CAMA

Corporate Alliance on Malaria in Africa

MALARIA ELIMINATION STRATEGIES

Reimagining Vector Control Strategies for Malaria Elimination in Africa

20TH NOVEMBER 2024

CAMA WEBINAR

Outcome Report

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OUR FOUNDERS

Mr. Aliko Dangote CON

Aliko Dangote is the founder and president/chief executive of the Dangote Group, the largest conglomerate in West Africa. The Group currently has a presence in 17 African countries and is a market leader in cement on the continent. One of the Group's subsidiaries, Dangote Cement Plc, is the largest listed company in West Africa and the first Nigerian company to join the Forbes Global 2000 Companies list.

The Group has diversified into other sectors of the Nigerian economy including agriculture and is currently constructing the largest petroleum refinery, petrochemical plant and fertilizer complex in Africa.

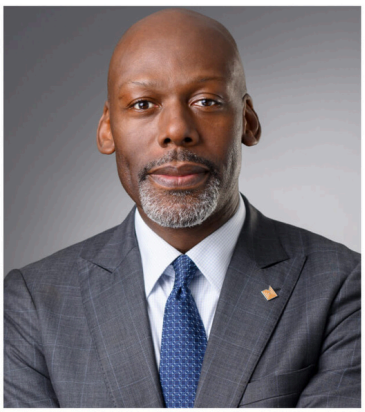
Internationally, Dangote sits on the board of the Corporate Council on Africa and is a member of the Steering Committee of the United Nations Secretary-General's Global Education First Initiative, the Clinton Global Initiative, the McKinsey Advisory Council, and the International Business Council of the World Economic Forum.

Mr. Aigboje Aig-Imoukhuede FCIB, CON

Aigboje Aig-Imoukhuede is the Founder and Chairman of Africa Initiative for Governance (AIG), a not-for-profit organisation, established to be a catalyst for high public sector performance in Africa by bringing proven private sector innovation, leadership and funding to the public sector in a private-public partnership to attract, inspire and support future leaders of Africa's public sector.

Mr. Aig-Imoukhuede is also the Founder and Chairman of Coronation Capital Limited, an Africa-focused private equity and proprietary investment firm established in 2014. Prior to this, he was Group Managing Director and Chief Executive Officer of Access Bank Plc, where he led the transformation of the bank to rank amongst Africa's leading banks.

THE ALLIANCE CO-CHAIRS & LEADER



Mr. Amaechi Okobi

CO-CHAIR

Amaechi Michael Okobi is the Chief Brand and Communications Officer for Access Corporation. In this role, he oversees the positioning of the Access Corporation brand, including all banking and non-banking subsidiaries, across various markets. Prior to this role, Amaechi served as the Group Head of Corporate Communications for Access Bank, a position he held since joining the organization in 2014.

Amaechi is a marketing and communications professional with over 25 years of experience with global and Nigerian retail brands such as Revlon Inc., Nigerian Breweries Plc, Globacom Ltd, and Diageo Plc. His experience cuts across marketing; communications; brand management; market growth strategy; reputation management; and public relations.

Mr. Michael Steinberg

CO-CHAIR

Michael Steinberg is the HSE lead, Community Health & Partnerships- Chevron and a Population health management and public health professional with over twenty years of experience as a leader and manager.

He has experience in various International assignments; a health subject matter expert; Corporate Pandemic Response Team member; Business Continuity process coordinator; communications lead; external partnerships lead, engagement and social investment lead; project, process, event and program manager; strategic planning and management; strong facilitation and training experience. Under his co-leadership, CAMA continues to play a vital role in advancing private-sector engagement and scaling impactful malaria control interventions across the continent.

Zouera Youssoufou

LEADER

Zouera Youssoufou is the Managing Director/CEO of the Aliko Dangote Foundation (ADF), the largest private Foundation on Africa, based in Lagos. In this role, she leads the Foundation's efforts to improve the health, nutrition, education and economic empowerment outcomes for the needy, primarily in Nigeria and in Africa.

She sits on several Boards including the African Business Coalition for Health (ABCHealth), Women's World Banking, Private Sector Health Alliance of Nigeria, ONE Global Leadership Circle, Center for the Strategic Studies on Africa, and International Institute for Sustainable Development (IISD). As of March 2020, Zouera also coordinates the Secretariat of CACOVID, the Nigerian Private sector coalition against Covid-19.

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A MALARIA FREE AFRICA

FOREWORD

The fight against malaria remains one of the most pressing public health challenges in Africa. Despite significant progress in reducing malaria incidence and mortality over the past two decades, the disease continues to pose a substantial burden on health systems, economies, and communities across the continent. The Corporate Alliance on Malaria in Africa (CAMA) recognizes the urgent need to innovate and adapt our vector control strategies to meet the evolving challenges posed by malaria transmission.

Mories Atoki (Dr.)
Chief Executive Officer
ABCHealth

On November 20, 2024, CAMA hosted a pivotal webinar titled "**Reimagining Vector Control Strategies for Malaria Elimination in Africa**" following the successful transition of CAMA from GBCHealth to ABCHealth.

The webinar brought together a diverse group of stakeholders, including public health officials, researchers, private sector representatives, and community leaders, to discuss innovative approaches and share best practices in vector control. The discussions centered on the evolving landscape of malaria transmission, the emergence of insecticide resistance, and the impact of climate change on vector populations. The distinguished speakers shared insights on cutting edge technologies, innovative practices, and successful case studies that have the potential to transform our approach to vector control.

The webinar also emphasized the critical importance of community engagement and behavioral change in the fight against malaria. By empowering local communities and integrating their knowledge and experiences into vector control strategies, we can enhance the effectiveness and sustainability of our efforts.
As we reflect on the discussions and recommendations that emerged from this event, it is clear that a multi-faceted approach is essential for reimagining vector control in the context of malaria elimination. We must leverage the strengths of public-private partnerships, invest in research and development, and utilize data-driven strategies to inform our interventions.

This report serves as a comprehensive summary of the webinar, capturing the key insights and recommendations shared by our esteemed speakers and participants. It is my hope that the knowledge gained from this event will inspire action and collaboration among all stakeholders committed to eradicating malaria in Africa.
Together, we can reimagine our strategies, harness innovation, and work towards a future where malaria is no longer a threat to public health and well-being in our communities.

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WELCOME ADDRESS

Michael Steinberg, Hsc., Lead Community Head and Partnerships at Chevron and Co-Chair of the Corporate Alliance for Malaria in Africa (CAMA), delivered an insightful welcome address at the CAMA webinar on "Reimagining Vector Control Strategies for Malaria Elimination in Africa." His remarks underscored the resilience of humanity in combating longstanding and emerging challenges, including the persistent burden of malaria. Acknowledging the vast progress made in malaria control, he emphasized that sustained innovation, collaboration, and commitment from all stakeholders are key to achieving the ambitious goal of malaria elimination.

Michael Steinberg, Hsc., Lead Community Head and Partnerships, Chevron , Co-Chair of the Corporate Alliance for Malaria in Africa (CAMA)

Significant strides have been made in the development of transformative tools that enhance the effectiveness of malaria interventions. Rapid diagnostic tests, alongside innovative solutions such as blood-free malaria testing, have redefined disease detection, ensuring timely and accurate diagnosis. The introduction of malaria vaccines, notably RTS,S and R21, represents a breakthrough in prevention strategies, providing an additional layer of protection for vulnerable populations. Equally critical are vector control interventions, with insecticide-treated nets (ITNs) remaining a cornerstone of malaria prevention. These advancements reflect the growing potential of integrating scientific discovery with practical, scalable solutions that address malaria transmission at its core.

While innovation serves as a catalyst for progress, the role of public-private partnerships in driving sustainable malaria elimination efforts cannot be overstated. Organizations operating in malaria-endemic regions bear a responsibility not only to safeguard their workforce but also to contribute meaningfully to broader community health initiatives.

Long-term investment in malaria control, particularly through data-driven and adaptive strategies, has proven instrumental in achieving measurable success. The impact of targeted intervention programs, such as the Boko Island Malaria Elimination Project, illustrate the necessity of an evidence-based, locally tailored approach that aligns with the epidemiological and socio-economic dynamics of affected regions.

Eliminating malaria requires an approach that moves beyond standardized solutions, embracing the complexity of community-specific needs. The realities of malaria transmission differ significantly across geographies, necessitating the deployment of mixed-method strategies that integrate traditional and emerging interventions. Strengthening health systems to support equitable access to malaria prevention and treatment remains paramount. The need for inclusive health policies and sustainable financing mechanisms to ensure continuity in malaria programs is central to achieving long-term success. A holistic perspective that recognizes the interdependence of malaria control efforts and overall healthcare resilience is essential in fostering enduring change.

Collaboration is key to malaria elimination efforts. Stakeholder engagement, spanning government entities, non-governmental organizations, private sector players, and research institutions, is fundamental in accelerating progress. The expertise, resources, and networks cultivated through such partnerships enable a more coordinated and impactful response to malaria. The alignment of objectives across sectors fosters a shared commitment to reducing malaria burden, ultimately translating into enhanced programmatic effectiveness and strengthened healthcare infrastructure.

The contributions of researchers, scientists, and frontline healthcare workers serve as a driving force behind malaria control efforts. Their dedication to advancing knowledge, improving intervention strategies, and delivering life-saving solutions at the community level is invaluable. The significance of recognizing and supporting those working at the grassroots level, often in challenging conditions, cannot be overstated. Their efforts not only bridge critical healthcare gaps but also reinforce the sustainability of malaria elimination programs.

As malaria control strategies continue to evolve, the opportunity to scale successful models and adapt interventions to emerging challenges remains a priority. The wealth of proven mechanisms, scientific expertise, and strategic partnerships offers a strong foundation upon which to build. The urgency of sustaining momentum in the fight against malaria calls for continued investment, innovative thinking, and a resolute commitment to achieving a malaria-free world. The alignment of efforts across sectors will be instrumental in transforming aspirations into reality, ensuring that malaria elimination is not just an ambition but an attainable goal.

INTRODUCTION

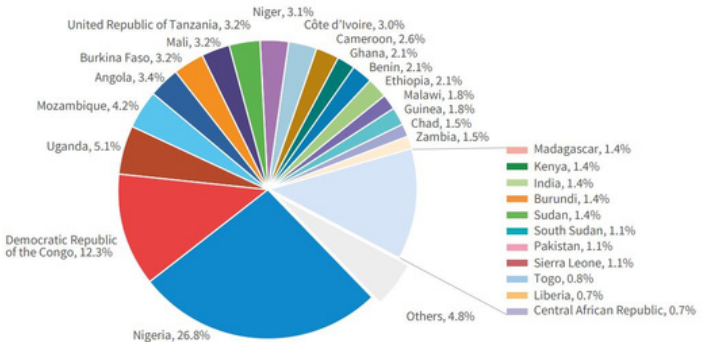
Malaria remains endemic in many African countries, with millions of cases reported annually. The traditional methods of vector control, such as Indoor Residual Spraying (IRS) and the use of Insecticide Treated Nets (ITNs), have been instrumental in reducing malaria transmission. However, the emergence of insecticide resistance and changing environmental conditions necessitate a re-evaluation of existing strategies. The African Business Coalition for Health (ABCHealth) Corporate Alliance on Malaria in Africa (CAMA) hosted a webinar in collaboration with it's members and partners.

As the global health landscape continues to evolve, it is imperative that we harness the collective expertise and resources of all stakeholders to develop sustainable and impactful strategies for malaria elimination. This report summarizes the key discussions, insights, and recommendations that emerged from the webinar, serving as a valuable resource for stakeholders dedicated to reimagining vector control strategies and ultimately achieving a malaria free Africa.

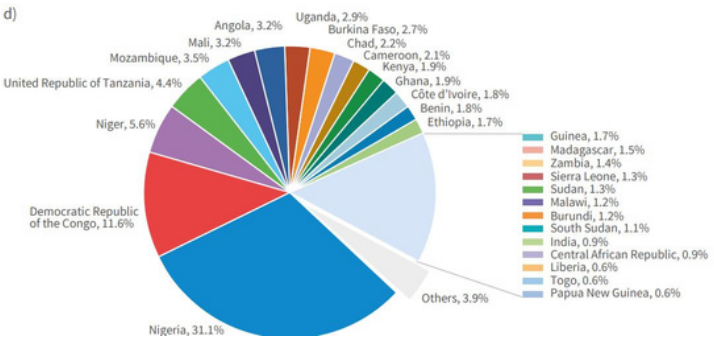
- There were 249 million malaria cases in 2022, an increase of 5 million vs. 2021.
- This increase was mainly concentrated in five countries: Pakistan, Nigeria, Ethiopia, Uganda and Papua New Guinea, due to factors like catastrophic weather events, population growth and conflict/forced migration.
- The number of lives lost to malaria declined marginally vs. 2021, to 608,000 deaths – still significantly higher than 2019, which saw 576,000 deaths.
- 76% of global malaria deaths were in children under 5 years old. That's more than 1,000 children dying of malaria every day, mostly in Africa.
- 94% of cases and 95% of deaths were in the WHO African Region.
- Four countries – Nigeria (27%), the Democratic Republic of the Congo (12%), Uganda (5%) and Mozambique (4%) – accounted for almost half of all cases globally.
- Globally, an estimated 2.1 billion malaria cases and 11.7 million malaria deaths were averted in the 2000-2022 period.
- Insecticide treated net (ITN) use remains generally unchanged, with only 50% of people sleeping under a net.
- Intermittent Preventive Treatment in pregnancy (IPTp) was up significantly in 2022 (42% vs. 34% in 2021), but too many pregnant women are still missing out on malaria prevention treatments.
- The delivery of 217 million courses of Artemisinin Combination Therapy antimalarial treatment last year was less than in 2021.
- Amongst the numerous challenges facing malaria elimination, climate change was a focus in this year's report.

Endemic countries' commitment and global resolve to control and eliminate malaria have led to some successes in 2022-2023, including:

- The scale-up of seasonal malaria chemoprevention (SMC) reaching 49.4 million children in 2022 at high risk of severe malaria.
- Roll-out of the world's first malaria vaccine, RTS,S/AS01, in 2022 and a WHO recommendation for a second, cheaper vaccine, R21/Matrix-M, in 2023.
- Availability of a new generation of dual-active ingredient insecticide-treated nets.
- The achievement of malaria elimination in a widening circle of countries: between 2000 and 2022, 25 countries that were malaria endemic in 2000 have achieved three consecutive years of zero indigenous malaria cases. Twelve of these countries were certified malaria-free by WHO.
- 12 countries are part of the High Burden High Impact (HBHI) approach and are tailoring their interventions at a sub-national level for optimal impact. These countries accounted for 67% of all cases and 73% of deaths globally.



In 2022, four countries in the Region – Nigeria (26.8%), the Democratic Republic of the Congo (12.3%), Uganda (5.1%) and Mozambique (4.2%) – accounted for nearly half of all malaria cases globally – Fig 1a



Four African countries also accounted for just over half of all malaria deaths globally: Nigeria (31.1%), the Democratic Republic of the Congo (11.6%), Niger (5.6%) and the United Republic of Tanzania (4.4%) – Fig 1b

KEYNOTE PRESENTATION

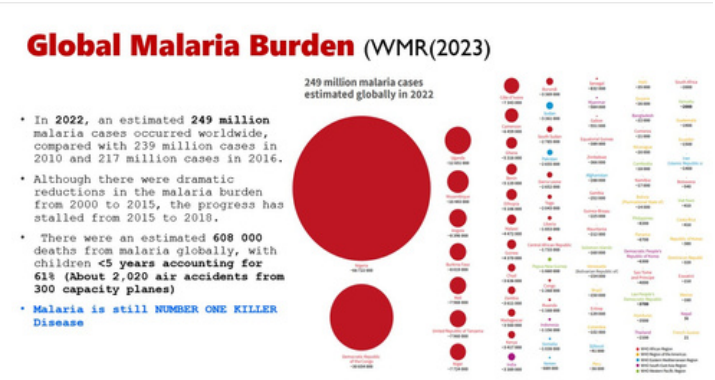
The webinar commenced with a presentation by Professor **Olugbenga Mokuolu**, Co-Chair of RBM Case Management Working Group and a leading malaria researcher, who provided an overview of the current malaria landscape in Africa. Key points included:

Epidemiological Trends: Despite progress, malaria remains a leading cause of morbidity and mortality in sub-Saharan Africa, with an estimated 249 million cases globally in 2022, with Africa currently driving the global malaria burden.

Prof Olugbenga Mokuolu - Co-Chair of RBM Case Management Working Group

Malaria remains a formidable public health challenge in Africa, contributing to a significant proportion of global malaria cases and deaths. Despite commendable progress over the last two decades, efforts to eliminate the disease have encountered persistent obstacles. The need for innovative and sustainable vector control strategies has never been more urgent, particularly as traditional methods, such as insecticide-treated nets (ITNs) and indoor residual spraying (IRS), face growing limitations due to insecticide resistance, logistical constraints, and varying levels of community acceptance. A reimagined approach to malaria vector control is essential to overcoming these barriers and accelerating progress toward elimination.

Vector control, which targets mosquito populations to prevent transmission, has historically been one of the most effective interventions for malaria reduction. However, resistance to pyrethroid-based insecticides among malaria vectors has significantly weakened the efficacy of conventional control measures. Studies indicate that resistance to newer classes of insecticides such as chlorfenapyr and clothianidin, though not yet widespread, is beginning to emerge, underscoring the urgency of resistance management strategies. The effectiveness of vector control is also challenged by the increasing prevalence of outdoor biting behavior among Anopheles mosquitoes, particularly in Nigeria, where substantial transmission occurs outside the protection of ITNs and IRS. This shift necessitates broader strategies that extend beyond indoor interventions.



A comprehensive understanding of vector ecology is crucial to refining control strategies. The primary malaria vectors in Africa belong to the Anopheles gambiae complex, comprising Anopheles coluzzii, Anopheles gambiae, and Anopheles arabiensis, which together account for nearly all malaria transmission in Nigeria. The emergence of Anopheles stephensi, an invasive vector species with unique urban adaptability, represents a serious threat to malaria elimination efforts. Unlike traditional vectors, this species thrives in artificial water containers and transmits malaria in densely populated urban settings, requiring targeted surveillance and control strategies to prevent its spread.

Reimagining vector control necessitates an integrated and multi-faceted approach. One promising direction is Integrated Vector Management (IVM), which combines multiple interventions tailored to local transmission dynamics. IVM incorporates evidence-based decision-making, community participation, and intersectoral collaboration to ensure the optimal use of available tools. By integrating environmental management, biological control, and chemical interventions, IVM reduces reliance on any single method, thereby mitigating the risk of resistance development.

Environmental management is the base of sustainable vector control. Addressing the root causes of mosquito proliferation through habitat modification, improved water management, and waste disposal can significantly reduce breeding sites. Poor housing conditions, as observed in many endemic regions, contribute to vector persistence. Housing improvements, such as screened windows, eaves closure, and improved ventilation, can substantially reduce indoor mosquito densities, providing long-term protection against malaria transmission.

The deployment of new classes of insecticide-treated nets, such as pyrethroid-PBO and chlorfenapyr-based nets, offers renewed hope in the fight against insecticide resistance. Additionally, attractive targeted sugar baits and spatial repellents provide alternative means of reducing mosquito populations and human-

vector contact. The use of endectocides, such as ivermectin, has also gained attention as a promising strategy for reducing mosquito longevity and transmission potential.

Advancements in genetic control techniques hold significant potential for malaria vector management. Gene drive technologies, which enable the spread of genetic modifications through mosquito populations, could potentially reduce vector competence or suppress mosquito populations altogether. While these technologies offer long-term sustainability, ethical, ecological, and regulatory considerations must be carefully addressed before large-scale implementation.

The success of any vector control strategy ultimately depends on strong community engagement and education. Empowering communities through awareness campaigns fosters a sense of ownership in malaria control efforts, leading to improved adherence to interventions such as ITN use, larval source management, and personal protective measures. Community-based approaches, including the use of biological control agents such as larvivorous fish and entomopathogenic fungi, can complement chemical-based methods while reducing environmental risks.

Innovative technologies are transforming malaria surveillance and response. Remote sensing, geographic information systems (GIS), and mobile health applications enhance real-time monitoring and data collection, allowing for more targeted and efficient vector control interventions. GIS mapping can identify high-risk transmission areas, facilitating precise intervention deployment, while mHealth platforms improve case detection and treatment accessibility.

To achieve malaria elimination, concerted efforts from governments, research institutions, and public-private partnerships are imperative. Strengthening entomological surveillance is essential for tracking vector behavior and insecticide resistance patterns. Investments in local production and manufacturing of vector control tools can enhance accessibility and sustainability. Additionally, supporting the deployment of malaria vaccines, such as RTS,S, alongside vector control strategies can provide a complementary approach to reducing disease burden.

A revolutionary change towards integrated, evidence-based, and community-driven approaches is necessary to overcome current challenges and sustain progress towards malaria elimination. Strengthening vector control efforts through innovation, collaboration, and adaptive strategies will be instrumental in transforming malaria-endemic regions into malaria-free zones, ultimately safeguarding the health and well-being of millions across Africa.

Innovative Technologies

- Emerging Technologies, such as remote sensing, geographic information systems (GIS), and mobile health (mHealth) applications, can enhance vector control efforts.
- These technologies can improve surveillance, monitoring, and data collection, enabling more targeted and efficient interventions.
- For example, GIS can help identify high-risk areas for malaria transmission, while mHealth applications can facilitate real-time reporting and response.

Challenges to Vector Control:

The increasing resistance of malaria vectors to commonly used insecticides and the emergence of the invasive mosquito specie – Anopheles Stephensi pose a significant challenge to vector control efforts. Professor Mokuolu elaborated this with entomological evidence showing the resistance of the anopheles species to pyrethroid group of insecticides in some states in Nigeria noting that the trend is not peculiar to the country - he also showed how other Africa countries rose from very low to very high malaria transmission cases after the detection of anopheles stephensi.

Reimagining Vector Control Strategies

Prof Mokuolu's presentation also focused on proposing innovative solutions in our vector control efforts, including:

- Genetic Control: The use of genetically modified mosquitoes to reduce vector populations and transmission.
- Novel Insecticides: Development of new classes of insecticides that can overcome resistance.
- Smart Traps and Surveillance Systems: Implementation of digital tools for real-time monitoring of mosquito populations and disease transmission.

Habitat Modification: Strategies to reduce mosquito breeding sites can be achieved through environmental management practices, a particularly note worthy comparism was made when prof showed two parts of the same community – one part well structured with less malaria cases, and a second part which isn't structured but with more malaria cases despite the presence of health facilities within this part of the community.

PANEL SESSION KEY HIGHLIGHTS

The panel discussion session which was moderated by **Dr. Mories Atoki,** CEO, ABCHealth, followed which featured a diverse and distinguished group of experts, including:

Dr. Rose Peter -Commercial Head, Vector Control SSA, Syngenta
Rhoda Robinson -Executive Director, HACEY Health Initiative
Dr Peter Billingsley- Founder, The Vital Initiative

The session focused on the role of the private sector in vector control efforts within the community and how to ensure sustainability of these innovative efforts.

Moderator: Dr Mories Atoki, CEO, ABCHealth

This concept envisions a reimagined vector control paradigm that goes beyond the reliance on existing insecticide- based methods, incorporating a variety of emerging technologies, new scientific tools, and community-centered interventions.

Malaria remains a significant public health issue in sub-Saharan Africa, with vector control being central to efforts aimed at reducing transmission. While interventions such as long-lasting insecticidal nets (LLINs) and indoor residual spraying (IRS) have contributed to a decline in malaria cases, these methods face challenges such as insecticide resistance and outdoor transmission. To achieve malaria elimination in Africa, it is crucial to rethink and reimagine vector control strategies, embracing innovative, integrated, and context-specific approaches that extend beyond traditional insecticide-based methods.

The future of malaria vector control lies in the adoption of Integrated Vector Management (IVM), which combines various control strategies suited to local conditions, including environmental management, biological control, and community- driven interventions. This holistic approach ensures that different control methods work synergistically and adapt to the dynamic nature of malaria transmission. Advancements in biotechnology, such as genetic engineering and gene drive technologies, hold promise for disrupting mosquito populations and reducing their ability to transmit malaria. These innovations, still in the experimental phase, offer long-term potential for sustainable malaria control.

Precision surveillance through technologies like remote sensing, artificial intelligence (AI), and mobile health apps provides invaluable real-time data on mosquito populations and transmission patterns. This data-driven approach enables targeted interventions, ensuring resources are deployed efficiently and at the right time. Furthermore, community engagement is vital for the sustainability of malaria control programs. Involving local populations in the planning and execution of vector control efforts fosters ownership and adherence to preventive measures, ensuring long-term success. The role of the private sector in malaria elimination is very crucial. Private sector partnerships can provide the necessary resources, innovation, and distribution networks to scale up malaria control interventions.

Collaborations between governments, international organizations, and private companies can drive the development of new technologies and ensure their rapid deployment across the continent. Companies can play a vital role in financing research, manufacturing bed nets and insecticides, and creating innovative solutions such as mobile health applications for disease surveillance. Private businesses with operations in malaria-endemic regions can contribute to vector control efforts through corporate social responsibility initiatives, funding local health interventions, and helping to ensure access to life-saving treatments.

Cross-border and regional collaboration are essential in tackling malaria, given its transnational nature. Global and Regional programs like the Chevron Malaria's and Peer Health Education Activities, Roll Back Malaria Partnership and the African Leaders Malaria Alliance (ALMA) facilitate the coordination of efforts, enabling countries to share data, resources, and best practices. By working together, African nations can overcome the barriers posed by malaria's movement across borders, ensuring that prevention and control strategies are unified and effective across regions, adopting a more comprehensive, adaptable, and data-driven approach to vector control, and leveraging the strengths of both public and private sectors, Africa can move closer to its goal of malaria elimination. The key to success lies in collaboration—across sectors, borders, and Communities—to build a sustainable, effective, and African-led response to malaria.

Public Private Partnerships in Vector Control

Public-private partnerships (PPPs) play an indispensable role in advancing malaria vector control strategies, fostering innovation, and expanding the reach of interventions in endemic regions. These collaborative frameworks facilitate the integration of private sector resources, technical expertise, and operational efficiency with the public sector's policy oversight, infrastructure, and community engagement mechanisms. The synergy between these two sectors creates a dynamic approach that strengthens malaria elimination efforts and addresses persistent challenges in vector control.

The success of targeted interventions often hinges on robust partnerships that bridge financial and operational gaps. Notably, private sector entities have demonstrated their capacity to complement national malaria control programs by introducing novel strategies and technologies. Dr Rose Peters, highlighted a prime example of this collaboration among AngloGold Ashanti Malaria Control Ltd, Mulanje Mission Hospital, and various public health agencies in Ghana and Malawi. These partnerships have resulted in the successful implementation of indoor residual spraying (IRS), a proven and highly effective vector control measure. The impact of such initiatives extends beyond individual interventions, as they create models of sustainable engagement that can be replicated in other malaria-endemic regions.

Rose Peters- Head, Vector Control, SSA, Syngenta

IRS remains fundamental in malaria vector control, playing a critical role in reducing transmission by targeting mosquitoes that rest on treated surfaces. Historical data and contemporary case studies underscore that no country has successfully eliminated malaria without incorporating IRS into its vector control strategy. The involvement of private sector organizations in IRS implementation enhances operational efficiency, ensures a consistent supply of high-quality insecticides, and facilitates the deployment of advanced application techniques. By leveraging private sector expertise, large-scale IRS campaigns can achieve higher coverage, improved compliance, and better insecticide resistance management.

One of the major contributions of the private sector in vector control is its ability to mobilize resources for sustained interventions. Financial investments from corporate entities, philanthropic foundations, and multinational organizations alleviate budgetary constraints often faced by national malaria control programs. This infusion of capital supports procurement of essential commodities such as insecticides, spraying equipment, and personal protective gear for IRS applicators. Furthermore, logistical support provided by private partners ensures timely and efficient delivery of materials to malaria-endemic regions, mitigating delays that could compromise intervention effectiveness.

Beyond financial contributions, private sector engagement enhances research and development (R&D) efforts in malaria control. Pharmaceutical companies, biotech firms, and industrial stakeholders collaborate with public health institutions to develop innovative vector control tools, including next-generation insecticides, improved formulation techniques, and novel application methods. These advancements are critical in addressing the growing challenge of insecticide resistance among malaria vector populations. Additionally, the private sector's role in data analytics and digital surveillance enhances monitoring and evaluation mechanisms, allowing for real-time adjustments to intervention strategies.

The integration of innovative technologies within PPPs further amplifies the effectiveness of vector control measures. Geographic Information Systems (GIS), remote sensing, and artificial intelligence-driven analytics enhance the precision of intervention planning, enabling targeted deployment of IRS in high-risk areas. Mobile health (mHealth) applications facilitate real-time reporting and coordination among field teams, ensuring swift responses to emerging transmission hotspots. These technological advancements, driven by private sector ingenuity, strengthen the overall impact of malaria control programs.

Another critical aspect of PPPs in malaria control is capacity building and workforce development. The private sector plays a significant role in training vector control personnel, equipping them with the skills needed to conduct IRS, manage insecticide resistance, and implement integrated vector management (IVM) strategies. Public health agencies benefit from these training programs as they enhance local expertise, reduce reliance on external consultants, and foster long-term sustainability of malaria control initiatives.

The regulatory landscape for vector control interventions is also significantly shaped by PPPs. Private sector stakeholders collaborate with governments and international organizations to ensure that new

insecticides, spraying technologies, and vector surveillance tools meet stringent safety and efficacy standards. By engaging in policy advocacy, the private sector helps streamline regulatory approvals, accelerates the adoption of new malaria control tools, and promotes harmonization of guidelines across different malaria-endemic countries.

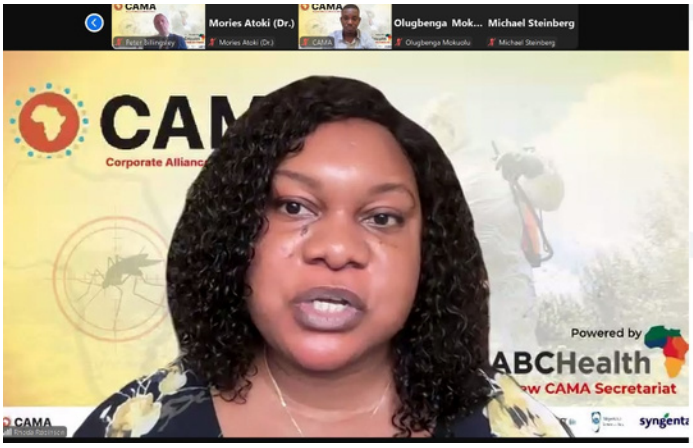
While PPPs offer substantial benefits, challenges remain in their implementation. Ensuring alignment of objectives between public health priorities and private sector interests requires transparent governance structures and strong accountability mechanisms. Effective coordination among stakeholders is essential to prevent duplication of efforts, optimize resource allocation, and maximize impact. Additionally, sustainability planning is crucial to avoid dependency on private sector funding and to establish long-term financing models that support continued malaria elimination efforts.

By leveraging financial investments, technical expertise, innovative technologies, and community engagement capabilities, these collaborations create a comprehensive approach that accelerates progress toward malaria elimination. The sustained commitment of both public and private sector stakeholders is vital to overcoming existing challenges, implementing scalable interventions, and ultimately achieving a malaria-free future.

Community Engagement and Behavioral Change

A significant portion of the discussion centered on the need for effective community engagement and behavioral change strategies. Ms. Rhoda Robinson emphasized that the effectiveness of any public health intervention, particularly in malaria-endemic regions, is largely dependent on the active participation and acceptance of the communities it seeks to protect. Without meaningful engagement, even the most scientifically sound and well-funded initiatives risk failing to achieve their intended impact. Establishing trust, fostering collaboration, and ensuring that interventions align with local realities are essential to embedding malaria control efforts within the fabric of community life.

One of the most successful approaches to community-driven malaria programs is the Asset-Based Community Development (ABCD) model. This strategy recognizes that communities are not passive beneficiaries of interventions but rather active stakeholders with valuable resources, knowledge, and skills that can be harnessed to drive malaria elimination efforts. By identifying and leveraging existing community assets—such as local leadership structures, traditional health systems, and social networks—interventions can be more sustainable, widely accepted, and effectively implemented. The ABCD model prioritizes working with communities rather than for them, fostering a sense of ownership that leads to lasting behavioral change.



Ms Rhoda Robinson- Co-Founder, HACEY Initiative

Building trust is at the heart of effective community engagement. Many malaria interventions have been met with skepticism due to historical mistrust of public health programs, particularly when externally driven. Engaging local leaders, traditional rulers, religious institutions, and community influencers helps bridge the gap between scientific recommendations and cultural beliefs. Endorsement from trusted community figures not only enhances credibility but also ensures that malaria control messages are delivered in a manner that resonates with the local population. Without such trust-building measures, even the most evidence-based interventions may struggle to gain traction.

Behavioral change communication plays a crucial role in addressing misconceptions and misinformation surrounding malaria prevention and treatment. Many communities harbor deep-seated beliefs about the causes, symptoms, and treatment of malaria, often rooted in cultural traditions or incomplete health knowledge. Some individuals may associate malaria with supernatural causes, environmental exposure to cold air, or dietary habits rather than mosquito bites. Others may be resistant to using insecticide-treated nets (ITNs) due to fears of chemical exposure, discomfort, or a lack of understanding of their effectiveness. Counteracting these misconceptions requires carefully crafted messaging that is not only scientifically accurate but also culturally sensitive.

Culturally tailored communication strategies have proven to be far more effective than generic public health messaging. Storytelling, folk theater, music, and visual arts have long been powerful tools for knowledge transmission in many African societies. Integrating these traditional methods into malaria awareness campaigns makes information more relatable and accessible. When community members see their lived experiences reflected in educational materials, they are more likely to internalize and adopt recommended practices. For instance, using local dialects in malaria prevention campaigns ensures that messages are fully understood and embraced across different demographic groups.

Collaborating directly with community members in the design and implementation of malaria control programs fosters a sense of shared responsibility. When individuals feel that they have contributed to an initiative's development, they are more invested in its success. This participatory approach can take the form of community-led malaria surveillance, where trained volunteers monitor and report cases, helping to identify transmission hotspots in real-time. Similarly, community health workers (CHWs) serve as vital intermediaries between formal health systems and local populations, ensuring that preventive measures and treatment options are readily accessible.

Endorsement from the community is a crucial determinant of the success of malaria control interventions. Resistance to health initiatives often arises when people feel that programs are imposed upon them without their input or consent. Ensuring that communities are consulted from the outset, rather than merely being informed after decisions have been made, promotes a sense of agency. This approach also helps to preempt and address potential barriers to adoption, such as resistance to IRS due to concerns about household contamination or reluctance to accept new malaria treatments due to fear of side effects.

Public health messaging must also consider the role of gender dynamics in malaria prevention. Women, as primary caregivers, play a central role in ensuring that children sleep under ITNs, seek timely treatment, and adhere to antimalarial therapies. However, they may also face barriers to accessing health services due to economic constraints, social norms, or limited decision-making power within households. Empowering women through targeted health education and economic support mechanisms, such as microfinance initiatives for malaria prevention tools, can significantly enhance intervention uptake. Similarly, engaging men in malaria prevention efforts ensures that they recognize the importance of investing in their families' health.

Sustainability is a recurring challenge in malaria control programs, and community engagement provides a pathway to long-term impact. While donor funding and government-led initiatives are crucial, true sustainability is achieved when communities are equipped with the knowledge, skills, and motivation to continue malaria prevention efforts independently. Training local health volunteers, establishing community-managed insecticide distribution networks, and fostering village-based savings groups for health interventions are all viable strategies for ensuring that malaria control does not wane when external support diminishes.

One of the key factors influencing behavioral change is the alignment of malaria interventions with community priorities. Health interventions are more likely to be embraced when they are integrated into broader community development efforts, such as maternal and child health programs, education initiatives, and economic empowerment schemes. When malaria prevention is positioned as part of a holistic approach to improving overall well-being, it becomes more relevant to the daily lives of those affected. This approach not only increases buy-in but also strengthens the resilience of communities against malaria resurgence.

The broader implications of community engagement extend beyond malaria control to overall public health strengthening. When communities develop the capacity to manage malaria effectively, they also become better equipped to respond to other infectious diseases and health challenges. The principles of participatory engagement, local ownership, and behavior change can be applied to a range of health interventions, from maternal and child health to vaccine uptake and sanitation initiatives. This cross-cutting impact highlights the transformative power of community-driven approaches in advancing public health goals.

Malaria elimination will not be achieved through scientific advancements and policy initiatives alone. The active participation of communities remains the most critical determinant of success. Ensuring that people are not just passive recipients of interventions but active agents of change is key to fostering resilience against malaria. Empowering communities through inclusive engagement, culturally relevant education, and participatory decision-making creates a sustainable pathway toward a malaria-free future, reinforcing the fundamental principle that those most affected by malaria should also be at the forefront of its elimination.

Malaria Vaccine Deployment

Dr. Peter Billingsley provided an overview of the current status of the development and deployment of malaria vaccines. With malaria remaining a leading cause of mortality, particularly among children under five, vaccines have emerged as a promising tool to complement existing vector control and treatment measures. The introduction of RTS,S and R21 represents a major advancement in reducing the disease burden; however, their current limitations underscore the need for continued innovation in malaria vaccine research. While these vaccines play a crucial role in lowering clinical cases and severe malaria outcomes, they do not fully prevent infection, leaving a critical gap in the path toward elimination.

The fight against malaria cannot be won without addressing the prevalence of infection in communities. The continued circulation of the malaria parasite, even in vaccinated populations, means that transmission persists, maintaining the cycle of infection and reinfection. The need for an anti-infection vaccine has been recognized as a global priority, with the World Health Organization (WHO) recently identifying it as the top research and development focus for future malaria

interventions. Preventing infection entirely would not only reduce disease incidence but would also significantly curtail transmission, making elimination a more achievable goal.

While substantial financial investments have been directed toward malaria control, the challenge does not solely lie in securing more resources. Strategic allocation and effective utilization of existing resources are equally critical. Innovation in malaria research, implementation strategies, and intervention deployment is paramount. The complexity of malaria transmission, coupled with the evolving resistance of mosquitoes to insecticides and the parasite to antimalarial drugs, necessitates a paradigm shift in malaria control strategies. New approaches must be explored and incorporated into global and national malaria programs to stay ahead of these challenges.

Dr Peter Billingsley- Founder, The Vital Narrative

The emergence of insecticide resistance among mosquito populations has significantly impacted the effectiveness of traditional vector control measures. Resistance to pyrethroids, a class of insecticides widely used in indoor residual spraying (IRS) and insecticide-treated nets (ITNs), has become a widespread concern, diminishing the protective effect of these tools. The growing threat of mosquito adaptation raises important questions about the future of malaria control. If current methods lose efficacy, alternative solutions must be developed and rapidly deployed to sustain progress.

Vaccination, while a powerful tool, cannot function as a standalone solution. The integration of immunization with other malaria interventions is necessary to achieve long-term disease control. The synergy between vaccines and vector control methods such as IRS, ITNs, and larval source management is essential in reducing transmission. Moreover, access to prompt diagnosis and treatment remains a fundamental pillar of malaria control, ensuring that infected individuals receive appropriate care before severe complications arise.

The deployment of existing malaria vaccines has demonstrated tangible benefits, but their real-world impact depends on several factors, including coverage, accessibility, and community acceptance. Ensuring that vaccines reach the most vulnerable populations requires strengthened health systems, efficient distribution networks, and targeted outreach programs. Immunization campaigns must be integrated into broader public health initiatives to maximize their effectiveness and sustainability.

Scientific progress in malaria vaccine research continues to offer hope for a more effective next-generation solution. The development of an anti-infection vaccine would mark a turning point in malaria eradication efforts, fundamentally altering the landscape of disease control. By blocking infection at the earliest stage, transmission could be significantly reduced, protecting entire communities rather than just vaccinated individuals. This would not only lessen disease burden but also ease pressure on healthcare systems, freeing up resources for other critical health priorities.

The evolution of malaria control strategies must be driven by proactive investment in research and development. Breakthroughs in genetic engineering, monoclonal antibody therapies, and novel vaccine platforms hold promise for more effective malaria prevention tools. Collaborative efforts between governments, research institutions, pharmaceutical companies, and global health organizations are necessary to accelerate progress. Funding mechanisms should prioritize high-impact research areas, ensuring that promising vaccine candidates move swiftly from the laboratory to large-scale deployment.

The future of malaria control hinges on the ability to anticipate and respond to emerging challenges. The resistance exhibited by mosquitoes and parasites demands an adaptive approach, where new tools are continually evaluated and incorporated into control programs. Surveillance and data-driven decision-making must be at the core of malaria elimination efforts, enabling health authorities to deploy the most effective interventions based on evolving epidemiological trends.

The collective goal remains complete malaria eradication, an objective that requires long-term commitment, sustained innovation, and strong political will. The development of an anti-infection vaccine stands as a critical milestone toward this goal, offering a pathway to breaking the transmission cycle once and for all. With the right combination of scientific advancements, strategic partnerships, and efficient resource allocation, malaria can be consigned to history, paving the way for healthier communities and a stronger public health infrastructure.

CAMA
The Corporate Alliance on Malaria in Africa

PODCAST CORNER

The Corporate Alliance on Malaria in Africa (CAMA) Podcast featuring **Dr. Pete Billingsley**, Founder, The Vital Narrative provides a deep and insightful discussion on the ongoing fight against malaria in Africa. Hosted by **Dr. Mories Atoki**, CEO of ABCHealth, the conversation uncovers the challenges, innovative solutions, and collaborative efforts required to eliminate malaria from the continent.

Significant progress has been made in malaria prevention and treatment through interventions such as insecticide-treated bed nets, indoor residual spraying, improved diagnostics, and the introduction of vaccines. However, persistent challenges hinder elimination efforts, including insecticide and drug resistance, evolving mosquito behaviors, and the limited impact of current vaccines, which primarily target young children without addressing broader transmission. Despite these measures, sustaining high coverage levels and overcoming logistical hurdles remain major obstacles in fully eradicating the disease.

To address these gaps, innovative solutions are being explored, such as the Bioko Island Malaria Elimination Project, which integrates various vector control strategies to reduce malaria prevalence. Emerging technologies, including laser-assisted spraying, spatial insecticides, and genetically modified mosquitoes, are being tested to enhance control efforts.

The BOHEMIA initiative, which utilizes ivermectin to combat malaria and other parasitic infections, highlights the potential for integrated health interventions. Meanwhile, vaccine research continues to evolve, with promising developments that could complement existing malaria control methods, though sustainable funding remains a challenge.

Private sector involvement is crucial in advancing malaria elimination, as businesses directly experience the economic impact of the disease on workforce productivity. Increased investment in research, partnerships, and innovative technologies can accelerate progress. Achieving malaria elimination requires a multifaceted approach that integrates traditional methods with emerging solutions, sustained collaboration, and long-term commitment. With continued innovation and strong political will, Africa can move closer to a malaria-free future, ensuring better health outcomes and economic growth for the continent.

RECOMMENDATIONS

The insights from the panel session reinforced the critical role of private sector engagement and innovative integrated vector management in sustaining gains in malaria vector control. By fostering collaboration between public health entities and private sector stakeholders, leveraging resources and expertise, and implementing data-driven, community-focused strategies, stakeholders can enhance the effectiveness and sustainability of malaria control efforts. As we move forward, it is essential to prioritize these approaches to ensure that the progress made in malaria elimination is not only maintained but also expanded upon in the years to come.

Specific recommendations based on the discussions and presentation made include;

1. **Invest in Research and Development**: Increase funding for innovative vector control technologies and strategies.
2. **Invest in local production and manufacturing**
3. **Strengthen Public-Private Partnerships**: Foster collaboration between public health authorities and private sector stakeholders to enhance resource mobilization and innovation.
4. **Enhance Community Engagement**: Develop community led initiatives that empower local populations to actively participate in malaria control efforts.
5. **Integrate Environmental Management**: Incorporate environmental management practices into malaria control strategies to reduce vector habitats.
6. **Utilize Data Effectively**: Implement data-driven approaches to inform decision-making and target interventions more effectively.

CONCLUSION

The CAMA webinar on "**Reimagining Vector Control Strategies for Malaria Elimination in Africa**" provided a valuable platform for stakeholders to share insights, discuss challenges, and explore innovative solutions. The collective commitment to reimagining vector control strategies is essential for achieving malaria elimination in Africa. By fostering collaboration, investing in research, and engaging communities, we can enhance our efforts and make significant strides towards a malaria-free future.

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We would like to thank our esteemed keynote speaker and panelists for sharing their invaluable insights and expertise, which enriched the discussions and provided a comprehensive understanding of the challenges and opportunities in malaria vector control. Your contributions have been instrumental in fostering a collaborative environment for innovative solutions.

We also express our appreciation to the participants who joined us from various sectors, including public health, academia, the private sector, and community organizations. Your engagement and commitment to the fight against malaria are vital to achieving our shared goal of elimination.

A special thank you goes to our organizing team for their dedication and hard work in planning and executing this event. Your efforts ensured a seamless experience for all attendees and facilitated meaningful discussions.

We look forward to continuing this important dialogue and working collaboratively to implement the insights and recommendations shared during the webinar.

Thank you all for your commitment to reimagining vector control strategies and advancing malaria elimination efforts across the continent.

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