustainability as well as working very closely with NMCPs allows us to transition from just vector control to a complete elimination and eradication strategy. I want to emphasize that the private sector is willing to take on this journey and see that value that goes way past just protecting staff and families of staff, to protecting entire communities.

COVID-19 has shown us that public health can have a huge impact on public wellbeing and global economies and that for the private sector it is now is an opportune time to get involved in health. This still requires a compelling investment case and high levels of engagement, and you will find partners that are willing to go all the way to zero. As M&E gets better private sector partners are willing to go the extra mile and increase investment as they are shown a pathway to zero and proof that that the pathway is possible and that is what is most important.

The last two years have highlighted that there is inequality in the world regarding disease control tools (drugs, vaccines, tools, etc). Local manufacture and new distribution models are important in ensuring sustainability. Private sector also wants to ensure that there is a platform to provide access to healthcare regardless of the disease. CHWs, laboratories, and logistics are critical areas where private sector can play a very important role.

We need to go past contributions in kind and really understand what is needed to get to zero. Sometimes the call is in cash and if we want to engage private sector, we need a plan of what really is the ask instead of asking what can be given in kind. We need to ensure cash is available to ensure that gaps can be filled when interventions change. M&E must be strong to prove results.

For Nandos/GBM, it has been an incredible journey. What we see from our experience is that the future is not as bright or as hopeful as we want it to be. The economies in our countries are struggling and we are in an environment of poor logistics systems, lots of failures and global inflation meaning we have to do more or at least the same with less money and this is where private sector can come in. This is a time to be bold in our asks and I think that you would find leadership that is willing to engage. I would really encourage the malaria world to ensure that there is longevity in what is being asked or suggested to the private sector. That's it from my side I hope that it I was helpful.

AngloGold Ashanti Malaria Control – Motivation, successes, challenges and lessons learned in Ghana

Ignatius Williams, AngloGold Ashanti

AngloGold Ashanti is a global mining company with a geographically diverse portfolio of operations and projects; AngloGold operations in Ghana, Guinea, Tanzania and DRC. In Ghana, AngloGold

Ashanti operates the Obuasi and Iduapriem mines located in the Ashanti and western regions respectively. These are areas where rain falls are almost all year round and malaria burden is high.

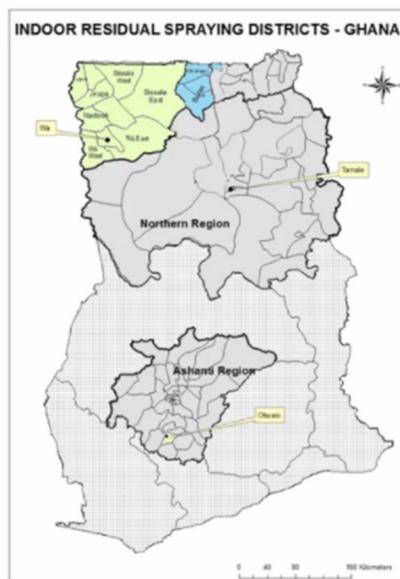
In the company's 2004 report to society, malaria was identified as the most significant public health threat to AngloGold Ashanti's operations in Ghana, Mali, Guinea and Tanzania which sparked discussion around how to institute the programs to benefit broader communities in which operations are being undertaken. The company is motivated to maximise productivity and contribute to a broader corporate social responsibility strategy that creates a positive social license to operate in their operations.

Mining in SSA is quite difficult regarding the engagement of communities and communicating benefits at the community level. AngloGold Ashanti strives to form partnership with the host communities sharing their environment, traditions, and values. Creation of positive social alliances and ensuring that communities are aware that the activities will contribute to broader economic uplifting is key to this element of the work.

The malaria program begin in Ghana due to productivity and absenteeism concerns due to malaria. The benefits of the program were immediately felt to the company and the community, and a decision was made to expand the program to benefit the communities and country as a whole.

On the recommendation of the NMCP through the Ghana CCM, AngloGold Ashanti has been Principle Recipient of the Global Fund Grant for the last 10 years and has replicated the model to 16 districts across Ghana in the Upper West and Upper East of the country which includes areas that are far from the organization's mines. AngloGold Ashanti Malaria Control (AGAMal) was established as a subsidiary company to implement IRS in the targeted areas and currently targets and sprays over 150,000 structures/houses annually, protecting approximately 1.2 million people from malaria and creates about 1,300 local temporary jobs every year.

AGAMal IRS operational districts are detailed below.

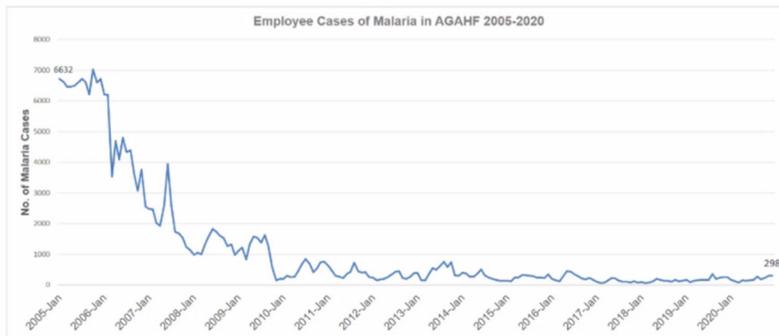


The implementation framework consists of vector control activities (IRS and LSM), SBCC (community education and promotion), surveillance and monitoring (malaria and insecticide resistance), and

disease management (diagnosis and treatment). Program strengths include robust surveillance, entomological monitoring, supervisory system to ensure conformity to standards. Highly trained staff. Strong relationships with stakeholders at various levels of implementation and high community acceptance which includes chiefs, leaders, and governmental agencies. Program diversity is also a strength and AGAMal has historically also engaged in COVID-19 and community education activities.

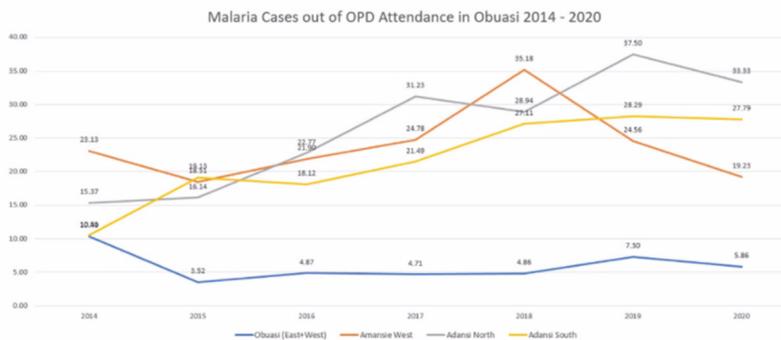
The graph below shows employee cases of malaria at the mine hospital between 2005 to 2020 and which shows a massive drop in cases being reported to the hospital following AGAMal engagement. This has resulted in increased revenue due to reduction in loss of workforce to malaria.

Successes - Impact



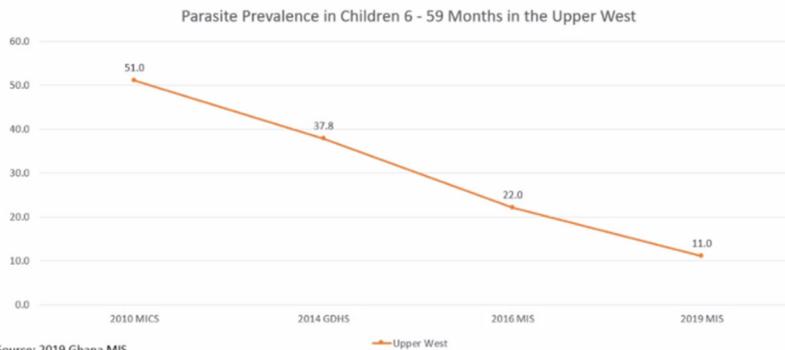
This second graph shows Obuasi malaria incidence over time which has also been positively impacted since 2014. Obuasi has significantly lower levels of malaria than other districts.

Successes - Impact



The graph below shows that in AGAMal’s area of activity in the Upper West parasite prevalence in children between 6-59 months has significantly reduced over the last 10 years. The programme contributions towards reduction of malaria in the district and region as a whole is evident.

Successes - Impact



Challenges faced have included:

Insecticide resistance: High levels of pyrethroid and organophosphate resistance in all districts in Ghana coupled with limited options for rotation. New pipeline products should be available soon to assist with an effective management strategy.

Funding: Global Fund has been the main source of funding for implementation besides the generous contributions of AngloGold Ashanti.

Issue with strong brand name: Association with global mining brands restricts access to other potential sources of funds for implementation of interventions and expansion of malaria control programmes.

Conclusions: Malaria control programmes offered by private sector can further act as centres of excellence that provide platforms for capacity building and implementation. Investing in the fight against malaria yields good return on investment for companies and communities served. Preventing malaria attributable deaths and saving lives is a worthwhile investment. We try to encourage all private sector companies to engage with the global fight against malaria. The lives saved today are the greatest assets for tomorrow's development.

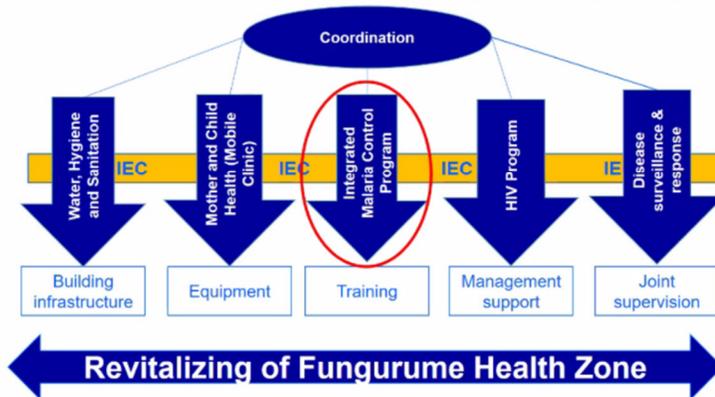
Tenke Fungurume – DRC

Leonard Ngwej

Tenke Fungurume is a mining company which has an integrated malaria control program. The mining takes place in Lulaba, DRC which is 180km from Northwest of Lubumbashi. The covered surface is 1600km² and is the largest private investment in DRC.

The population consists of over 380,000 people and TFM households make up more or less 75%. Approximately 10,000 agents and contractors are present. There are 18 health areas, 12 of which are in the mining concession area. Over 60 per cent of medical visits were malaria-related and confirmed by RDT or microscopy. There was no vector control program in the area before TFM. The 5 axes of the community health program in the Fungurume health zone are as follows:

THE 5 AXES OF THE COMMUNITY HEALTH PROGRAM IN THE FUNGURUME HEALTH ZONE



Malaria is a key risk in the area with year-round transmission and peaks occurring during the rainy season. Between Oct-Apr is high transmission season and from May-September is considered to be low transmission (dry) season.

The 5 pillars mentioned before were all integrated with design and implementation based on scientific evidence with interventions focusing on workplace and community. The robust programme has a strong M&E component which monitors impact indicators (incidence, prevalence).

The main activities of the malaria control program can be divided into community and work environment activities. In both settings, IRS is a key activity aimed at reducing the malaria burden. This involves spraying insecticide on household walls to reduce and prevent indoor transmission of malaria. It has a lethal effect on the endophilic vectors and assists with reduction of vector density. Other activities include monitoring of larval sources, vector surveillance, IEC campaigns, environmental management, case management, chemoprophylaxis, LLIN & repellent distribution as well as impact assessments.

The IRS activity requires mapping and enumeration of structures in addition to the supply of equipment, insecticide, PPE and the recruitment and training of spray operators, field supervisors, and needed mobilisers. Logistical needs include operational vehicles and planning of interventions to ensure they are implemented prior to the rainy season in order to prevent surges in malaria. Insecticides have been rotated every few years ensuring that insecticides used are in line with local insecticide resistance levels. These are as follows:

- Insecticides used:
 - ✓ 2008-2010: Pyrethroids (PY);
 - ✓ 2011-2014: Carbamates (PY resistance detected in 2010).
 - ✓ 2014-2018: Organophosphates (OP)
 - ✓ 2019-2020: Neonicotinoids (NN).

Spray operators and supervisors collect data which is certified by a data manager and compiled and captured daily and feeds into weekly reports. In 2020, 62,893 households were visited and 214,554 rooms were sprayed. This is an increase of 338% since 2008. Coverage in 2020 was 93.97% well over the WHO recommended level (85%).

Susceptibility testing is conducted in the entomology lab with an insectarium. Female mosquitoes are reared in this insectary and insecticide impregnated filter papers are used to rest for insecticide

resistance according to WHO protocols. Tests are performed every semester and resistance to pyrethroids and DDT is already registered.

Biological efficacy tests are formed on treated walls. The goal of this is to determine the evolution of the insecticide's persistence over time. Tests are conducted with susceptible mosquitoes each year during and after the IRS campaign. Tests are carried out on different categories of walls including unfired bricks, fired bricks, plastered walls and painted walls as well as thatch structures.

The company has published the following research in academic journals:

RESEARCH Open Access

Indoor residual spray bio-efficacy and residual activity of a clothianidin-based formulation (SumiShield® 50WG) provides long persistence on various wall surfaces for malaria control in the Democratic Republic of the Congo

Leonard M. Ngwey^{1*}, Isak Hattingsh¹, Godwell Mlambo¹, Emmanuel M. Masha¹, Jean-Christophe K. Kazaha¹, Françoise K. Makanga¹ and Michael J. Bangs^{1,2}

RESEARCH Open Access

Feasibility and implementation of community-based malaria case management with integrated vector control in the Democratic Republic of Congo

Edouard Kawasa Swana^{1*}, Ghislain Van Molen¹, Clarence Kuzi Makeng¹, Hensette Bunga Mupamba¹, Gabriel Muzibho Kabala¹, Oscar Numbi Lubaya¹ and Michael J. Bangs^{1,2}

RESEARCH Open Access

Variable residual activity of K-Othrine® PolyZone and Actellic® 300 CS in semi-field and natural conditions in the Democratic Republic of the Congo

Leonard M. Ngwey^{1*}, Emmanuel M. Masha¹, Clarence K. Makeng¹, Henri T. Mundongo¹, Françoise K. Makanga¹, Jean-Christophe K. Kazaha¹ and Michael J. Bangs^{1,2}

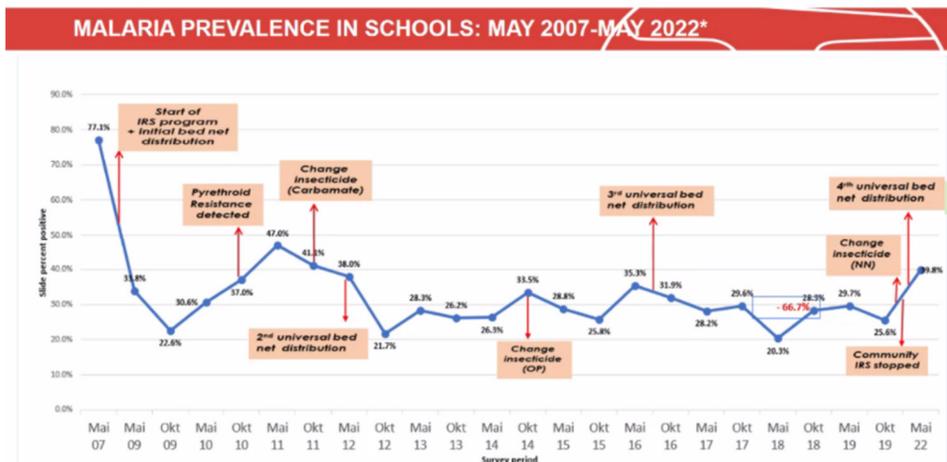
RESEARCH Open Access

School-based malaria prevalence: informative systematic surveillance measure to assess epidemiological impact of malaria control interventions in the Democratic Republic of the Congo

Edouard K. Swana^{1*}, Thierry Y. Nye^{1,2}, Leonard M. Ngwey¹, Betty N. Mupamba¹, Sylvain¹, Clarence K. Makeng¹, Isak Hattingsh¹, Oscar N. Lubaya¹, Jean-Baptiste S. Kalona¹ and Michael J. Bangs^{1,2}

Malaria prevalence surveys are also conducted in schools bi-annually. This includes randomized sampling from children aged between 6-12. Since 2008 there has been a 66.7% reduction in malaria prevalence. External quality control of microscopic slides is conducted bi-annually with an external investigator.

As you can see from the graph below the levels of malaria have been dependent on the success of our malaria control programs and the effectiveness of insecticide used. Wherever insecticide resistance has developed, the insecticide has been changed and malaria burden is once more reduced.



Conclusions: The program has significantly reduced malaria burden amongst workers and prevalence in communities through IRS. The influx of populations in the mining areas increases the number of structures to be sprayed and thus increases costs overall due to the increasing cost of insecticides coupled with the limited number of classes to use. There is a need for public-private partnership to continue the program as the cost is becoming increasingly heavy for the company.

New challenges include IRS withdrawal following its non-inclusion in the specifications. The community finds the activity too costly for the money allocated to social programs by TFM. The need to find alternative control strategies is also a major challenge and the purchase of PBO ITNs is being considered in the meantime.

CAMA GBC Health Private Sector Engagement Strategy – Nigeria

Ochuko Keyamo

For over 15 years CAMA has mobilized the business response to malaria in Africa. CAMA is a diverse coalition of private sector companies committed to improving health across the continent. CAMA believes that global and national businesses have a significant part to play in the fight against malaria. CAMA's is to bring those businesses together to amplify their intellectual, practical and financial resources so that together, we can end malaria, keeping teams, suppliers, customers and communities safe.

CAMA is an alliance that was formed about 15+ years ago by marathon oil and currently driven by GBC Health. We are an alliance of many countries interested in the fight against malaria utilizing interventions such as ITNs, IRS, provision of treatments, frameworks, and investments.

Current members include: Access, Chevron, Bayer, DCL, Nigerian Breweries, Vestergaard, Aloko Dangote Foundation and ExxonMobil. Beyond these current members there are other companies which are involved in different activities such as Shell. Other non-private sector players are also included to ensure wider impact and reach.

Historically they have worked in different countries and include DRC, South Africa, Angola, Ghana and Nigeria. Considering the huge burden of malaria in Nigeria this country has been a major priority.

Private sector engagement is a strategic approach which CAMA uses to collaborate, consult, implement and strategize with private sector for greater impact, sustainability and effectiveness to malaria programs and better health outcomes at the workplace and communities. Operational principles of private sector engagement include; Mapping out and engaging early and often, incentivize and value PSE throughout planning and programming, expand the use of approaches and tools that can unlock the potential of PS, build and act on evidence available, work with partners to establish metrics that measure value and deliver increased sustainability and greater impact, show PS shareholders a return on their investment by sharing program data and results. It is a win-win for everybody when we have a malaria-free society.

CAMA convene and bring stakeholders together; they curate and draw together reports and best practice examples from both their own activity and also from the wider private sector/health community. They connect and create multi-sector partnerships between business, governments, multilateral organisations and communities who contribute to each other's expertise and resources. They catalyse and build on resources through innovation management, logistics and marketing of private sector to increase scale and impact of malaria control. They challenge and create opportunities for companies to come together in partnership to shape and challenge policies at a national level.

The following were then provided as brief examples of successes on vector control:

- Advisory support to companies for the development and expansion of initiatives
 - CAMA's work with AngloGold Ashanti laid the foundation for the company to become the first private sector principal recipient of US\$138 million Global Fund grant for IRS programming in Ghana
 - Aliko Dangote Foundation: In partnership with NMEP & CAMA a comprehensive strategy to increase the impact of private sector support of malaria control and elimination in Nigeria. Mobilized and distributed 8,000 LLINs and treated over 45,000 with full courses of antimalarial medicines
 - ExxonMobil Corporation: In collaboration with CAMA, ExxonMobil developed a corporate workplace program offering free malaria services. In the course of time, 14.4 million LLINs have been delivered through this program
 - Access bank Plc Malaria to Zero Initiative: The Private Sector Health Alliance & Access bank Plc in collaboration with CAMA launched this initiative, mobilized and distributed 30,000 LLINs and reaching 273,000 people with malaria information
- Industry or issue specific dialogues conducted - collaboration with the Global Fund's PSC on a bednet industry dialogue led to an agreement among manufacturers to address bottlenecks to rapid procurement and delivery of LLINs
- Trainings and workshops in several countries in Africa - the Partnership with USAID/PMI and RTI International on Entomological Training in Angola and Democratic Republic of Congo (DRC) which targeted health workers to improve vector control operations received national and international recognition as example of successful PPP. This workshop also led to the creation of Angola's first insectary
- Established relationship with the NMEP/ NMCP (the coordinating body for all malaria interventions in-country) in some African countries; provided feedback into national and regional strategic plans, policies and dialogues for malaria control and elimination from the perspective of a unified private sector hub
- Engagement with the National Malaria Elimination Programme (NMEP) to improve and expand IRS implementation in Nigeria
- Ongoing dialogues with companies on malaria and vector control interventions - we are currently finalizing a partnership with Innovative Vector Control Consortium (IVCC), and speaking with other companies to contribute towards the expansion of IRS in Ghana
- End Malaria Project: A 3-year initiative led by CAMA, the EMP will catalyze private sector resources and capabilities to increase awareness and support malaria elimination efforts saving at least 50,000 lives by 2023
- CAMA Online Library: CAMA in collaboration with private sector partners will develop and launch an online, multi-media library of curated high-quality resources on malaria including vector control that can be used for workplace and community programs across Africa.
- Possible collaboration with Aliko Dangote foundation, and Chevron Nigeria on vector control interventions in some states in Nigeria

Current activities in vector control include the following:

Challenges to malaria vector control have grown in recent years, threatening global goals to significantly subdue malaria by 2030. Service disruptions due to COVID-19, insecticide resistance and mosquitos' behavioural adaptations are just some of the challenges limiting the effectiveness of vector control and threatening decades of progress. These challenges can only be overcome through reinvigorated action and multisectoral collaboration. The next few years present a clear call to action for businesses to work towards rapid acceleration of progress. This will require bold partnerships, smart use of both trusted and emerging tools and the collective will to address underlying systemics

challenges. Finally, she expressed that she is very happy to be on this call as partnerships and collaboration is key to addressing the supply chain issues and other issues that we are facing in malaria control today.

Ghana NMCP Perspective

Phyllis Owusu-Achau

In 2020 21% of outpatient cases were confirmed for malaria (96% testing rate) and 18% of inpatient cases were also due to malaria. Whilst a number of interventions exist to control malaria in Ghana a gap in funding to cover interventions to crucial areas of the country still exists. As part of the national malaria strategic plan 2021-2025 the NMCP aims to improve mobilization of resources and maximise the efficient use of available resources for public health impact by 2025. In an environment of increasingly limited financial resources, the NMCP financing strategy presents a path to mobilize resources and support a funding allocation process that is evidence based, transparent, efficient and effective. The NMCP recognizes the private sector as key in its efforts to mobilize sources for maximum public health impact.

Private sector resource mobilization starts with a stakeholder mapping exercise. Which companies are there and who can be engaged. The next step is to empower them and make a case for involvement in malaria control with either resources or logistics. Outlining specific program needs and then scouting for private entities who are appropriately positioned to support a program. For example, SMC, can companies let us use their vehicles for program implementation? Last year we had a textile company who wanted to engage in malaria control activities where staff were trained on test and treat and importance of bed net use. Urban area projects are important as different patterns of transmission are observed in these areas. Specialized nets for urban areas are required as access is high to nets, actual use of nets is low. If we could provide specialized nets, then our use can be improved. With regards to CSR, we are working with several private companies including AGAMal and other mining companies to implement IRS. Another thing we have been looking at is tax incentives through engagement of parliamentarians in Ghana which will be instrumental to providing tax incentives for private sector to get involved in malaria control.

Taking an industry by an industry approach and tailoring concept notes and proposals to solicit support from ministries in government and private sector. Local Government have been approached to help push for advocacy of malaria activities at the district level. Ministry of routes and transport have been engaged to ensure that any construction does not promote breeding sites and we have called for more engagement with the NMCP.

Lessons learned: Collaborations with private sector entities are key and essential for resource mobilization and advancing program goals through advocacy and resources. The National strategic plan aims to engage private sector and dedicate staff specifically to PS engagement. Budget allocation for pursuing private sector partnerships is essential, as it is costly.

Way forward: We have finalized some concept notes and pitch materials to approach prospective companies for resource mobilization and implementation of IRS. We have scheduled physical visits to work sites of these PS partners. Involve MCEs and MPs in galvanizing private sector entities in their localities to look for funding source opportunities. Lastly, we would like to start collaborating

with other malaria endemic countries and this platform serves as a good means of doing that where we can learn lessons from other countries and pursue similar activities in Ghana.

Conclusion: Most countries talk about engaging PS but getting onto the ground engaging PS and getting things moving is difficult. Malaria programs ought to be deliberate and targeted in the approach to PS involvement. Public entities such as national ministries can be essential players in identifying and engaging private companies.

DRC NMCP Perspective

Narcisse Basosila

In DRC 12% of cases and 11% of deaths are caused by malaria and it is the main cause of morbidity and mortality in SSA and is endemic in DRC with a prevalence of 30.9% in children. The main vectors are *Anopheles gambiae* and *Anopheles funestus* with *Plasmodium falciparum* being the predominant species. Malaria is the cause of 44% of hospital consultations in DRC.

The main objective of the NMCP in DRC is to reduce malaria morbidity and mortality by 40% from 2018. They aim to do this through 80% coverage of prevention methods (LLINs, IRS, PMC, IPTp, SMC), 80% diagnosis rate and a 100% treatment rate, >80% availability of malaria supplies, controlling 80% of epidemics, 95% completeness of health zones as well as 80% adoption of favourable behaviours.

Program missions, vision, values and strategies have been mapped out as shown in the diagram below:



During 2021 private sector malaria control activities primarily consisted of: Procurement of artemisinin-based combination therapies and rapid diagnostics tests. Promotion of malaria case management. Production and distribution of marketing and communication materials for the

program. Development of the roadmap for the integration of private sector establishments into the HMIS and organization of meetings. Collection of baseline studies programs.

The challenges faced in malaria prevention and control included integration of the distribution of third generation LLINs, extension of IRS in HBHI provinces during epidemic outbreaks, failure to respect the LLIN distribution schedule, durability of LLINs (1.5 years instead of supposed 3 years), biological efficacy which turned out to be 16 months instead of 36.

Recommendations: Implementing IRS requires high level of commitment: Policy, HR, Finance, Logistics, organizational capacity and adequate planning. Implement IRS in areas with seasonal transmission in the East and SE of the country (mountain areas) using insecticides recommended by WHO.

Nigeria NMEP Perspective

Philip Okoko

Philip apologized that he was speaking from a public place as he was delivering his talk from an airport.

NMEP has mandate to coordinate all malaria efforts in country. It is accountable for formulating and facilitating policy guidelines, coordinating the activities of partners and stakeholders on malaria elimination activities, providing the activities of partners and stakeholders on malaria elimination activities, providing technical support to states malaria programmes and stakeholders, mobilizing resources, and monitoring and evaluating progress and outcomes in malaria elimination efforts across Nigeria.

Nigeria carries heaviest burden of malaria burden in the world with different states in Nigeria at different levels of achieving malaria elimination. The country average is malaria parasite prevalence of 23%. NMEP has a national strategic plan to achieve a malaria free Nigeria (<10% parasite prevalence). Their mission is to provide equitable, comprehensive, cost-effective, efficient and impactful malaria control interventions through transparent, accountable, client-oriented, community-owned and multisectoral approaches that contribute to a strengthened health system. There are many objectives of the NMEP but today we will focus on the one related to vector control which is to improve access and utilization of vector control interventions to at least 80% of the targeted population by 2025. The thrust of the strategies under this objective is the provision of proven high impact vector control interventions towards universal insecticide coverage to the entire population. The core interventions include LLINs (>80% in a target community) and IRS. These are then complemented by larval control and environmental management. People are also encouraged to protect themselves through the use of nets, repellents and protective clothing at night.

The NMEP national malaria strategic plan promotes a multi-pronged approach to vector control implementation, which includes:

1. Mass distribution of ITNs consistently implemented in 24 states. 13 of these have been without funding or support for very long periods of time and because of that have not been able to implement mass campaigns.
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2. Sustenance of continuous distribution (ANC and EPI). This is implemented across the entire country though there is room for improvement and the efforts of these interventions need to be strengthened.
3. Targeted implementation of IRS based on the outputs of stratification. There has been isolated implementation since 2013, most recent is the 3 LGAs (IDP camps) in Borno state which have been sprayed in partnership with the INGO The Mentor Initiative.
4. Targeted implementation of LSM based on the outputs of stratification. There has been isolated implementation in Lagos, but this has not been sustained. The NMEP is currently working towards expanding the implementation of this activity to Kebbi state which has a very high malaria burden (52% parasite prevalence).

As you can see, we are at various levels of progress across the country and one of the innovative ways of moving Nigeria to elimination across the country is through engagement of private sector in the following ways:

5. Continue to work closely with CAMA, led by the GBC Health on various areas of malaria intervention through the years with increased focus on vector control.
6. The NMEP has established a private sector desk to coordinate private sector involvement in malaria interventions across the country.
7. In collaboration with IVCC and other partners, NMEP also developed a business case for the PPP-IRS arrangement towards establishing a sustainable IRS implementation across the country.
8. A partnership matrix where mapping of potential private sector partners was conducted helped to define the mix of potential partners and their nature/levels of involvement in the PPP-IRS arrangement.

The NMEP is currently working with the NLNG company to implement a mix of malaria intervention including case management, vector control and surveillance in 1 LGA in Rivers State, South of the country. So far most private sector malaria control activities have been conducted in silos but with the development of the PPP-IRS business case and establishment of private sector desk, it is expected that these activities will take a more coordinated approach to enable data aggregation and the national level, irrespective of source. With support from IVCC consultants have been engaged to support the engagement of process working closely with key persons in the national program for sustainability. It is expected that there will be improved private sector involvement especially in areas where progress has been slow over the years. It is important that these activities are coordinated so that they are fitting into the national database. At present there are possibly some activities conducted that have not had data submitted to NMEP.

It is expected that the PPP arrangement would have the potential of better public services through improved operational efficiency. There would be incentives for the private sector to deliver projects on time and within budget. Imposing budgetary certainty by setting present and future costs of IRS projects over time is essential for a sustainable and long-lasting approach. PPP arrangements would provide the platform for gradually exposing state owned enterprises and government to increasing levels of private sector participation.

What we need in Nigeria is budgetary certainty. We want to encourage local public and private sector capacities to be developed through this engagement. This can be in terms of HR, finance, resources, or logistics and private sector engagement can help accelerate gap fill in these areas. We would love to establish long term value for money at the end of the day.

Conclusion: Although the country has made a lot of progress, there is clear a need for a more galvanized effort in accelerating our drive towards elimination. This calls for needs to recognize the private sector and all it has to offer in this effort. Another critical factor is the sustainability of the intervention, which explained why there is a search for private sector involvement as well as other possible stakeholders. With all hands-on deck malaria elimination is possible. If it has been done in other countries, why cannot be done in Nigeria.

Meeting Recap and Next Steps

Jessica Rockwood thanked the speakers and stated that what this session has showed is that there is so much to do and so much interest in private sector engagement and reinforced that we can't stop until we get to zero. She then thanked everyone for staying on the call 30 minutes over allocated time and said she is looking forward to seeing everyone in Seattle and if not there in Accra Ghana in February. She then ended the meeting.
