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MINISTRY OF HEALTH

Implementation Plan for Multiple First-Line Therapies (MFT) for Uncomplicated Malaria Treatment in Kenya

(2026 - 2030)



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Foreword

Malaria remains a significant public health burden in Kenya, with 5.5 million cases and 769 associated deaths reported in 2023. The Government of Kenya, in collaboration with development partners, civil society, the private sector, and other stakeholders, continues to implement high-impact interventions to reduce malaria transmission and mortality. These include the distribution of insecticide-treated nets (ITNs), intermittent preventive treatment in pregnancy (IPTp), and case management of malaria in line with national treatment guidelines.

Currently, the national guidelines recommend artemether-lumefantrine (AL) and dihydroartemisinin-piperaquine (DHA-PPQ) as the first- and second-line treatments for uncomplicated malaria. However, over the past decade, evidence of genetic markers indicating risk of resistance to artemisinin has emerged in the sub-Saharan region, including confirmed partial resistance in five countries in Eastern Africa. This growing threat underscores the urgent need for adaptive strategies to preserve the efficacy of current antimalarial medicines.

The introduction of **Multiple First-Line Therapies (MFT)** provides a critical opportunity to mitigate the risk of resistance. By concurrently deploying more than one first-line antimalarial treatment, MFT reduces selective drug pressure and slows the development of resistance by providing different selective pressures across the parasite's genome rather than the usual approach of a single selective pressure that allows its adaptation to the drug to rapidly rise to high frequency across malaria endemic countries. This strategy must be supported by strengthened molecular surveillance to ensure timely detection and response to emerging resistance patterns.

This MFT Implementation Plan offers a detailed roadmap for introducing and operationalizing MFT in Kenya. It aligns with the goals of the Kenya Malaria Strategy (KMS) 2023–2027, under strategic objective 3 (4.3.1) which seeks to significantly reduce malaria-related illness and deaths by ensuring 100% of confirmed cases receive appropriate treatment.

Importantly, the private health sector, which manages an estimated 30% of uncomplicated malaria cases or approximately one in every three Kenyans seeking care plays a critical role in the delivery of malaria treatment. The successful implementation of MFT will require effective engagement with the private sector actors to ensure adherence to malaria case management and treatment guidelines, accessibility to quality-assured medicines, and monitoring for surveillance and pharmacovigilance.

The Ministry of Health remains firmly committed to a coordinated, multi-sectoral response to malaria. I therefore call upon all stakeholders across government, the private sector, development partners, and civil society to lend their full technical and financial support to this MFT Plan. Together, we can address the threat of antimalarial drug resistance and move closer to our vision of a malaria-free Kenya.



Dr Patrick Amoth, CBS
Director General,
Ministry of Health

Preface

Kenya has made significant progress in malaria control through the scale-up of proven interventions, including effective case management guided by national treatment policies. Artemisinin-based combination therapies (ACTs) have played a central role in reducing malaria-related morbidity and mortality. However, emerging evidence of genetic markers associated with reduced susceptibility to artemisinin in sub-Saharan Africa poses a serious threat to these gains and calls for proactive adaptive strategies.

The introduction of Multiple First-Line Therapies (MFT) for uncomplicated malaria represents a strategic approach to mitigating the risk of antimalarial drug resistance. By concurrently deploying more than one quality-assured ACT, MFT reduces selective drug pressure and helps preserve the long-term efficacy of available treatments. This approach aligns with global recommendations and supports Kenya's commitment to evidence-based malaria control.

This Implementation Plan for Multiple First-Line Therapies for Uncomplicated Malaria Treatment in Kenya (2026–2030) provides a clear framework for the phased introduction and operationalization of MFT across the health system. It is aligned with the Kenya Malaria Strategy 2023–2027 and emphasizes strong engagement of both public and private health sectors, recognizing the critical role of private providers in malaria case management.

The Ministry of Health, through the Directorate of Primary Healthcare Services, reaffirms its commitment to coordinated implementation, strengthened surveillance, and partnership with all stakeholders to ensure the success of this Plan and to safeguard effective malaria treatment for all Kenyans.



Dr. Joel Gondi

Director, Primary Healthcare Services
Ministry of Health, Kenya

Acknowledgment

The National Malaria Control Program (NMCP) extends its sincere appreciation to all partners and stakeholders who contributed to the development of the Multiple First-Line Therapy (MFT) Implementation Plan. This document represents a collaborative milestone in Kenya's efforts to safeguard the efficacy of antimalarial treatments and strengthen malaria case management across the country.

We especially acknowledge funding from Unitaid through STOP-AMDR Project that is implemented by Jhpiego and the U.S. Government through REACH Malaria that made it possible to convene technical workshops that informed the development of this critical MFT plan.

We further recognize the leadership and dedication of the National Malaria Control Program (NMCP) team and coordination of technical inputs through the Malaria Case Management, Procurement and Supply Management Committee of Experts (COEs) and other representatives from other COEs.

The NMCP is also grateful for the invaluable technical contributions from key partners and stakeholders including Strathmore University and other academic institutions represented, Kenya Medical Research Institute (KEMRI), KEMRI-Welcome Trust Research Programme, KEMRI-Walter Reed Project, Pharmacy & Poisons Board, the World Health Organization (WHO), Jhpiego - STOP-AMDR Project, REACH Malaria, CHISU, PROPEL, AMREF Health Africa, Maisha Meds, County health management team representatives, County Malaria Control Coordinators and pharmacists.

Lastly, we commend all healthcare workers across the country whose tireless service in malaria diagnosis, treatment, and data reporting continues to guide national decision-making and inform policy direction. Their commitment remains central to the success of this initiative and to achieving a malaria-free Kenya.



Dr. Kibor Keitany, OGW

Head, National Malaria Control Program

Ministry of Health, Kenya

Acronyms and Abbreviations

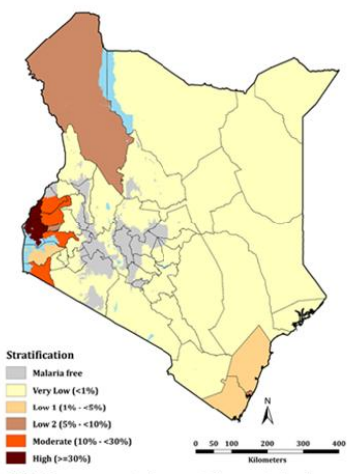
ACPR	Adequate clinical and parasitological response
ACT	Artemisinin-based combination therapy
ADR	Adverse drug reactions
AL	Artemether-Lumefantrine
ASAQ	Artesunate-Amodiaquine
ASMQ	Artesunate-Mefloquine
ASSP	Artesunate-Sulfadoxine-Pyrimethamine
CHP	Community health promoters
CME	Continuous medical education
COE	Committee of experts
DHA	Digital Health Authority
DHA-PPQ	Dihydroartemisinin-Piperaquine
EMR	Electronic medical records
EQA	External quality assessment
GLMI	Great Lakes Malaria Initiative
HCP	Health care professional
IEC	Information, education, and communication
IPTp	Intermittent preventive treatment of malaria in pregnancy
KEMSA	Kenya Medical Supplies Authority
KEMSA iLMIS	Kenya Medical Supplies Authority Integrated Logistics Management Information System
KEPH	Kenya essential package for health
KHIS	Kenya Health Information System
KMIS	Kenya Malaria Indicator Survey
KMS	Kenya Malaria Strategy
KMTC	Kenya Medical Training College
KNMF	Kenya National Malaria Forum
LMIS	Laboratory management information system
M&E	Monitoring and evaluation
MEDS	Mission for Essential Drugs and Supplies
MFTs	Multiple First-line Therapies
MoH	Ministry of Health
NITAG	National Immunization Technical Advisory Group
NMARL	National Malaria Reference Laboratory
NMCP	National Malaria Control Programme
OPD	Outpatient department
PPB	Pharmacy and Poisons Board
PCR	Polymerase chain reaction
PMI	President's Malaria Initiative
QA	Quality assurance
RDT	Rapid diagnostic kit
SBC	Social Behavior Change
SMC	Seasonal malaria chemoprevention
SP	Sulfadoxine-Pyrimethamine
SPAQ	Sulfadoxine-Pyrimethamine with Amodiaquine
TACT	Triple artemisinin-based combination therapy
TES	Therapeutic efficacy study
TWG	Technical working group
USG	United States Government
WHO	World Health Organization

1. Introduction

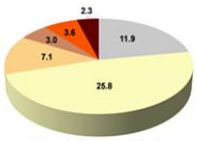
1.1 Background on malaria in Kenya

Malaria is a major public health challenge globally and in Kenya. In 2023, Kenya reported 5.5 million cases of malaria and 769 deaths[1]. Antimalarial drug resistance, by Plasmodium falciparum to artemisinin-based combination therapy (ACT) is a threat, given the limited armamentarium of effective antimalarials. Inappropriate use of antimalarial drugs can cause selective pressure on malaria parasites to develop resistance. In Africa, ACTs are the standard treatment for malaria. Resistance to ACTs has been documented in Southeast Asia since the early 2000s[2]. At present, resistance to artemisinin included in combination therapies is a growing problem in Africa and has been reported in the East Africa region[3]. Given this, the emergence and spread of resistance to ACTs in Africa will have devastating consequences, since there are few new treatments available and ready in the market. Therefore, continued surveillance for the emergence of resistance and strategies to mitigate ACT resistance on this continent is a high priority.

The Kenya Malaria Strategy's (KMS 2023 – 2027) goals are to reduce malaria incidence by 80% and malaria deaths by 90% of 2023 levels by 2027/2028 and to interrupt indigenous malaria transmission in selected counties by 2027/2028. To achieve these goals, the third strategic objective of the KMS 2023 – 2027 aims to ensure malaria cases are managed according to the guidelines for the diagnosis, treatment, and prevention of malaria in Kenya[4]. To attain this objective, the KMS 2023 - 2027 aims to ensure that all suspected malaria cases receive quality-assured parasitological diagnosis at all levels of care; all confirmed malaria cases receive appropriate treatment, and there's continuous monitoring of the quality of malaria medicines. The prevalence of malaria among children 6 months to 14 years in Kenya has continued to reduce from 11% in 2010 to 8% in 2015 and to 6% in 2020 (Figure 1). In terms of parasite species P. falciparum in this age group also reduced from 81% in 2010 to 76% in 2020, according to the Kenya Malaria Indicator Survey (KMIS) 2020[5] (Figure 2). According to statistics from the Kenya Health Information System (KHIS), malaria accounted for an estimated 16% of outpatient consultations in 2023, malaria-related deaths reduced by 32% between 2016 and 2023, while



Endemicity in 2020	Total projected population 2020	% of total projected population	Cumulative % of total projected population
>=30%	1,893,700	4%	4%
10% to <30%	3,789,492	8%	12%
5% to <10%	2,826,328	6%	18%
1% to <5%	5,825,829	12%	30%
<1%	**34,141,883**	**70%**	100%
Total	48,477,232*	100%	



- *Population at risk by endemicity class in millions*
- ***Very low (PAPfPR$_{2-10}$<1%) and malaria free is 70%** of total population**

Figure 1: Malaria Prevalence by Endemicity Zone, 2020

inpatient malaria deaths per 100,000 population per year decreased from 2.2 in 2018/19 to 1.5 by 2022/2023.

According to the 2020 county malaria profiles, 70% of the population is at risk of malaria, and the Lake Endemic Zone accounts for at least two-thirds of this at-risk population, with Busia and Siaya Counties reporting prevalence of ≥30% (Table 1).

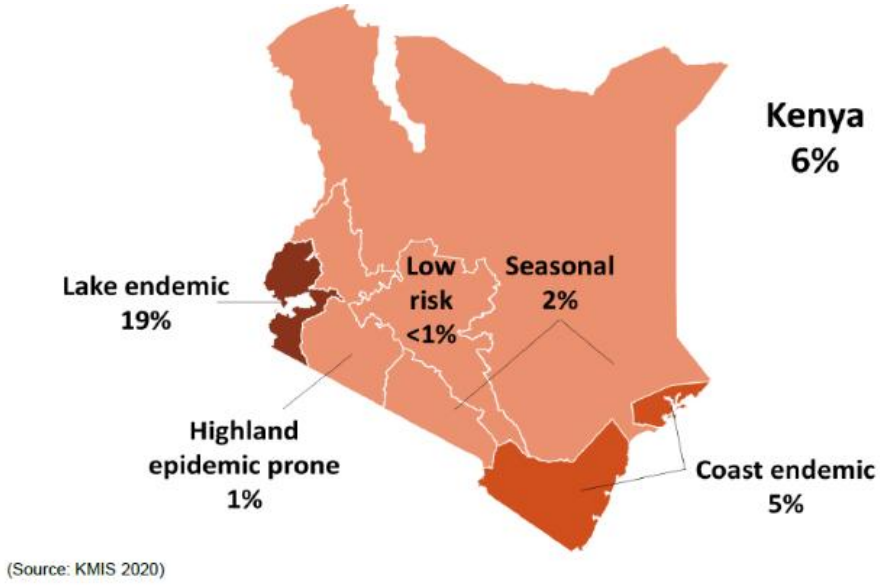


Figure 2: Malaria Risk Map by Endemicity Zone, 2020

Classification of malaria burden	Adjusted incidence, median (interquartile range)	County
No transmission	0	Nairobi
Very low burden	2.0 (1.0 - 3.2)	Embu, Kirinyaga, Kitui, Laikipia, Lamu, Machakos, Makueni, Mandera, Murang'a, Nyandarua, Nyeri, Wajir
Low burden	11.0 (9.0-15.5)	Bomet, Garissa, Isiolo, Kajiado, Kiambu, Marsabit, Meru, Nakuru, Taita Taveta, Tharaka Nithi
Moderate burden	54.0 (30.5-71.0)	Mombasa, Elgeyo Marakwet, Narok, Nyamira, Samburu, Tana River, Uasin Gishu
Moderate to high burden	95.0 (82.0 -117.0)	Kilifi, Baringo, Kericho, Kisii, Nandi, Trans Nzoia
High burden	474.0 (343.0-478,0)	Bungoma, Turkana, Homa Bay, Kwale, West Pokot
Very high burden	748.0 (649.0-850.0)	Busia, Siaya, Kakamega, Kisumu, Migori, Vihiga

Table 1: Classification of counties based on malaria burden.

*Adjusted incidence, median (interquartile range means the typical number of malaria cases per 1,000 people in an area, with a range showing how much the numbers vary across counties.

1.2 Antimalarial drug policy changes in Kenya

In 2001, the WHO recommended artemisinin-based combination therapies (ACTs) as the first-line treatment for uncomplicated malaria, a decision driven by the emergence of resistance to existing therapies (chloroquine and sulfadoxine-pyrimethamine) in Asia, Africa, and Latin America[6]. Triple artemisinin-based combination

therapies (TACTs) which combine artemisinin derivatives with two partner drugs are also efficacious and well-tolerated in clinical trials and could be used in areas of multidrug-resistant malaria once they become available for clinical use, in the future. Kenya has updated its drug policy for malaria per global guidance and the availability of new/additional formulations. The current national malaria diagnosis, treatment, and prevention guidelines recommend Artemether-Lumefantrine (AL) as the first line and dihydroartemisinin-piperaquine (DHA-PPQ) as the second line antimalarial drug. Previously, the first-line medication for malaria in Kenya was chloroquine for a long period, up until the late 1990s. Chloroquine resistance emerged in the 1970s and was replaced with Sulfadoxine-Pyrimethamine (SP) as first-line in 1997. This option did not last long as resistance was reported and another change in the drug policy was made in 2004 to deploy ACTs as first-line, specifically Artemether-Lumefantrine (AL); this was followed by the addition of dihydroartemisinin-piperaquine (DHA-PPQ) as second line in 2006.

1.3 Antimalarial resistance landscape in Kenya

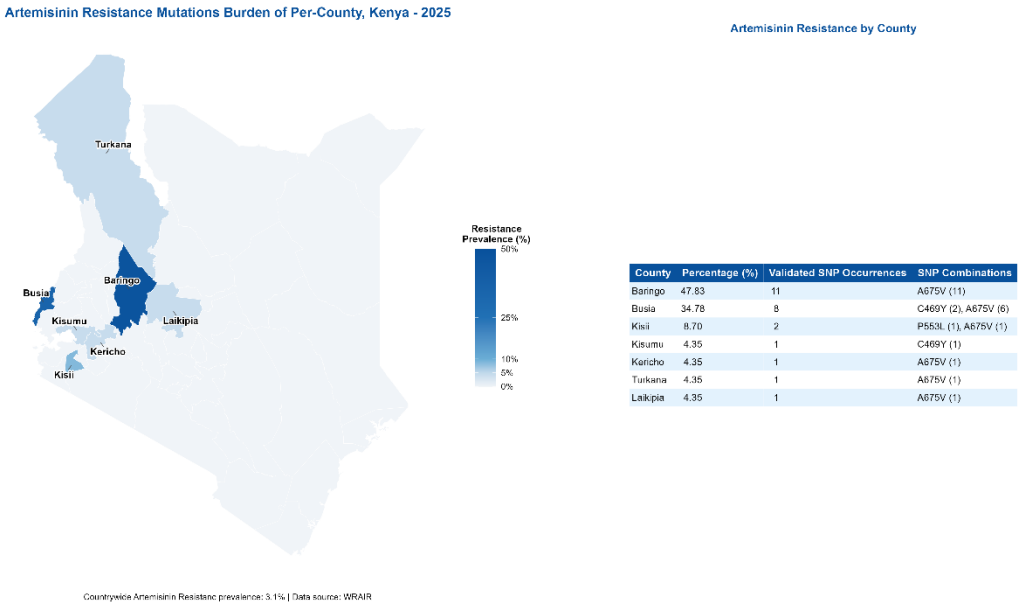
Kenya continues to face significant challenges with antimalarial drug resistance. Owing to this, the country has experienced multiple shifts in first-line treatment policies due to emerging resistance patterns. Artemisinin partial resistance refers to a delay in parasite clearance from the bloodstream within 3 days following treatment with an ACT[7]. The mechanisms of resistance developed by the parasites against artemisinin primarily affect the ring stage of the parasite, hence the name, "partial" resistance. "Full" artemisinin resistance has not been reported. Patients infected with parasites with partial artemisinin resistance can be effectively treated with an ACT as long as the partner drug remains efficacious. However, with partner drug resistance, partial artemisinin resistance can result in treatment failure[8]. This phenomenon is of public health significance as it allows the P. falciparum parasite to survive exposure to artemisinin.

The emergence of partial artemisinin resistance is further compounded by resistance to partner drugs piperaquine or amodiaquine. In Southeast Asia, a study on pre-existing partner-drug resistance found an increased emergence and spread of artemisinin resistance[8]. Of note, piperaquine resistance led to earlier emergence of artemisinin resistance compared to lumefantrine. Therefore, molecular surveillance for both artemisinin and partner drug-resistant genotypes is a key strategy to address parasite resistance to ACTs. In Africa, artemisinin partial resistance has so far been confirmed in Uganda, Tanzania, Rwanda, Ethiopia, and Eritrea [9-13]. In Uganda, partial resistance phenotypes arose in multiple places independently – not just about the spread of resistance but fostering resistance in the local parasite population[1]. In 2009, WHO issued Methods for Surveillance of Antimalarial Drug Efficacy, which recommended that countries conduct therapeutic efficacy studies (TES) of their first- and second-line antimalarial drugs every other year[14]. This was further refined in 2021 to include recommendations for countries to differentiate re-infections and recrudescence through molecular analyses[15].

The NMCP, research, and academic institutions have continued to implement TES to monitor the efficacy of AL and DHA-PPQ based on WHO TES protocols. In 2017, TES of AL and DHA-PPQ conducted in Siaya and Busia counties in the lake endemic region of Kenya reported a polymerase chain reaction (PCR) corrected adequate clinical and parasitological response (ACPR) of 88.5% (95%CI: 80.9 – 93.3%) for AL and 93.0% (95% CI: 86.9 - 96.4%) for DHA-PPQ[13]. The ACPR <90% is evidence of the waning efficacy of AL. Subsequent TES implemented in 2021/2022 reported ACPR of AL ranging from 57% (Siaya County), 77% (Busia County) to 79% (Bungoma County) before PCR correction. While these are PCR-uncorrected results, they too point to

[1]

the waning efficacy of AL. To date, there is no documented evidence of artemisinin resistance or partial resistance in Kenya, however, at least 3 mutations in the genetic marker of artemisinin resistance, kelch13



Artemisinin Resistance by County

County	Percentage (%)	Validated SNP Occurrences	SNP Combinations
Baringo	47.83	11	A675V (11)
Busia	34.78	8	C469Y (2), A675V (6)
Kisii	8.70	2	P553L (1), A675V (1)
Kisumu	4.35	1	C469Y (1)
Kericho	4.35	1	A675V (1)
Turkana	4.35	1	A675V (1)
Laikipia	4.35	1	A675V (1)

Figure 3: Prevalence of validated artemisinin partial resistance mutation markers in Kenya

(k13), have been detected through molecular surveillance efforts (Figure 3). The three mutations are C469Y, P553L, and A675V, of which A675V though currently present at a low frequency of <5% is the common mutation and widespread across several regions in Western Kenya. Continued surveillance is crucial to determine whether the frequencies of these mutations are rising.

The findings of these ongoing surveillances show varying frequencies and distribution of the validated resistance markers and hence a pointer to the need for further drug efficacy studies.

Relationship between molecular markers of resistance and treatment failure

The relationship between molecular markers of resistance and treatment failure in malaria is critical, to determine if the mutations result in delayed parasite clearance following ACT administration. Molecular markers, such as mutations in the Pfcrt and Pfmdr1 genes are potentially associated with partner drug resistance e.g., piperaquine and lumefantrine, respectively, and validated K13-propeller mutations associated with artemisinin resistance, serve as genetic indicators of diminished drug efficacy[16]. These mutations disrupt normal drug-target interactions, allowing the parasite to survive and multiply despite optimal treatment. In areas where resistant strains are prevalent and in cases of partner drug resistance, the potential for treatment failure increases, contributing to prolonged illness, transmission persistence, risk of severe malaria and death, and the need for second-line therapies. Monitoring molecular markers of resistance is crucial, as they provide early warning signals of resistance before clinical treatment failures are widely observed.

The connection between specific mutations, partner drug-resistant strains, and treatment failure informs public health responses, guiding the adaptation of treatment policies, such as the shift that was made from sulfadoxine-pyrimethamine to ACTs in 2004. Any emergence of artemisinin-resistant strains in Kenya threatens the effectiveness of ACTs, underscoring the need for continuous surveillance of molecular markers to update treatment guidelines and ensure the availability of effective drugs. Understanding this relationship also aids in

the development of new antimalarial compounds and combination therapies to overcome drug resistance and reduce the burden of malaria.

2. Overview of drivers of antimalarial resistance

To better understand the antimalarial resistance landscape, WHO recommends that countries assess the drivers of resistance. These are defined as the factors that influence the emergence and circulation of resistance. The WHO strategy to respond to antimalarial resistance in Africa categorizes the drivers of resistance into two main groups: background drivers which include factors related to the parasite, host, drugs, and the environment, and treatment-related drivers that refers to patterns of exposure of the Plasmodium parasite to antimalarial drug based on prescription practices and adherence to treatment by malarial patients.

Kenya's prevalence of key resistance markers remains below the WHO action threshold (<5%), early genetic and clinical signals detected since 2022 reflect early-stage patterns previously observed in settings where resistance later expanded rapidly. Antimalarial drug resistance in Kenya is driven by complex drivers of parasite biology, human host factors, and health-system dynamics that together intensify selection pressure on *Plasmodium falciparum*.

2.1 Background drivers

Spontaneous genetic mutations in drug-response genes such as kelch13, pfcrt, and pfmdr1 arise within large, rapidly replicating parasite populations and are amplified through repeated treatment exposure, high parasitemia, mixed infections, and genetic recombination during malaria transmission. These parasite-driven risks are reinforced by host-level factors, including partial immunity in high-transmission areas that can mask persistent infections, poor treatment adherence, incorrect dosing, and widespread self-medication; particularly in the private sector often involving substandard or falsified medicines that sustain sub-therapeutic drug concentrations and enable resistant strains to survive and proliferate.

Vector, environmental, and ecological drivers further shape resistance dynamics by influencing transmission intensity and parasite spread. Historical gains in malaria control remain fragile and reversible, as illustrated by Kilifi County's sharp decline in malaria-related admissions from over 50% in 2000 to 7% in 2009 followed by a gradual resurgence, underscoring how fluctuating transmission can re-expose populations to evolving parasite strains (MOH-KHIS2). Climate variability, seasonality, population movement, and changing mosquito ecologies create additional pathways for resistant parasites to disseminate. The detection of the invasive, urban-adapted vector *Anopheles stephensi* in Kenya in 2022 represents a critical emerging threat due to its ability to breed in man-made water containers and sustain transmission in densely populated urban settings. This leads to increased malaria burden and the opportunity for resistant parasites to spread beyond the historical zones.

Drug-related and system-level factors ultimately determine the pace at which resistance emerges and spreads. Long drug half-lives, historical reliance on single first-line regimens, and rising antimalarial costs following treatment failure have repeatedly narrowed therapeutic options and intensified drug pressure. While expanded diagnostic coverage reflected by RDT use exceeding 84% has improved targeted treatment, the emergence of parasite antigen deletions poses a growing risk of false-negative diagnoses and inappropriate drug use. These challenges are compounded by financing shortfalls following donor transitions, weaknesses in commodity forecasting and last-mile delivery, limited training, and delays in updating treatment policies. In this context, the introduction of Multiple First-Line Therapies (MFTs) for uncomplicated malaria strategically deployed across geographic areas, age groups, and public-private sectors to achieve at least 35% uptake per regimen in line with WHO guidance offers a critical strategy to dilute selection pressure, slow parasite adaptation, and preserve drug efficacy. A phased implementation beginning with pilot counties in 2026–2027 and national scale-up by 2028, supported by continuous therapeutic efficacy monitoring, pharmacovigilance, and drug consumption surveillance, is essential to counter these drivers and sustain malaria control gains in Kenya. Without the deployment of effective countermeasures, malaria incidence and mortality are projected to double or more by 2030 (Watson, O.J et al., 2022).

2.2 Treatment-related drivers of resistance

Kenya has conducted assessments and surveys that have documented several treatment-related drivers of antimalarial resistance. According to the 2024 health facility assessment (HFA) undertaken by the NMCP, only 51.7% of health workers adhered to the recommended malaria diagnosis and treatment guidelines, nationally (HFA 2024). The guidelines recommend that all suspected malaria cases should receive a confirmatory laboratory test (microscopy or RDT), and all confirmed cases should receive appropriate treatment; AL for uncomplicated malaria and parenteral artesunate for severe malaria. The HFA reported a suboptimal testing rate for suspected malaria cases (53.8%), although there were a high (98.5%) prescription and use of AL as the first-line antimalarial drug. Despite the low testing rate nationally, malaria endemic zones reported higher (78.5%) testing rates.

These assessments have also documented gaps in the technical capacity of frontline clinical and laboratory staff to effectively apply suspected malaria case definition, perform malaria rapid diagnosis tests (mRDT) and/or microscopy, prescribe AL according to the recommended dosing schedule for uncomplicated malaria and artesunate for severe malaria. Mid-level tertiary medical colleges produce over 85% of Kenya's frontline public health workforce, but in most cases, their curricula are not updated to include policy and guideline revisions and new policy recommendations as they arise. The NMCP in collaboration with Kenya Medical Training College (KMTC) has updated the KMTC curricula to incorporate updates to the national malaria diagnosis, treatment, and prevention guidelines. These curriculum updates are important to ensure that graduating frontline health workers have the current knowledge and skills to effectively manage malaria patients, according to the national guidelines.

Analysis from the KHIS has shown that there's overuse of antimalarial drugs in public health facilities. In 2023, 104.3% and 100.4% of confirmed malaria cases received AL for treatment of uncomplicated malaria nationally and in the lake endemic region, respectively. The overuse of AL in scenarios where patients are malaria negative increases the potential exposure of the parasite to sub-therapeutic drug levels in high malaria transmission regions, providing an environment for resistance to develop. While these analyses mainly involve public health facilities, non-adherence to the diagnosis and treatment guidelines is widespread both in public and private health facilities.

2.3 Other policy-related drivers of resistance

In the devolved system of governance, the national Ministry of Health (MOH) is charged with the formulation of policies while the sub-national levels implement these policies. The pharmacy and poisons board (PPB) licenses and regulates antimalarial drugs in Kenya, including coordinating surveillance for the quality and safety of drugs. However, the PPB has not managed to successfully regulate the sale of drugs in informal drug outlets (those not registered by the PPB). These informal drug outlets have increased access to AL over the counter, promoting self-medication, without laboratory confirmation. This has in turn resulted in the misuse of AL to treat non-malarial fevers. Despite this challenge, the PPB and other stakeholders have maintained high post-market surveillance to address counterfeit and substandard antimalarial drugs.

These informal drug outlets have increased over-the-counter access to artemether-lumefantrine (AL), leading to widespread self-medication without laboratory confirmation. This practice results in irrational use of AL for non-malarial fevers, contributing to unnecessary drug wastage. Although this does not exert direct drug pressure on malaria parasites (as no parasites are involved), it increases overall AL consumption and may indirectly impact drug availability and resistance management efforts. Despite these challenges, the Pharmacy and Poisons Board (PPB) and other stakeholders continue to maintain rigorous post-market surveillance to

detect and address counterfeit and substandard antimalarial drugs.

The private sector, including pharmaceutical outlets, private clinics, and hospitals, has largely remained underregulated at both national and county levels. Most malaria case management policies have primarily focused on the public sector. Available evidence from the 2022 Malaria Indicator Survey indicates that adherence to policy recommendations such as the use of artemether-lumefantrine (AL) as the first-line treatment for uncomplicated malaria and restricting treatment to laboratory-confirmed cases is variable, particularly among private pharmaceutical outlets and smaller clinics. Further targeted assessments are needed to comprehensively understand and address gaps in private sector compliance.

3. Addressing antimalarial resistance in Kenya

The *WHO strategy to respond to antimalarial drug resistance in Africa*[3] recommends that countries implement a four-pronged strategy to address the emergence and spread of antimalarial resistance. These strategies include:

- Strengthened surveillance of antimalarial drug efficacy and resistance.
- Improved regulation of the use of diagnostics and therapeutics to reduce drug pressure.
- Optimal implementation of prevention strategies including vector control and chemoprevention to limit the spread of antimalarial drug resistance.
- Research and innovation to optimize the use of current therapeutic and non-therapeutic tools and the development of new tools to address antimalarial resistance.

3.1 Surveillance for antimalarial drug efficacy and resistance

An effective surveillance system together with strengthened technical and laboratory capacity for malaria case management is important for generating useful data for antimalarial resistance in Kenya. The following are key strategies to optimize surveillance for antimalarial drug efficacy and resistance in the context of MFT implementation in Kenya: This will be achieved through a cross-sectional dried blood spot (DBS) surveys of at least 100 samples per sentinel health facility (SHF) in 10 counties (to represent the different malaria endemic zones (lake, coast, highland, and outbreak hotspots) before MFT roll out and every second year of every product rotation. The sampling will be done in 10 sentinel sites across the country (Kilifi, Kwale, Kisumu, Baringo, Busia, Turkana, Kisii, Kericho, Isiolo and Nakuru).

3.1.1 Improved quality of antimalarial drug efficacy and resistance data

Therapeutic efficacy studies (TES) are the gold standard method for testing antimalarial drug efficacy. WHO recommends that countries conduct TES every two years to monitor drug efficacy17. In addition, routine molecular surveillance through genetic analysis helps detect resistance markers like Pfcrt, *Pfdhfr, Pfdhps,* Pfmdr1, and K13 mutations, providing insights into emerging resistance. Given the role of K13 mutations in artemisinin resistance, routine monitoring is crucial to assess the spread of resistant parasites. Secondary molecular analyses will be conducted to assess non-*Plasmodium falciparum* species by RT-PCR and histidine rich protein 2 gene deletion status to ensure our malaria rapid diagnostic test maintains efficacy. It is important to broaden molecular surveillance to include other markers such as Pfhrp2/3, ensuring comprehensive tracking of drug resistance and testing challenges while also enhancing human and laboratory capacity to conduct advanced genetic analyses, including sequencing, to track the spread of resistance mutations. In addition, therapeutic efficacy studies will be conducted at selected SHFs within the first year of each drug cycle to assess drug efficacy. The SHF clinical and laboratory staff will be trained on patient data collection, treatment follow up and sample collection on the first and third day of treatment, day 7 and day 28. During this period patients involved in the TES will be asked to come back to the SHF for a follow the third drug administration and the follow-up checkups. Whole blood will be collected on the first day of treatment. All other days, a DBS will be collected, and for all visits microscopy data will be collected. The DBS samples will be utilized to measure the prevalence of antimalarial drug resistance (AMDR) markers, pharmacokinetic drug levels in the blood and a subset of whole blood samples from SHFs in close proximity to the KEMRI labs will be collected for *in vitro*

chemosensitivity assays.Strengthening the local and regional network of diagnostic and reference laboratories to support routine surveillance and AMDR will ensure adequate quality control and improved accuracy of drug efficacy and resistance surveillance data. Therefore, there is a need to implement strong quality assurance systems for diagnostics to ensure the accuracy, consistency, and reliability of test results. This should be combined with training and mentorship for malaria microscopy and regular quality control for rapid diagnostic kits (RDTs), to maintain high diagnostic standards. External quality assessment (EQA) programs for malaria diagnostics and updated certification of laboratories and individuals to attain and adhere to national and international diagnostic standards are also important in ensuring consistency in test performance across all facilities. Clinical management improvements are necessary to strengthen Kenya's diagnostic capabilities and improve treatment outcomes. Expanding access to diagnostic tools through point-of-care testing, mobile diagnostic units, and community testing programs will ensure that even remote areas are covered.

3.1.2 Increasing coverage of antimalarial drug efficacy and resistance surveillance systems

The availability of data on antimalarial resistance monitoring is key to addressing the emergence of partial artemisinin resistance. In Kenya, there's limited data on antimalarial resistance and few TES have been done, mostly in one or two study sites. Currently, the NMCP is leading efforts to establish sentinel sites for routine molecular surveillance to complement the biennial TES. The country lacks the capacity to conduct some of the molecular and advanced TES analysis, including pharmacokinetic studies to assess patient adherence to treatment and analysis of genetic markers of antimalarial resistance. Infrastructural improvements are needed to equip the National Malaria Reference Laboratory (NMARL) and the County Reference Laboratories with the commodities and supplies needed to undertake drug efficacy and antimalarial surveillance and improve data capture, transmission, analysis, and use. There is a need to integrate data systems that link surveillance findings with patient management and treatment outcomes, facilitating data sharing across regions.

Training healthcare workers including clinicians, laboratory officers on the TES tests and analysis as per the WHO TES protocol will be key to the successful implementation of TES and routine molecular surveillance. Clinicians should also receive periodic training on malaria case management. Regular mentorship and supportive supervision are also strategies for the continuous improvement of knowledge and skills. The training content should be aligned with the national guidelines, which will be updated to include the MFTs. Health workers will also be updated on the molecular surveillance results and any resistance trends through organized dissemination plans. Clinical training programs and continuous medical education (CMEs) will ensure that healthcare workers remain informed and skilled in managing malaria cases. An integrated approach to performance management, supervision, and mentorship will be employed to provide continuous support to healthcare workers, ensuring adherence to best practices. This approach will emphasize efficiency and sustainability in the context of financial constraints, while promoting adherence to best practices in malaria case management.

Effective drug efficacy and antimalarial resistance surveillance systems require robust infrastructure and human resources. For optimal implementation, adequate health financing is needed to address the gaps in funding as outlined in the KMS 2023-2027. The NMCP, Development Partners, Implementing Partners, and other stakeholders should prioritize resource mobilization to address the cost of MFT implementation. Mobilization of adequate resources will enable the timely procurement of commodities that are essential for the implementation of TES, routine molecular surveillance, and drug quality surveys. Ensuring a secure and reliable supply chain will help prevent stock-outs and the distribution of substandard drugs, which can exacerbate resistance.

Strong collaborations with the private sector will further enhance diagnostic and treatment coverage and improve the availability of data for decision-making. Optimizing treatment through strict adherence to national

guidelines is critical, and healthcare workers must be continuously trained in patient management to ensure effective and accurate use of antimalarials.

3.1.3 Strengthened use of antimalarial drug efficacy and resistance data to inform public health action.

Continuous analysis and dissemination of antimalarial drug efficacy and resistance data is vital for coordinated and effective response to any early pointers of resistance including delayed parasite clearance and treatment failures. Dissemination of data is important for raising awareness around resistance. Stakeholders should be engaged and updated, based on results of TES and routine molecular surveillance.

The analyzed data should be discussed at the case management committee of experts (COE) technical meetings, leading to informed decisions and policy directions. The COE has the representation of experts with diverse knowledge, skills, and experience. The reports should also be disseminated to the counties and the public. Education campaigns should reinforce the messaging around 'test, treat, and track' and the importance of adherence to treatment to prevent resistance.

The MFT Plan will have a clear communication strategy, with targeted messaging to reach the at-risk populations. The messages will be culturally appropriate and delivered through multiple channels to reach diverse audiences, from rural to urban communities. Community involvement through community health promoters (CHPs) and local leaders will help reinforce the messaging around adherence to treatment and encourage behavior change.

Clear, concise messages will be developed to promote adherence to treatment and support behavior change, especially among at-risk populations. These messages will be culturally appropriate, audience-specific, and delivered through existing communication platforms, including community health promoters (CHPs) and local leaders. Where possible, the approach will align with and build upon the existing national malaria communication strategy, adapting it as needed to ensure relevance and impact.

Activity/Topic	Purpose	Deliverables	Target audience	Frequency
Study initiation workshop	Introduction to the project activities and expected outcomes	- Overview of project and implementation -Endorse timelines	Researchers, HF collaborators, community, and policy makers	At the start of the project

3.2 Limiting drug pressure through optimized regulation and use of malaria diagnostics and therapeutics

In Kenya, AL is the recommended first-line antimalarial drug hence it is procured for treatment in the public health facilities. Private health facilities prescribe a mix of AL and DHA-PPQ, which is the second-line antimalarial drug. Due to challenges with access to malaria diagnostics mainly due to stock outs, the testing rate was 89.03% as at June 2025 (KHIS, 2025). The use of AL as the first line coupled with a suboptimal testing rate can potentially result in AL drug pressure on malaria parasites. Adherence to test and treat strategy has also faced challenges, especially in the private sector where most patients presenting with fever in malaria

endemic regions access drugs without a confirmatory laboratory test. Therefore, the use of diagnostics to confirm the presence of malaria parasites before treatment and diversification of first-line antimalarial drugs should be implemented to reduce drug pressure. The strategies below are vital to reducing AL drug pressure.

3.2.1 Review the guidelines for the diagnosis, prevention, and treatment of malaria to include MFTs

The country needs to reduce the over-reliance on AL as the first-line antimalarial drug, by implementing MFTs to conserve AL and other ACTs, thus lengthening their therapeutic lifespan that makes the treatment guidelines cost effective. The guidelines for diagnosis, prevention, and treatment of malaria should be reviewed to include MFTs, based on evidence of confirmed partial artemisinin resistance in the Eastern Africa region. Only ACTs recommended by the WHO and registered in the country by the Pharmacy and Poisons Board (PPB) should be considered. Ideally, these ACTs should have efficacy >95% where applicable, the new drugs should be included in TES for baseline efficacy data.

Antimalarial drugs or their long-acting component considered first or second line and those used for MFTs should not be used for chemoprevention interventions. Currently, Sulfadoxine-Pyrimethamine with Amodiaquine (SPAQ) is used for seasonal malaria chemoprevention in Turkana Central sub-county. While this use involves only one sub-county, there is a need to select another drug without Amodiaquine, for MFT in this sub-county. The following drugs are registered in Kenya and are included as part of the essential medicines List (EML): Artesunate-Amodiaquine (ASAQ), Artesunate-Pyronaridine (ASPY), Dihydroartemisinin-Piperaquine (DP) and Artemether-Lumefantrine (AL).

3.2.2 Implement regulatory frameworks for quality ACTs

Regulatory frameworks are essential for enforcing standards in the registration and use of antimalarials. The PPB's regulatory oversight must ensure that only quality-assured drugs are distributed. In addition, strict adherence to national guidelines on the use of antimalarials across both public and private sectors is critical. Effective implementation of Kenya's Multiple First Line plan will depend on strong regulatory frameworks and coordination among healthcare stakeholders.

In Kenya, there is robust post-market surveillance for antimalarial commodities, and this has ensured the availability of quality ACTs along the supply chain in both public and private sectors. The PPB continues to implement stringent regulatory frameworks that have limited presence of substandard ACTs in the market. Despite this progress, the private informal sector remains largely unregulated. Therefore, the PPB and relevant stakeholders should implement strategies to ensure conformity in the private informal sector. As the country moves to implement MFTs, it is critical to ensure patients are not exposed to sub-therapeutic drug levels, a factor contributing to resistance.

3.2.3 Strengthen private sector engagement in malaria case management

The private health sector plays a vital role in malaria case management in Kenya. It is estimated that up to 30% of outpatient cases of uncomplicated malaria are managed in private health facilities. This translates to approximately one out of every three Kenyans receiving treatment for malaria in the private sector, making it a critical pillar in Kenya's national malaria control and elimination efforts. Importantly, the private sector also manages a significant share of severe malaria cases, further emphasizing its contribution to the continuum of malaria care.

Kenya has not yet recorded clinical or therapeutic failure of artemether-lumefantrine (AL), the current first-line treatment. However, the threat of emerging resistance to artemisinin-based therapies remains real and urgent, particularly considering regional trends. The private sector has so far contributed positively to delaying the onset of resistance by ensuring widespread access to quality-assured ACTs other than AL.

In addition, the private sector has therefore, in many cases, been at the forefront of the implementation of

Multiple First-line Therapies (MFT). Several molecules earmarked for MFT rollout — including those not currently available in public sector procurement systems — have already been in use in private sector facilities. This positions private providers as critical partners in ensuring the early adoption, availability, and appropriate use of alternative first-line therapies.

To align private sector malaria treatment with the national MFT strategy, the NMCP is moving away from its earlier emphasis on artemether-lumefantrine (AL) as the sole recommended ACT. Private providers are now encouraged to offer patients choices from among WHO-recommended, quality-assured ACTs. These include: Artesunate-Amodiaquine (ASAQ), Artesunate-Pyronaridine (ASPY), Dihydroartemisinin-Piperaquine (DP) and Artemether-Lumefantrine (AL).

This shift leverages the private sector's flexibility and wider formulary access, supports rational treatment practices, and helps reduce selection pressure on a single drug—thereby contributing to efforts to delay antimalarial drug resistance.

Despite ongoing efforts, challenges persist in ensuring consistent adherence to national malaria treatment guidelines across both public and private sectors. In the private sector, limited integration into the NMCP framework and weak regulatory oversight contribute to variability in case management practices. However, even within public facilities under NMCP oversight, adherence to guidelines is not always optimal. This reflects broader regional trends in East Africa, where fully integrating private sector actors into national malaria responses remains a common gap.

To address this, Kenya's NMCP continues to intensify its engagement with private sector health providers as a core component of its strategy to manage and mitigate the threat of antimalarial drug resistance. Key areas of action include:

- **Training and Capacity Building:** Ensuring that private sector clinicians and pharmacists are trained in updated malaria case management guidelines, including MFT protocols and rational ACT use.
- **Mentorship and Supportive Supervision:** Establishing systems for ongoing mentorship, regular supervision visits, and peer learning opportunities within private facilities.
- **Access to Quality-assured Commodities:** Facilitating access to WHO-prequalified ACTs and diagnostic tools in the private sector to ensure consistent quality of care.
- **Data Integration and Reporting:** Encouraging private facilities to report malaria cases and treatment data into national surveillance systems to improve visibility and coordination.
- **Policy and Regulatory Support:** Strengthening regulatory oversight and policy alignment to create an enabling environment for private sector participation in national MFT roll-out and AMDR containment.

As Kenya moves toward MFT implementation, the private sector will continue to be a cornerstone of this strategy. Their early adoption of MFT molecules, coupled with their reach and influence, makes them invaluable allies in the effort to safeguard the efficacy of ACTs and maintain the gains made in malaria control over the last two decades.

3.2.4 Improve access to quality malaria diagnostics services

The national guidelines recommend that only those who are laboratory-confirmed through microscopy or RDT should receive antimalarial treatment. This in turn leads to the overuse of antimalarial drugs. There is a need to promote access to quality-assured RDTs and microscopy services in both public and private sectors. Microscopists should receive competency-based training to ensure they deliver high-quality and reliable results. To address persistent stock-outs of diagnostic supplies, NMCP, donors, and partners should not only mobilize sustainable funding but also tackle the systemic bottlenecks identified in the MPR — such as weaknesses in supply chain management, forecasting, and accountability — to ensure consistent availability of malaria

diagnostics at all levels of the health system.

3.2.5 Capacity build health workers on malaria case management

The NMCP has continued to provide periodic capacity building to health workers on malaria case management per the national guidelines. The health workers should be sensitized on any updates to the guidelines. The training should emphasize the recommended diagnostic methods, test and treat strategy, and administration of all antimalarials included in the MFTs. Health workers should also be sensitized on patient follow-up, especially for severe malaria patients. Middle-level colleges and tertiary education centers should also be sensitized.

3.3 Limit the spread of antimalarial drug resistance

With the circulation of resistance markers in the East Africa region and confirmed partial artemisinin resistance in Uganda, Tanzania, Rwanda, Ethiopia, and Eritrea[9–13], It is crucial for countries to collaborate and ensure a coordinated implementation of surveillance and response to antimalarial resistance. The following strategies are important for Kenya to limit the spread of resistance:

3.3.1. Increase coverage of malaria chemoprevention methods

The KMS 2023–2027 highlights chemoprevention as a key strategy for reducing malaria cases and lowering drug pressure. Kenya currently implements intermittent preventive treatment in pregnancy with Sulfadoxine-Pyrimethamine (IPTp-SP) in 15 counties and 4 fringe counties, though coverage needs improvement due to emerging endemic areas. The country should also consider the implementation of other chemoprevention strategies like SMC which are being piloted in Turkana central and post-discharge malaria chemoprevention.

3.3.2. Increase coverage of malaria vaccine

Kenya was among the first countries to pilot the RTS, S malaria vaccine in the lake endemic zone. Currently, 52 sub-counties are routinely administering the vaccine to children under two years of age. In 2023, the World Health Organization approved the R21/Matrix-M malaria vaccine for use in high-transmission settings among children under two. Following this, Kenya's National Immunization Technical Advisory Group (KENITAG) recommended its introduction into the national immunization program. The malaria vaccine enhances immunity in young children, thereby reducing malaria cases and the incidence of severe disease. However, it is not a replacement for antimalarial treatment; rather, it is most effective when used alongside other interventions such as insecticide-treated nets, indoor residual spraying, and prompt diagnosis and treatment. Scaling up the vaccination program to cover the entire lake endemic and coastal endemic zones is expected to increase protection among children under two years. Kenya plans to transition to the R21/Matrix-M vaccine in 2026.

3.4 Strengthening cross-border collaboration through the Great Lakes Malaria Initiative

Strong cross-border collaboration is needed to address resistance in regions with shared transmission risks. Collaborative efforts with neighboring countries in the East Africa region, particularly in areas with high population mobility, will help manage resistance across borders and ensure a coordinated response to emerging threats. There is a need to leverage existing regional platforms, especially the Great Lakes Malaria Initiative (GLMI) to share information on drug efficacy and resistance patterns. Through sharing cross-border surveillance data and implementing one coordinated approach, countries will strengthen the availability of data

in border crossing areas, ensuring increased coverage for surveillance on antimalarial drug efficacy and resistance.

3.5 Research and innovation to mitigate antimalarial resistance

This will play a crucial role in sustaining long-term efforts to combat resistance. Investments in research infrastructure, including advanced laboratories and data management systems, will support studies on resistance trends and the development of new diagnostic tools and treatments. Building the capacity of local researchers and laboratory officers through targeted training programs will further enhance Kenya's ability to monitor and respond to resistance. High-quality research is essential for developing novel strategies to counter resistance and improve malaria control. The data arising from evaluation of these new tools and strategies will be evaluated by the TWGs for adoption into the case management framework.

Key areas of focus include:

1. Digital diagnostic tools: Leveraging AI, connectivity, and digital platforms for improved accuracy and surveillance.
2. New biomarkers for RDTs and drug resistance: Identifying novel parasites and host markers to enhance detection and resistance monitoring.
3. New formulations of existing compounds: Developing child-friendly, stable, and more acceptable formulations to improve adherence.
4. Test and validate new drug combinations: Assessing new partner combinations and multiple therapies to delay resistance.
5. Testing/uptake of new drug molecules: Evaluating novel compounds through adaptive trials and regulatory pathways.
6. New control intervention tools and laboratory techniques and pipelines: Strengthening chemoprevention strategies, molecular surveillance, and high-throughput lab systems.
7. Introduce automated drug dispensing techniques and dosing measurements, integration of this system into stocking, procurement and supply chain-Integrating automated systems into procurement and supply chains to improve accuracy, reduce errors, and enhance stock management.

4. Antimalarial drugs for MFT implementation in Kenya

Uncomplicated Malaria is treated using ACTs. Severe malaria is initially treated using parenteral artesunate, then a full course of ACT.

WHO recommends the following six ACT for the treatment of Plasmodium Malaria[16]:

1. Artemether + Lumefantrine (AL)
2. Artesunate + Amodiaquine (ASAQ)
3. Artesunate + Mefloquine (ASMQ)
4. Dihydroartemisinin + Piperaquine (DHA-PPQ)
5. Artesunate + Sulfadoxine–Pyrimethamine (ASSP)
6. Artesunate + Pyronaridine (ASPY)

Artesunate-Mefloquine (ASMQ) is not recommended for use in Sub-Saharan Africa due to self-limiting neuropsychiatric effects and other notable severe side effects and is also not registered for use in Kenya. The ACTs considered for MFT roll out in Kenya are AL, ASPY, DHA-PPQ and ASAQ.

Sulfadoxine-Pyrimethamine (SP) is used for IPTp in malaria-endemic regions of Kenya. SP-Amodiaquine (SPAQ) is currently being used to pilot SMC in Turkana County and as recommended by WHO, another molecule that does not contain Amodiaquine should be considered for MFT roll out in Turkana County.

The formulations registered in the country by PPB are as outlined below.

Table 2: Antimalarial formulations registered in the country by PPB.

INN drug	Dosage form	Dosage strengths
Artesunate and Amodiaquine (ASAQ)	Tablets	(25mg+67.5mg)
	Tablets	(50mg+135mg)
	Tablets	(100mg+270mg)
Artemether and lumefantrine (AL) Tablets	Tablets	(20mg+120mg)
	Tablets	(80mg+480mg)
Pyronaridine and Artesunate (ASPY) (Pyramax)	Tablets	(180mg + 60mg)
	Granules for oral suspension	(60mg +20mg)
Dihydroartemisinin & Piperaquine Phosphate (DHA-PPQ)	Dispersible Tablets	(20mg +160mg)
	Dispersible Tablets	(30mg +240mg)
	Tablets	(40mg +320mg)
	Tablets	(80mg +640mg)

Table 3: Profile of Antimalarial Drugs for MFTs

MFT	Half-life	Formulation	Safety profile	Spectrum
Artemether + Lumefantrine (AL)	Artemether-1-3 hours Lumefantrine-3-6 days	Tablets and dispersible tablets	Heart rhythm changes prolongation of QT intervals.	P. falciparum & P. vivax
Artesunate + Amodiaquine (ASAQ)	AS has a very short half-life (20-45 minutes (8), whereas AQ (or rather its principal, active metabolite deseth-amodiaquine) has a much longer half-life (about 6-18 days (9)	Tablet (can be dissolved with sugar and water for children)	Not contraindicated in pregnancy and breastfeeding Used with caution in patients with CVDs and Patients on Efavirenz. GI side effects are common but may be minimized by dividing the once-daily dose to twice daily.	P. falciparum and P. vivax
Dihydroartemisinin + Piperaquine (DHA-PPQ)	24 days	Available in adult (40/320mg) and Pediatric (20/160mg) Tablets. Dispersible tablet 20/160mg	DHA-PPQ is generally safe, with mild side effects such as nausea and dizziness, Safe for use in children. Limited safety in the first trimester of pregnancy.	Has activity on P vivax and P. falciparum
Artesunate + pyronaridine (ASPY)	14 to 18 days	Pediatric 20mg/60mg granules for oral suspension And Adult 60mg/180mg Tablet	Contraindicated in the first trimester of pregnancy. Minimal side effects: Nausea vomiting, abdominal discomfort, and dizziness.	P. falciparum and P. vivax malaria

4.1. Dosing Schedules for the drugs considered for MFTs

1. Dosing Schedule for Artemether Lumefantrine (AL)

The target dose range for AL is 5–24 mg/kg body weight of artemether and 29–144 mg/kg body weight of lumefantrine. AL is recommended to be administered twice a day for 3 days (total, six doses). The first two doses should, ideally, be given 8 hours apart.

Body Weight (KG)	AL (mg) given twice daily for 3 days
5 to < 15	20 + 120
15 to < 25	40 + 240
25 to < 35	60 + 360
≥ 35	80 + 480

2. Dosing schedule for Artesunate Amodiaquine (ASAQ)

The target dose range for ASAQ is 4 (2–10) mg/kg body weight per day of artesunate and 10 (7.5-15) mg/ kg body weight per day of amodiaquine once a day for 3 days. A total therapeutic dose range of 6–30 mg/kg body weight per day of artesunate and 22.5-45 mg/kg body weight per dose of amodiaquine is recommended.

Body weight (kg)	ASAQ (mg) given once daily for 3 days
4.5 to < 9	25 + 67.5
9 to < 18	50 + 135
18 to < 36	100 + 270
≥ 36	200 + 540

3. Dosing schedule for Dihydroartemisinin Piperaquine (DHA-PPQ)

The target dose range for DHA-PPQ is 4 (2–10) mg/kg body weight per day dihydroartemisinin and 18 (16–27) mg/kg body weight per day piperaquine given once a day for 3 days for adults and children weighing ≥ 25 kg. The target doses and ranges for children weighing < 25 kg are 4 (2.5-10) mg/kg body weight per day dihydroartemisinin and 24 (20–32) mg/kg body weight per day piperaquine once a day for 3 days.

Children weighing < 25 kg should receive at least 2.5 mg/kg body weight dihydroartemisinin and 20 mg/kg body weight piperaquine to achieve the same exposure as children weighing ≥ 25 kg and adults. Dihydroartemisinin + piperaquine should be given once daily for 3 days.

The DHA-PPQ dose regimen currently recommended by the manufacturer provides adequate exposure to piperaquine and excellent cure rates (> 95%), except in children < 5 years, who have a threefold increased risk for treatment failure. Children in this age group have significantly lower plasma piperaquine concentrations than older children and adults given the same mg/kg body weight dose.

Body weight (kg)	DHA-PPQ (mg) given once daily for 3 days
5 to < 8	20 + 160
8 to < 11	30 + 240
11 to < 17	40 + 320
17 to < 25	60 + 480
25 to < 36	80 + 640
36 to < 60	120+960
60<80	160+1280
>80	200+1600

4. Dosing schedule for Artesunate Pyronaridine (ASPY)

The target dose range is 7.2–13.8 mg/kg body weight of pyronaridine and 2.4–4.6 mg/kg body weight of artesunate. The tablets should be taken orally once daily for 3 days and according to body weight as follows: 24 to <45 kg (two tablets), 45 to <65 kg (three tablets), and ≥65 kg (four tablets). It can be administered at any time, regardless of food consumption.

Body weight(kg)	ASPY (mg) given once daily for 3 days
≥5 to< 9	20mg/60mg
9 to < 17	40mg/120mg
17 to < 24	60mg/180mg
24 to < 45	120mg/360mg
45 to < 65	180mg/540mg
≥65	240mg/720mg

5. Approaches to Introducing Multiple First-Line Therapies (MFTs) in Kenya

5.1 MFT Implementation Approaches

The following nine approaches for MFT Implementation depending on Country's prevailing situation:

5.1.1. Randomization (e.g. clinical trial–like, by day of week)

This approach allocates different first-line antimalarial drugs to patients according to a predefined randomization rule (for example, drug A on Mondays/Wednesdays, drug B on Tuesdays/Thursdays, etc.). Randomization can occur at the facility level, provider level, or patient level. This approach is most feasible in pilot or research-oriented settings, such as sentinel surveillance sites or selected counties with strong supervision. It allows Kenya to generate high-quality evidence on effectiveness, adherence, safety, and resistance patterns under controlled conditions. Randomization minimizes selection bias and helps ensure equal drug pressure across therapies. However, it is operationally complex, may confuse providers and patients, and is difficult to scale nationally outside of trial-like settings.

5.1.2. Free-market procurement and distribution with subsidies; prescribing by doctor/patient choice

In this approach, multiple recommended first-line therapies are made available through the market, with public subsidies to ensure affordability. Prescribers and patients choose among the available therapies. This aligns well with Kenya's mixed public–private health system, especially in urban and peri-urban areas where private pharmacies play a major role. Subsidies (similar to past AMFm models) can be used to steer demand toward recommended therapies.

This approach leverages market mechanisms and patient choice but risks uneven drug use, overuse of preferred drugs, and inequities in access. Strong regulation and pharmacovigilance are required to prevent inappropriate prescribing and resistance concentration.

5.1.3. Geographic distribution (by County or Sub-County)

Different first-line therapies are assigned to different geographic areas (e.g., counties or sub-counties). Each area uses one designated first-line therapy, while neighboring areas use different therapies. This approach is highly compatible with county-based health system governance. Counties or malaria-endemic zones (e.g., Lake endemic vs. coastal regions) could be assigned different therapies based on transmission intensity and logistics capacity.

Geographic allocation is relatively easy to manage and supervise. However, population movement across county boundaries may dilute the benefits, and local resistance may still emerge if drug pressure is not sufficiently diversified at finer spatial scales.

5.1.4. Distribution by type of health facility

Different therapies are assigned to different facility types, such as hospitals, health centers, dispensaries, or community health programs. For example, hospitals could use one ACT, primary health facilities another, and community case management programs a third. This aligns with existing tiered service delivery structures. This approach simplifies supply chain management within facility categories. However, patients often move between facility types, and drug pressure may cluster within certain population groups.

5.1.5. Different drugs in public and private markets

Under this approach, the public sector uses one or more designated first-line therapies, while the private sector uses different recommended therapies. Given the large role of private pharmacies and clinics in malaria treatment, this approach could rapidly diversify drug pressure nationally. It requires strong coordination between the Ministry of Health, regulators, and private distributors. This approach is administratively simple and leverages existing market separation. However, differences in affordability, quality assurance, and prescribing practices between sectors may undermine equity and adherence.

5.1.6. Different drugs assigned to different age groups

Specific first-line therapies are allocated to defined age groups (e.g., under-5s, school-aged children, adults). This could build on existing age-based malaria policies (e.g., pediatric dosing). For instance, one ACT could be prioritized for young children while another is used for adults. This approach is straightforward for providers but may be biologically inefficient for resistance management if age groups overlap epidemiologically. It also complicates treatment when age is uncertain or dosing formulations are limited.

5.1.7. Different drugs given during different time periods (rotation or cycling)

First-line therapies are rotated over time, such as annually or every few years, so that one therapy is used exclusively during a defined period before switching. This approach is easier to implement administratively but provides temporal rather than simultaneous diversification. It may be considered during transition periods or where supply chains cannot support multiple concurrent therapies. Cycling is simple but less effective at slowing resistance, as parasites adapt sequentially. Resistance developed during one cycle may persist into subsequent cycles.

5.1.8. Stepwise introduction of new therapies

New first-line therapies are introduced gradually alongside existing ones, increasing their use over time as systems adapt. This approach is useful when introducing new ACTs or triple ACTs, allowing training, supply chains, and community acceptance to develop progressively. Stepwise introduction reduces operational risk and allows learning by doing. However, it delays full MFT benefits and may initially concentrate drug pressure on older therapies.

5.1.9. Expanding second-line treatment guidelines

This approach broadens eligibility for second-line therapies (e.g., longer post-treatment failure windows or broader inclusion criteria), thereby increasing overall drug diversity in use.
This could be applied in high-resistance or high-burden areas where treatment failure monitoring is strong. It complements, rather than replaces, MFT.
While it increases diversity, it may raise costs, complexity, and the risk of misclassification of treatment failure if diagnostics and follow-up are weak.

Table 4: Summary of the nine approaches

1. Randomization (e.g. as in a clinical trial, by day of week)	4. Distribution by type of health facility	7. Different drugs given during different time periods (rotation or cycling)
2. Free-market procurement and distribution, with subsidies; prescribing done by doctor/patient choice	5. Different drugs in public and private markets	8. Stepwise introduction of new therapies
3. Geographic distribution (by County, Sub-County etc.)	6. Different drugs assigned to different age groups	9. Expanding second-line treatment guidelines (e.g. longer post-treatment window, broader inclusion criteria)

Table 5: Advantages and disadvantages of Phased rotational approach (Kenya's selected model)

MFT Deployment Approach	Advantages	Disadvantages
Segmentation by Geographical Region (geographic distribution by county, sub county)	• Builds on regional disease burden and resistance data. • Enables region-specific resource allocation. • Allows for more targeted and effective treatment of malaria, especially in regions with high resistance.	• High logistical complexity due to concurrent use of multiple ACTs. • Risk of inequitable access or inter-county confusion. • Requires parallel training and supply systems. • Requires training on several drugs based on geographical location
Randomization	Strong evidence generation; balanced drug pressure; minimizes bias	Operationally complex; difficult to scale; provider and patient confusion
Free-market with subsidies. Segmentation by Population (different drugs assigned to different age groups)	• Leverages private sector; patient choice; rapid coverage. • Enables targeted procurement by age or demographic group. • Allows focused monitoring of specific populations.	• Uneven drug use; risk of resistance concentration; regulatory challenges • High complexity in training and reporting. • Increased risk of prescription errors. • Possible confusion among patients and providers.
Geographic distribution	Simple supervision; aligns with county governance; predictable supply	Population movement; uneven resistance pressure; boundary leakage
Facility-type distribution	Logistically straightforward; fits tiered system	Patient movement across facilities; clustered drug pressure
Public vs private market split	Administratively simple; rapid national diversification	Equity concerns; quality control challenges; inconsistent prescribing
Age-group allocation	Easy for providers; builds on existing guidelines	Limited resistance benefit; dosing and age misclassification issues
Temporal rotation (cycling)	Simple to implement; clear communication	Weak resistance prevention; sequential resistance selection

Stepwise introduction	Low operational risk; gradual capacity building	Delayed full MFT impact; short-term pressure on older drugs
Expanded second-line use. Phased Rotational Implementation Approach (Kenya's Selected Model)	Increases drug diversity, useful in high resistance areas. • Sequential 8-month rollout allows for gradual expansion and assessment. • Simplified logistics – one ACT procured and used nationally per rotation. • Reduces risk of resistance through planned periodic drug rotation. Facilitates focused training, supervision, and monitoring.	Higher costs; diagnostic and monitoring complexity • Requires strong coordination during each transition. • Temporary variation in ACTs between counties. • Potential for delays if procurement or funding cycles are disrupted.

5.2 Kenya's Preferred Strategy: Phased Rotational Implementation Approach

After evaluating multiple strategies for introducing Multiple First-Line Therapies (MFTs) to combat malaria, Kenya has adopted a Phased 2-year Rotational Implementation Approach as the most practical and sustainable pathway.

This approach combines geographically phased rollout with scheduled drug rotation, allowing gradual expansion across counties while ensuring sufficient time to assess operational feasibility, monitor effectiveness, and build capacity before nationwide implementation.

The approach is guided by:

- Findings from Therapeutic Efficacy Studies (TES)
- Molecular resistance surveillance data
- Programmatic feasibility and supply chain capacity
- Resource availability and health system readiness

The objective is to distribute drug pressure over time and space, thereby reducing the likelihood of antimalarial resistance while maintaining operational feasibility within Kenya's centralized health system.

5.3 Implementation of the Phased Rotational Approach

Kenya will begin MFT implementation using ASPY (artesunate–pyronaridine) as the first-line antimalarial within the public sector. Existing artemether–lumefantrine (AL) stocks will continue to be used during the early rollout period. AL remains efficacious in Kenya, and ongoing TES will monitor its performance to detect any early indicators of reduced sensitivity.

Phased Implementation Schedule
Implementation will follow an 8-month phased transition plan over a two-year rotation cycle:

- Phase 1 (Months 1–8): ASPY introduced in the first four counties.
- Phase 2 (Months 9–16): Expansion to an additional four counties, based on performance assessments and lessons from Phase 1.
- Phase 3 (Months 17–24): Scale-up to the remaining 39 counties, completing the first two-year rotation.

At the start of the second rotation cycle, all counties will transition to DHAP (dihydroartemisinin–piperaquine) as the first-line antimalarial for the next two years.
This staged approach allows the Ministry of Health (MoH) and the National Malaria Control Programme (NMCP) to:

- Assess implementation performance and lessons learned before each expansion phase.
- Incrementally strengthen healthcare workforce capacity and data systems.
- Manage supply chains effectively with minimal disruption; and
- Optimize learning and adaptation across all phases.

Private Sector Participation
The private sector responsible for nearly one-third of all malaria case management will remain a key partner in MFT implementation.

Private providers will continue to have access to any of the six WHO-prequalified ACTs for uncomplicated malaria, in line with national treatment guidelines. The NMCP will ensure regulatory oversight through continuous engagement, quality assurance, and improved reporting mechanisms to ensure private sector alignment with national MFT objectives.

5.4 Operational Considerations for MFT Implementation

5.4.1 Health Information Systems and Surveillance

To effectively manage a multi-drug environment, Kenya's health information and surveillance systems will be enhanced to capture and report data on multiple ACTs. This will involve:

- Revisions to facility and community-level registers including EMRs.
- Updates to summary reporting tools; and
- Modifications to the Kenya Health Information System (KHIS).

Strengthening pharmacovigilance, TES, and molecular surveillance systems will be critical to monitor:

- Drug efficacy and safety.
- Early signals of resistance; and
- Patterns of treatment failure.

Findings from TES and molecular surveillance will guide evidence-based decision-making for each transition phase and subsequent drug rotation.

5.4.2 Capacity Building for Healthcare Providers

Effective implementation of MFTs requires a well-prepared and knowledgeable health workforce. Capacity-building will be aligned with each rollout phase and rotation cycle.
Key activities will include:

1. Structured pre-rollout and refresher training prior to each 8-month transition.
2. Mentorship and supportive supervision to ensure adherence to diagnostic and treatment protocols.
3. Continuous professional development and integration of MFT content into pre-service medical and nursing curricula; and **in-service curricula**
4. Orientation and training of Community Health Promoters (CHPs) at every transition point to ensure correct prescription, adherence counselling, and accurate data reporting.

This phased training approach ensures that healthcare workers are adequately prepared for each new stage of the rollout.

5.4.3 Community Sensitization

Community sensitization is vital to build public trust and understanding during phased implementation, particularly when different counties are temporarily using different ACTs. Key communication messages will focus on:

- Access to standardized/quality health care, safety, and individual responsibility
- Reinforcing that ASPY and all other ACTs are equally effective and approved by the Ministry of Health.
- Emphasizing that medicine changes are planned and evidence based.
- Encouraging strict adherence to prescribed treatments to prevent resistance; and
- Maintaining confidence in government-led malaria control efforts.

Nationally harmonized communication materials and messaging will be deployed to ensure consistency, clarity, and prevent public confusion during county-level transitions.

5.4.4 Resourcing for Sustainable MFT Commodity Security

To maintain continuous availability of ACTs throughout each 8-month phase and during drug rotation periods, Kenya will strengthen systems for forecasting, quantification, and procurement planning.
Key measures will include:

- Early coordination between NMCP, KEMSA, and county health departments.
- Alignment of donor and government procurement cycles with the 8-month transition schedule.
- Efficient redistribution plans to prevent stockouts or wastage during drug switches; and
- Clear guidance on the management and redeployment of residual stock at the end of each phase.

Financing for MFT commodities will be jointly supported by the Government of Kenya and development partners, ensuring the sustainability of this rotational model.

5.5 Summary: Why the Phased Rotational Approach Fits Kenya's Context

The Phased Rotational Implementation Approach offers a practical, data-driven, and adaptable pathway for Kenya to introduce Multiple First-Line Therapies effectively. It balances scientific rationale with operational feasibility and available resources. This approach:

- Reduces the risk of antimalarial resistance by rotating ACTs every two years.
- Employs 8-month transition intervals to allow learning and operational refinement.
- Aligns with Kenya's centralized procurement and supply systems.
- Facilitates progressive capacity building across counties.
- Ensures continuity of malaria treatment services; and
- Allows smooth transition to DHAP during the second rotation cycle.

By combining this rotational framework with strong surveillance, workforce development, and community engagement, Kenya aims to sustain ACT efficacy and strengthen the resilience of its national malaria control efforts.

6. Supply Chain Operational Plan for MFTs

6.1 Management of stock of antimalarial currently in use (Phase out plan)

A phasing-out plan will be implemented for the drug in stock to avoid wastage. Accurate estimates of the current drug in stock and in the pipeline will be compiled, and future procurements adjusted to ensure that when the switch to the new medicine is made, there are minimal remnant stocks of previous medicine in the system. The remaining stock can be reserved as an alternative drug for pregnant women in the first trimester. The national rotation of a single molecule approach has been agreed upon, and the rotation is proposed to be done as shown in the table below. With the implementation of Seasonal Malaria Chemoprevention (SMC) using SPAQ in Turkana County, NMCP will deploy an alternative ACT during the ASAQ rotation.

Table 6: Proposed two-yearly drug rotation.

Rotation	1st Choice of drug for MFT	Treatment of Uncomplicated malaria in pregnant women
First Rotation	ASPY	AL
Second Rotation	DHA-PPQ	AL

Table 7: Counties as per MFT Schedule in the first rotation

MFT Phase 1	Baringo, Busia, Kakamega & Siaya
MFT Phase 2	Bungoma, Kisumu, Migori & Turkana
MFT Phase 3	Bomet, Elgeyo Marakwet, Embu, Garissa, Homa Bay, Isiolo, Kajiado, Kericho, Kiambu, Kilifi, Kirinyaga, Kisii, Kitui, Kwale, Laikipia, Lamu, Machakos, Makueni, Mandera, Marsabit, Meru, Mombasa, Murang'a, Nairobi, Nakuru, Nandi, Narok, Nyamira, Nyandarua, Nyeri, Samburu, Taita Taveta, Tana River, Tharaka Nithi, Trans Nzoia, Uasin Gishu, Vihiga, Wajir & West Pokot

Table 8: Roadmap of the 2 rotations

Rotation I / Phase	Counties Covered	Estimated Case Load (%)	Period	Duration (Months)	Key Considerations	Proposed Molecules / Medicines
Phase I	4 counties (Baringo, Busia, Kakamega & Siaya)	~37%	Oct 2026 –Sep 2028	24	High-burden, evidence of markers of resistance, managing AL stock in-country, heterogenicity of transmission	Artesunate/Pyronaridine (AS/PY) Artemether–Lumefantrine (AL) for pregnant women
Phase II	4 counties (Bungoma, Kisumu, Migori & Turkana)	~38%	Jun 2027 – Sep 2028	16	High-burden, managing AL stock in-country, vast coverage	Artesunate/Pyronaridine (AS/PY) Artemether–Lumefantrine (AL) for pregnant women
Phase III	Remaining 39 Counties	~22%	Feb 2028 – Sep 2028	8	Final cohort contingent on AL stock levels and results from earlier phases	Artesunate/Pyronaridine (AS/PY) Artemether–Lumefantrine (AL) for pregnant women
	All counties	100%	Oct 2028 - Sept 2030	24	Full rotational roll-out	Dihydroartemisinin–Piperaquine (DHA-PPQ) Artemether–Lumefantrine (AL) for pregnant women

6.2 Procurement and supply chain management

Quantification of MFTs

The National Malaria Control Program (NMCP) under the Ministry of Health, in collaboration with Partners, carries out an annual forecasting and supply planning exercise to establish malaria commodity requirements for the country. This is in its mandate to ensure malaria commodity security across the country.

The quantification exercise for FY 2025 was carried out in November 2025 as part of the annual Forecasting and Supply Planning exercise. Participants for the exercise included NMCP, Kenya Medical Supplies Authority (KEMSA), the National Treasury, Global Fund Local Funding Agent, United States Government (USG) Department of State (DoS) Kenya office and USG's Global Health Supply Chain- Procurement Supply Management (GHSC-PSM) Kenya program.

The objectives of the exercise were to determine the national requirements for malaria HPT for the period 2026–2029. Two additions under malaria pharmaceuticals this year are Artesunate-Pyronaridine (ASPY) and Dihydroartemisinin-Piperaquine (DHAP) as part of the multiple first line treatment (MFT) approach for uncomplicated malaria using ACTs.

Data on closing stock on hand (SoH) at the end of 2024 at both levels i.e. central (KEMSA and MEDS) and peripheral (health facilities), consumption data for the period January to October 2025, and yearly population estimates from the Kenya National Bureau of Statistics were availed. Quantification Analytics Tool (QAT) and Ms Excel were used for generating the forecasts; consumption-based method was used to forecast the requirements for AL.

Adjustments for introduction of ASPY and DHA-PPQ including the most cost-effective formulations that were selected to meet the dosing requirements for all the weight categories in line with the malaria MFT phased approach. Dispersible tablets and powder formulations were reserved for paediatric population.

ASPY will be in two strength formulations i.e. 20mg/ 60mg satchets and 60mg/ 180mg tablets.

DHAP will be in three strength formulations i.e. 20mg/ 160mg and 40mg/ 320mg dispersible tablets for children, and 40mg/ 320mg tablets for adults.

Assumptions:

1. For AL, there are four weight bands whose consumption is split as shown in the table below, for the year 2025 (KHIS 2025).

Table 9: Percentage average consumption per weight band data 2025

Patient weight band	Percentage average consumption per weight band data 2025
5 to < 15 kg	17%
15 to <25 kg	19%
25 to <34 kg	14%
35 kg and above	50%

2. *Malaria commodities pipeline parameters*: The minimum MOS at facility and central level is set at 3 and 6 months respectively, while maximum MOS is 6 and 12 respectively for the two levels.

3. *Commodity consumption data*: Actual consumption data as of October 2025 for the malaria commodities was used to inform quantification where applicable. The data was obtained from KHIS and then adjusted for non-reporting. Substitution was considered for AL.

4. *Stock in rates*: Stock in rates for ACT were obtained from the health facility assessment report 2024.
5. *Commodity prices:* The quantification used the prices available for the various products as of November 2025. Sources for prices included Global Fund SRP, KEMSA, GHSC-PSM and Abt Associates. The prices are subject to change over time.
6. For ASPY, considerations were made for the satchets/ tablets required as per the weight category and formulation strength, split between the two formulations, pack size of ASPY satchets and tablets and the phased approach.
7. For DHA-PPQ, considerations were made for the three strengths, different pack sizes and the second rotation

Table 10: Percentage Quantities Required per Drug Category

Year			2026		2027		2028	
Drug	Unit	% Qty required per drug category	Estimated Quantities	Estimated Costs KES (USD)	Estimated Quantities	Estimated Costs KES (USD)	Estimated Quantities	Estimated Costs KES (USD)
artemether lumefantrine 20mg/ 120mg tabs	blister of 6s	17%	526,432	15,056,990 ($115,823)	281,376	8,048,040 ($61,908)	11,893	341,510 ($2,627)
	blister of 12s	19%	591,811	29,236,870 ($224,899)	316,321	15,629,120 ($120,224)	13,370	660,920 ($5,084)
	blister of 18s	14%	439,714	28,011,490 ($215,473)	235,026	14,974,570 ($115,189)	9,934	634,400 ($4,880)
	blister of 24s	50%	1,534,878	113,737,520 ($874,904)	820,387	60,794,630 ($467,651)	34,675	2,574,260 ($19,802)
artemether lumefantrine 20mg/ 120mg tabs for malaria in pregnancy	blister of 24s	100%	90,000	6,669,000 ($51,300)	90,000	6,669,000 ($51,300)	90,000	6,669,000 ($51,300)
artemether lumefantrine 20mg/ 120mg tabs Total		**100%**	**3,182,834**	**192,712,000 ($1,482,400)**	**1,743,110**	**106,115,360 ($816,272)**	**159,871**	**10,880,090 ($83,693)**
artesunate pyronaridine	20mg/ 60mg sachets	27%	57,975	7,224,230 ($55,571)	523,593	64,716,340 ($497,818)	633,999	78,344,630 ($602,651)
	60mg/ 180mg tabs	73%	160,070	41,784,860 ($321,422)	1,445,656	377,207,220 ($2,901,594)	1,750,490	456,719,510 ($3,513,227)
artesunate pyronaridine Total		**100%**	**218,045**	**49,009,220 ($376,994)**	**1,969,249**	**441,923,560 ($3,399,412)**	**2,384,489**	**535,064,140 ($4,115,878)**

Year			2026		2027		2028	
Drug	Unit	% Qty required per drug category	Estimated Quantities	Estimated Costs KES (USD)	Estimated Quantities	Estimated Costs KES (USD)	Estimated Quantities	Estimated Costs KES (USD)
dihydroartemesinin piperaquin tabs	20mg/ 160mg dispersible	8%	-	–	-	–	64,984	10,574,720 ($81,344)
	40mg/ 320mg dispersible	28%	-	–	-	–	230,814	51,523,290 ($396,333)
	40mg/ 320mg	64%	-	–	-	–	522,321	137,866,040 ($1,060,508)
dihydroartemesinin piperaquin tabs Total		**100%**	**-**	**–**	**-**	**–**	**818,120**	**199,963,990 ($1,538,185)**
ESTIMATED COST OF MFT PER YEAR				**241,721,220 ($1,859,394)**		**548,038,920 ($4,215,684)**		**745,908,220 ($5,737,756)**

Procurement, Distribution and Inventory Management of MFTs

Procurement will be done via KEMSA, with guidance from the Ministry of Health. The supply plans for the malaria MFT HPT will be based on the existing program inventory control system of having a minimum stock level of nine months (6 months at KEMSA and 3 months at the periphery) and a maximum stock level of eighteen months (12 months at KEMSA and 6 months at the periphery).
Last mile distribution will aim at maintaining a steady supply of MFT to facilities while ensuring that resources are used most effectively. The distribution cycle will be agile ensure that drugs reach the health facilities as per the set timelines while maintaining quality and efficacy of the drugs. Real-time delivery updates will be monitored and received through KEMSA iLMIS.
Inventory management of the MFT medicines will be as per existing guidelines, using the revised data capture and reporting tools.

Quality Assurance of MFTs

The quality assurance (QA) process for MFTs involves several key steps to ensure that the treatments meet safety, efficacy, and quality standards. The main quality assurance issues are related to continued product efficacy (drug resistance monitoring), product safety (pharmacovigilance), product quality at registration and/or procurement, post-market surveillance, TES to monitor the efficacy of the drugs deployed as MFTs, and surveillance of adverse events associated with the use of the MFTs.
The NMCP will ensure that MFT drugs are registered in the country by the Pharmacy and Poisons Board (PPB), which also guarantees that the drugs are safe, efficacious, and meet quality standards. The deployment of MFTs will be aligned with national treatment guidelines, WHO recommendations, and public health protocols.

Several key steps will be taken to ensure MFTs are available by maintaining stable procurement and supply chain management.

1. Forecasting, Demand, and Quantification

Quantification of antimalarials for MFT is conducted using the consumption method, using historical data on the consumption of actual commodities to calculate the quantity of commodities that will be needed in the future. Reporting rates and out-of-stock periods will be factored into the calculations. Additionally, for AL, substitution across the four AL presentations/strengths will be considered. This method will likely be used in the quantification of the antimalarials for MFT.
Forecasting was conducted for the MFTs for the first rotation of ASPY and AL and second rotation for DHAP and AL for the period 2026-2028. The forecasted quantity and cost for the different formulations for all the ACTs is listed in table 7 above.

2. MFT Procurement Process

Procurement of malaria commodities in Kenya is conducted by the Kenya Medical Supplies Authority (KEMSA) as well as other international procurement agencies with guidance from the NMCP. International best procurement practices are followed to ensure that appropriate and quality-assured health commodities are obtained at the lowest possible acquisition cost. The Procurement and Supply Management (PSM) unit of the NMCP is responsible for ensuring appropriate coordination of the various funding and procuring agencies to ensure a well-managed pipeline. The procurement of the drugs for MFTs will be done through the usual procurement channels every year for the subsequent cycle. KEMSA and MEDS will work with the NMCP to ensure procurement, customs clearance, and delivery of the drugs to the relevant warehouse, for distribution to health facilities.

3. Distribution

The goal of distribution is to maintain a steady supply of health commodities to facilities while ensuring that resources are used most effectively. The distribution cycle includes the following: customs clearance, transport and delivery, inventory management, and storage. The KEMSA distribution model is agile in ensuring that drugs reach the health facilities as per the set timelines and quality and efficacy of the drugs are well maintained. There are systems in place to monitor ongoing deliveries by tracking

through GPS-enabled electronic padlocks. Real-time delivery updates are monitored and received through the ePOD Application. The Mission for Essential Drugs and Supplies (MEDS) may be an additional distribution entity for USG-funded commodities. The distribution of the subsequent new MFT drug will begin 6 months before the end of the cycle as the previous drug is being phased out.

4. *Inventory Management*

An inventory management system is a cycle of activities comprising ordering, receiving, storage, issuing, and reporting of commodities. Various forms are used for requisitioning and issuing medicines, financial accounting, and preparing consumption and stock balance reports.

5. *Quality Assurance Mechanism*

The quality assurance (QA) process for MFTs involves several key steps to ensure that the treatments meet safety, efficacy, and quality standards. The main quality assurance issues are related to continued product efficacy (drug resistance monitoring), product safety (pharmacovigilance), product quality at registration and/or procurement, post-market surveillance, TES to monitor the efficacy of the drugs deployed as MFTs, and surveillance of adverse events associated with the use of the MFTs.

6. *Regulations of Multiple First-Line Therapies*

The NMCP will ensure that MFT drugs are registered in the country by the Pharmacy and Poisons Board (PPB), which also guarantees that the drugs are safe, efficacious, and meet quality standards. The deployment of MFTs will be aligned with national treatment guidelines, WHO recommendations, and public health protocols.
Kenya's Pharmacovigilance system will be used to monitor and report adverse drug reactions (ADRs), and therapeutic effectiveness associated with antimalarial therapies. This is essential to ensure the safety and efficacy of the treatments over time.

Post-market surveillance system will be used to monitor and report suspected poor-quality ACTs. Suspicion of poor quality may arise from physical examination of a product (e.g., discoloration, disintegration of tablets) or observation of lack of efficacy with a given batch of medicines. Reporting will be done using the forms below, which are also available electronically from PPB:

- Yellow form to capture all suspected adverse drug reactions.
- Pink form to report poor quality health products and medical technologies.
- White alert card-a card that is issued by a healthcare professional (HCP) to a patient who has experienced a serious ADR. It is expected to be always carried by the patient himself or herself and be presented to his clinician, dentist, nurse, pharmacist, or community health promoter at the time of consultation. This will help the HCP to identify patients.

7. Stakeholders Engagement & Collaboration

Identifying key stakeholders and keeping them updated and informed on the MFT strategy will facilitate the adoption and implementation process. Stakeholders will be engaged during the planning, implementation, monitoring, and evaluation of the MFTs. The NMCP will engage stakeholders through National and subnational forums such as case management COE, TWGs, and Kenya National Malaria Forum (KNMF) among others.

There are various stakeholders ranging from the local communities, Ministry of Health, NMCP, County Governments, donors, Regulators, and implementing partners. Engagement of all stakeholders is vital to the successful implementation of this MFT Plan. Public education campaigns targeting health workers and the local communities should emphasize the importance of completing treatment regimens to prevent resistance. Community involvement, through CHPs and local leaders, will help reinforce these messages and encourage behavior change. Communication strategies must be culturally appropriate and delivered through multiple channels to reach diverse audiences, from rural communities to urban areas. Targeted messages for specific groups, such as pregnant women and care givers of young children will ensure that the highest-risk populations are reached. Impact measurement tools will help assess the effectiveness of these campaigns.

Roles of stakeholders in MFT Implementation

Various stakeholders will be engaged for the successful implementation of the MFTs. Key roles include:

- Coordination of MFT implementation:
- National and County Governments
- The NMCP will coordinate all aspects of MFT deployments, including convening review meetings and technical forums like COEs and Sector Working Groups.
- Resource mobilization to fund the MFT implementation budget:
- The NMCP, National Treasury, County treasuries, donors, health development partners, and implementing partners will be involved in resource mobilization, including budget reviews and fundraising to address budget deficits.
- Advocacy and awareness on MFTs.
- Pharmacovigilance and post-market surveillance
- The PPB, NMCP, Counties, and relevant implementing partners will be involved in monitoring the safety and quality of MFTs.

The stakeholders critical for the implementation of antimalarial drug resistance include the following:

Table 11: Stakeholder mapping for MFT Implementation

Stakeholder	Organization	Roles and Responsibilities
National Government	Ministry of Health (National Malaria Control Program, Health Information System Unit, Division of Reproductive Health, Division of Child Health, Division of Health Financing, National Vaccine and Immunization Program, Division of Health Promotion, Division of Community Health Services, Division of Health Informatics, Digital Health, Directorate of Health Products and technology (HPT), Kenya Medical Supplies Agency), The National Treasury, Ministry of Education and other relevant line ministries including Kenyan disciplined forces offering health care	Develop national policies, strategies, and guidelines; resource mobilization; oversight and coordination of malaria and health programs; procurement and supply chain management; data management; financing; health workforce regulation and deployment.
National Government Administrative Officers (NGAO)	Regional Commissioners, County Commissioners, Chiefs, Assistant Chiefs, Village Elders	To mobilize communities, enforce public health measures, Support health systems to ensure successful implementation of MFTs, Promote trust in government-approved malaria programs (UHC)
Political Players	Parliamentary Committee on Health, County Assembly Health Committees, Political Leaders	Policy formulation and legislation; budget allocation and approval; political support and advocacy for malaria control and health programs.
Faith-Based Organization (FBO)	Kenya Conference of Catholic Bishops (KCCB), MEDs, Christian Health Association of Kenya (CHAK), Supreme Council of Kenya Muslims (SUPKEM) National Council of Churches of Kenya (NCCK) and other religious institutions.	Provide health services especially in underserved areas; community mobilization and health education; advocacy for health-seeking behavior and service uptake
Counties	Council of Governors (COG), County Treasury, County Health Departments, County Departments of Education, County Assembly Health Committees	Implementation of malaria control programs; health service delivery; planning and budgeting at county level; recruitment and deployment of health workers; community engagement.
Health Insurance	Social Health Authorities (SHA/SHIF), Insurance companies (Health insurance)	Provide financial protection and access to malaria and health services through health insurance schemes; expand health coverage; manage claims and payments.
Regulatory bodies	Pharmacy & Poisons Board (PPB), Kenya Medical Pharmacy & Dentists Council (KMPDC), Clinical Officers council (COC), Nursing Council of Kenya, and any other relevant body	Regulate training, licensing, and practice of health professionals; ensure quality and safety of medical products and health services; enforcement of standards.
Professional Association Bodies & Health Trade Unions	Kenya Medical Association (KMA), Pharmaceutical Society of Kenya (PSK), Kenya Pharmaceutical Association (KPA), National Nurses Association of Kenya (NNAK), Kenya Progressive Nurse Association KPNA, The Midwives Association of Kenya (MAK), Kenya Clinical Officers' Association (KCOA), Kenya Medical Laboratory Technicians and Technologist Board (KMLTTB), Community Health Services & Development Officers Association CHESOA, Kenya Union of Clinical Officers (KUCO), Kenya Medical	Advocate for professional development, fair labor practices, and rights of health workers; support continuous medical education; contribute to policy development.

Stakeholder	Organization	Roles and Responsibilities
	Practitioners, Pharmacists and Dentists Union (KMPDU), Kenya National Union of Nurses, Kenya National Union of Medical Laboratory Officers, Kenya National Union of Pharmaceutical Technologists, Kenya Union of Nutritionists and Dietetics, Kenya Health Professionals Societies	
Private Sector	Private hospitals and pharmacies, The Kenya NGOs Alliance Against Malaria (KeNAAM), Kenya Healthcare Federation (KHF), Health NGOs' Network (HENNET), Manufacturers of antimalarials and diagnostic products, Importers and wholesalers, Drug outlets	Provide health services and products; innovation and investment in health technologies; support commodity supply chain; contribute to surveillance and reporting.
Research and Academic Institutions	KEMRI and partners, Strathmore University, Mount Kenya University, Moi University, University of Nairobi, Kenya Medical Training Colleges (KMTCs)	Conduct operational and implementation research; training and capacity building; evidence generation to inform policy and practice; monitoring and evaluation.
Development and technical partners for health	U.S. Government Department of State CDC, UNITAID, the Global Fund to fight HIV AIDs, Tuberculosis and Malaria, World Health Organization	Provide technical and financial support; support capacity building and health systems strengthening; promote best practices and global health standards.
Community	Civil Society Organizations (CSOs), Community Based Organizations (CBOs), CHAs and CHPs, **People Living with Disabilities (PLWD)**, Human Rights Organizations, Households, community members and vulnerable populations.	Demand creation and service uptake; participation in health promotion and prevention activities; community-based surveillance; feedback and accountability mechanisms.

8. Social Behavior Change (SBC)

Social Behaviour Change (SBC) for Multiple First-Line Malaria Treatment (MFT) helps create awareness, understanding, and acceptance of the new malaria treatment options among people in malaria-endemic areas. It uses clear messages and community engagement through. Advocacy: Effective communication, Behavior change communication and Community participation & engagement.

8.1 Social mobilization channels to promote the uptake of MFTs

1. Stakeholders Engagement

The national, county and subcounty stakeholders mapped for the awareness and acceptance meetings: The SBC messaging will focus on:

- Promoting clear understanding that MFTs are safe, effective, and approved by MOH to strengthen malaria treatment in the country.
- Promote community acceptance through open interpersonal communication at the household level and facility by the health care providers.
- Reinforcement and aligning with proper treatment practices Test treat track and complete the dose.

2. Interpersonal Communication for CHPs in the household and community dialogues

Key Messages on MFTs and Malaria Care

- Treat every fever promptly — go to the health facility for testing and treatment.
- Always complete all malaria doses, even if you feel better.
- Return to the facility after treatment for a check-up to ensure full recovery.
- Accept the malaria medicine given; multiple approved treatments (MFTs) ensure effective care for everyone.

The target audience for the MFTs will be as follows:

Primary audience: Household heads who are responsible for their households. This will include men and women, fathers, mothers, grandparents, guardians, child headed households and caregivers.

Secondary audience: Health workers, community leaders, NGAO, teachers, women's groups, men's groups, youth groups, religious leaders, media representatives, and key community stakeholders, etc.

Tertiary audience: County leadership, Members of Parliament (MPs), Policy Makers, Members of County Assembly, Multilateral/Bilateral Agencies, NGOs, private sector, County Administration, National Government Administrative Officers (NGAO) Departments and Agencies (MDAs), Media, etc.

The SBC implementation plan is necessary for the proper planning, execution, and evaluation of strategies aimed at improving malaria treatment adherence, compliance, and awareness amongst the target population. The SBC Committee of Experts (COE) will develop a comprehensive implementation plan of action and budget that will guide the deployment of SBC interventions and activities to support the introduction and implementation of MFTs. Monitoring and evaluation mechanisms (Social Listening Tools) will be applied to measure whether the SBC activities are impactful in contributing towards the uptake of MFT.

3. Channels of Communication

1) Interpersonal communication for healthcare workers/community health promoters
2) Mass media (radio, TV)

3) Print Media (Newspapers, Policy briefs, IEC materials)
4) Social Media forums (WhatsApp, Facebook and Instagram)
5) Community Mobilization/engagement (Chiefs barazas, religious gatherings, Public Address Systems)

Table 12: MFT Implementation framework

Activities	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	Responsible
Thematic Area 1: Approaches to Introduction to MFTs						
Stakeholder Engagement and Planning Workshops: Involves consultations with local health officials (CHMTs), private sector, community leaders, and partners to plan the rotational cycles, ensuring alignment with local needs	X	X				MoH (NMCP), CHMTs, Partners, Community Leaders
Training of Health Workers: Build capacity of health personnel through integrated training that includes updated MFT protocols, rotational implementation, social and behavior change (SBC) messaging, monitoring and evaluation (M&E), and other key programmatic areas to ensure sustainability.	X	X			X	MoH, County Health Depts, KMTCs, Regulatory Councils
Community Awareness Campaigns: Design and execute communication strategies to educate communities about the rotational treatment schedule and its benefits	X	X	X	X	X	MoH (Health Promotion Division), CSOs, CHPs, SBCC Partners
Procurement and Logistics Management: Purchasing of antimalarial drugs and supplies	X	X	X	X	X	MoH (HPT), KEMSA, Global Fund, Development Partners
Nationwide Rollout of Treatment Cycles (First Cycle)		X				MoH, County Governments
Monitoring and Evaluation of the First Cycle		X	X			MoH (Health Informatics), KEMRI, M&E Units
Nationwide Rollout of Subsequent Cycles			X	X	X	MoH, County Health Departments
Periodic Review and Reporting: At the end of each full rotation, assess the impact, challenges, and outcomes to refine future rotations and report findings to stakeholders for decision-making			X	X	X	MoH, M&E Units, Implementing Partners, Stakeholders
Operational Research on the Effectiveness of MFTs: To guide further deliberations	X	X	X	X	X	
Thematic Area 2: Identifying antimalaria drugs for MFTs in Kenya						
Completed	Rotation 1: ASPY/AL Rotation 2: DHAP/AL					

	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	Responsible
Thematic Area 3: Procurement and Supply Chain Management for MFTs						
Post-marketing surveillance for MFTs		X	X	X	X	PPB, KEMRI, MoH (Pharmacovigilance), NMCP
Inclusion of MFTs in the national treatment guidelines and KMS	X	X				MoH (Guidelines Review Committee), WHO, KMPDC
Forecasting and supply planning	X	X	X	X	X	MoH (HPT), KEMSA, Counties
Procurement of MFTs		X	X	X	X	MoH, KEMSA, Development Partners
Distribution planning	X	X	X	X	X	MoH (HPT), KEMSA, County Health Depts
Supply chain audits and regular pipeline monitoring	X	X	X	X	X	MoH (Supply Chain Unit), KEMSA, Donors
Expand the national LMIS to include MFTs	X	X	X			MoH (Health Informatics & Digital Health), KEMSA, LMIS Vendors

Thematic Area 5: Advocacy, Communication, SBC						
Activities	**2025/2026**	**2026/2027**	**2027/2028**	**2028/2029**	**2029/2030**	**Responsible**
Development of malaria MFT key messages	X	X	X	X	X	NMCP, SBC COE, Partners, Counties
Capacity building Health care providers & CHPs on SBC strategies	X	X	X	X	X	NMCP, SBC COE, Partners, Counties
Advocacy engagements	X	X	X	X	X	NMCP, SBC COE, Partners, Counties, Media Houses
Public Communications	X	X	X	X	X	NMCP, SBC COE, Partners, Counties, Media Houses
Community engagement and social mobilization	X	X	X	X	X	NMCP, SBC COE, Partners, Counties, Media Houses
Monitoring & Evaluation	X	X	X	X	X	NMCP, SBC COE, Partners, Counties, Media Houses
Thematic Area 6: Financing the MFT plan						
Resource mobilization, costing updates, financial planning, and coordination with domestic and external funding sources	X			X		

Thematic Area 7: M&E						
Activities	**2025/20**	**2026/20**	**2027/20**	**2028/20**	**2029/20**	**Responsible**
Revise and update MOH data reporting tools and EMRs to capture MFT data with LMIS linkage	X					NMCP/Division of Health Informatics
Evaluate MFT adoption, fidelity, and impact biennially		X		X		NMCP/Counties/Partners
Conduct routine genomic surveillance, TES, sentinel surveillance for resistance mutations, lot-to-lot testing, post-market surveillance, and health facility assessments	X	X	X	X	X	NMCP/Counties/Partners
Incorporate end-user acceptability and provider feedback mechanisms into M&E	X	X	X	X	X	NMCP/Counties/Partners

8.2 MFT Training and Orientation Plan

1. Purpose

The purpose of this Training and Orientation Plan is to ensure a competent and prepared health workforce for effective implementation of Multiple First-Line Therapies (MFT) in malaria case management. The plan aims to standardize knowledge and practice across public and private sectors, support correct diagnosis, prescription, adherence counselling, pharmacovigilance, data capture and reporting, and institutionalize MFT capacity building within pre-service and in-service systems.

Expected Outcomes

- Health workers and CHPs are adequately prepared to implement MFT.
- Standardized malaria case management practices.
- Improved adherence, reporting, and pharmacovigilance; and
- Strengthened community engagement and acceptance of MFT.

2. Training and Orientation Model

A multi-tiered model will be adopted, integrating pre-service training, in-service training, Community Health Promoter (CHP) orientation, mentorship and supportive supervision to ensure scalability, sustainability, and quality of MFT implementation.

3. Pre-Service Training Strategy

The content of MFT guidelines will be integrated into healthcare workers training curricula to ensure new graduates enter service fully oriented. Training materials will be updated to cover MFT principles, rational ACT use and resistance prevention, and Test–Treat–Track malaria case management. This will be implemented in collaboration with training institutions, regulatory bodies, and relevant MoH departments.

4. In-Service Training for Health Workers

In-service training will be conducted in phases aligned with MFT rollout and drug rotation cycles, beginning with stakeholder engagement at national, county, and sub-county levels. Target cadres include clinicians, nurses, pharmacists, laboratory personnel, and facility managers. Training will focus on MFT treatment protocols, drug rotation rationale, case management, adherence counselling, pharmacovigilance, and use of updated reporting tools and EMRs/KHIS. A cascade training approach will be used (National → County → Sub-county → Health Facility).

5. Training and Orientation of Community Health Promoters (CHPs)

Community Health Promoters will be oriented at every MFT transition point to support community-level implementation. Orientation will equip CHPs to explain MFT and use of different ACTs, reinforce treatment adherence and follow-up, identify and refer adverse drug reactions, and support household-level data capture using eCHIS.

6. Supportive Supervision and Mentorship

Supportive supervision will be integrated into routine malaria supervision at all levels to reinforce correct MFT implementation, address gaps through on-site mentorship, and promote continuous quality improvement using routine data.

9. Financing the MFT Plan

The introduction of MFTs in Kenya to combat antimalarial resistance requires additional financial resources. Implementation of MFTs will also necessitate the review and revision of long-term procurement plans by the government and its partners. These changes can require substantial costs that must be budgeted for during the planning stage to ensure a seamless transition and continued service delivery to clients. It is also important to take into consideration the sustainability of the identified approach for the uninterrupted provision of services to patients.

Through the estimation of the necessary human resources, infrastructure, and training needs, stakeholders can develop a comprehensive budget. Furthermore, identifying diverse financing sources, ranging from government funding to development partners, will guide the sustainability of the MFT plan, tailored to the specific implementation approach of the country. Determining the resource requirements will require all activities related to the implementation of the MFT plan to be identified and linked to existing activities while new activities will be costed. The activity-based costing (ABC) methodology will be used and will entail the identification, measurement, and valuing of resources consumed by each activity. The resource requirements for the MFT Plan will be detailed, resources available will be analyzed against the resource gap, and a resource mobilization strategy will be developed to address the resource gap.

To address the sustainability of this intervention, the government at both national and county levels must take up a big role in funding the activities.

Table 13: Budgetary Components for Malaria Program Implementation

Thematic Areas	FY25/26	FY26/27	FY27/28	FY28/29	FY29/30	Total
Social Behaviour Change	**985,000**	**5,255,000**	**380,000**	**380,000**	**380,000**	**7,380,000**
Capacity Building on SBC Strategies	635,000	940,000				1,575,000
Development of Malaria MFT Key Messages		3,535,000				3,535,000
Media and Community Dissemination of MFT Messages	350,000	780,000	380,000	380,000	380,000	2,270,000
Capacity Strengthening Activities		**10,170,000**				**10,170,000**
Conduct Orientation of County and sub-County TOTs		1,880,000				1,880,000
Conduct Orientation of County and sub-County TOTs (Facilitation)		705,000				705,000
Conduct Orientation of master TOTs		6,000,000				6,000,000
Conduct Orientation of master TOTs-Facilitation		240,000				240,000
Train CHPs in updated case management guidelines		290,000				290,000
Train CHPs on updated case management guidelines (Facilitation)		60,000				60,000
Train Health workers on updated case management guidelines		290,000				290,000
Train Health workers on updated case management guidelines (Facilitation)		705,000				705,000

Leadership, Governance & Coordination	**13,160,000**	**23,330,000**	**310,000**	**150,000**	**150,000**	**37,100,000**
Collaborate with Pharmacy and Poisons Board and other authorities on regulatory compliance		160,000				160,000
Conduct quarterly coordination meetings	75,000	75,000	75,000	75,000	75,000	375,000
Include private sector in the roll out and implementation exercise			160,000			160,000
Include private sector in the roll out and implementation exercise		160,000				160,000
Integrate MFT into County & Sub-county TWGs and CASIC)	30,000	30,000	30,000	30,000	30,000	150,000
Integrate MFT into technical steering committee (COEs and NASIC)	45,000	45,000	45,000	45,000	45,000	225,000
Printing of revised guidelines that include MFT, SOPs and job aids	11,160,000	22,320,000				33,480,000
Update pre-service curriculum with MFT		300,000				300,000
Update case management materials and In-service curriculum with MFT	1,750,000					1,750,000
Update mentorship guide, supportive supervision manual, and tool kit		240,000				240,000
Update TORs to Incorporate MFTs	100,000					100,000
HIS and Data Systems	**55,000**	**112,900,000**	**223,200,000**	**20,000**	**36,000**	**336,211,000**
Data entry and use training (SCHRIOs, Clerks)		660,000		20,000	36,000	716,000
Integrate MFT indicators into DHIS2/LMIS	55,000					55,000
Procure digital hardware for MFT implementation and reporting in Taifa care.		111,600,000	223,200,000			334,800,000
Quarterly data review meetings		640,000				640,000
Financing & Resource Mobilization	**200,000**	**400,000**	**2,350,000**	**4,700,000**		**7,650,000**
Include MFT in AWP/CIDP, partner mapping, advocacy	200,000	400,000	2,350,000	4,700,000		7,650,000
Service Delivery & Quality of Care		**10,062,000**	**1,340,000**	**2,680,000**	**1,340,000**	**15,422,000**
Conduct supportive supervision		2,680,000	1,340,000	2,680,000	1,340,000	8,040,000
MFT guidelines & IEC materials		6,696,000				6,696,000
Revision of pre-service curriculum		310,000				310,000
Sensitize and training of laboratory staff on Malaria diagnostics & QA		376,000				376,000

Advocacy & Community Engagement		**310,000**		**1,270,000**		**1,580,000**
Advocacy Engagements				1,270,000		1,270,000
Develop SBC strategy & materials		310,000				310,000
Monitoring & Evaluation and Reporting Tools	**60,000**	**23,370,000**	**1,020,000**	**1,020,000**	**1,020,000**	**26,490,000**
Align EMR data elements with new MOH registers		120,000				120,000
Integrate MFT post marketing surveillance into PPB system		800,000				800,000
Monitoring and Evaluation of MFT Interventions		1,020,000	1,020,000	1,020,000	1,020,000	4,080,000
Orient facility & county users on updated tools	60,000					60,000
Printing and distribution of revised tools		21,120,000				21,120,000
Review and update MOH reporting tools		310,000				310,000
Supply Chain Management	**242,270,960**	**549,368,920**	**746,928,280**	**1,020,000**	**1,020,000**	**1,540,608,160**
artemether lumefantrine 20mg/ 120mg tabs (blister of 6s)	15,056,990	8,048,040	341,510	TBD	TBD	23,446,540
artemether lumefantrine 20mg/ 120mg tabs (blister of 12s)	29,236,870	15,629,120	660,920	TBD	TBD	45,526,910
artemether lumefantrine 20mg/ 120mg tabs (blister of 18s)	28,011,490	14,974,570	634,400	TBD	TBD	43,620,460
artemether lumefantrine 20mg/ 120mg tabs (blister of 24s)	113,737,520	60,794,630	2,574,260	TBD	TBD	177,106,410
artemether lumefantrine 20mg/ 120mg tabs for malaria in pregnancy (blister of 24s)	6,669,000	6,669,000	6,669,000	TBD	TBD	20,007,000
artesunate pyronaridine (20mg/ 60mg sachets)	7,224,230	64,716,340	78,344,630	TBD	TBD	150,285,200
artesunate pyronaridine (60mg/ 180mg tabs)	41,784,860	377,207,220	456,719,510	TBD	TBD	875,711,590
dihydroartemesinin piperaquine tabs (20mg/ 160mg dispersible)	0	0	10,574,720	TBD	TBD	10,574,720
dihydroartemesinin piperaquine tabs (40mg/ 320mg dispersible)	0	0	51,523,290	TBD	TBD	51,523,290
dihydroartemesinin piperaquine tabs (40mg/ 320mg)	0	0	137,866,040	TBD	TBD	137,866,040
Conduct monthly stock reviews (County)	120,000	240,000	240,000	240,000	240,000	1,080,000
Conduct monthly stock reviews (National)	240,000	480,000	480,000	480,000	480,000	2,160,000
Conduct quality assurance audits for MFTs		150,000				150,000
Integrate MFT indicators into DHIS2/LMIS		40,000				40,000

Sensitize and train staff on MFT consumption data management	30,000					30,000
Sensitize and train staff on MFT consumption data management (Facilitation)		60,000				60,000
Train facility in-charge & SCM officers on stock management	50,000					50,000
Train facility in-charge & SCM officers on stock management (Facilitation)	60,000					60,000
Train staff on MFT reporting and LMIS requisition	50,000					50,000
Train staff on MFT reporting and LMIS requisition (Facilitation)		60,000				60,000
Undertake Annual Forecasting and Quantification		300,000	300,000	300,000	300,000	1,200,000
Grand Total (KES)	**256,730,960**	**735,165,920**	**975,528,280**	**11,240,000**	**3,946,000**	**1,982,611,160**

Table 14: Summarized BUDGET

Thematic Areas	FY2025/26	FY2026/27	FY2027/28	FY2028/29	FY2029/30	Grand Total
Social Behaviour Change	985,000	5,255,000	380,000	380,000	380,000	7,380,000
Capacity Strengthening Activities		10,170,000				10,170,000
Leadership, Governance & Coordination	13,160,000	23,330,000	310,000	150,000	150,000	37,100,000
HIS and Data Systems	55,000	112,900,000	223,200,000	20,000	36,000	336,211,000
Financing & Resource Mobilization	200,000	400,000	2,350,000	4,700,000		7,650,000
Service Delivery & Quality of Care		10,062,000	1,340,000	2,680,000	1,340,000	15,422,000
Advocacy & Community Engagement		310,000		1,270,000		1,580,000
Monitoring & Evaluation and Reporting Tools	60,000	23,370,000	1,020,000	1,020,000	1,020,000	26,490,000
Supply Chain Management	242,270,960	549,368,920	746,928,280	1,020,000	1,020,000	1,540,608,160
Grand Total (KES)	**256,730,960**	**735,165,920**	**975,528,280**	**11,240,000**	**3,946,000**	**1,982,611,160**

10. Monitoring and Evaluation of the MFT Plan

The Monitoring and Evaluation (M&E) implementation of the MFT plan is a critical framework designed to systematically assess the effectiveness, efficiency, and impact of adopting MFTs for malaria treatment in Kenya. MFT is a strategic approach aimed at combating drug resistance by utilizing a diversified set of treatment regimens rather than relying on a single therapy. Given the complex nature of malaria control and the potential for variability in treatment efficacy across different regions, the M&E plan is essential for ensuring that the implementation process is data-driven, responsive, and aligned with public health objectives.

The MFT as an intervention ensures malaria patients receive appropriate treatment, with efficacious drugs. Antimalarial drug efficacy and resistance monitoring in Kenya has not been as frequent as stated in the strategy hence the need for a robust post-market quality surveillance program to be in place. The quality of ACTs should be monitored and managed along the supply chain, through sampling and testing at selected sentinel sites.

The NMCP shall monitor the progress in MFT implementation using the outlined indicators and conduct periodic evaluations to assess if the introduction of MFT is achieving the overall objective of preventing antimalaria drug resistance thus leading to better treatment outcomes. The MFT M&E plan provides a structured mechanism to track progress, evaluate outcomes, and inform adjustments to the program based on real-time evidence; survey-based data, KEMSA iLMIS, KHIS, sentinel sites, and training data contributing to improved health outcomes and the sustainability of malaria treatment efforts.

The monitoring of the implementation of MFTs is designed to track the input, output performance, outcomes, and operational efficiency of introducing MFTs. The program will monitor key indicators such as drug efficacy, safety, resistance patterns, treatment outcomes at periodic intervals as outlined in the protocol, treatment adherence and adverse drug reaction and cost effectiveness of MFT implementation to ensure financial sustainability.

Data will be collected from healthcare facilities and supply chain operations, to assess both clinical and logistical aspects of MFT deployment. This monitoring will ensure that the treatment strategy effectively addresses drug resistance, improves patient outcomes, and provides actionable insights for continuous program improvement and policy adjustments. Program evaluation will be conducted to track changes in program performance over time.

10.1 Data sources and reporting systems

The M&E performance framework outlines the various data sources that will be used to measure the progress of the MFT indicators. These include routine health information management systems aligned to the DHA as well as specific studies and surveys such as genomic surveillance, and health facility assessment surveys among others.

Routine health information tracks health facility and community malaria service delivery statistics, commodity management data for commodity pipeline monitoring. Commodities tracked in the pipeline include mRDTs, LLINs, and antimalarials incorporating consumption, stock levels, losses, and expiries. Digital platforms and EMR integration will be scaled up for real-time facility and community-level reporting, with interoperability of EMR and KHIS assured.

Periodic health facility surveys will be undertaken to assess case management practices including diagnosis, treatment, prescription practices, as well as supply chain management aspects of malaria commodities incorporating the rotational multiple first line deployment. Genomic surveillance will be done to monitor the emergence of molecular markers of drug resistance or the emergence and spread of relevant molecular markers. Pharmacovigilance systems will be leveraged to capture and analyze safety and or adverse drug reactions associated with MFT medicines.

10.2 Strategies for demonstrating program outcome and impact

The MFT program will be deemed successful if the efficacy of the first-line ACTs is >95%, delayed resistance, and nationwide implementation of MFT. Mixed-method evaluations (quantitative monitoring complemented by qualitative patient/provider interviews) will be used to capture perceptions, barriers, and enablers of MFT adoption. Genomic surveillance will be used to detect resistance markers while biennial TES will be conducted to evaluate the efficacy of antimalarials.

10.3 Plans for dissemination and use of information

Effective dissemination of information will be critical for successful MFT implementation. Communication efforts will focus on enhancing awareness and understanding of the MFT approach, promoting evidence-based decision-making for treatment guidelines and policy adaptation, fostering stakeholder engagement across all levels (national, county, health facility, and community), and driving continuous program improvement through the integration of feedback and lessons learned. Key data and information to be disseminated will include:

- Efficacy and safety data from Therapeutic Efficacy Studies (TES)
- Genomic surveillance findings on antimalarial drug resistance
- Operational data on MFT distribution, uptake, and logistics performance
- Lessons learned and best practices from pilot implementation
- Behavioral and perception insights from healthcare providers and patients regarding treatment adherence and acceptability
- Policy implications derived from MFT outcomes on drug resistance patterns and malaria burden, to inform the NMCP and the Ministry of Health
- Dissemination will leverage multiple platforms and forums, including:
- Consultative work planning and review meetings
- Capacity-strengthening sessions and learning exchanges
- Interactive open-access dashboards and periodic bulletins visualizing program progress and resistance trends.
- County-level review forums to institutionalize feedback loops with frontline health workers, communities, and supply chain actors.
- The biennial Kenya Malaria Forum, as well as regional and international conferences
- Commemorative events such as World Malaria Day
- Print and broadcast media, and digital platforms including the NMCP website (www.nmcp.or.ke) and the Ministry of Health website (www.health.go.ke)

10.4 Data quality constraints and potential solutions

Malariadata quality may be affected by changes in documentation practices following the introduction of new molecules under the MFT strategy. To ensure accurate and consistent recording of treatment data, health care workers will be sensitized on the updated tools using job aids and mentorship. Periodic supportive supervision will further reinforce correct use and understanding of the revised reporting tools.

Potential challenges include the unavailability of standardized reporting tools in some health facilities, which may result in underreporting of MFT-related data; limited interoperability between electronic medical records (EMRs) and health information systems (HIS) in high-volume facilities; and low reporting rates from private sector providers, particularly regarding malaria treatment data.

These challenges can be mitigated through timely revision and dissemination of data collection tools to include new molecules, ensuring adequate supply of reporting tools across all facilities, and strengthening engagement of the private sector in malaria case management and data reporting. Additionally, annual Data Quality Assessments (DQAs) focusing on MFT data elements will be conducted. Enhancement of the electronic Community Health Information System (eCHIS) will enable capture of treatment adherence and outcomes that are often missed at facility level. Continuous capacity building for health care workers (HCWs) and community health promoters (CHPs) will also be prioritized to improve MFT data capture, analysis, and utilization for evidence-based decision-making.

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12. Appendices

Appendix 1: List of Contributors

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Appendix 2: Internal Validation by High Level Ministry of Health Leadership

No.	Name	Designation
1.	Dr. Patrick Amoth	Director General
2.	Dr. Gondi Joel	Director, Promotive and Preventive Health Services
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5.	Dr. Omar	Director
6.	Dr. Lucy Musyoka	Director, Health Standards and Compliance
7.	Dr. Pauline Duya	Director, Traditional and Alternative Medicine
8.	Dr. Norbert Otieno Abuya	Health and Wellness
9.	Dr. Maureen Kimani	Head, Community Health Services
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11.	Dr. Benjamin Murkomen	Head, Port Health
12.	Dr. Nancy Njeru	Director, Healthcare Financing, Digital Health, Policy and Research
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Appendix 4: Timeline of MFT Rollout

Link to Live Chart:
bit.ly/MFT-Chart

MFT Implementation Schedule

Select a period to highlight at the right. | **Current Month** 4 | Plan Duration | Actual Start | % Complete | Actual (beyond plan) | % Complete (beyond plan)

ACTIVITY	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE	Period in Months: Oct-25 (1)	Nov-25 (2)	Dec-25 (3)	Jan-26 (4)	Feb-26 (5)	Mar-26 (6)	Apr-26 (7)	May-26 (8)	Jun-26 (9)	Jul-26 (10)	Aug-26 (11)	Sep-26 (12)	Oct-26 (13)	Nov-26 (14)	Dec-26 (15)	Jan-27 (16)	Feb-27 (17)	Mar-27 (18)	Apr-27 (19)	May-27 (20)	Jun-27 (21)	Jul-27 (22)	Aug-27 (23)	Sep-27 (24)	Oct-27 (25)	Nov-27 (26)	Dec-27 (27)	Jan-28 (28)	Feb-28 (29)	Mar-28 (30)	Apr-28 (31)	May-28 (32)	Jun-28 (33)	Jul-28 (34)	Aug-28 (35)	Sep-28 (36)	Oct-28 (37)	Nov-28 (38)	Dec-28 (39)
Finalization of MFT implementation plan	1	2	2	1	**80%**																																						
Validation of MFT plan	2	1	2	1	**50%**																																							
Begin requisition and procurement for ASPY for MFT 1 counties	4	9	4	9	**0%**																																							
Procurement for ASPY for MFT 1 counties	4	9	4	9	**0%**																																							
Anticipate arrival of ASPY in-country and last mile distribution to MFT1 counties	12	1	12	1	**0%**																																							
Begin requisition and procurement for ASPY for MFT2 counties	13	9	13	9	**0%**																																							
Initiation of ASPY by MFT1 counties in October 2026	22	3	22	3	**0%**																																							
Monthly stock status monitoring of all ACTs	22	12	22	12	**0%**																																							
Anticipate arrival of ASPY in-country and last mile distribution to MFT2 counties	22	1	22	1	**0%**																																							
Initiation of ASPY by MFT2 counties in June 2027	23	3	23	3	**0%**																																							
Conduct FASP	23	3	23	3	**0%**																																							
Begin requisition and procurement of DHAP for the 2nd rotation	1	5	1	4	**0%**																																							
Discussions to happen on: New ACT molecules, AL stock in-country, Therapeutic Efficacy Studies (TES),	1	5	1	4	**0%**																																							

MFT Implementation Schedule

Select a period to highlight at the right.

Current Month 4 | Plan Duration | Actual Start | % Complete | Actual (beyond plan) | % Complete (beyond plan)

ACTIVITY	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE
Genomic surveillance, Compare case burden with respect to ongoing interventions (IRS, ITN, malaria vaccine coverage), Performance review of MFT1 and MFT2 roll out, End term review of the current malaria strategy					
Initiation of ASPY by MFT3 counties in February 2028 (will be dependent on AL stock status)	29	1	29	1	**0%**
Initiate development of Kenya Malaria Strategy 2028-2032 in January 2028	1	5	1	4	**0%**
Anticipate arrival of DHAP in-country and last mile distribution to all counties in September 2028 to all Start of rotation 2 in October 2028 (roll out of DHAP) in all counties	1	5	1	4	**0%**

Period in Months

Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27	Nov-27	Dec-27	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39

Performance Framework for MFT Implementation (2024–2030)

Thematic Area	Strategic Objective	Results Level	Indicator	Definition / Rationale	Baseline (2024)	Targets						Means of Verification	Frequency	Responsible	Disaggregation
						24/25	25/26	26/27	27/28	28/29	29/30				
1. Approaches to Introduction of MFTs	Strengthen national and county-level readiness for MFT rollout.	Output	% of counties implementing MFT protocols	Counties that have fully adopted MFT protocols in at least 80% of facilities	0%			8.5%	17%	100%	100%	County Implementation Reports, DHIS2	Quarterly	NMCP, CHMTs	By county, facility type
		Output	% of HCWs trained on MFT	Training coverage on MFT by cadre (HCWs)	0%			80%	85%	90%	95%	Training reports	Quarterly	NMCP, CHMTs	Cadre
		Output	% of CHPs trained on MFT	Training coverage on MFT by County (CHPs)	0%			80%	85%	90%	95%	Training reports	Quarterly	NMCP, CHMTs	County

Thematic Area	Strategic Objective	Results Level	Indicator	Definition / Rationale	Baseline (2024)	Targets						Means of Verification	Frequency	Responsible	Disaggregation
						24/25	25/26	26/27	27/28	28/29	29/30				
			% of health facilities reporting the use of ACTs as per MFT deployment approach	Initiation and deployment of the MFT approach as per the schedule	0%			80%	85%	90%	95%	Training reports	Quarterly	NMCP, CHMTs	Facility type & ownership
			% of health facilities with trained Health workers on MFT	Health care worker training coverage	0%			80%	85%	90%	95%	Training reports	Quarterly	NMCP, CHMTs	Facility type & ownership
		Outcome	% of patients with confirmed uncomplicated malaria who received first-line antimalarial treatment according to the MFT strategy selected	Adherence to the Multi-First-Line Therapy (MFT) treatment	0%			70%	80%	85%	85%	DHIS2/ KHIS	Monthly	NMCP	ACT & County

Thematic Area	Strategic Objective	Results Level	Indicator	Definition / Rationale	Baseline (2024)	Targets						Means of Verification	Frequency	Responsible	Disaggregation
						24/25	25/26	26/27	27/28	28/29	29/30				
2. Selection of Antimalarial Drugs	Ensure all ACT formulations for MFTs are registered	Output	# of ACTs formulations registered to support MFT approach	ACTs meeting safety, efficacy, and registration criteria	4			6	6	6	6	PPB Register, NMCP reports	Annual	NMCP, PPB	By molecule, manufacturer
		Output	Inclusion of MFT in national treatment guidelines	National policy reflects MFT strategy	No			Yes	—	Yes	—	MoH guideline updates	Biennial	MoH, NMCP, Guidelines TWG	N/A
3. Procurement & Supply Chain	Ensure uninterrupted availability of MFTs in facilities.	Outcome	% of GOK & FBO health facilities with stockouts of all ACTs in last one month	No stock-outs of any of the ACTs used under MFT	TBD			0%	0%	0%	0%	Facility reports, LMIS	Quarterly	KEMSA, NMCP, CHDs	Facility type & ownership
		Output	% of health facilities reporting on malaria commodities in KHIS	Facility-level reporting compliance	85%			100%	100%	100%	100%	DHIS2 reports	Monthly	NCMCP	Facility type & ownership

Thematic Area	Strategic Objective	Results Level	Indicator	Definition / Rationale	Baseline (2024)	Targets						Means of Verification	Frequency	Responsible	Disaggregation
						24/25	25/26	26/27	27/28	28/29	29/30				
		Output	% of accurate MFT forecasts (±25% error)	Supply planning accuracy to ensure sufficient stock	75%			80%	90%	95%	95%	Forecasting reports, pipeline monitor	Annual	NMCP, HPT, KEMSA	National level
		Output	Central medical stores order fill rate for MFT ACTs	Track replenishment of malaria commodity orders	TBD			100%	100%	100%	100%	LMIS system data	Annual	MoH ICT, NMCP, CHDs	By county
		Output	# of reported adverse drug reactions (ADRs) incidences among patients treated with MFT antimalarial medicines (disaggregated by ACT).	Number of adverse drug reactions associated with MFT antimalarial treatment	TBD			No target for spontaneous reporting	No target for spontaneous reporting	No target for spontaneous reporting	No target for spontaneous reporting	PPB PV reports https://pv.pharmacyboardkenya.org/	Quarterly	NMCP, PPB	By molecule, county
4. Advocacy, Commu	Build public and provider support for MFT.	Output	# of SBC campaigns conducted	Campaigns promoting awareness of MFTs	0			4	4	4	4	Campaign activity reports	Quarterly	NMCP, SBCC COE	By channel (media, CHPs, events)

Thematic Area	Strategic Objective	Results Level	Indicator	Definition / Rationale	Baseline (2024)	Targets						Means of Verification	Frequency	Responsible	Disaggregation
						24/25	25/26	26/27	27/28	28/29	29/30				
		Outcome	% of community members aware of MFT	Measured via KAP survey	TBD			—	60%	—	80%	KAP surveys	Biennial	NMCP, Research Partners	By county, gender
		Output	% of GOK & FBO health facilities with job aids reflecting MFT approach	Availability of job aids at facility level	0%			90%	95%	95%	95%	Training reports	Quarterly	NMCP, CHMTs	Facility type & ownership
5. Financing the MFT Plan	Mobilize sustainable financing.	Output	% of budgeted MFT ACTs procured as per MFT deployment plan	Secured budget for procurement of MFT ACTs	0%			70%	80%	90%	100%	National & County AWPs	Annual	MoH Finance, Treasury, Counties	By level

Appendix 5: Monitoring and evaluation indicators (Section 3)

Activity	Indicators	Data Sources	Assumptions
Output 3.1.1: Improved quality of resistance data	% sentinel sites doing TES. % labs in EQA. No. of samples genotyped for resistance markers.	TES reports; NMCP molecular database;	Adequate funding and trained staff
Output 3.1.2: Increased coverage of surveillance systems	No. of sentinel sites reporting timely data. % staff trained on TES protocols	NMCP M&E reports; Training registers; DHIS2	Counties support TES; data systems interoperable
Output 3.1.3: Use of surveillance data for action	No. of TES/molecular reports disseminated. % counties receiving feedback. No. case management meetings	COE meeting minutes; NMCP dissemination reports; County bulletins	Decision-makers act on evidence
Output 3.2.1: Updated guidelines (MFT)	Revised treatment guidelines disseminated	MoH publications; NMCP circulars; PPB policy docs	Resistance evidence prompts updates
Output 3.2.2: Stronger regulatory frameworks	% ACTs passing surveillance. No. of enforcement actions	PPB reports; post-market surveillance database	Private informal sector regulated
Output 3.2.3: Private sector engagement	% private facilities trained/reporting. No. of mentorship visits	Training registers; Supervision checklists; DHIS2 private sector	Private sector willing to comply
Output 3.2.4: Improved access to diagnostics	% suspected cases tested. RDT stock-out rate. % certified microscopists	Facility surveys; LMIS; NMCP QA reports	Reliable supply chain
Output 3.2.5: Health worker training	No. workers trained annually. % adherence to guidelines	Training registers; Supervision reports; CME records	Low staff turnover
Output 3.3.1: Chemoprevention coverage	% pregnant women ≥3 IPTp. % children completing SMC cycles	DHIS2; ANC registers; SMC pilot reports	Drug supply maintained; community uptake high
Output 3.3.2: Malaria vaccine coverage	% children completing RTS, S or R21. No. of counties scaling up vaccination	MoH vaccine reports; DHIS2 immunization	Community acceptance of vaccines
Output 3.4: Cross-border collaboration	No. of GLMI meetings. % of sites sharing data. No. of joint activities	GLMI reports; NMCP records; Regional bulletins	Neighboring countries align efforts
Output 3.5: Research capacity strengthened	No. of resistance studies. No. of researchers trained. No. of tools evaluated by TWGs	Research publications; Institutional reports; TWG minutes	Sustained funding; retention of scientists

Appendix 6: Multiple First-Line Therapy (MFT) Costed Implementation Matrix.

This costed implementation matrix outlines priority actions required to operationalize Kenya's Multiple First-Line Therapy (MFT) approach for malaria case management. It translates strategic objectives into actionable interventions across key health systems strengthening areas—leadership and governance, training and capacity building, service delivery, supply chain, health information systems, advocacy, and financing.
The matrix provides a structured framework to guide HSS coordination among national, county, and partner stakeholders for the phased roll-out of MFT between December 2025 and December 2030, ensuring alignment with the Kenya Malaria Strategy and ongoing surveillance and case management reforms.

Total Estimated Cost: KES 926,627,500 (USD 7.1M) Exchange Rate=130

HSS Area	Activity	Expected outputs	Timeline	Means of verification	Responsible person	Indicators	Unit Cost (KES)	Number	Total Cost (KES)	Notes/ Assumptions
1. Leadership & Governance	Integrate MFT into technical steering committee (COEs and NASIC)	Functional national technical steering committee (NTSC)	Dec 2025 – Dec 2026	Meeting minutes, attendance registers	Director General AMR focal person	Number of meetings conducted by the committee	50000/meeting	6	300,000	Includes venue, refreshments, meeting materials for 6 meetings
	Integrate MFT into County & Sub-county TWGs and CASIC)	Functioning TWGs with regular meetings and action plans	Jan – Dec 2026	Meeting minutes, attendance registers	Director of health	Number of TWGs active	50,000 / meeting	47	2,350,000	Includes venue, refreshments, meeting materials for 6 meetings
	Update TORs to incorporate MFTs	Approved TORs for TWGs	Dec 2025 – Feb 2026	Signed TOR documents	NMCP lead	TORs developed, validated and customized	100000	1	100,000	Printing & validation workshop
	Conduct quarterly coordination meetings	Coordinated MFT activities with partners	Feb – Nov 2026	Meeting minutes, action points	CDH	Number of meetings held	300, 000	188	18,800,000	Includes partner travel & logistics

HSS Area	Activity	Expected outputs	Timeline	Means of verification	Responsible person	Indicators	Unit Cost (KES)	Number	Total Cost (KES)	Notes/ Assumptions
	Update case management materials and pre-service curriculum to include MFT	Treatment Guidelines, SOPs, Training packages, and preservice curriculum	Jan – Apr 2026	workshop to update the MFT materials	NMCP and medical colleges	Updated tools: Guidelines and SOPs (Both hard and soft copies)	20,000	100	2,000,000	Venue hires and travel logistics
	Update mentorship guide, supportive supervision manual, and tool kit	Mentorship and S.S tools developed	Mar – May 2026	Workshop report	NMCP lead	Tools developed	20,000	100	2,000,000	Venue hires and travel logistics
	Collaborate with Pharmacy and poisons board and other authorities on regulatory compliance	Stakeholders meeting, Compliance reports available	Feb – Jun 2026	Compliance requisitions made	DG	Number of compliance issues raised, Number of pharmacovigilance reports	20,000	20	400, 000	Meeting reports and action points
	Include private sector in the roll out and implementation exercise	Meetings held with private sector on MFT rollout	Feb – Jun 2026	Meeting reports, minutes signed MOUs	NMCP lead	Number of quarterly meetings held with private sector	20,000	1000 pax (3 days)	60,000,000	Meeting held outside work environment
2. Training & Capacity	Conduct Orientation of master TOTs	30 Master TOTs	Jan 2026	Training reports and action points	NMCP Lead	Number of staff per key target areas	20000	30pax (5 days)	3,000,000	Blended approaches

HSS Area	Activity	Expected outputs	Timeline	Means of verification	Responsible person	Indicators	Unit Cost (KES)	Number	Total Cost (KES)	Notes/ Assumptions
	Conduct Orientation of County and sub-County TOTs	235 County and Sub-county TOTs (5 per county)	Feb – Mar 2026	Training reports and cascade plans	Director of Health	Number of staffs trained	20000	235 pax (5 days)	14,100,000	Blended approaches and approach training
	Train Health workers on updated case management guidelines	1160 Trained staff with improved knowledge of MFT (4x290 sub counties)	Apr – Aug 2026	Training reports, pre/post-tests	County Training Officer	Number of staffs trained	7,500 / staff	4 pax/sub county	8,700,000	Includes training venue, trainer fees, materials, per diem.
	Train CHPs on the updated malaria case management	107,831 CHPs trained on guidelines	May – Nov 2026	Training reports	CMC	Number of CHPs trained	7,500 / staff	107,831	808,732,500	
3. Service Delivery & Quality of Care	Print and distribute MFT guidelines & IEC materials	MFT guidelines distributed to the 13,392(9,696 +3,696) public and private health facilities.	Jan – Jun 2026 3,696	Distribution receipts, facility checklists	CMC	Number of facilities receiving guidelines	5,000 / facility	13,392	66,960,000	Printing & delivery
	Conduct onsite Clinical mentorship & support supervision in 47 counties	Clinical mentorship & support supervision conducted	Quarterly	Mentorship reports, supervision checklists	CMC	Number of health facilities' visits conducted. 9,696public + private	3,000 / visit	13,392	40,176000	Transport & per diem
	Conduct support supervision	Improved adherence	Quarterly 2026	Supervision reports	CHMT	Visits conducted	3,000	200	600,000	Routine QA

HSS Area	Activity	Expected outputs	Timeline	Means of verification	Responsible person	Indicators	Unit Cost (KES)	Number	Total Cost (KES)	Notes/ Assumptions
	Sensitize and train on lab staff on Malaria diagnostics & QA	Skilled lab staff	Apr – Aug 2026	Attendance, QA reports	Lab Coordinator	Staff trained	6,000	30	180,000	1-day training
	Integrate MFT in tertiary teaching institutions' curricula	MFT fully Integrated in tertiary teaching institutions' curricula	June 2026 - July 2026	Meeting reports and minutes	DG, Director of education	Updated curricula	20000	30	600,000	One day meeting
	Adopt operational research and innovation to Improve test and treatment	Evidence of ongoing operational research	Biennially	Research done/published	Head of research	Surveillance reports, pharmacovigilance reports, Number of researches done	-	-	-	Database of manuscripts and reports
	Conduct Malaria diagnosis quality assurance	Improved accuracy in Malaria diagnosis and reporting	Quarterly	Quality assurance reports	Diagnostics focal person	Number of staff trained	6,000 / staff		180,000	1-day training + mentorship
	Monitor Data entry and reporting on MFT consumption	Staff capable of accurate data entry & reporting	Apr – Jun 2026	Accurate monthly reports	County pharmacist, Sub County Pharmacist	Number of monthly reports (13,392)	12,000 / staff	337	4,044,000	Airtime, Data for County pharmacist, Sub County Pharmacist per year

HSS Area	Activity	Expected outputs	Timeline	Means of verification	Responsible person	Indicators	Unit Cost (KES)	Number	Total Cost (KES)	Notes/ Assumptions
4. Supply Chain Management	Train facility in-charge & SCM officers on stock management	Trained staff in supply chain and stock management	Feb – Apr 2026	Training reports, attendance sheets	SCM Coordinator	Number of staff trained	6,000 / staff	50	300,000	Includes venue & materials
	Sensitize and train staff on MFT consumption data management	Data-competent staff	Apr – Jun 2026	DQA reports	HIS Officer	Staff trained	5,000	30	150,000	1-day training
	Train staff on MFT reporting & LMIS requisitions	13,392 Staff skilled in logistics management and LMIS use	Apr – Jun 2026	Training reports, post-training assessment	County Pharmacist	Number of staff trained	6,000/ staff	13,392	80,352,000	5-day training
	Monthly stock reviews	Updated stock records and reduced stock-outs	Jan – Dec 2026	Stock review reports, facility registers	Facility In-charge	Number of facilities reviewed	1,500 / facility	600	900,000	Transport & refreshments for visits
	Conduct quality assurance for MFTs	Supplied MFTs meet the quality standards	Apr – Dec 2026	QA reports, checklists	Regional PPB team lead	Number of QA assessments conducted	3,000 / facility	50	150,000	QA tools, transport
	Develop a forecasting and quantification calendar and plan	a forecasting and quantification calendar and plan available and in use	Dec 2025-Feb 2026	a forecasting and quantification calendar and plan	Director DHPT	Number of forecasting and qualification meetings done	20000	50	1,000,0000	5-day workshop

HSS Area	Activity	Expected outputs	Timeline	Means of verification	Responsible person	Indicators	Unit Cost (KES)	Number	Total Cost (KES)	Notes/ Assumptions
5. Health Information & Data Systems	Integrate MFT indicators into DHIS2/LMIS	MFT indicators included in electronic systems	Jan – Apr 2026	DHIS2/LMIS reports, system screenshots	HIS Officer / IT Specialist	Indicators integrated	150,000		150,000	IT support & customization
	Data entry & use training (SCHRIOs, clerks)	Accurate data entry and use for decision-making	Feb – May 2026	Training reports, pre/post-test results	HIS Officer	Number of staff trained	5,000 / staff		150,000	Includes training materials
	Quarterly data review meetings	Improved data use for program decisions	Quarterly 2026	Meeting minutes, action plans	CHMT / Sub-county Health Team	Number of meetings held	40,000 / meeting	4	160,000	Venue & refreshments
	Procure digital hardware for MFT implementation and reporting into Taifa care	Tablets, Computers and WIFI available	Feb – May 2026	List of health facilities quipped and reporting into Taifa care	DG	Number of health facilities supplied with gadgets for Taifa care	75000(25000 x3 gadgets per facility)	13,392	1,004,400,000	At least 3 gadgets per health facility
6. Financing & Resource Mobilization	Include MFT in AWP/CIDP, partner mapping, advocacy	Budget and resources allocated for MFT	Feb – Jun 2026	Approved AWP/CIDP, partner reports	CHMT / Planning Officer	Number of advocacy activities conducted	100,000			Workshops & advocacy briefs
7. Coordination & Follow-Up on MFT implementation	County & Sub-county level meetings	Coordinated implementation of MFT activities	Quarterly	Meeting minutes, attendance sheets	CHMT / Sub-county coordinators	Number of meetings held	120,000	4	480,000	Includes transport, refreshments, documentation

HSS Area	Activity	Expected outputs	Timeline	Means of verification	Responsible person	Indicators	Unit Cost (KES)	Number	Total Cost (KES)	Notes/ Assumptions
8. Monitoring & Evaluation	Routine M&E visits and data audits	Data verified, performance monitored	Quarterly 2026	M&E visit reports, data verification sheets	M&E Officer	Number of facilities visited	50,000	20	1,000,000	Field visits & feedback
	Integrated MFT post marketing surveillance into PPB system	Post marketing survey for MFT integrated into PPB system	Jan – Mar 2026	Reports	PPB pharmacovigilance team Lead	Number of reports on MFT related ADE incidences	-			

9. COSTED SBCC IMPLEMENTATION MATRIX FOR MALARIA MFT DEPLOYMENT

Activities	Target Group	Key Messages	Communication Channel	Timelines	Responsible Person/Institution	Means of Verification	Cost Components (Breakdown in KES)	Estimated Total Cost (KES)	Justification / Notes
1. Development of Malaria MFT Key Messages	Primary audience (health workers, communities, caregivers)	Promote understanding and uptake of MFT guidelines, correct diagnosis, and treatment adherence	IPC materials, IEC materials (brochures, posters), radio spots, TV & social media content	By March 2026	NMCP, SBC COE, Partners, Counties	Availability of MFT key messages for the primary audience	- Message design & creative development (consultant fees – KES 1,200,000) - Pre-testing & validation workshops (2 workshops × KES 350,000 = KES 700,000) - Translation/adaptation into 3 local languages (KES 600,000) - Printing of 10,000 IEC materials (KES 150 × 10,000 = KES 1,500,000) - Audio & video production (5 radio + 2 TV spots = KES 2,000,000) - Content review, approvals & dissemination (KES 500,000)	KES 6,500,000	Covers full creative development, translation, and production across media platforms

2. Capacity Building on SBC Strategies	Health care providers & Community Health Promoters (CHPs)	Strengthen provider communication & counseling on MFT	Virtual, physical & hybrid training, mentorship, OJT & supervision	By June 2026	NMCP, SBC COE, Partners, Counties	Number of health providers & CHPs trained on MFTs	- Development of training materials (KES 600,000) - Training facilitation (6 regional sessions × KES 800,000 = KES 4,800,000) - Trainer per diems & transport (KES 1,200,000) - Venue hire, meals, stationery (KES 900,000) - Virtual training platform costs (KES 300,000) - Mentorship & supervision field visits (KES 1,000,000)	KES 8,800,000	Supports regional training and post-training mentorship in counties
3. Advocacy Engagements	Policy makers, Parliament Health Committee, CoG, Private sector, Development partners, Political & Opinion leaders	Secure policy and financial support for MFT scale-up	High-level advocacy meetings, briefs, stakeholder forums, conferences	By June 2026	NMCP, SBC COE, Partners, Counties	Number of high-level meetings held with top leadership	- Preparation of advocacy briefs & policy papers (KES 500,000) - Organization of 5 national advocacy meetings (KES 600,000 × 5 = KES 3,000,000) - Travel, per diem, and accommodation (KES 1,000,000) - Media coverage & documentation (KES 700,000)	KES 5,500,000	Targets 4–5 national-level policy dialogues with top decision-makers

							- Stakeholder coordination & follow-up (KES 300,000)		
4. Monitoring and Evaluation of SBCC Interventions	NMCP, SBCC COE, Partners, Counties, Media Houses	Track performance and outcomes of MFT-related SBCC activities	Social listening tools, surveys, and M&E tools	By Jan 2026	NMCP, SBCC COE, Partners, Counties	Surveillance and M&E reports	- Subscription/licensing of social listening tools (KES 1,200,000) - Field monitoring visits (KES 600,000) - Data collection & analysis (KES 400,000) - Evaluation workshop (KES 700,000) - Report writing & dissemination (KES 500,000)	KES 3,400,000	Supports continuous learning, monitoring, and reporting
5. Media and Community Dissemination of MFT Messages	Communities, caregivers, health workers	Promote MFT adoption and correct malaria testing behaviors	Community radio, social media, print media, roadshows	Ongoing (2025–2026)	NMCP, Media partners, County SBC units	Media monitoring reports	- Radio airtime (30 stations × KES 60,000 = KES 1,800,000) - TV airtime (4 stations × KES 300,000 = KES 1,200,000) - Social media campaign management (KES 1,000,000) - Community events & roadshows (10 events × KES 350,000 = KES 3,500,000) - Branding, publicity & logistics (KES 800,000)	KES 8,300,000	Covers multi-channel dissemination over a 12-month campaign

Appendix 7: Risk and Mitigation Matrix for MFTs

This matrix outlines potential risks and corresponding mitigation measures for implementing Multiple First-Line Artemisinin-based Combination Therapies (MFT). It can be adapted at national, county, or sub-county levels and reviewed quarterly during MFT coordination meetings.

Risk/ Barrier	Specific Risk Description	Likelihood	Impact	Overall Risk Level	Mitigation / Response Measures	Responsible Entity	Monitoring Frequency
Policy / implementation Plan/ Regulatory	Delays in policy approval or guideline revision for MFT adoption	High	High	High	Engage MOH, PPB, and NMCP early; hold TWG sessions; align with WHO guidance	MOH/ NMCP/ County Health Dept	Weekly
Procurement & Supply Management	Procurement delays due to long lead time, inadequate financing, suppliers unable to fulfill country orders	High	High	High	Secure financing through Government/ Partners Engage local manufacturers to encourage local manufacturing of ACTs	MoH, National Treasury, NMCP, DHPT, Partners, local manufacturing companies	Monthly
Procurement & Supply Management	Stock imbalances among ACTs lead to unequal distribution, stock-out, AL expiry	High	High		Continuous ACT pipeline monitoring, County commodity data review	NMCP, KEMSA, MEDS, County HPT units	Monthly
Health Worker Capacity	Inadequate training or confusion on prescribing different ACTs	Medium	Medium	Medium	Develop job aids, conduct training and supervision	CHMT / Sub-county PHMT	Quarterly
Patient/ client acceptance	Community confusion about multiple ACTs or perceived inequality	Low	Low	Low	Conduct SBC campaigns explaining MFT rationale; engage CHPs and leaders	SBC Unit / CHPs	Biannual
Health system readiness	Facilities lacking data capture and reporting tools, or supervision to manage multiple ACTs	Medium	Medium	Medium	Review and update the tools, reporting forms, supervision checklist, dashboard	NMCP/ HIS	Quarterly
Delayed financing	Program lacking dedicated finances for nimble MFT deployment	Medium	Medium		Advocate for MFT inclusion in AWPs, Mapping of partner for commitment	NMCP Lead	Annual

Notes for Use

- Review and update this matrix quarterly during MFT review meetings.
- Color coding for risk levels: Red = High, Orange = Medium-High, Yellow = Medium, Green = Low.
- Customize specific risks and responsible entities based on local context.



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(2026 - 2030)

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