DEFEATING MALARIA TOGETHER IN AFRICA'S GREAT LAKES REGION

Community-led Systems-based Malaria Approach for Grassroots Community Workers in Uganda, Kenya, Tanzania, Rwanda, Burundi, and DRC

MAKEXAFRICA
Research & Advocacy
P.O. Box 903013 Kampala–Uganda
info@makexafrica.org
https://makexafrica.org

2026

Simon Mugudde *is a research, monitoring and evaluation specialist based in Kampala, Uganda. He supports public and private sector institutions design feasible strategies, especially on sustainable rural development. He is also the founder of MAKEXAFRICA, a foundation promoting climate and health solutions through research and advocacy in Uganda.*

List of Acronyms and Abbreviations

ACT	Artemisinin-based Combination Therapy
EIR	Entomological Inoculation Rate
IMF	International Monetary Fund
IRS	Indoor Residual Spraying
LLINs	Long Lasting Insecticide Treated Nets
MDA	Mass Drug Administration
MoFPED	Ministry of Finance Planning and Economic Development
MoGLDS	Ministry of Gender Labor and Social Development
MoH	Ministry of Health
NDP	National Development Plan
PDM	Parish Development Model
SMC	Seasonal Malaria Chemoprevention
UMRESP	Uganda Malaria Reduction and Elimination Strategic Plan
WHO	World Health Organization
MRDT	Malaria Rapid Diagnostic Test
PMI	President's Malaria Initiative
VHTs	Village Health Teams
CHWs	Community Health Workers
SOPs	Standard Operating Procedures
HMCs	Health Management Committees
IEC	Information Education and Communication
OPD	Out Patients Department
UBOS	Uganda Bureau of Statistics
UMIS	Uganda Malaria Indicator Survey
CHEWs	Community Health Extension Workers
CAOs	Chief Administrative Officers
RDCs	Resident District Commissioners
MPs	Members of Parliament
OPD	Out Patients Department
ITNs	Insecticide-Treated Nets
UMMRS	Uganda Malaria Mortality Reduction Strategy

Table of Contents

Executive Summary

This malaria approach is designed for Africa's Great Lakes region. The participatory design of the approach was informed by the various existing malaria strategies in each of Africa's Great Lakes countries: Uganda, Kenya, Tanzania, Rwanda, Burundi, and Democratic Republic of the Congo. These countries are often described as functioning like ecological islands because of vast freshwater bodies such as Lake Victoria, Lake Tanganyika, and Lake Albert dominating their geography. The region is characterized by high rainfall, tropical climate conditions, dense populations, and large freshwater ecosystems which create ideal ecological conditions for malaria transmission.

Despite a high prevalence across the Great Lakes region, there are malaria variations from one country to another. Kenya has heterogeneous malaria transmission, with endemic zones in western and coastal regions and low or epidemic risk areas in highland and urban centers. It accounts for a significant portion of outpatient visits and hospitalizations, particularly among children under five and pregnant women.

Tanzania remains highly endemic for malaria, with transmission occurring year-round across most regions in the country. Tanzania mirrors Kenya's trajectory but at a higher overall burden. Between 2000 and 2010, the country achieved substantial reductions in prevalence. It had reductions in malaria incidence and mortality, of 86 percent in 2005 and 74 percent in 2012. The country faced resurgence due to multiple factors since 2012. From 2012 to 2017, malaria incidence surged dramatically—from 93 per 1,000 to 418 per 1,000. The country faced resurgence due to multiple factors.

The Democratic Republic of the Congo (DRC) is among the world's highest burden countries, contributing an estimated 12.6 percent of global malaria cases and substantial mortality, especially among children under five, over the past two decades. Burundi frequently ranks among East Africa's countries with the highest malaria incidence, driven by stable endemic transmission that results in persistent case burdens. Data from Burundi indicate epidemic cycles characterized by pronounced seasonal peaks and high case numbers, particularly among children under five. Uganda continues to be among the top ten countries contributing to the global malaria burden. Despite documented reductions in parasite prevalence, an estimated 12.6 million malaria cases were reported in 2023.

The proposed malaria approach for Africa's Great Lakes region is designed with the awareness that; malaria control focuses on reducing disease burden, elimination aims to stop local transmission, and eradication seeks complete global disappearance of the disease. The approach is also founded on the awareness that malaria control has been the most practical approach in regions with intense transmission and favorable climates for mosquito breeding, particularly in Africa's Great Lakes region and tropical areas of Africa where environmental conditions support year-round malaria transmission.

The approach is grounded in a systems-based epidemiological control framework integrating transmission dynamics, health systems strengthening, economic optimization, and governance accountability. This architecture aligns closely with the WHO Global Technical Strategy for Malaria 2016–2030. It emphasizes universal access, surveillance as a core intervention, and transformation of malaria programs into control and elimination platforms.

The logic of the approach is that vector density reduction decreases transmission probability, while mass drug administration reduces the human parasite reservoir. Unlike conventional programming, which staggers interventions due to funding cycles, this approach adopts a temporal compression strategy: concentrated, repeated intervention rounds designed to overwhelm transmission capacity.

The three interconnected core interventions in the approach that should be rolled out simultaneously under both control and elimination frameworks are: *(i) mass-population testing for malaria parasites,*

(ii) mass-drug administration for malaria, and (iii) mass-indoor and outdoor-vector spraying. The success of mass-testing, mass-treatment, and mass-vector-spraying is based on three other strategic components of community mobilization and engagement, community resource mobilization and sustainability, and community knowledge generation through monitoring, supervision, surveillance, evaluation, and dissemination.

Malaria interventions are not merely technical ambitions. Success of the approach depends on maintaining epidemiological pressure, and strengthening institutional systems, especially health systems. It also depends on ensuring financial sustainability, embedding surveillance intelligence at the center of decision-making. Interventions should not be merely incremental. Synchronized disruption of the malaria vector and virus are required. This approach represents that disruption.

Introduction

This malaria approach is designed for Africa's Great Lakes region. The participatory design of the approach was informed by the various existing malaria strategies in each of Africa's Great Lakes countries: Uganda, Kenya, Tanzania, Rwanda, Burundi, and Democratic Republic of the Congo. These countries are often described as functioning like ecological islands. This is because vast freshwater bodies such as Lake Victoria and Lake Tanganyika dominate their geography.

The vast lakes create semi-enclosed ecological systems where human populations, water sources, and biological processes are tightly interconnected. Much like islands, populations in these countries are clustered along shorelines, and near other smaller water-bodies such as channels, puddles, floodplains, wetlands, streams, seasonal rivers, ponds etc. They do this for fishing, agriculture, and trade. This continues to result in dense human–environment interaction zones where diseases circulate intensively within relatively contained ecological spaces.

The presence of large lakes shapes disease dynamics in the region by providing permanent breeding grounds for pathogens and vectors, particularly malaria-transmitting mosquitoes. Malaria transmission is significantly higher in communities located near lakes and other water bodies. This is because such bodies provide stable, year-round breeding habitats for Anopheles mosquitoes. Thus, the malaria risk increases with proximity to water-bodies, largely due to the formation of stagnant pools, vegetation-rich edges, and shallow warm waters that favor mosquito reproduction[1].

Unlike areas that rely on seasonal rainfall, lake regions sustain continuous vector reproduction, leading to persistent, year-round malaria transmission rather than seasonal outbreaks. Further, most of the countries in Africa's Great Lakes are also located in its tropics (Uganda, Kenya, Tanzania, and DRC), with Uganda positioned almost exactly on the equator. Africa's tropics, characterized by consistent warmth and seasonal rains instead of cold winters, are conducive for mosquitoes[2].

Climate and weather patterns in the Great Lakes region further intensify the island-like vulnerability to disease. The tropical climate in the region is characterized by consistently warm temperatures, high humidity, and bimodal rainfall patterns. All these accelerate pathogen development and transmission. Warmer temperatures shorten the life cycle of both mosquitoes and the malaria parasite, allowing infections to spread more rapidly[3]. At the same time, rainfall creates numerous temporary breeding sites such as puddles and flooded depressions, while high humidity increases mosquito survival rates. This enables vectors to live longer and transmit infections more efficiently. Rainfall variability and temperature increases are strongly associated with malaria transmission dynamics in East Africa[4].

Climate change is amplifying these risks by making the region even more conducive to disease transmission. Increasing temperatures and changing rainfall patterns are expanding mosquito habitats and prolonging transmission seasons. Malaria epidemics are becoming more frequent and widespread as climate variability intensifies[5]. Extreme weather events such as flooding not only create new breeding sites but also increase exposure to multiple pathogens simultaneously, including waterborne diseases like cholera. As environmental systems shift, Africa's Great Lakes region is effectively becoming a more efficient ecological incubator for infectious diseases.

[1] Kibret, S., et al. (2012). The impact of a large dam on malaria transmission in Ethiopia. Parasites & Vectors.
[2] Yukich, J. O., Lengeler, C., Tediosi, F., et al. (2008). Costs and consequences of large-scale vector control. American Journal of Tropical Medicine and Hygiene, 79(3), 373–384.
[3] Mordecai, E. A., et al. (2019). Thermal biology of mosquito-borne disease. Ecology Letters.
[4] Mafwele, B. J., & Lee, J. W. (2022). Climate factors and malaria transmission in Africa. Scientific Reports.
[5] Ototo, E. N., et al. (2022). Climate variability and malaria transmission in East Africa. Acta Parasitologica.

The constant presence of water bodies means that breeding sites cannot be fully eliminated, while year-round favorable climatic conditions prevent natural interruptions in transmission cycles. Moreover, many communities live in close proximity to lake shores, wetlands, swamps, ponds, etc. These people mostly live under conditions of poverty and inadequate housing. These conditions increasingly expose them to mosquitoes and limit access to preventive measures. The same environmental conditions that support malaria transmission also facilitate other infectious diseases. The result is overlapping health burdens. Africa's Great Lakes region exemplifies a setting where geography, climate, and human settlement patterns interact to sustain high, persistent, and difficult-to-control disease transmission, especially for malaria[6].

Efficacious fight against malaria should be driven by populations whose lives, productivity, and dignity are systematically eroded by repeated infections, preventable deaths, and intergenerational poverty. It is these populations that suffer the negative effects of malaria, particularly, miscarriages, stillbirths, child and maternal mortalities, stunting, school absenteeism, vanished livelihoods, and chronic economic vulnerability[7],[8]. These populations understand malaria not merely as a biomedical condition, but as a structural constraint on their personal and community development[9].

Based on the above awareness, the proposed malaria approach is community designed and community-led. Its uniqueness is in the simultaneity of the packages of interventions proposed. The approach puts power in the hands of individuals and their grassroots communities.

Historical Persistence of Malaria

During colonial periods malaria control efforts often focused on protecting colonial administrators and extractive industries rather than indigenous populations. Vector control campaigns were selective and economically motivated[10]. Thus, malaria interventions followed economic priorities rather than universal health equity. The international focus on promoting insecticide-treated nets (ITNs), artemisinin-based combination therapies (ACTs), indoor residual spraying (IRS), seasonal malaria chemoprevention (SMC), and new vaccines, is more economically driven than driven by universal health equity. Donor priorities seem to emphasize malaria commodity distribution over health system strengthening. They also emphasize measurable short-term outputs over long-term structural transformation, and visibility of political returns within donor countries[11].

The imposition of structural adjustment programs (SAPs) on African countries by the International Monetary Fund (IMF) and World Bank (WB) in the 1980s and 1990s, brought about some structural challenges. SAPs reduced public expenditure, privatized state services, and imposed fiscal austerity. This resulted in a weakening of public health systems. Malaria control at that time, which depended

[6] World Health Organization. (2024). Malaria epidemiology and health system responses in Africa.
[7] Smith, T. A., Chitnis, N., Penny, M., & Tanner, M. (2017). Malaria modeling in the era of eradication. Cold Spring Harbor Perspectives in Medicine, 7(8).
[8] Thomas A. Smith, Nakul Chitnis, Melissa Penny, and Marcel Tanner Department of Epidemiology and Public Health. (2017). Malaria Modeling in the Era of Eradication. Swiss Tropical and Public Health Institute, Basel CH 4002, Switzerland; and University of Basel, Basel CH 4001, Switzerland
[9] This position was arrived at after a series of community sessions in Uganda where participants shared their personal experiences on how malaria had devastated their lives and livelihoods. Participants shared their experiences, observations, and testimonies on how neglecting the fight against malaria in their communities to external (often profit seeking) actors was part of the reason why the war against malaria was not being won.
[10] Packard, R. M. (2007). The making of a tropical disease: A short history of malaria. Johns Hopkins University Press.
[11] Srivastava, D., & McGuire, A. (2015). Global health aid and governance. Health Policy Planning, 30(8), 999–1012.

on strong primary healthcare infrastructure, suffered from the reforms implemented through the SAPs[12].

The late 1990s and early 2000s saw a surge in global health financing. The Global Fund to Fight AIDS, Tuberculosis and Malaria was established in 2002. The U.S. President's Malaria Initiative (PMI) and the Bill & Melinda Gates Foundation investments were established in 2005[13]. The above institutions catalyzed a massive expansion of malaria commodity markets for long-lasting insecticide nets, manufacturing of ACT, diagnostic test kits, and insecticides. This was the period when the global health-industrial complex developed. It was a network of donors, NGOs, manufacturers, consultants, and procurement agencies. Together they reflected an institutionalization of disease management within global capitalism.

The persistence of malaria can be tagged to the dependency of African countries on donor supported interventions, the struggle with structural debt, weak domestic capacity, and climate pressures. Market incentives make it harder to rollout and sustains interventions that can lead to lasting results[14]. In the midst of this, most African governments allocate less than 15% of their national annual budgets to health. Where malaria elimination is technically possible, political will, domestic financing, and bureaucratic efficiency become decisive factors. Systemic governance challenges, including corruption, procurement inefficiencies, and weak accountability, undermine malaria programs[15].

Malaria markets are structurally different from high-income disease markets such as cancer or diabetes. Most malaria-endemic countries are low-income, meaning prices are tightly negotiated by global purchasers such as the Global Fund, UNICEF, Gavi, etc. This makes profit margins comparatively low, and demand highly donor-dependent. Further, private sector research and development into malaria tools is less lucrative compared to research and development for chronic non-communicable diseases such as cardiovascular or oncology therapeutics prevalent in wealthy markets. This has historically limited investment in novel malaria tools and contributed to slower progress than might be possible with larger commercial incentives[16].

Malaria transmission is a dynamic ecological and socio-economic process governed by vector density, parasite prevalence, human behavior, immunity patterns, climatic factors, and institutional capacity. In relation, in high-transmission settings such as Africa's Great Lakes region, malaria behaves as a complex adaptive system. This means that interventions that are sequential or partial often fail to push transmission below the threshold required for elimination[17].

[12] Kentikelenis, A., Stubbs, T., & King, L. (2017). IMF conditionality and health outcomes in low-income countries. Lancet Global Health, 5(10), e911–e922.
[13] Birn, A. E. (2014). History of global health: Longstanding questions, new perspectives. Health Systems & Reform, 1(1), 1–14.
[14] African Union report 2021.
[15] Hemingway, J., Ranson, H., Magill, A., et al. (2016). Averting a malaria disaster: Will insecticide resistance derail elimination? The Lancet, 387(10029), 1785–1788.
[16] Mandal, S., Sarkar, R. R., & Sinha, S. (2011). Mathematical models of malaria: A review. Malaria Journal, 10, 202.
[17] Smith, T. A., Chitnis, N., Penny, M., & Tanner, M. (2017). Malaria modeling in the era of eradication. Cold Spring Harbor Perspectives in Medicine, 7(8)

Global Malaria Incidence and Intervention Strategy

Malaria Prevalence

Globally malaria remains one of the largest infectious disease burdens, with an estimated 282 million malaria cases worldwide in 2024. In the same period, an estimated 610,000 malaria deaths were recorded, with a current global incidence rate of 64 malaria cases per 1,000 population at risk. These figures represent a slight increase from previous years, indicating that global progress against malaria has stalled in recent years. In 2024 the WHO estimated that ending malaria by 2030 would require approximately USD 7.3 billion annually. Unfortunately, investments remain well below target, something contributing to stagnation or reversal in progress[18].

Malaria transmission currently occurs in about 80–85 countries worldwide, where approximately half of the world's population lives. Africa records about 94–95 percent of global malaria cases and deaths, with most deaths occurring in children under five years. South-East Asia, Eastern Mediterranean, and Western Pacific account for the remaining small share of global cases. Sub-Saharan Africa remains the epicenter of the disease burden, which includes Kenya, Rwanda, Burundi, Democratic Republic of the Congo, Uganda, and Tanzania[19]. Despite the high burden, global malaria control programs have prevented massive losses. About 2.2 billion malaria cases and 12.7 million deaths have been averted since the year 2000 due to prevention and treatment interventions[20].

Malaria Control

Malaria control is the earliest and most widely used strategy in the global fight against malaria. Historically, malaria control strategies emerged during the late 19th and early 20th centuries after the discovery that malaria is transmitted by Anopheles mosquitoes. The goal of malaria control is not necessarily to stop transmission completely but to reduce the incidence, prevalence, morbidity, and mortality of malaria to levels where it is no longer a major public health problem[21]. Early control interventions included environmental management, drainage of swamps, improved housing, mosquito nets, and later insecticides such as dichlorodiphenyltrichloroethane (DDT) and antimalarial drugs such as chloroquine. These measures significantly reduced malaria in several parts of the world, particularly in Europe and North America during the early 20th century[22].

In many tropical regions, especially sub-Saharan Africa, malaria control has remained the dominant strategy because of high transmission intensity and favorable climatic conditions for mosquito breeding. Over the past two decades, global malaria control has relied on insecticide-treated bed nets, indoor residual spraying, rapid diagnostic testing, and artemisinin-based combination therapies. Countries such as Tanzania, Rwanda, Ethiopia, and Uganda have implemented large-scale malaria control programs that have reduced mortality and disease burden, although transmission still persists[23].

Malaria Elimination

Malaria elimination refers to the interruption of local transmission of malaria parasites within a defined geographic area as a result of deliberate interventions. During elimination interventions, continued surveillance is required to counteract reintroduction[24]. This strategy gained prominence during the

[18] WHO. (2024). World malaria report 2024. Geneva: World Health Organization.
[19] World Health Organization. (2024). Malaria epidemiology and health system responses in Africa.
[20] World Health Organization. (2019). Eliminating malaria. https://www.who.int/activities/eliminating-malaria
[21] This is according to the Center for Disease Control and Prevention 2024.
[22] Packard, R. M. (2007). The making of a tropical disease: A short history of malaria. Johns Hopkins University Press.
[23] Centers for Disease Control and Prevention. (2024). History of malaria control and elimination. https://www.cdc.gov/malaria/history/index.html; World Health Organization. (2024). Malaria epidemiology and health system responses in Africa.
[24] World Health Organization 2024.

mid-20th century with the launch of the Global Malaria Eradication Programme in 1955, which aimed to interrupt transmission in many parts of the world. Malaria elimination has been successful in several countries, particularly those with moderate or seasonal transmission and strong health systems. For example, the United States eliminated malaria transmission by the early 1950s through mosquito control, environmental management, improved housing, and public health campaigns[25].

Similarly, countries such as China, Sri Lanka, Paraguay, and the United Arab Emirates successfully eliminated malaria in recent decades through intensive surveillance, vector control, and rapid treatment of cases. China was certified malaria-free in 2021 after decades of coordinated national efforts involving community participation, improved healthcare access, and targeted vector control. In the mediterranean region, Cyprus successfully eliminated malaria by 1950 through systematic mosquito control campaigns that targeted breeding sites across the island[26]. These examples demonstrate that malaria elimination is achievable when transmission levels are manageable and when governments maintain strong surveillance and rapid intervention systems.

Malaria Eradication

Malaria eradication is the most ambitious strategy and refers to the permanent reduction of malaria infection to zero worldwide, meaning that no further interventions would be required[27]. Historically, eradication became a global goal in the 1950s with the launch of the WHO Global Malaria Eradication Programme. This program relied heavily on large-scale DDT spraying, antimalarial treatment, and surveillance. The campaign achieved major successes in many regions, eradicating malaria from Europe, North America, the Caribbean, and parts of Asia and Latin America.

However, the eradication campaign ultimately failed to achieve its global goal due to multiple factors including insecticide resistance, drug resistance, limited funding, political instability, and logistical challenges in high-transmission areas such as sub-Saharan Africa. As a result, the global eradication campaign was largely abandoned by the late 1960s, and attention shifted toward malaria control. Despite these challenges, eradication remains the long-term global vision, and modern strategies now include new tools such as vaccines, genetic vector control technologies, and improved surveillance systems to potentially achieve eradication in the future[28].

Contemporary Relevance

When comparing malaria control, elimination, and eradication, the three strategies represent different levels of ambition and feasibility. Malaria control focuses on reducing disease burden, elimination aims to stop local transmission, and eradication seeks complete global disappearance of the disease. Historically, control has been the most practical approach in regions with intense transmission and favorable climates for mosquito breeding, particularly in tropical areas of Africa where environmental conditions support year-round malaria transmission. Elimination has proven successful in countries with seasonal transmission, strong health systems, and manageable mosquito populations, such as those in Europe, East Asia, and parts of the Middle East[29].

Eradication, while theoretically possible, faces major challenges due to climate variability, population movement, insecticide resistance, and ecological factors that allow malaria vectors to thrive in many parts of the world. Considering current global realities—including climate change, expanding mosquito habitats, and persistent poverty in endemic regions—the most realistic strategy today is a

[25] Packard, R. M. (2007). The making of a tropical disease: A short history of malaria. Johns Hopkins University Press.
[26] Ibid
[27] Packard, R. M. (2007). The making of a tropical disease: A short history of malaria. Johns Hopkins University Press.
[28]Ibid
[29] Birn, A. E. (2014). History of global health: Longstanding questions, new perspectives. Health Systems & Reform, 1(1), 1–14.

progressive pathway combining control and elimination, with eradication remaining a long-term global aspiration. In Africa, where malaria transmission remains high due to warm temperatures, rainfall patterns, and widespread mosquito habitats, strengthened control strategies combined with targeted elimination in specific regions may provide the most effective pathway toward eventually achieving global eradication[30].

Africa's Great Lakes Countries Malaria Overview

Malaria remains one of the most persistent public health challenges in the African Great Lakes region, which includes Uganda, Tanzania, Rwanda, Burundi, Kenya, and parts of the Democratic Republic of the Congo. The region is characterized by high rainfall, tropical climate conditions, dense populations, and large freshwater ecosystems such as Lake Victoria, Lake Tanganyika, and Lake Albert. These water-bodies create ideal ecological conditions for malaria transmission.

Across Africa's Great Lakes region, malaria remains highly concentrated. Indeed, Africa accounts for about 94 percent of global malaria cases and 95 percent of malaria deaths. In 2022, the region recorded approximately 233 million malaria cases and about 580,000 deaths, most of them among children under five years. Within this continental picture, Africa's Great Lakes region represents one of the epicenters of persistent malaria transmission, where environmental, socio-economic, and health system factors converge to sustain high disease prevalence[31].

Malaria in Kenya

In the early 2000s, Kenya experienced high malaria prevalence, particularly in lake and coastal regions. Between 2005 and 2015, large-scale interventions led to substantial reductions in incidence, bringing malaria to more moderate levels nationally. By around 2022, incidence was estimated at about 63 cases per 1,000 population. Prevalence among children was approximated at 3.9 percent. However, this progress has been uneven across population groups. Malaria remains concentrated among lower socio-economic classes, especially rural households, individuals with low education levels, and communities living in poor housing conditions.

Kenya has heterogeneous malaria transmission, with endemic zones in western and coastal regions and low or epidemic risk areas in highland and urban centers[32]. Malaria accounts for a significant portion of outpatient visits and hospitalizations, particularly among children under five and pregnant women. Seasonal and climatic factors, such as rainfall patterns, influence transmission peaks and hotspots. The updated Kenya National Malaria Strategy 2023–2028 revised targets to reduce malaria incidence by 80 percent and mortality by 90 percent by 2028. This led to an intensification of stratified interventions tailored to county-level transmission profiles, strengthening gender, equity, and human rights integration into service delivery, though implementation remains nascent. Overall, Kenya demonstrates a decline followed by stagnation, with malaria increasingly becoming a disease of inequality and geography rather than universal exposure.

Kenya strategic priorities in response to malaria are vector control through LLINs distribution and targeted IRS in high transmission counties, and case management. This is done through quality assurance for ACT delivery and diagnostics, and health systems strengthening. Strengthening of health systems is done through workforce training, supply chain improvements, and community health strategy expansion. Kenya has maintained high treatment coverage (80 percent) across most regions,

[30] Ibid
[31] World Health Organization. (2023). World malaria report 2023. Geneva: WHO.
[32] Kenya National Malaria Strategic Plan 2023-2027.

improving clinical outcomes, and expansion of community health volunteers improved early detection and treatment in rural settings.

Some challenges including misconceptions about the causes of malaria and prevention hinder uptake of interventions. Housing quality, which affects vector entry, varies by wealth and region, compounding inequities. Despite decentralization reforms, resource gaps and disparities in funding allocation persist. Out-of-pocket payments for care deter timely treatment seeking, especially among poorer communities. Integration of equity and human-rights approaches into action plans remains limited by funding and operational challenges. Pyrethroid resistance in vectors and emerging drug resistance threaten gains and require adaptive strategies such as next-generation nets and newer drug regimens, which demand additional resources.

Malaria in Tanzania

Tanzania remains highly endemic for malaria, with transmission occurring year-round across most regions. It is among countries with a significant malaria burden, contributing to the high overall case load in Africa's Great Lakes region[33]. Tanzania mirrors Kenya's trajectory but at a higher overall burden. From 2000 to 2015, malaria prevalence declined significantly, but the country still recorded about 147 cases per 1,000 population in 2022, with prevalence of around 9.7 percent among children. National data trends from 2015 to 2020 show malaria incidence per 1,000 population at risk decreasing from 162 to 106, a 35 percent reduction. This indicated progress over the long term, albeit with ongoing challenges in sustaining momentum and stalling declines past 2015[34].

The National Malaria Strategic Plan aligns with global and regional goals including the Global Technical Strategy for Malaria from 2016 to 2030. The plan focuses on vector control through high-coverage distribution of LLINs and targeted IRS in select regions. It also focuses on case management through improving diagnosis using RDTs and prompt ACT treatment. Surveillance is implemented through strengthening health information systems. Partnerships and financing through coordination across sectors including private health facilities and donor partners.

Tanzania has achieved long-term decline in incidence and mortality over 15 years through scaled LLIN coverage, improved diagnosis, and effective treatment coverage. Some regions in the country have seen near universal bed-net ownership and improved case detection through community health worker programs. Although long-term declines are evident, Tanzania is still off-track from meeting GTS and AU targets for 2025 and 2030, with incidence increasing in some districts[35]. Funding constraints, particularly in domestic resource mobilization, limit scale-up of newer tools. Resistance to pyrethroid insecticides used in many LLINs and growing evidence of changes in mosquito behavior undermine intervention effectiveness.

Malaria in Rwanda

Rwanda achieved substantial reductions of 86 percent in 2005 and 74 percent in 2012 in malaria incidence and mortality. From 2012 to 2017 malaria incidence surged dramatically—from 93 per 1,000 to 418 per 1,000. This resurgence affected especially children under five experiencing the highest burden, with large inter-district disparities. Following intensified interventions, Rwanda reduced incidence from 345 per 1,000 in 2018 to about 40 per 1,000 in 2023. The current socio-economic patterns show that malaria risk is higher in low-income and rural populations. Rwanda, therefore,

[33] World malaria report 2024: addressing inequity in the global malaria response. Geneva: World Health Organization; 2024. License: CC BY-NC-SA 3.0 IGO.
[34] Tanzania National Malaria Report 2021-2025.
[35] ALMS 2025

illustrates a cycle of control, resurgence, and recovery, strongly mediated by policy strength and social determinants[36].

The remarkable achievements were the result of strategic approaches centered around high-coverage vector control. These strategies involved mass distributions of LLINs, targeted IRS in hotspots, enhanced surveillance through weekly district reporting, and rapid intervention teams. Community case management was also a key component, facilitated by CHWs equipped with RDTs and ACTs, along with climate-adapted planning.

Some of the notable accomplishments include sustained reductions in mortality even as case incidence rose, strengthened clinical care and case management, and high coverage of preventive tools in many regions, all achieved through consistent public engagement. However, persistent challenges remain, including environmental modifications from agriculture, vector resistance to pyrethroids, and changes in mosquito behavior. These challenges necessitate adaptive intervention approaches. Additionally, the movement of people across Rwanda's borders with high-burden neighboring countries contributes to imported cases, complicating elimination efforts and highlighting the need for integrated regional strategies[37].

Malaria in Burundi

Burundi has experienced a worsening malaria situation over the past decade, despite earlier modest gains. By 2022, it recorded approximately 275 cases per 1,000 population and a child prevalence of about 21.9 percent, among the highest in the region[38].

The burden is disproportionately concentrated among poor households, rural communities, and individuals with limited education and low access to healthcare. As in other countries, children under five and pregnant women are the most affected. Gender differences are less distinct than class disparities, but poverty and weak health systems, drive transmission. The malaria trend in Burundi reflects a shift from moderate control to crisis-level burden, largely due to systemic and socio-economic constraints[39].

The Burundi Malaria Strategic Plan (2021–2027) prioritizes LLIN distribution as a cornerstone for intermittent preventive treatment for pregnant women, and case management scale-up at community levels. The plan operates within a resource-constrained health system, where implementation remains uneven and highly sensitive to socioeconomic shocks.

Burundi has achieved nationwide LLIN campaigns significantly raised household ownership, improving baseline preventive coverage, and strengthened integration of malaria services within broader health system delivery. But patterns show frequent epidemic transmission driven by climatic variability and socio-economic instability. This leads to fluctuating case burdens despite control efforts. Weak surveillance systems and limited laboratory capacity create delays in outbreak detection and response. Persistent poverty limits household ability to consistently use preventive tools and seek timely treatment[40].

[36] Mafwele, B. J., & Lee, J. W. (2022). Climate factors and malaria transmission in Africa. Scientific Reports.
[37] Ibid
[38] Ototo, E. N., et al. (2022). Climate variability and malaria transmission in East Africa. Acta Parasitologica.
[39] WHO Regional Office for Africa. (2023). Malaria epidemiology and progress in Africa.
[40] Ibid

Malaria in Democratic Republic of the Congo

DRC is among the world's highest burden countries, contributing an estimated 12.6 percent of global malaria cases[41]. The country has suffered substantial mortality, especially among children under five throughout the past 20 years. The limited use of bed nets and the presence of weak infrastructure, exacerbated by conflict-related disruptions, contribute to the persistent high trend. Unlike Rwanda and Kenya, the DRC has not experienced sustained national declines.

The last publicly accessible malaria strategic framework dates to 2016–2020. It introduced stratification by parasite prevalence to prioritize interventions in high–burden provinces. Conflict, displacement, and logistical bottlenecks disrupt supply chains and health service access. Fragmented surveillance and data systems weaken outbreak detection and targeted responses. Dependence on donor funding makes the system vulnerable to aid shifts. Outbreak responses, as seen with Kwango Province, often reveal gaps in surge capacity and reflect the combined impact of food insecurity, inadequate access to medical care, and delayed reporting[42]. Some achievements include improved LLIN ownership and use in targeted provinces, and documented reductions in child mortality and incidence between 2010 and 2018 in some regions, though progress has been uneven[43].

Epidemiological Trends in Africa's Great Lakes Region

Malaria transmission in the Great Lakes region has fluctuated with climate variability, population movements, and health system capacity. Since the early 2000s global malaria initiatives such as the Roll Back Malaria Partnership and the WHO Global Technical Strategy for Malaria (2016–2030) have contributed to reductions in malaria mortality. Between 2000 and 2019 malaria mortality in Africa declined by nearly 60 percent. This was largely due to widespread deployment of insecticide-treated nets, improved diagnostics, and expanded access to treatment. However, since 2017, progress in Africa's Great Lakes countries stalled or reversed due to insecticide resistance, drug resistance, climate variability, population growth, and weak health systems[44].

According to regional epidemiological estimates, Uganda and Burundi record some of the highest incidence rates in East Africa. These countries have reported more than 250 malaria cases per 1,000 population annually. Uganda recorded over 12 million malaria cases in 2023, illustrating the continued scale of the problem. Tanzania also maintains high transmission intensity with incidence rates above 140 per 1,000 population. Rwanda and Kenya have comparatively lower incidence but continue to face seasonal outbreaks[45].

Malaria transmission in the Great Lakes region tends to concentrate around specific ecological lake basin zones – particularly around lakes Tanganyika, Victoria and Albert. This is where stagnant water bodies facilitate mosquito breeding. It also concentrates around lowland tropical zones where temperatures remain favorable for mosquito survival. There is also concentration around highland fringe areas, where climate change has expanded malaria transmission into previously low-risk areas. These geographical patterns demonstrate the interaction between environmental conditions and disease transmission. It is in these areas where the majority of people live exposed to mosquitoes year-round.

All five countries are endemic for plasmodium falciparum, the most virulent malaria species. Transmission intensity is shaped, on one hand, by ecological variation in climate and altitude. On the

[41] SevereMalaria.org
[42] Ibid
[43] Ibid
[44] World Health Organization 2023; 2024; 2025.
[45] Ibid

other hand, it is shaped by the socio-economic determinants of poverty, housing, and mobility. Routine surveillance remains inconsistent. Many of the countries lack real-time data systems capable of localized risk stratification, impairing rapid response[46].

Uganda Malaria Context

Structural Vulnerability

Uganda is among the top ten countries contributing to global malaria burden. Despite documented reductions in parasite prevalence from 42 percent in 2009 to 9 percent in 2018, resurgence since 2022 indicates structural fragility. An estimated 12.6 million malaria cases were reported in 2023, resulting in approximately 15,900 fatalities. In that same year, the country accounted for approximately 5.1 percent of the global malaria burden. The disease remains the leading cause of outpatient visits, accounting for 33 percent of all out patients' department (OPD) visits, and 20 percent of hospital admissions[47].

National Prevalence

The Uganda Bureau of Statistics (UBOS) together with the ministry of health conducted nationally representative Malaria Indicator Surveys (MIS). These measured malaria prevalence, prevention, and treatment indicators in 2009, 2014–2015, 2018–2019, and 2024–2026. These surveys primarily measure malaria prevalence among children aged 0–59 months, which is used as a standard epidemiological indicator for malaria burden. The earliest MIS conducted in 2009 found that malaria prevalence among children under five was approximately 42–45 percent, indicating extremely high transmission across most parts of the country. At that time malaria was the leading cause of morbidity in Uganda, with most regions experiencing stable year-round transmission due to favorable climate and mosquito breeding conditions.

By the time of the 2014–2015 MIS, malaria prevalence had dropped dramatically to 19 percent nationally, representing more than a 50 percent, reduction compared to 2009. The decline was largely attributed to the large-scale distribution of insecticide-treated mosquito nets, improved access to rapid diagnostic testing, and expansion of artemisinin-based combination therapy for treatment. The 2018–2019 MIS showed further improvement, with national malaria prevalence among children under five estimated at roughly 9–10 percent by microscopy or rapid diagnostic testing. This survey confirmed that malaria prevalence declined but remained uneven across regions and populations, particularly affecting rural households and poorer communities.

Malaria prevalence among children under five increased slightly to about 13 percent nationally, up from around 10 percent in the 2026 MIS. Although this represented a modest rebound, the long-term trend still reflected a substantial decline from the very high levels recorded in 2009[48]. Overall, the national trend between 2009 and 2026 shows a major reduction in malaria prevalence followed by a slight resurgence in the most recent MIS. The pattern can, therefore, be recapped as high prevalence in 2009, sharp decline from 2014 to 2019, and modest rebound from 2024 to 2026.

Regional Prevalence

Between 2014 and 2015 malaria prevalence was highest in eastern and northern regions in Uganda. East Central (36 percent) West Nile (28 percent) and North East (27 percent) while the lowest levels were recorded in the southwestern highland regions and Kampala, with South Western around 4 percent and Kampala with less than 1 percent. These variations reflect differences in climate, altitude,

[46] Ibid 2024.
[47] World Health Organization 2024; Uganda Ministry of Health 2024.
[48] Uganda Malaria Indicator Survey 2025-2026.

rainfall patterns, and socio-economic conditions that influence mosquito breeding and malaria transmission.

Karamoja, West Nile, and parts of Busoga continued to exhibit relatively higher malaria prevalence compared to the national average. There was indication of parasite prevalence rates exceeding 30 percent in Karamoja and over 20 percent in West Nile and Busoga[49]. The regional disparities highlight the importance of geographically targeted malaria interventions such as indoor residual spraying and community case management in high-transmission zones[50]. They also suggest that environmental factors such as rainfall, wetlands, and temperature play a major role in shaping malaria transmission in Uganda[51].

Uganda Malaria Strategic Direction: Control or Elimination?

National Malaria Reduction and Elimination Strategic Plan

Uganda has a dual strategic approach focused on malaria burden reduction (control) in high-transmission areas, and malaria elimination in selected low-transmission zones. This reflects the reality that malaria transmission intensity varies widely across the country. The goal is to reduce malaria morbidity and mortality while preparing districts for elimination pathways[52]. To support this transition, Uganda introduced Malaria Elimination Demonstration Zones (MEDZ) in selected districts to test elimination strategies before national scale-up. The zones serve as pilot sites for pre-elimination strategies including active community case detection, household-level screening, targeted vector control, and rapid treatment of symptomatic and asymptomatic infections. The demonstration phase is designed to show how localized elimination could be achieved before scaling nationally.

Malaria programming in Uganda is also embedded in broader national health policy frameworks including Health Sector Strategic Investment Plan, Health Sector Development Plan, and Universal Health Coverage frameworks. Within these frameworks, malaria is treated as a priority tracer disease used to assess health system performance. These plans emphasize scaling up major interventions such as LLINs, IRS, ACT, and intermittent preventive treatment.

A major recent policy innovation is the Uganda Malaria Mortality Reduction Strategy (UMMRS). This strategy focuses on reducing malaria deaths by addressing delays in diagnosis and treatment. A central element of this strategy is the "24.2 Initiative", which requires treatment of uncomplicated malaria within 24 hours, and initiation of treatment for severe malaria within 2 hours. The target is to reduce severe cases and mortality by improving early access to care.

Revision of the National Malaria Reduction and Elimination Strategic Plan

Uganda launched[53] a modified malaria elimination strategy (2026–2030) marking a decisive policy and operational shift from broad-based malaria control to a targeted, data-driven elimination strategy. Spearheaded by the Uganda Ministry of Health, the programme is designed to respond to stagnating progress and recent increases in malaria prevalence. Rather than applying uniform interventions across the country, the strategy prioritizes geographic stratification, directing the most intensive interventions to high-burden regions while supporting lower-burden districts to transition toward pre-elimination and eventual elimination status. This re-direction is intended to reflect a more efficient allocation of limited resources and align Uganda with global elimination frameworks.

[49] Uganda Malaria Indicator Survey 2014/2015.
[50] Uganda Malaria Indicator Survey 2018/2029.
[51] Uganda Malaria Indicator Survey 2024/2025.
[52] National Malaria Reduction and Elimination Strategic Plan (2021–2025/2026).
[53] The strategy was launched by the Uganda minister of health in April 2026 in Kampala

A central pillar of the strategy is the integration of multiple high-impact interventions into a coordinated package. These include sustained distribution and proper use of insecticide-treated nets, expanded indoor residual spraying, and the introduction of malaria vaccination for young children in high-transmission settings. By combining vector control, immunization, and case management, the programme adopts a layered approach that addresses both prevention and transmission interruption.

The scale-up of rapid diagnostic testing and access to effective antimalarial medicines is intended to ensure that every suspected case is confirmed and treated within the shortest possible time. The approach is reinforced by strengthening supply chains, improving health facility readiness, and enhancing the capacity of frontline health workers to manage malaria effectively.

The strategy places strong emphasis on community-level systems and decentralized service delivery, particularly through Village Health Teams (VHTs). By bringing testing, treatment, and health education closer to households, the programme seeks to overcome barriers related to distance, cost, and delayed care-seeking. This is especially relevant in high-transmission and rural settings, where community-based interventions are critical for impact. The approach also underscores the role of behavioral change, promoting consistent use of preventive tools and timely health-seeking practices as essential complements to biomedical interventions.

Another defining feature of the programme is its reliance on real-time data and surveillance systems to guide decision-making. Using recent malaria indicator surveys and routine health data, the Uganda aims to continuously track transmission patterns, identify hotspots, and adjust interventions accordingly. This is anticipated to enhance accountability and ensures that interventions remain responsive to changing epidemiological conditions, rather than static or assumption-driven.

The programme is anchored in a multi-sectoral and partnership-driven framework, recognizing that malaria elimination extends beyond the health sector alone. Collaboration with international agencies, civil society, research institutions, and local governments is expected to strengthen implementation capacity and mobilize both technical and financial resources. At the same time, the government emphasizes increased domestic financing and political commitment, positioning malaria elimination not only as a health priority but also as a development imperative linked to productivity, education, and economic growth.

Process of Developing the Malaria Approach

The process of designing the malaria approach was yearlong, multisectoral, participatory, and community-led. It involved the direct and active participation of grassroots stakeholders across the 11 political districts in Eastern Uganda. The key categories of stakeholders that participated in the conceptualization and design of the approach included: village local council committees, women committees, youth committees, village health teams (VHTs), community health workers (CHWs), heads of health centers II-IV (HCs), district health officers (DHOs) parish chiefs, and sub county chiefs. Others included biostatisticians, malaria focal persons, planners, technocrats, cultural leaders, school administrators, religious leaders, representatives of the elderly, representatives of herbalists and healers, academicians and researchers, chief administrative officers (CAOs), resident district commissioners (RDCs), environmentalists, members of parliament (MPs), representatives from the ministry of health central government, and above all, community people who are most affected by malaria.

Facts, views, experiences, opinions, and testimonies from all the stakeholders during the conceptualization and design process informed the uniqueness of the model. The approach is cognizant of, and was informed by the various national strategies against malaria in each of the countries in the

Great Lakes region. While the approach is written based on the grassroots structure in the Uganda context, the same grassroots structure (and hierarchy of community institutions) is similar to grassroots structures across Great Lakes countries. Thus, this approach can and should be used as a guiding approach to rolling out malaria interventions in Africa's Great Lakes countries.

Description of the Malaria Approach Framework

The malaria approach for Africa's Great Lakes region is designed with the awareness that; malaria control focuses on reducing disease burden, elimination aims to stop local transmission, and eradication seeks complete global disappearance of the disease. The approach is also founded on the awareness that malaria control has been the most practical approach in regions with intense transmission and favorable climates for mosquito breeding, particularly in the Great Lakes region and tropical areas of Africa where environmental conditions support year-round malaria transmission.

The malaria approach is grounded in a systems-based epidemiological control framework integrating transmission dynamics, health systems strengthening, economic optimization, and governance accountability. This architecture aligns closely with the WHO Global Technical Strategy for Malaria 2016–2030[54], which emphasizes universal access, surveillance as a core intervention, and transformation of malaria programs into elimination platforms. The logic of the approach is that vector density reduction decreases transmission probability, while mass drug administration reduces the human parasite reservoir[55]. Unlike conventional programming, which staggers interventions due to funding cycles, this approach adopts a temporal compression strategy: concentrated, repeated intervention rounds designed to overwhelm transmission capacity.

The approach simultaneously deploys control and elimination strategies. First, simultaneity of control and elimination approaches, and second, simultaneity of interconnected interventions under control and elimination. The three interconnected interventions that should be rolled out simultaneously under control and elimination approaches are: *(i) mass-population testing for malaria parasites, (ii) mass-drug administration for malaria, and (iii) mass-indoor and outdoor-vector spraying.*

The success of mass-testing, mass-treatment, and mass-vector-spraying is based on three other strategic components of: community mobilization and engagement, community resource mobilization and sustainability, and community knowledge generation through monitoring, supervision, surveillance, evaluation, and dissemination. Prior to rollout, piloting should be done at sub county level, to test the effectiveness of communication, community mobilization, and engagement strategies centered around the program's key focus areas: mass-spraying, mass-testing, and mass-treatment. The insights gained from conducting the process-pilot are expected to influence overall rollout and scaling.

Community-led Mass Testing and Mass Drug Administration

Testing for malaria and administering of malaria drugs is not new. It has been going on for decades as a malaria intervention strategy. Health facility-based testing and drug administration has well documented challenges, especially lower responsiveness and adherence. Most of the health facilities are ill-equipped to satisfactorily attend to all patients, let alone conduct effective surveillance and customized follow up of cases. In this model, mass testing and mass drug administration take the intervention right into the community, led by the community, right at the doorsteps of households. In

[54] World Health Organization. (2023). World malaria report 2023. Geneva: WHO.
[55] Smith, T. A., Chitnis, N., Penny, M., & Tanner, M. (2017). Malaria modeling in the era of eradication. Cold Spring Harbor Perspectives in Medicine, 7(8).

every sub county, the community health centre III is the coordination station – before field intervention teams spread out into parishes, villages, and clustered households.

The officers in charge of health center IIIs is the community coordinator of mass testing and mass drug administration in a given sub county. The logistics of mass testing and mass drug administration are managed at the health center III. The sub county health management committees, village local council committees, women committees, youth committees, VHTs, CHWs, parish chiefs, and sub county chiefs are all involved in the process of mass testing and mass drug administration in a given sub county.

Before conducting mass testing and mass-drug administration, the technical teams (led by the officers in charge at health center IIIs) ensure that the necessary quality and quantity of testing kits and drugs are stocked. This means community profiling to ascertain the total disaggregated population of the sub county is established. A central storage facility is established at district health departments, while centre IIIs are responsible for storing and distributing testing kits and drugs as per defined schedules. Standard Operating Procedures (SOPs)[56] detailing the mass-testing and mass-drug administration process, including the types of kits and drugs to be used, dosage specifications, precautions, resurgence handling, emergency case handling, referral processes, and managing side effects, should be attached as annex.

Before mass testing and mass-drug administration, the technical teams ensure that the necessary quality and quantity of testing kits and drugs are stocked. A central storage facility is established at district health departments, while centre IIIs are responsible for storage, and distribution/supply of testing kits and drugs as per defined schedules. SOPs detailing the mass-testing and mass-drug administration process, including the types of kits and drugs to be used, dosage specifications, precautions, resurgence scenarios, referral processes, emergency case handling, and managing side effects, will be attached as an annex.

Health workers and village health teams are guided by standardized operating procedures that provide consistency in testing, treatment, referral, and record-keeping. Village publicity secretaries escort health workers into households to provide reassurance and explanations. Respective village coordinators (who are also coordinated by the sub county health centre III), support the logistics of fieldwork, including stock movement and daily redistribution. Severe cases identified through household visits are referred immediately to higher-level facilities, with transport arranged by the sub county coordination station.

Sub county health workers receive refresher training on the correct use of rapid diagnostic tests (mRDTs), artemisinin-based combination therapy (ACT) protocols, pediatric dosing, and referral pathways. Village publicity secretaries are oriented in communication, ethical conduct, demystification of malaria myths, and community mobilization and engagement techniques. Teachers in primary and secondary schools in the sub county receive guidance on supporting monitoring among children in school, especially on adherence and responsiveness.

Community-led Mass-Vector-Spraying

The proposed mass vector spraying (MVS) differs from indoor residual spraying (IRS). Mosquitoes do not exclusively reside indoors or on walls. Thus, unlike IRS, which is confined to indoors, MVS is carried out indoors and outdoors of all houses and other structures within habitable radius. Open grassy spaces that may harbor mosquitoes in neighborhoods are also sprayed. MVS also covers school

[56] SOPs for respective countries are influenced by the laws, systems, and governance frameworks of a given country. The exact brands of drugs, kits, supplies, commodities, and dosages are also defined by countries, based on the respective governments' health laws and guidelines. The process of mass testing and mass drug administration remains, largely, the same, with the ultimate end goal of tackling the malaria virus within the bodies of people in their communities.

buildings, churches, mosques, community centers, shades, and public shelters. All these are potential hosts and breeding grounds for mosquitoes. MVS is carried out bi-annually with the aim to substantially reduce the mosquito population, and demote their normal capacity to reproduce and to fast-spread the malaria causing virus.

For effective and efficient MVS, the use of quality insecticides, pumps, protective gear, first-aid packs, skilled sprayers, apt supervisors, and record takers is vital. The MVS is intended to suppress mosquito populations and reduce vector -human contact. It is also intended to record the cost-efficiency of community-led spraying, its social acceptability, and technical rigor to inform scaling.

MVS should reflect full community practical participation. Teams of local youth volunteers selected and oriented within their villages do the spraying. They are supported by a supervisor per village. All supervisors are coordinated by the village local council committee. The council committee is overseen by established parish health management committees. The officer in charge of the sub county health center III oversees the parish management committees. This is done in liaison with the district health teams.

Sprayers are organized into village-level clusters. Each cluster is assigned daily quotas (numbers of homes to be sprayed) based on human population in a given village. Supervisors employ standardized checklists to ensure compliance with SOPs for spraying. They also conduct daily debriefings to address challenges such as nozzle blockages or household refusals. Mop-up rounds are scheduled for households that miss earlier rounds.

Community Mobilization and Engagement

The effectiveness and efficiency of mass testing, mass treatment, and mass vector spraying pivot on effective community mobilization and engagement. Community mobilization and engagement start at the conceptualization/design idea. Even if this approach will be replicated as it is, there is need to engage key stakeholders in a process of understanding what the approach is about. Let the voice of the community be incorporated in the final framework ahead of intervention. Face-to-face community consultative meetings at parish, sub-county, and district levels, as well as with the overall national malaria plan for a given country, are key. Community consultative meetings should include youth, women, teachers, traders, religious leaders, cultural practitioners, educationists, environmentalists, etc.

The various community leaders, the pillar of authority, should popularize the approach in their respective villages where their voice is known and respected. Women councils should reassure mothers about the safety of testing for malaria, especially among categories like the pregnant. Youth should be mobilized and engaged as vehicles of mobilization of the rest of their community. Localization of information education, and communication should be done for relevance. Informational materials should be disseminated to individuals, households, neighborhoods, schools, markets, community centers, mosques, etc. information should be in audio, print (narration and illustration), and video forms. To reach a broader audience, information dissemination should be done using radios and community-radios (talking loud speakers mounted on pillars in villages).

Community-led Resource Mobilization and Sustainability

The key resource is the people, in their respective communities. As long as communities are engaged to take up ownership of the need to address the malaria challenge in their communities, other resources will be acquired with less difficulty. While the approach is community-led, external expertise should be involved to oversee, especially, the technical parts of interventions. Financial and material resource mobilization should start within the community. Everyone has something to offer. Local and central government ministries, agencies, and departments should be invited to support financially and materially. Business groups and philanthropists should be requested to support. Pharmaceutical

factories should be requested for in kind donations. Youth should offer their labor, especially on mass vector spraying. Seeking in kind donations, especially of spray pumps, drugs, medicines, supplies, commodities, test kits, etc. substantially reduces the budget. Locally manufacturing/producing the chemical for mass vector spraying substantially brings down the budget as compared to procurement of finish products. For environmental protection, organic vector chemicals should be used for spraying.

Monitoring, Supervision, Surveillance, Evaluation, and Dissemination

This is a technical part that should be implemented by highly experienced health experts. A robust surveillance system should be put in place. The focus should be to observe the characteristics and behaviors of mosquitoes and the parasite. Surveillance was should be designed to prioritize relapses and/or drug resistance. Liaising with experts in government, international organizations, universities, or individuals in the private sectors would bring the best qualified talent to the tasks.

Supervision and surveillance are continuous throughout the rollout, implementation, and scaleup. Daily parish-level debrief sessions should be conducted reconcile technical and procedural observations. These debriefs can also be used to reconcile registers, confirm stock balances, and report operational challenges. Parish and sub county supervisors should validate data, while technical teams from the districts provide oversight. Entomological surveillance and parasitemia monitoring should be integrated with test and treat results. Reports on adherence to treatment, drug resistance, especially among children, are critical in ensuring that effectiveness beyond initial case management.

Alongside surveillance, monitoring is intended to observe out for community changes in knowledge, attitude, and practice, particularly people's responsiveness and adherence, mobilization, communication, and participation. Annual evaluations should focus on the key indicators on mobilization, communication, participation, contributions, and mass-spraying, mass-testing, and mass-treatment. Modern elimination strategies recognize surveillance not merely as monitoring but as an active transmission-disruption tool[57]. The approach proposes the incorporation of real-time case reporting; entomological monitoring; drug efficacy tracking; geospatial mapping of hotspots; and adaptive micro-stratification. Surveillance data is intended to guide targeted responses in persistent foci, consistent with elimination-stage best practices[58].

Conclusion

The proposed malaria approach for Africa's Great Lakes region is designed with the awareness that; malaria control focuses on reducing disease burden, elimination aims to stop local transmission, and eradication seeks complete global disappearance of the disease. The approach is also founded on the awareness that malaria control has been the most practical approach in regions with intense transmission and favorable climates for mosquito breeding, particularly in Africa's Great Lakes region and tropical areas of Africa where environmental conditions support year-round malaria transmission.

The logic of the approach is that vector density reduction decreases transmission probability, while mass drug administration reduces the human parasite reservoir. Unlike conventional programming, which staggers interventions due to funding cycles, this approach adopts a temporal compression strategy: concentrated, repeated intervention rounds designed to overwhelm transmission capacity. Success will depend on maintaining epidemiological pressure, and strengthening institutions.

[57] World Health Organization. (2025). Global technical strategy for malaria 2016–2030 (updated 2025). WHO.
[58] Sturrock, H. J. W., et al. (2013). Targeting asymptomatic malaria infections. Nature Reviews Microbiology, 11, 201–212.

References

African Union. (2001). Abuja Declaration on HIV/AIDS, tuberculosis and other related infectious diseases. African Union.

ALMA. (2025). Africa malaria progress report 2025: Member states off-track; expanded toolkit deployment.

AP News. (2024). Malaria burden and new treatment options for infants in Africa.

Asante, F. A., et al. (2013). Economic burden of malaria in sub-Saharan Africa. Malaria Journal, 12(1), 307.

Barofsky, J., Anekwe, T., & Chase, C. (2015). Malaria elimination and economic outcomes in sub-Saharan Africa. Health Policy and Planning, 30(9), 1222–1236.

Bhatt, S., Weiss, D. J., Cameron, E., et al. (2015). The effect of malaria control on Plasmodium falciparum in Africa between 2000 and 2015. Nature, 526, 207–211.

Birn, A. E. (2014). History of global health: Longstanding questions, new perspectives. Health Systems & Reform, 1(1), 1–14.

Centers for Disease Control and Prevention. (2024). History of malaria control and elimination. https://www.cdc.gov/malaria/history/index.html

Dorothy, W. (2014). A comparison of five malaria transmission models: benchmark tests and implications for disease control

Evaluate Pharma. (2022). World preview 2022, outlook to 2028. Evaluate Ltd.

Feachem, R. G. A., Phillips, A. A., & Targett, G. A. T. (2009). Shrinking the malaria map: A prospectus on malaria elimination. Malaria Elimination Group.

Feachem, R. G., Phillips, A. A., Targett, G. A. T., et al. (2019). Shrinking the malaria map: Progress and prospects. The Lancet, 376(9752), 1566–1578.

Feldbaum, H., & Michaud, J. (2010). Global health and foreign policy. Epidemiologic Reviews, 32(1), 82–92.

Gallup, J. L., & Sachs, J. D. (2001). The economic burden of malaria. American Journal of Tropical Medicine and Hygiene, 64(1–2), 85–96.

Hemingway, J., Ranson, H., Magill, A., et al. (2016). Averting a malaria disaster: Will insecticide resistance derail elimination? The Lancet, 387(10029), 1785–1788.

Hickel, J. (2017). The divide: A brief guide to global inequality and its solutions. Penguin.

Kentikelenis, A., Stubbs, T., & King, L. (2017). IMF conditionality and health outcomes in low-income countries. Lancet Global Health, 5(10), e911–e922.

Kibret, S., et al. (2012). The impact of a large dam on malaria transmission in Ethiopia. Parasites & Vectors.

Mafwele, B. J., & Lee, J. W. (2022). Climate factors and malaria transmission in Africa. Scientific Reports.

Malaria Atlas Project. (2024). Malaria burden estimates for East Africa

Malaria Consortium. (2023). Supporting Uganda's Malaria Reduction and Elimination Strategy (SUMRES). Kampala, Uganda.

Mandal, S., Sarkar, R. R., & Sinha, S. (2011). Mathematical models of malaria: A review. Malaria Journal, 10, 202.

Ministry of Health (2022). National Community Health Strategy. Kampala. Government of Uganda.

Ministry of Health Uganda. National Malaria Reduction and Elimination Strategic Plan 2021–2026.

Ministry of Health Uganda. Uganda Malaria Mortality Reduction Strategy.

Ministry of Health, Kenya. (2023). Kenya National Malaria Strategy 2023–2027.

Ministry of Health. (2022). Uganda malaria reduction and elimination strategic plan 2021–2025. Government of Uganda.

Mordecai, E. A., et al. (2019). Thermal biology of mosquito-borne disease. Ecology Letters.

Najera, J. A. (1999). Malaria control: Achievements, problems, and strategies. Parassitologia, 41(1–3), 1–89.

Najera, J. A., Gonzalez-Silva, M., & Alonso, P. L. (2011). Some lessons for the future from the Global Malaria Elimination Programme. PLoS Medicine, 8(1), e1000412.

Navarro, V. (2009). What we mean by social determinants of health. Global Health Promotion, 16(1), 5–11.

Navarro, V. (2009). What we mean by social determinants of health. Global Health Promotion, 16(1), 5–11.

Newby, G., et al. (2015). Review of mass drug administration for malaria. Malaria Journal, 14, 480.

NMCP United Republic of Tanzania. (2021–2025). National Malaria Strategic Plan 2021–2025.

Ototo, E. N., et al. (2022). Climate variability and malaria transmission in East Africa. Acta Parasitologica.

Packard, R. M. (2007). The making of a tropical disease: A short history of malaria. Johns Hopkins University Press.

RBM Partnership. (2022). Action and investment to defeat malaria 2021–2030. Roll Back Malaria Secretariat. Geneva.

Sachs, J., Malaney, P., & Gallup, J. (2002). The economic and social burden of malaria. Nature, 415, 680–685.

Sandip Mandal, Ram Rup Sarkar and Somdatta Sinha. (2011). Mathematical models of malaria - a review

Smith, D. L., & Schapira, A. (2012). Reproduction numbers in malaria. PLoS Biology, 10(7), e1001357.

Smith, D. L., Battle, K. E., Hay, S. I., et al. (2012). Ross, Macdonald, and a theory for malaria transmission. PLoS Pathogens, 8(4), e1002588.

Smith, T. A., Chitnis, N., Penny, M., & Tanner, M. (2017). Malaria modeling in the era of eradication. Cold Spring Harbor Perspectives in Medicine, 7(8).

Snyman, K. (2025). Who pays to treat malaria and how much? Analysis of the cost of illness, equity and economic burden of malaria in Uganda

Srivastava, D., & McGuire, A. (2015). Global health aid and governance. Health Policy and Planning, 30(8), 999–1012.

Sturrock, H. J. W., et al. (2013). Targeting asymptomatic malaria infections. Nature Reviews Microbiology, 11, 201–212.

The Global Fund. (2023). Results report 2023. Geneva: Global Fund.

Thomas A. Smith, Nakul Chitnis, Melissa Penny, and Marcel Tanner Department of Epidemiology and Public Health. (2017). Malaria Modeling in the Era of Eradication. Swiss Tropical and Public Health Institute, Basel CH 4002, Switzerland; and University of Basel, Basel CH 4001, Switzerland

Tusting, L. S., Willey, B. A., Lines, J., & Greenwood, B. (2016). Socioeconomic development as a tool for malaria control. Malaria Journal, 15(1), 1–13.

Uganda Ministry of Health. (2022). Malaria epidemiology and control report 2022. Kampala: MoH.

UNICEF. (2025). Uganda malaria vaccine rollout. Kampala.

White, M. T., Conteh, L., Cibulskis, R., & Ghani, A. C. (2011). Costs and cost-effectiveness of malaria control interventions. Malaria Journal, 10, 337.

WHO (2025). Global Technical Strategy for Malaria 2016–2030. WHO Library Cataloguing-in-Publication Data. Geneva, Switzerland.

WHO Regional Office for Africa. (2023). Malaria epidemiology and progress in Africa.

WHO Regional Office for Africa. Uganda malaria situation updates.

WHO. (2024). World malaria report 2024. Geneva: World Health Organization.

Wickremasinghe, R., Premaratne, R., Peiris, L., et al. (2016). Elimination of malaria in Sri Lanka. Malaria Journal, 15, 1–8.

Wikipedia contributors. (2023–2024). Health in Rwanda.

World Health Organization. (2007). Everybody's business: Strengthening health systems. Geneva.

World Health Organization. (2012). Handbook for integrated vector management. Geneva.

World Health Organization. (2014). WHO-CHOICE methods and cost-effectiveness thresholds. Geneva.

World Health Organization. (2019). Eliminating malaria. https://www.who.int/activities/eliminating-malaria

World Health Organization. (2019). Malaria eradication: Questions and answers. https://www.who.int/news-room/questions-and-answers/item/malaria-eradication

World Health Organization. (2023). World malaria report 2023. Geneva: WHO.

World Health Organization. (2024). African health ministers commit to end malaria deaths.

World Health Organization. (2024). Malaria epidemiology and health system responses in Africa.

World Health Organization. (2025). Global technical strategy for malaria 2016–2030 (updated 2025). WHO.

World malaria report 2024: addressing inequity in the global malaria response. Geneva: World Health Organization; 2024. License: CC BY-NC-SA 3.0 IGO.

Yukich, J. O., Lengeler, C., Tediosi, F., et al. (2008). Costs and consequences of large-scale vector control. American Journal of Tropical Medicine and Hygiene, 79(3), 373–384.

Zhou, S. S., Zhang, S. S., Zhang, L., et al. (2015). China's 1-3-7 surveillance and intervention strategy. Malaria Journal, 14, 1–7.

MAKEXAFRICA
Research & Advocacy
P.O. Box 903013 Kampala – Uganda
makexafrica@makexafrica.org
https://makexafrica.org