MALARIA ERADICATION WITHIN A GENERATION

The Lancet Commission on malaria eradication

All-of-society approaches to malaria elimination: Examples from Thailand and Zambia

In September 2019, the Lancet Commission on malaria eradication published the first comprehensive, peer-reviewed academic document to examine the scientific, operational, and financial challenges on the path to eradication and identify solutions that will enable us to achieve a world free of malaria within a generation. The report addresses a bold proposition: malaria, one of the most ancient and deadly diseases of humankind, can and should be eradicated by 2050. The Commission provided recommendations across ten thematic areas – ranging from improving data for decision-making to leveraging the private sector to increasing domestic financing – for countries to consider as they refine their malaria strategies and strive towards elimination.

The UCSF Secretariat of the Commission has developed a series of briefings illustrating the experiences of countries that are already successfully operationalizing the approaches recommended by the Commission, thus helping to accelerate the trajectory to malaria eradication. The briefings are intended to increase the visibility of country leadership and innovation and demonstrate practical application of the Commission's recommendations.

Introduction

The report of the *Lancet* Commission on malaria eradication (LCME) asserted that by strengthening malaria program management and operations, improving the use of existing tools and developing and deploying new ones, and spending US$ 2 billion more per year, malaria eradication can be achieved within a generation.[1] The LCME report identified several priorities for improved management and operations, particularly at the subnational level. Increasing access to management training and supporting malaria programs in conducting operational research and identifying and implementing data-driven, locally-appropriate strategies are essential for accelerating progress towards national elimination and global eradication.

Another priority requirement for effective program delivery is **sustained and responsive community engagement**, with community members actively participating in the design, planning, implementation, and evaluation of malaria elimination interventions. Progress toward malaria elimination depends on engaged communities, as the effectiveness of malaria tools and approaches, both standard and novel, relies on high coverage, consistent uptake, and proper usage. A closely related theme emphasized in the LCME report is the **essential role of leadership, governance, and accountability** in driving the eradication agenda forward. The Commission maintains that sustained collaboration and commitment by national and subnational stakeholders in malaria-endemic countries may be the most important factor for successful elimination and eradication, noting that "empowering subnational leaders, particularly at the district level, to respond to the technical, financial, and operational needs of malaria programs, can have powerful effects on community engagement and domestic financing."[1] **Taken together, these themes illustrate the power of an all-of-society approach to malaria elimination** that involves the input and engagement of multiple groups, including community members, civil society organizations, religious and cultural leaders, local politicians, community health workers, and national and subnational malaria program staff. This briefing describes innovative malaria elimination strategies used in Thailand and Zambia that embody this collaborative approach.

Thailand

Thailand is on track to achieve its 2024 elimination goal after several years of continuous decline in malaria transmission, as a result of high coverage of case management and prevention interventions, intensified surveillance, and stratified responses at the subnational level. The country reported just 2,836 indigenous malaria cases in 2020, and as of May 2021, 40 out of 77 provinces have been nationally certified as malaria-free.[2,3] Thailand's malaria program is vertically managed by the Ministry of Public Health's Department of Disease Control and Division of Vector Borne Diseases, which are responsible for policy and strategy development, provision of technical support, and management of the centralized malaria database. Twelve regional Offices of Disease Prevention and Control (ODPC) oversee provincial Vector Borne Disease Centers, and malaria services are delivered through clinics run by district-level Vector Borne Disease Units.[4]

As transmission has become more focal in recent years, Thailand has started integrating malaria activities into general health services while decentralizing operations and decision-making to provincial, district, and subdistrict levels.[3] Simultaneously, the country is aiming to reduce its reliance on external funding by mobilizing national and subnational domestic resources to finance malaria elimination.[5] Thus, the success of Thailand's malaria elimination strategy hinges on the engagement, empowerment, and commitment of multiple stakeholders at the local level, including vector borne disease staff and village health workers, community members, traditional leaders, and subdistrict Local Administrative Organizations (LAOs), whose representatives are elected by their communities and have a central role in local governance and decision-making.

To this end, key priorities under Thailand's malaria elimination strategy include promoting community ownership of elimination, and capacity building and resource mobilization within LAOs to ensure continued political, financial, and material support for subdistrict malaria elimination efforts.[4] LAOs are responsible for collaborating with local health staff to prevent and control diseases, and making decisions on malaria intervention implementation.[5] The malaria program has stratified transmission in the country down to the village level, and local health workers have used this data to raise awareness of the malaria situation among LAO staff and encourage local collaboration and financial support.[3,6] Through active engagement by vector borne disease staff, collaborative partnerships have been built and additional funding for elimination activities is now coming from subdistrict general budgets and health security funds created under Thailand's policy for universal health coverage.[4,5]

Improving local ownership over elimination

Although Thailand's national malaria burden has steadily declined over the past several years, some provinces have faced significant challenges in maintaining progress. ODPC 6 provides oversight and support for eight provinces near the Cambodia border where a large proportion of the population engages in farming and overnight agricultural activities that increase exposure to malaria vectors. During 2015-2016, there was a marked increase in malaria transmission in areas that had not reported cases in many years. Human and financial resources for vector borne disease had declined in these areas, so in response to the outbreaks, ODPC 6 leadership mobilized participation from subdistrict LAOs and general health system partners. ODPC 6 issued a policy directing all provincial and district vector borne disease staff in the region to work closely with affected LAOs, developing operational partnerships with various local stakeholders for vector control and other malaria activities. Vector borne disease staff educated LAOs on the respective local malaria situations and requested human and

Principles of effective community engagement

The importance of engaging communities and securing their active participation in and ownership over malaria control and elimination efforts has been acknowledged by national malaria programs and the global malaria community for many years.[7,8] This is becoming increasingly urgent, as more programs shift to stratified, locally-tailored approaches that require the participation and decision-making of subnational level and local actors, including affected communities.[9] Yet, until recently, there has been a lack of clear guidance and minimal funding or operational support for community engagement. Furthermore, there has not been consensus on how community engagement is defined, operationalized, or evaluated, resulting in considerable heterogeneity and inconsistency in the implementation and assessment of community engagement strategies.[7,10] Community engagement has often been conflated with health promotion strategies such as information, education and communication, social and behavioral change communication, or community health worker programs. While these approaches are important components, true community engagement goes beyond *what* activities and strategies are implemented to considering *how* those activities are designed, implemented, monitored, and evaluated, and *who* is involved. Recent research has shown that successful engagement acknowledges and reflects community priorities, builds trust through transparency, collaboration, and shared decision-making, and is guided by principles of inclusion and representation.[9] Defining community engagement as "a participatory process in which community stakeholders are actively involved in the design, governance, delivery, monitoring, and evaluation of malaria services" has been proposed to align stakeholders in promoting true community ownership of malaria elimination.[9,10]

In the past few years, global organizations have moved to fill the gap in guidance on community engagement for malaria:

» ***Community Engagement Framework for Quality, People-Centered and Resilient Health Services (WHO, 2017):*** aims to institutionalize community engagement into health system practice and can help malaria programs identify opportunities for integration of communities into program planning and implementation.[11]

» ***Minimum Quality Standards and Indicators for Community Engagement (UNICEF, 2020):*** establishes a common language across stakeholders in the global development and humanitarian sectors for defining community engagement principles, actions, goals, and benchmarks. The document identifies a set of 16 standards of community engagement to inform policy and guide the design, implementation, monitoring, evaluation, and funding of development and humanitarian programs. Indicators and checklists to support measurement of the minimum standards and assessment of their implementation are also included.[12]

» ***Malaria SBC Toolkit for Community and Faith Leaders (PMI and Breakthrough ACTION, 2021):*** recognizes the critical role these leaders play in promoting health issues among their constituents and supporting the fight against malaria. The Toolkit provides strategies, actions, and resources for effectively integrating and communicating malaria messaging, creating sustainable behavior change within communities, and building partnerships with other leaders, communities, and local stakeholders to reduce the malaria burden.[13]

financial support for indoor residual spraying (IRS), fogging, and bednet treatment as needed. The subdistricts formed malaria teams that included LAO staff, village chiefs, health promotion hospital staff, and village health volunteers. The malaria teams were led by vector borne disease staff who served as technical mentors and trainers, ensuring intervention quality, reporting subdistrict data into the national malaria information system, and conducting regular meetings to monitor and evaluate progress. Financial support for training and vector control came from subdistrict health funds.[4,6]

The collaboration between the public health sector and LAOs in ODPC 6 continued after the outbreaks were controlled. When Thailand launched its malaria elimination strategy in 2017, vector borne disease staff worked with LAOs and the subdistrict malaria teams to communicate national guidelines and implement new elimination strategies according to village-level stratification. By 2019, the malaria burden in all ODPC 6 provinces had declined to very low levels.[14] The ongoing collaboration and reciprocal support between the vector borne disease program and local governments and communities aligns with and reinforces malaria elimination strategy priorities, and the mutual respect among vector borne disease and LAO staff has facilitated a strong and effective partnership.[6]

Increasing community engagement for elimination

Yala Province, at the southernmost point of the country along the border with Malaysia, is one of Thailand's few Muslim-majority provinces and has high malaria receptivity due to its rainforest ecology and geography. Primary occupations are agriculture-based, and villages are located in close proximity to mountainous forests, rivers, and streams that provide favorable mosquito breeding conditions, exposing residents of all ages to malaria vectors. In addition, military posts associated with the international border put soldiers at risk for malaria. Because of these factors, Yala has recorded some of the highest malaria case rates in the country since 2013. Cases peaked at nearly 6,000 in 2017, the highest incidence in Thailand that year.[4,5]

The 2017 case increase overwhelmed local vector borne disease staff, limiting their ability to provide services outside of malaria clinics or conduct outreach and educational activities within affected communities. In response, multiple stakeholders came together to plan a community-level campaign to address the various challenges (Figure 1) and bring down the malaria burden in Yala. Bajoh subdistrict was selected as a pilot location for the campaign because it had reported a high number of cases. The campaign was focused on two key interventions, active case detection and IRS, both of which require the understanding and cooperation of community members to be successful. Thus, early engagement of the local community was essential.[5]

Stakeholders involved in planning and implementing the campaign in Bajoh included regional ODPC 12 representatives, vector borne disease staff and the Provincial Health Office in Yala, district and subdistrict LAOs, village chiefs, local imams, the Army Medical Center, and Young Muslim Association of Thailand (YMAT), a local civil society organization. Community forums were held to discuss the malaria problem, communicate its urgency, develop solutions in a collaborative manner, and build capacity among the community to get involved in the collective response. All stakeholders played important roles in the campaign. Vector borne disease staff provided guidance and oversight and trained village health workers to conduct active case detection and IRS, while LAO staff and local leaders gave operational and financial support for the interventions, educated residents on their importance, and encouraged participation in campaign activities. YMAT representatives worked alongside local government, village and religious leaders, and village health workers to host meetings, provide locally appropriate malaria education and demonstrations for students and community members, and promote community action against malaria that reflected local customs and health seeking practices.[5,15]

The community-based approach implemented in Bajoh subdistrict was considered a success by those involved. Community members felt a stronger sense of knowledge and ownership over their health, and local leaders and village health workers were proud of their collective accomplishments and the improved capacity of various groups to work together so effectively.[5] The pilot results inspired other communities in Yala to work closely with public health staff and YMAT on malaria, and this collaborative approach has since evolved to become the Yala People's Network for malaria elimination. LAOs in subdistricts with malaria transmission have become close operational partners of vector borne disease staff, contributing funding and support for malaria interventions. YMAT implemented a large-scale community education program in Yala, training and deploying 230 village health workers to provide education on malaria transmission, treatment, and prevention. YMAT has also strengthened the role of imams in supporting malaria elimination activities.[15]

One of the primary learnings from the Yala campaign pilot was that keeping communities informed of the local malaria situation is vital for stimulating community action and engagement. Since late 2017, ODPC 12 representatives have provided weekly malaria situation updates using data extracted from the national malaria information system, broken down to village level. Yala vector borne disease staff relay these updates using an instant messaging app to stakeholders in all districts, who then use the data to plan responses and monitor progress. As a result of these collaborative efforts, reported cases in Yala have declined since the peak in 2017, a trend that has continued throughout the COVID-19 pandemic despite short-term disruption to malaria program activities and funding. Yala reported just 905 cases in 2020, a remarkable reduction of more than 80% in only three years.[2,5]

Figure 1: Malaria elimination strategies and challenges in Bajoh Subdistrict, Yala Province

Strategies*	Challenges	Solutions using an all-of-society approach
Robust and timely surveillance and reporting	• Cultural preference for traditional healers bypasses public sector reporting mechanisms • Military inexperienced in malaria diagnosis, control, and need for public sector reporting	• Education and outreach by village and religious leaders improved understanding of malaria prevention and treatment, increased engagement with public health sector vs traditional healers • Military trained by health staff, all cases referred to local clinics for treatment and reporting into national database
Directly observed therapy for radical cure	• Cultural preference for traditional healers bypasses or delays standard malaria diagnosis and treatment • 14-day drug regimens not completed	• Education and outreach by village and religious leaders encouraged early treatment seeking behavior and compliance, increased engagement with public health sector vs traditional healers
Active case detection among at-risk groups	• More extensive ACD required additional budget • Inadequate number of trained staff to prepare blood smears, including within military • Unwillingness of community to be screened (felt healthy, no symptoms)	• Subdistrict allocated complementary funds • VHVs trained in blood collection, conducted mass ACD • Military trained by health staff in use of RDT, preparation of blood smears, microscopy • Religious leaders encouraged community members to participate in screening during sermons
Increased coverage of vector control interventions	• Community dislike of LLINs (too hot to sleep) • Belief that IRS in the household could harm human and animal health • Greater coverage required additional budget	• Village and religious leaders, VHVs provided education, improved awareness among community • Provincial staff trained subdistrict volunteer teams in IRS and breeding site surveillance, provided equipment and supplies • Subdistrict allocated complementary funds
Improved partnership among stakeholders	• Little awareness of urgency of malaria situation in Yala among local stakeholders • Local population mostly religious and ethnic minorities, presenting cultural and language barriers for provincial and national staff and military • Lack of communication between military and civilians/local government	• Provincial health office convened meetings with district/subdistrict staff • District health office engaged subdistrict representatives to promote intensified malaria response, secure additional subdistrict funding • Community forums brought together multiple local stakeholder groups • Military and public health sector coordinated to conduct concurrent ACD and IRS campaigns
Increased community ownership of elimination	• More extensive outreach and education activities required additional budget • Religious/cultural/language barriers between various stakeholders • Belief that malaria was a minor illness • Lack of knowledge on connection between malaria, mosquito bites, and prevention/control measures	• Subdistrict allocated complementary funds • Community forums held to elevate malaria elimination, align awareness and understanding of issues, overcome language and cultural barriers • VHVs already trusted within communities trained in ACD, conducted house-to-house campaigns to collect blood and provide malaria education • Greater awareness and appreciation for dangers of malaria among community improved participation, took ownership over identification of problems and solutions

*Primary strategies described in Thailand's National Malaria Elimination Strategy 2017-2026[4]
ACD: active case detection; IRS: indoor residual spraying; LLIN: long-lasting insecticidal net; RDT: rapid diagnostic test; VHV: village health volunteer

Zambia

Zambia has prioritized malaria elimination by leveraging national political will, reflected in the renaming of its National Malaria Control Programme to the National Malaria Elimination Centre (NMEC). In its national strategic plan for the period 2017-2021, the NMEC set an ambitious goal of malaria elimination by 2021 through scale-up of vector control, case management, surveillance and response focused on parasite clearance, health promotion, health systems capacity building, and sustainable financing.[16] While Zambia has not yet achieved elimination, recognition that the 2021 goal would not be met prompted the development of stronger, multi-disciplinary efforts to achieve elimination in coming years. Since 2019, the NMEC and its partners have strategically engaged key groups to intensify its comprehensive, all-of-society approach to malaria elimination.

Multistakeholder collaboration through the End Malaria Council

Zambia's NMEC and its partners have demonstrated their commitment to collaboration through the establishment of an End Malaria Council (EMC), a country-led and country-owned partnership between public sector, private sector, traditional leaders, and the community, with the aim of removing barriers and mobilizing action

and resources for malaria elimination.[17] Recognizing that elimination requires participation of several non-health areas of government, the EMC engages with the Office of the Vice President and the Ministries of Finance; Defense; Education; Livestock and Fisheries; Works and Supply; Tourism and Arts; and Local Government and Housing.[18] Members of the EMC include government ministers and a leader from Zambia's House of Chiefs, senior executives of private businesses, faith leaders, and renowned traditional leaders.

The EMC prioritizes 1) action and accountability, ensuring the national malaria strategic plan is implemented by driving action and holding stakeholders accountable; 2) resource mobilization, by identifying and pursuing traditional and innovative domestic resources to help cover the NMEC's strategic plan funding gap, estimated at US $100 million in 2020; and 3) advocacy to keep malaria elimination high on public and private sector agendas. All financial resources generated or mobilized through the EMC and its End Malaria Fund go directly to the NMEC to fund its programmatic anti-malaria work.[18] For example, in 2020, private sector EMC member First Quantum Materials contributed over US $300,000 for community-wide malaria interventions in North-western Province, including mass drug administration. The Zambia Revenue Authority, another private sector member, donates profits from vehicles seized after violation of import regulations to the End Malaria Fund.

In addition to collaborating with national, subnational, and local partners, Zambia's EMC works at the regional level with the African Leaders Malaria Alliance (ALMA).[19] The EMC's engagement with ALMA has driven widespread use of ALMA's Scorecard for Accountability and Action by all government and non-government partners who contribute to the NMEC strategic work plan, thereby facilitating unified coordination and monitoring of progress.[20] All partners meet annually to set collective goals and define individual commitments to these goals. Commitments by government, private sector, and faith partners are all assessed using the same metrics, and progress is reviewed quarterly. The review of the malaria scorecard in early 2021 revealed occasional stockouts of antimalarial drugs, precipitating a multidisciplinary fact-finding field visit to investigate and a commitment by partners to increase funding for these medications.

Engaging faith communities through the FLAME coalition

The EMC and the NMEC have also enlisted faith communities and leaders as malaria elimination allies. In recognition of the ongoing impact of malaria on faith leaders and their congregants, Zambia's faith groups have developed a Faith Leader Advocacy for Malaria Elimination (FLAME) coalition to unify and amplify their voices and advocate for increased adoption, implementation, and funding of policies that accelerate malaria elimination at all levels of society.[21] The FLAME coalition, supported by the J.C. Flowers Foundation and hosted by Zambia's EMC, organizes and consolidates the advocacy work of faith leaders, some of whom have actively engaged on malaria issues in their own local communities for over a decade. Its members are diverse and include leaders from Zambia's eight major religious councils that serve as unified umbrella organizing bodies for various religious denominations.

FLAME members Reverend Busiku (St. Mary Magdalene Anglican Church) and Reverend Munachoonga (Brethren in Christ Church), members of the Mother's Union, and the Medical Director for Chilenje sub-district raise awareness for malaria elimination during the SADC Malaria Week sensitization march in Lusaka, Zambia. Photo credit: J.C. Flowers Foundation

Since its inception in 2020, the FLAME coalition has been working to engage people of faith throughout Zambia. FLAME creates an enabling environment for malaria elimination by generating public support and attention towards its feasibility and importance. FLAME leadership aims to ensure that all faith leaders in Zambia have sufficient malaria knowledge to educate their congregants and mobilize them and other community members to take personal action to prevent malaria. FLAME coalition members urge each person of faith in Zambia to contribute one kwacha (US $0.05) to malaria elimination efforts as a sign of personal commitment to

Members of Zambia's Western Province FLAME chapter pledge to support the country's goal to eliminate malaria through advocacy, resource mobilization, and engagement of their faith communities. Photo credit: J.C. Flowers Foundation

the cause. Though this financial contribution will not have a major impact on the funding gap, it is a concrete indication of widespread personal commitment to malaria elimination among the community. FLAME coalition members have also advocated for malaria by speaking to government officials and using media outlets to remind government stakeholders and communities of the collective commitment to eliminate malaria. For example, during the COVID-19 pandemic, FLAME and the Zambia EMC supported the production of two short media advertisements to promote the importance of maintaining vigilance on malaria to ensure that gains are not lost.

Subnational advocacy in Western Province

Though the FLAME coalition originally intended to focus only on national-level action, it has recognized the need to strengthen subnational advocacy and leadership in light of increasingly heterogeneous malaria transmission in Zambia that requires policies, strategies, and resources to be locally targeted and tailored.[22] The FLAME coalition is forming provincial-level chapters that strengthen accountability and leadership at the ward, district, and provincial levels.[23] The first subnational FLAME chapter was formed in Zambia's Western Province in late 2020, and includes 40 faith leaders from different religious councils. Since its establishment, the provincial FLAME chapter has collaborated with NMEC officials, national EMC and FLAME coalition members, and Western Province Health Office representatives to orient Western Province faith leaders in malaria elimination policy and advocacy. The training has since cascaded to local congregations. Although many of the faith leaders engaging with the FLAME coalition in Western Province were already working in collaboration with the NMEC and the Isdell:Flowers Cross Border Malaria Initiative of the Anglican Church to support the selection, training, and fieldwork of local community health workers,[23] they had not previously been involved in malaria elimination advocacy. Since this initial provincial FLAME orientation, faith leader advocacy efforts have also raised awareness of stockouts and influenced provincial-level commodity distribution.

Conclusion

The collaborative, all-of-society approaches implemented in Thailand and Zambia illustrate the importance of engaging all stakeholders in malaria elimination, a central theme of the LCME report. Thailand's ODPC 6 prioritized local ownership of elimination, transferring knowledge, skills, and responsibilities to local officials who then engaged their constituents in malaria activities. Success in controlling an outbreak in Thailand's Yala Province hinged upon malaria being embraced as a community problem that required community-driven solutions. And in Zambia, the malaria program strengthened commitment, accountability, and visibility of malaria elimination from the national down to the local level by promoting collaboration with stakeholders at all levels and across sectors, including the influential faith community.

The experiences in Thailand and Zambia demonstrate what can be gained when malaria elimination is no longer positioned as the sole responsibility of the public health sector. With the support, guidance, and partnership of malaria program staff, local stakeholders from the community and partner organizations in these countries have taken on leadership and decision-making roles, conducted malaria activities, and routinely advocated for malaria elimination. The examples demonstrate the impact that invested communities, governments, civil society organizations, and faith leaders can have on elimination efforts when the public health sector actively engages them as operational partners in the fight against malaria. Collective action by diverse stakeholders helps bend the curve toward eradication, bringing us closer to the shared vision of a world free of malaria.

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