NATIONAL MALARIA ELIMINATION

STRATEGIC PLAN

(NMESP) OF GHANA: 2024 - 2028

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(NMESP) OF GHANA: 2024 - 2028

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PREFACE

Ghana has made significant progress regarding malaria control over the years. For instance, deaths due to malaria have reduced from 2,799 in 2012 to 151 in 2022. Malaria prevalence has also declined from 27.5% in 2011 to 8.6% in 2022 while confirmed malaria cases per 1000 population has reduced from 192 in 2019 to 159 per 1000 in 2020. Despite these achievements, malaria remains a significant public health problem in Ghana.

Developed midway during implementation of the National Malaria Strategic Plan 2021-2025, Ghana's first National Malaria Elimination Strategic Plan births a paradigm change from control to elimination, shifting focus from burden reduction to disruption of malaria transmission. The strategic plan outlines the goals, objectives, and contextually relevant strategies to be deployed to achieve same. It is an exciting and unique period as the country works towards the ambitious target of eliminating malaria in 21 districts with very low burden of malaria by 2028, deploying new tools, expanding coverage and quality of delivery of existing tools through innovation and reliance on data, within the context of a strong and effective leadership across all levels, high political will, and commitment, community engagement and ownership, as well as multisectoral cooperation and partnerships.

Drawing from lessons from countries that have eliminated malaria, the plan proffers a realistic and practical resource mobilisation strategy to support planned activities, and a robust monitoring and evaluation plan to ensure timely and complete implementation.

It is our collective hope that the goals and objectives of this plan would be realized. The plan when implemented will offer the necessary momentum towards a nationwide elimination of malaria and contribute towards the socio-economic development of Ghana.

Kwaku Agyeman-Manu
Honourable Minister for Health, Ghana

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ACRONYMS AND ABBREVIATIONS

AAP	Annual Action Plan
ACT	Artemisinin-based Combination Therapy
ADR	Adverse Drug Reactions
AEFI	Adverse Event Following Immunization
AGAMal	AngloGold Ashanti Malaria Control
ALMA	African Leaders Malaria Alliance
ANC	Antenatal Clinic
CHN	Community Health Nurse
CHO	Community Health Officer
CHPS	Community Health Planning and Services
CIC	Community Information Centre
COVID19-	Coronavirus Disease 2019
CPMR	Centre for Plant Medicine and Research
CPPA	Community Pharmacy Practice Association
CSO	Civil Society Organisation
CWC	Child Welfare Clinic
DACF	District Assembly Common Fund
DHIMS	District Health Information Management Systems
DMTDP	District Medium Term Development Plan
DPAT	District Performance Assessment Tool
ECOWAS	Economic Community of West African States
EDD	Expected Delivery Date
EIR	Entomological Inoculation Rate
EOSR	End Of Spray Round
FDA	Food and Drugs Authority
FBO	Faith-Based Organisation
FHD	Family Health Division of the Ghana Health Service
G6PD	Glocose-6-Phosphate Dehydrogenase
GAEC	Ghana Atomic Energy Commission
GAVI	GlobalV accine Alliance
GDHS	Ghana Demographic and Health Survey
GES	Ghana Education Service
GF	The Global Fund
GhiLMIS	Ghana Integrated Logistics Management Information System
GHS	Ghana Health Service
GHSC-PSM	Global Health Supply Chain Programmme - Procurement and Supply Management
GMIS	Ghana Malaria Indicator Survey

GOG/GoG	Government of Ghana
GSS	Ghana Statistical Service
GTS	Global Technical Strategy
HBHI	High Burden High Impact Initiative
HMIS	Health Management Information System
HRP3/2	Histidine-Rich Protein 3/2
ICT	Information Communication Technology
IPTp-SP	Intermittent Preventive Treatment of Malaria using Sulphadoxine Pyrimethamine
IPTsc	Intermittent Preventive Treatment of malaria in school children
IRM	Insecticide Resistance Monitoring
IRS	Indoor Residual Spraying
IT	Information Technology
ITN	Insecticide Treated Net
KATH	Komfo Anokye Teaching Hospital
KPI	Key Performance Indicator
LLIN	Long-Lasting Insecticide-treated Net
LMD	Last Mile Distribution
LSM	Laval Source Management
LUSPA	Land Use and Spatial Planning Authority
MAVCOC	Malaria Vector Control Oversight Committee
MCM	Malaria Case Management
MDA	Mass Drug Administration
MDG	Millennium Development Goals
MDRT	Malaria Diagnostic Refresher Training
M&E	Monitoring and Evaluation
MiP/ MIP	Malaria in Pregnancy
MICS	Multiple Indicator Cluster Survey
MIS	Malaria Indicator Survey
MLGRD	Ministry of Local Government and Rural Development
MMDA	Metropolitan, Municipal, District Assembly Metropolitan,
MMDCE	Municipal, District Chief Executive
MoF	Ministry of Finance
MoH/ MOH	Ministry of Health
MoU/MOU	Memorandum of Understanding
MRH	Ministry of Roads and Highways
MRV	Measles Rubella Vaccine
MSWR	Ministry of Sanitation and Water Resources
MTR	Mid-Term Review
NCCE	National Commission for Civic Education

NDP	National Development Plans
NDPC	National Development Planning Commission
NFM	New Funding Model
NGO	Non-Governmental Organisation
NHIS	National Health Insurance Scheme
NHRC	Navrongo Health Research Centre
NHSP	National Health Strategic Plan
NMCP	National Malaria Control Programme
NMEOC	National Malaria Elimination Oversight Committee
NMEP	National Malaria Elimination Programme
NMETCC	National Malaria Elimination Technical Coordination Committee
NMIMR	Noguchi Memorial Institute for Medical Research
NMSP	National Malaria Strategic Plan
NMTC	Nursing and Midwifery Training College
NoP	Network of Practice
NPHRL	National Public Health and Reference Laboratory
OHLG	Office of the Head of Local Government Service
OTCMS	Over-the-Counter Medicine Sellers
PDMC	Post-Discharge Malaria Chemoprevention
Pf	Plasmodium falciparum
PfPR	Plasmodium falciparum parasite prevalence
Pm	Plasmodium malariae
PMI	President's Malaria Initiative
Po	Plasmodium ovale
PS&C	Procurement and Supply Chain
PSM	Procurement Supply Chain Management
QA	Quality Assurance
QI	Quality Improvement
RBM	Roll Back Malaria Partnership
RCC	Regional Coordinating Council/ Rolling Continuation Channel
RCD	Regional Coordinating Director
RDT	Rapid Diagnostic Test
RMS	Regional Medical Stores
RSME	Research Surveillance Monitoring and Evaluation
SBC	Social and Behavioural Change
SDG	Sustainable Development Goals
SDP	Service Delivery Point
SHEP	School Health Education Programme
SLDP	Single Low Dose Primaquine

SMC	Seasonal Malaria Chemoprevention
SMEOR	Surveillance Monitoring Evaluation and Operational Research
SoP/SOP	Standard Operating Procedure
SSDM	Stores, Supplies and Drugs Management Division
SSF	Single Stream of Funding
SSNIT	Social Security and National Insurance Trust
STG	Standard Treatment Guideline
TES	Therapeutic Efficacy Surveillance
ToR	Terms of Reference
TWG	Technical Working Group
U5MR	Under Five Mortality Rate
UC	Universal Coverage
UHC	Universal Health Coverage
UNDP	United Nations Development Programme
VAT	Value Added Tax
VL	Vectorlink
WAHO	West African Health Organisation
WHO	World Health Organisation

EXECUTIVE SUMMARY

Ghana remains a high-burden malaria country with malaria ranked among the country›s top three diseases seen in outpatient departments. In 2022, the country recorded over 5.2 million confirmed cases of malaria with 151 malaria-associated deaths. In the same year, the in-patient malaria mortality rate stood at 0.48 per 100,000 persons with 0.05 per 100,000 persons recorded among children under 5 years. Malaria transmission is generally stable in Ghana with varying endemicity across the regions. Ghana Demographic and Health Survey (2022) showed a reduction in prevalence, recording national prevalence reduction from 14.1% in 2019 to 8.6% in 2022, with the Greater Accra Region still having the lowest prevalence of 2.0%, and the Oti Region the highest (15.0%). The economic burden of malaria arises from the costs associated with delivery of interventions, income loss among infected individuals, effects on workforce time, productivity losses and potential declines in investment. Grounded on sustained, all-level stakeholder ownership, the National Malaria Elimination Programme (NMEP) of Ghana is making strides in sustaining evidence-based programming to achieve the malaria elimination agenda of the Government of Ghana (GoG). The malaria programme is integrated into all levels of the health care system in Ghana. Planning and implementation are aligned with the National Health Strategic Plan (NHSP) and the National Development Plans (NDP). Various tools, linkages, coordination mechanisms, governance structures, programme monitoring, and partnerships are in place and are continually being improved upon at all levels. The private sector and civil society are involved in supporting government efforts towards a malaria-free Ghana. The National Malaria Elimination Strategic Plan (NMESP) 2024 – 2028 builds on progress made and lessons learnt in implementing the 2021-2025 National Malaria Strategic Plan (NMSP). The process for developing the NMESP 2024 – 2028 emanates from the midterm review (MTR) and Malaria Elimination assessment process carried out through multi- stakeholder consultations and engagements at national and subnational levels.

The NMESP was developed based on the principles of country ownership and leadership, inclusive and coordinated partnership, accountability, and evidence-based and result-oriented management.
Ghana intends to eliminate malaria through a progressive sub-national approach deploying a mix of malaria interventions tailored to local context.

The goals of the NMESP 2024-2028 are to:

- Reduce malaria mortality by 90% by the year 2028 (using 2022 as baseline)
- Reduce malaria case incidence by 50% by 2028 (using 2022 as baseline)
- Eliminate malaria in 21 districts with very low malaria burden by 2028.

The eight (8) strategic objectives of the NMESP 2024-2028 are:

1. To ensure 100% of the population has adequate knowledge, attitudes, practices andrequisite skills for malaria elimination by 2028.
2. To ensure 100% of the population use at least one malaria preventive measure.3. To ensure that 100 % of suspected malaria cases are tested by 2028.

4. To ensure that 100% of confirmed malaria cases are appropriately, effectively, and completely treated by 2028.
5. To strengthen malaria surveillance, and monitoring and evaluation systems by 2028.
6. Ensure timely and adequate supply of quality-assured malaria commodities to all service delivery points by 2028.
7. To strengthen and maintain capacity for governance and programme management to achieve programmatic objectives at all levels of the healthcare system towards malaria elimination by 2028.
8. To improve mobilisation of resources and efficiently use available resources towards malaria elimination.

Interventions/ strategies to achieve these goals and objectives have been tailored to suit the sub- national context through stratification using malaria prevalence, incidence, and all-cause under 5 mortality rates, together with other relevant data. The four strata are:

i. Very low burden areas (1-49 cases/1,000 population, <1% parasite prevalence)
ii. Low burden areas (50-199 cases/1,000 population; 1%- <5% parasite prevalence)
iii. Moderate burden (200-499 cases/1,000 population; 5-<15% parasite prevalence)
iv. High burden (>/=500 cases/1,000 population; >15% parasite prevalence)

a. Cross cutting Interventions to be deployed in all zones/ areas include:

- Quality case management
- Intermittent Preventive Treatment of Malaria in Pregnancy (IPTp)
- Post Discharge Malaria Chemoprevention (PDMC)
- Availability and rational use of quality malaria commodities
- Distribution of Long-Lasting Insecticide-treated Nets (LLINs)
- Larval Source Management (LSM)
- Entomological surveillance
- Epidemiological surveillance
- Research
- Social Behaviour Change (SBC)
- Effective programme leadership and management at all levels
- Malaria Vaccination

b. Interventions to be deployed in each epidemiological strata include:

i. Very low burden areas

- Mass Drug Administration (MDA)
- Single Low Dose Primaquine (SLDP)
- Enhanced Epidemiological Surveillance
- Enhanced Entomological Surveillance

ii. Low burden areas

- Enhanced Epidemiological Surveillance
- Enhanced Entomological Surveillance

c. Moderate and High burden areas

- Indoor Residual Spraying (IRS)
- Seasonal Malaria Chemoprevention (SMC)
- Intermittent Preventive Treatment of Malaria in School Children (IPTsc)

This document also outlines plans to monitor and evaluate achievement of goals, objectives, and level of implementation of planned activities through an elaborate Surveillance, Monitoring and Evaluation (SME) plan, as well as a risk mitigation plan to forestall/ limit impact on implementation.

The cost of implementing the NMESP 2024-2028, based on WHO's guide for Malaria Strategic and Operational Plan Costing, is estimated at almost 3 billion US Dollars over the 5-year period (2024 – 2028), ranging from 381,260,265 US Dollars in the 2nd year (2025) to 909,775,398 US Dollars in the 4th year (2027).

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CHAPTER 1: INTRODUCTION

Malaria is a major public health and socioeconomic problem in Ghana. It is a leading cause of morbidity and mortality in the country, particularly among children under the age of five years and pregnant women. According to the annual malaria reports, malaria accounts for approximately 20% of all outpatient visits and 22% of all hospital admissions in Ghana (NMCP, 2022).

The socioeconomic impact of malaria in Ghana is significant. The disease imposes a heavy economic burden on households, the health system, and the national economy. Malaria-related illnesses and deaths lead to lost productivity, absenteeism from work and school, and increased healthcare costs. This results in reduced economic growth and development.

In addition, the burden of malaria falls disproportionately on the poor, who may be unable to afford effective preventive measures and treatment. This perpetuates the cycle of poverty, making it difficult for individuals and households to break out of poverty.

Efforts to control malaria in Ghana have included the distribution of insecticide-treated bed nets, indoor residual spraying of insecticides, the use of antimalarial medicines among others. However, the challenges in controlling and eliminating malaria in Ghana are complex and require a multifaceted approach that addresses the social, economic, and environmental factors which contribute to the disease. Overall, malaria remains a significant public health and socioeconomic problem in Ghana, and concerted efforts are needed to reduce the burden of the disease and improve the health and well-being of the population.

The Government of Ghana continues to recognize malaria as a disease of high priority that requires sustained efforts of international, national, and inter-departments/agencies at all levels in planning, implementation and reporting to eliminate the disease. For instance, the National Health Plan recognizes the importance of malaria as a major public health and socioeconomic problem and aims to reduce the burden of the disease through a coordinated and comprehensive approach. By prioritizing malaria control efforts, the plan aims to improve the health and well- being of the population and contribute to economic development.

Ghana has also made significant commitments to regional and international malaria control efforts, as well as to malaria elimination compacts, agreements, strategies, plans, and targets that seek to eliminate the disease through stakeholder efforts. These commitments demonstrate the country›s dedication to reducing the burden of malaria and improving the health and well- being of its population.

At the regional level, Ghana is a member of the West African Health Organisation (WAHO), which has developed a regional malaria control strategy. Ghana is also a member of the African Leaders Malaria Alliance (ALMA), which is committed to eliminating malaria on the continent. Through its membership in these organisations, Ghana has committed to working with other countries in the region to eliminate malaria. At the international level, Ghana is a signatory to several global agreements and targets related to malaria

control and elimination. These include the Global Technical Strategy for Malaria 2016-2030 (GTS), the Roll Back Malaria (RBM) Partnership, and the Sustainable Development Goals (SDGs), which include a specific target to end malaria by 2030.

In addition, Ghana has developed its own national malaria strategies, plans, and targets. Currently, the National Malaria Strategic Plan (NMSP) for 2021-2025 outlines the country›s goals and objectives for malaria.

The planning and budgeting cycle for the implementation of the malaria strategic plan in Ghana involves several key steps and implementation tools. These steps and tools are designed to ensure that the strategic plan is effectively implemented, and that resources are efficiently allocated to achieve the goals and objectives of the plan.

CHAPTER 2: COUNTRY PROFILE

2.1 Geographical situation

Ghana is an African country located in the West African sub-region. The country shares a border with Togo to the East, Burkina Faso to the North, Ivory Coast to the West and the Gulf of Guinea to the South. The country is divided by the Greenwich Meridian and lies entirely within the northern tropics between latitudes 4oN and 12oN of the equator. It covers a surface area of 238,537 sq. km and has a coastline of 540 km, most of which is relatively flat, except for a range of hills on the eastern border and Mount Afadja – the highest point above sea level (884 metres) – located east of the Volta River. There are three ecological zones in the country: the Southern zone made up of a sandy coastline backed by a coastal plain which is crossed by several rivers and streams; the middle transitional belt made up of heavily forested areas with many streams and rivers; and a northern savannah, which is drained by the Black and White Volta Rivers. The Volta Lake, created because of the construction of a hydroelectric dam in the eastern part of the country, is one of the largest artificial lakes in the world.

The southern regions of Ghana are mostly grasslands and shrublands, along with forests. These forests extend to the east of about/by270 km. Southern Ghana has become an important location for extracting industrial minerals. Environmental factors such as land cover, vegetation (savannah, tropical forest, and mangrove and swampy areas), coupled with the generally warm temperatures and rainfall (ranging from 100mm to 2800mm) all contribute to the endemic risk of contracting malaria. Altitude ranges from sea level to 750m above create temperatures favourable for the breeding of mosquito vectors (*An. gambiae, An. arabiensis and An. funestus*) and the development of malaria parasites, and this significantly increases the malaria risk in Ghana.

2.2 Socio-political System

Ghana is politically stable and has a strong democratic system with a presidency, cabinet, parliament, and an independent judiciary, forming the three arms of government. The executive is made up of the President, a Vice President and a constitutionally entrenched cabinet of which the Minister of Health is a member. The Legislature comprises a speaker, two deputy Speakers and 275 Members of Parliament mandated constitutionally to enact laws for the smooth administration of the country. The country has an independent judiciary which is headed by the Chief Justice and comprises the lower courts, High Courts, the Court of Appeal, and the Supreme Court. In addition, there are specialised courts that deal expeditiously with specific cases. The country is divided into sixteen regions: Ashanti, Bono, Ahafo, Bono East, Savannah, Northeast, Oti, Western North, Central, Eastern, Greater Accra, Northern, Upper East, Upper West, Volta, and Western Regions. Each region is headed by an appointed Regional Minister who represents the Head of State (the President of the country). The Regional Minister is assisted by a Deputy Regional Minister and a Regional Coordinating Council (RCC) to coordinate and formulate integrated district plans and programmes within the framework of approved national development policies and priorities. Ghana has 261 Metropolitan, Municipal

and District Assemblies (MMDAs), each headed by a District Chief Executive. The District Assembly is made up of elected and appointed members and is the highest political and administrative authority in the district. The districts are also subdivided into unit areas and are headed by elected executives.

2.3 Demographic Situation

Ghana located in West Africa and has a population of over 31 million people. The country has a diverse population made up of different ethnic groups, with the Akan being the largest group, followed by the Mole-Dagbon, Ewe, and Ga-Adangbe. The population of Ghana is relatively young, with a median age of 21.4 years, and a life expectancy of 64 years. The fertility rate is relatively high, with an average of 3.9 children born per woman. The population growth rate is around 2.15%, which is expected to decline slightly over the coming years but will remain relatively high. Ghana is also an urbanising country, with approximately 56% of the population living in urban areas.

Table 1: Demographic situation of Ghana

Indicator	National Value
Population	30,832,019 (est. 2021)
Population growth	2.1% (est. 2021)
Age structure	Age group 0-14 years: 35.3% (male 5,530,217/female 5,360,236) 15-24 years: 20.2% (male 3,090,043/female 3,160,940) 25-54 years: 35.6% (male 5,585,838/female 6,642,893) 55-64 years: 4.8% (male 753,284/female 792,832) 65 years and over: 4.4% (male 771,281/female 677,346) (est. 2021)
Birth rate	27.9 births/1,000 population (est. 2022)
Death rate	6.3 deaths/1,000 population (est. 2021)
Infant mortality rate	28 per 1000 live births (est. 2022)
Under 5mortality rate	40 per 1000 live births (est. 2022)
Maternal mortality	310 per 100,000 live birth (est. 2022)
Life expectancy at birth	64.68 (est. 2022)
Total fertility rate	3.9 births per woman (est. 2022)
Literacy rate	69.8%, (est. 2021)
Health expenditure	US$1.4 billion (est. 2020)
Physician density	3 physicians per 10,000 population (est. 2021)
Net migration rate	-0.312 per 1000 population
Urbanisation	56.7% (est. 2021)

2.4 Ecosystem, Environment and Climate

The topography of the country is mainly low-lying areas with some elevations in the eastern part of the country. The climate is tropical with two main weather seasons- the rainy season and the harmattan season. The harmattan season (December-March) is characterized with dry dusty weather. Transmission of malaria in the dry season is limited as opposed to the rainy season where the female anopheles mosquito, a vector of malaria, successfully breeds leading to higher transmission of malaria. Variabilities in malaria transmission exist across the three ecological zones: namely the coastal savannah zone in the South, the forest zone in the Centre, and the Sahel Savannah in the North of the country. These differences are accounted for by climatic and environmental factors in association with vector and parasite distribution. The coastal savannah and forest zones have two rainfall peaks from March to June (the major rainfall season) and September to November (the minor rainfall season), both corresponding to two peaks of malaria. Transmission of malaria occurs over a total period of about ten months. The forest zone is a tropical rainforest and the wettest of the three zones with annual rainfall averaging 1399.5 mm. It has an abundant vegetation cover with several rivers and streams that encourages breeding of mosquitoes. It has high malaria transmission. The coastal savannah zone follows with its tropical/ grassland savannah climate, and an annual average rainfall of 750mm. It has low to moderate malaria transmission. Both have a temperature average of 26.5°C. The Sahel savannah zone has a dry climate with a single rainfall peak from May to September with a mean temperature of 28°C. The rainfall peak in the Sahel savannah zone corresponds to a malaria transmission period of about six to seven months in total, a single malaria transmission season. The temperature of all three zones, which ranges from 22°C to 33°C, supports the female anopheles mosquito vector breeding and consequently, malaria transmission in Ghana. The climate, rainfall pattern and tropical conditions have made malaria perennial in Ghana, and climate change may worsen these conditions. Coupled with the recent detection of the invasive mosquito species *Anopheles stephensi* in Accra, Ghana in 2023, adaptation and malaria mitigation measures are imperative. An. stephensi is known to be breed in all kinds of water sources, under diverse climatic conditions and is known to be resistant to many insecticides.

2.5 Socioeconomic Situation

The Gross Domestic Product (GDP) per capita for Ghana as at 2022 is 2,175.9 USD (World Bank, 2023). With a life expectancy at birth of 63.6 years and a Gross National Income (GNI) per capita value of 5745 USD, Ghana's Human Development Index was 0.632 as at 2021, ranking 133 globally; the country has an annual GDP growth rate of 3.2% (UNDP, 2022; World Bank, 2023). Ghana has a Total Fertility Rate of 3.9 as at the year 2022, a life expectancy rate at birth of 64.8, under- 5 mortality rate of 40 and a maternal mortality ratio of 310 per 100, 000 live births, and a literacy rate of 69.8% for persons 6 years and older, and 80.38% for those 15 years and older (WHO, 2022; World Bank, 2023; GSS, 2018; GDHS 2022). Regions in Southern Ghana, being relatively more urbanized, have higher population concentration than in other parts of the country, and yet, have lower average household sizes (GSS, 2021). These Southern Regions covering the Coastal Savannah and a significant part of the Forest ecological zones, tend to have more improved sources of drinking water and sanitation facilities than the Northern Regions found in the Sahel Savannah regions

(GSS, 2020). Regions with the highest wealth quintiles are in the Southern part of Ghana, namely Greater Accra Region followed by Ashanti, Western and Eastern Regions in descending order (GSS, 2020; Dako-Gyeke & Kofie, 2015). These four regions respectively have more than 5% of their women having more than secondary education. Wealthier quintiles having disproportionately lower malaria prevalence, and higher maternal education found in these quintiles are associated with improved child health.

Gender is a significant determinant of malaria morbidity and women have a higher burden of malaria than men (Nkegbe et al., 2017; Quaresima et al., 2021). Women have been found to significantly spend more time outdoors in the early hours of the morning before 6 am than men do. Early morning biting habits of some anopheline mosquitoes in Ghana is well documented (Akuoko et al., 2022; Aberese-Ako et al., 2019). The practice of preventive measures especially the use of Insecticide-Treated Nets (ITNs) is stipulated by husbands who determine the non- usage of the nets, with usage being higher in the rainy than in the dry hot harmattan season. Community participation is key in the uptake and success of all country-based health interventions. The Alma Ata declaration of 1978 identified community engagement and participation as an important principle of primary healthcare. Participation is a function of community health governance and by this, encompasses all relevant stakeholder groups in the community and engenders some accountability. Rural residents are more likely to own and use an Insecticide-Treated Net (ITN) for both pregnant women and children, as well as all other residents in the household (MIS, 2019). More rural communities are targeted for some preventive strategies such as Indoor Residual Spraying and mass ITN distribution campaigns than urban communities (MIS, 2019). In a multi-country analysis of Malaria Indicator Survey and Demographic and Health Survey data in Sub-Saharan Africa, it was shown that modern housing, a characteristic of Urban residencies, is associated with 9- 14% reduced odds of malaria infection controlling for ITN usage (Tusting et al., 2017).

2.6 Health System Analysis

'Health equity is achieved when everyone can attain their full potential for health and well- being'. Political, economic, and legal contextual factors determine the distribution of resources and power, leading to equity or lack of it, and reduced access in some jurisdictions to health. According to the World Health Organisation's (WHO) 2022 categorization of Regions in Universal Health Coverage, the WHO Africa Region falls in the 4th quadrant with a relatively low service coverage (WHO, 2022). One of the cornerstone commitments by Ghana to achieving Universal Healthcare for all is by reducing the financial barrier to healthcare through the National Health Insurance Scheme (NHIS). The NHIS has apparently equalized financial access for those who can, and those who cannot afford. Targeting of some preventive healthcare services are also quite adequate in reaching the poorest of the poor e.g., malaria control interventions. Cultural and literacy barriers may, however, modify the use and benefits of these preventive healthcare measures (Saleh, 2013).

CHAPTER 3: MALARIA SITUATIONAL ANALYSIS

3.1 History of the Malaria Programme

Malaria control initiatives started in the country in the colonial era. Intensive government efforts at controlling malaria in Ghana led to the creation of a malaria control unit within the Ministry of Health (MOH) in 1957. This was established in the Volta Region in collaboration with the WHO to train personnel in geographical reconnaissance, malariometric, and entomological surveys, and to conduct indoor residual insecticide application trials in the control of adult mosquito population.

In 1961, there was the creation of a National Malaria Service when the country adopted the global Malaria Eradication Programme, which used residual spraying and larviciding to control malaria vectors. This initiative, however, was discontinued in 1967 due to inadequate technical feasibility and financial resources. Other national efforts at controlling malaria are summarised below:

3.1.1 Key Milestones

- **1957**: Creation of a malaria control unit within the MOH
- **1961**: Creation of a National Malaria Service when the country adopted the Global Malaria Eradication Programme, which used residual spraying and larviciding to control malaria vectors, however, this was discontinued in 1967 due to inadequate technical feasibility and financial resources.
- **1992**: Launching of a 5-year (1993-1997) National Malaria Control Action Plan with a focus on capacity building for improved disease management in health facilities.
- **1998**: Commitment of Ghana to the Roll Back Malaria (RBM) Initiative, which builds on the Global Malaria Strategy with a focus on Africa, began with the initiation of malaria control in 30 districts focusing on case management.
- **2000**: Commitment to the Abuja Declaration on Roll Back Malaria in Africa and the Millennium Development Goals (MDGs)
- **2000**: Development of National Malaria Strategic Plan, 2000-2008
- **2002**: Round 2 of Global fund support to implement selected malaria controlinterventions in 20 districts.
- **2004**: Round 4 of Global Fund support for countrywide scale-up of interventions at the time
- **2006**: Ghana committed to malaria elimination in Africa
- **2008**: Development of National Malaria Strategic Plan, 2008-2015 (GF R8, RCC)
- **2014**: Development of National Malaria Strategic Plan, 2014-2020 (GF SSF, NFM1)
- **2015**: Commitment to the UN Sustainable Development Goals (SDGs)
- **2020**: Development of National Malaria Strategic Plan, 2021-2025 (GF NFM 2)
- **2022**: Name change from National Malaria Control Programme to National Malaria Elimination Programme

3.2 Epidemiology

3.2.1. Malaria Parasites

Plasmodium falciparum (Pf) is the predominant malaria parasite causing severe morbidity and mortality in Ghana. *Plasmodium falciparum* (Pf) mono-infection remains the most prevalent malaria infection type in all regions, ranging between 95.8% (95% CI: 94.6 – 96.8) in the Ashanti region and 100% in the Western and Western North regions with a national prevalence of 98.2% (95% CI: 97.9 – 98.5). Mono-infection with *Plasmodium ovale* (Po) remains the second most prevalent infection type observed (1.0% ; 95% CI : 0.8 – 1.3). National prevalence of *Plasmodium malariae* is 0.4%, ranging between 0.0% in Eastern, Volta, Oti, Western, Western North, Northeast, and Savannah Regions, and 1.5% in Ahafo Region. Prevalence of Mixed infections of *Pf+Pm* and Pf+Po are prevalent at 0.1% and 0.3% respectively. *P. vivax* has not been reported from health facilities or identified in any part of the country *(Malaria Parasite Prevalence Report 2022)*.

3.2.2 Malaria Vector Distribution

Anopheles gambiae sensu lato (s.l.) or anopheles gambiae complex and *An. funestus* have been identified as the major vectors of malaria in all the ecological zones of Ghana i.e., the northern savannah, middle transitional and in the southern zones. They account for about 95% of all Anopheles mosquitoes collected. *Anopheles gambiae sensu stricto* (s.s.) of the complex is predominant and is found across the country.

Anopheles arabiensis has been found in the sahel zone but in fewer numbers. Characteristically, these species are highly anthropophilic, bite mostly late in the night, and are commonly found in the rural and peri-urban areas where socio-economic activities lead to the creation of conducive breeding sites.

Anopheles stephensi, an invasive malaria vector, was recently discovered (in 2022) in two suburbs of the country's capital, Accra, namely Tuba and Dansoman. Steps have been taken to limit its spread, including enhanced larval Source Management (LSM), enhanced entomological surveillance, Social Behaviour Change (SBC) activities among others.

3.2.3 Malaria Vector Behaviour

Studies across the country show that biting by *An. gambiae* s.s., the main malaria vector is continuous throughout the night, and usually peaks between 22:00 hours and 04:00 hours. Additionally, both *An. gambiae* s.s and *An. funestus* bite both inside and outside rooms, and in some cases almost equally (PMI, Feeding and Resting Behaviour of malaria vectors, 2016- 2017). Adapting control strategies targeting outdoor biting by vectors is thus imperative in the quest to eliminate malaria in the country.

The main malaria vectors have also been found to rest mainly indoors after feeding, explaining the addition of IRS (that targets indoor resting mosquitoes), an effective intervention to complement the use of Long-Lasting Insecticide-treated Nets (LLINs). It is also important to note (supported by the PMI Vector Link report 2019), that this indoor resting vector behaviour could change over the years in areas receiving IRS,

where mosquitoes are found mostly resting outside of living/sleeping structures. Thus, increased outdoor biting may allow malaria transmission to be maintained even if LLINs and IRS have been fully scaled up. It is important to note that these biting behaviours of the main malaria vectors in Ghana present programmatic challenges to the scaling up of the current LLIN intervention.

3.2.4. Dynamics of Malaria Transmission and Level of Endemicity

3.2.4.1. Entomological Inoculation Rate (EIR)

The micro-geographical and seasonal variations in the biting and the level of malaria transmission observed in many areas showed that malaria transmission is heterogeneous in Ghana. The Entomological Inoculation Rate (the average infective bite an individual will receive from a mosquito per unit time) ranges from 418 in the Northern part of the country to about 20 in the South (MPR 2019). The intensity of transmission is highest in the northern zone, followed by the middle zone and least in the southern zone, as per Entomological Inoculation Rate (EIR) data shown in Figure 8. In the former Northern Region of Ghana for instance, PMI reported a decline of EIR attributable to seven years of Indoor Residual Spraying (IRS). Malaria transmission in the northern savannah zone was observed to be highly seasonal, with relatively high transmission occurring between June and October. The assessment reported a general decline of about 86% in EIR in 2017 compared to 2016 (Coleman et al, 2017).

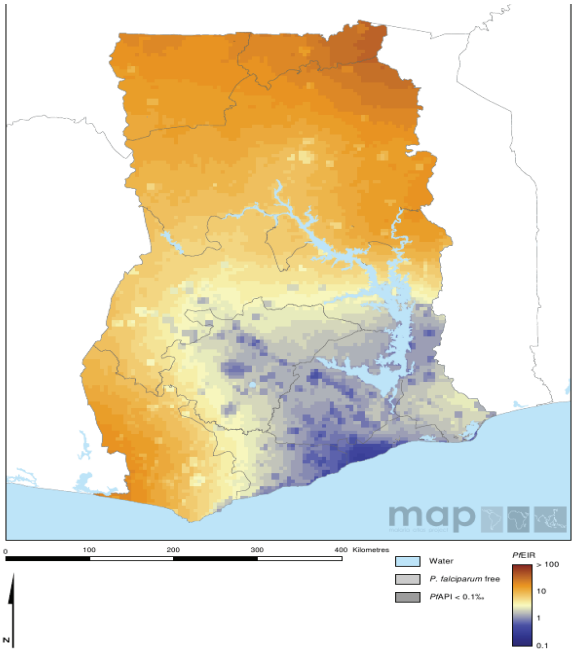


Figure 1: Risk of Malaria Transmission Across the Different Ecological Zones (EIR); Source: Gething et al., 2011. Malaria Journal

3.2.4.2 Distribution of Malaria by Place

Malaria transmission is generally stable in Ghana with varying endemicity (MIS 2019) across the regions in Ghana. The Ghana Demographic and Health Survey 2022 (GDHS 2022) shows a parasite prevalence among

children under 5years of 8.6%, a decrease from 27.5% in 2011 (MICS, 2011) [Figure 2].

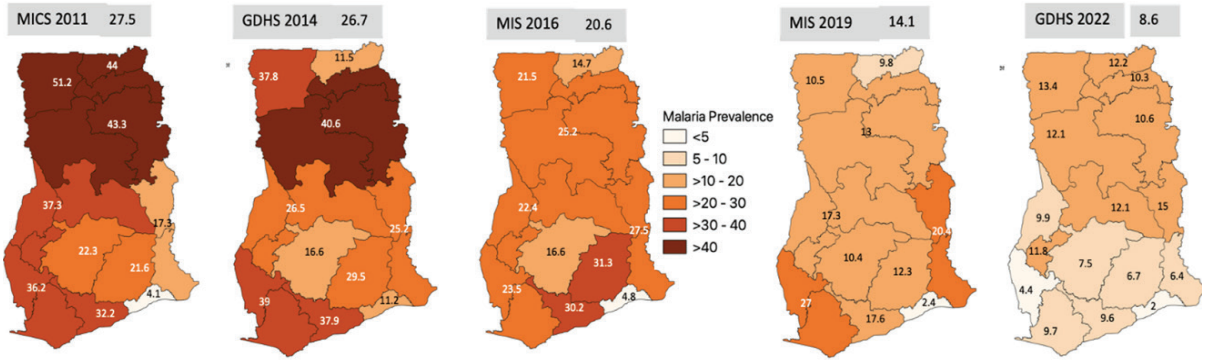


Figure 2: Percentage of children aged 6-59 months who tested positive for malaria by microscopy by setting (Source: GDHS 2022)

3.2.4.3 Malaria Prevalence by Rural/Urban Location

Malaria prevalence in children is relatively higher among rural households than urban households as shown in Figure 3.

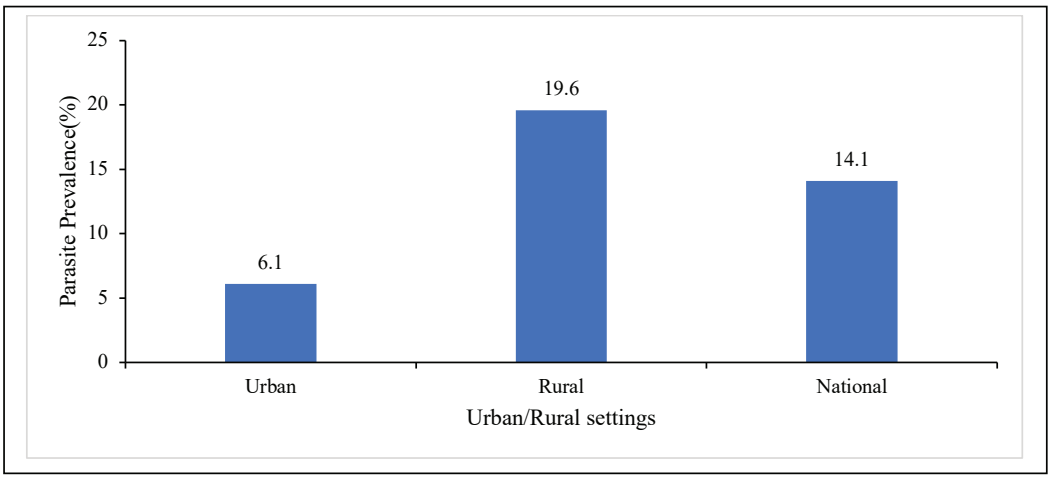
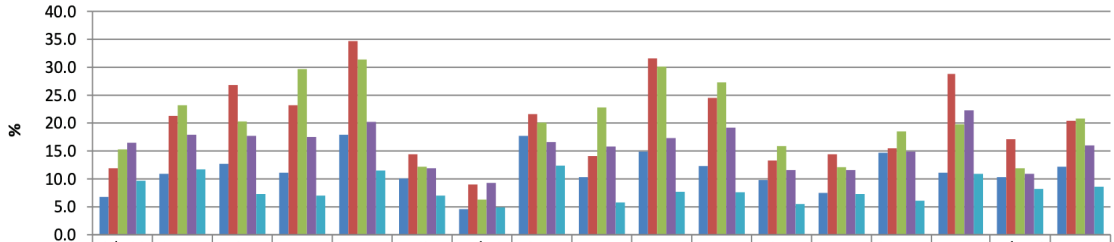


Figure 3: Percent of children aged 6-59 months who tested positive for malaria by microscopy by Urban/ Rural distribution (Source: MIS 2019)

3.2.4.4: Distribution of Malaria by Person

In 2021, overall age-specific malaria distribution by person was highest among patients aged 10-14 years (20.48%) followed by patients aged 5-9 years (20.0%) [Figure 4]. This pattern was observed in 6 out of the 16 regions: Central, Volta, Bono, Ahafo, Northern, and Savannah (Sentinel Site Report, 2022)



	G/ACCRA	CENTRAL	EASTERN	VOLTA	OTI	WESTERN	W/NORTH	ASHANTI	BONO	B/EAST	AHAFO	NORTHERN	N/EAST	SAVANNAH	U/EAST	U/WEST	NATIONAL
< 5yrs	6.8	10.9	12.7	11.1	17.9	10.1	4.6	17.7	10.3	14.9	12.3	9.8	7.5	14.7	11.1	10.3	12.2
5 - 9yrs	11.9	21.3	26.8	23.2	34.7	14.4	9.0	21.6	14.1	31.6	24.5	13.3	14.4	15.5	28.8	17.1	20.4
10 - 14yrs	15.3	23.2	20.3	29.7	31.4	12.2	6.3	20.1	22.8	30.1	27.3	15.9	12.1	18.5	19.8	11.9	20.8
15 - 19yrs	16.5	17.9	17.7	17.5	20.2	11.9	9.3	16.6	15.8	17.3	19.2	11.6	11.6	14.9	22.3	10.9	16.0
20yrs and above	9.7	11.7	7.3	7.0	11.5	7.0	4.9	12.4	5.8	7.7	7.6	5.5	7.3	6.1	10.9	8.2	8.6

Figure 4: Age-specific Malaria prevalence in sentinel sites by regions, 2022.
Source: Malaria Parasite Prevalence Report, 2022

3.2.4.5 Description by Time

Trends of monthly suspected and confirmed malaria cases at the national level from January 2014 to October 2022 is demonstrated in Figure 5. The pattern of malaria has remained similar over the years; with cases increasing from April and peaking in October/November.

In most years, minor peaks were recorded in May/June and the highest in October/November.
This trend coincides with the rainfall pattern in Ghana, where rainfall intensifies around April/May and around October. However, the seasonal patterns of malaria in the northern savannah zones- where the rains start from June and ends in October- is completely different from the southern zones, as demonstrated in Figure 6.

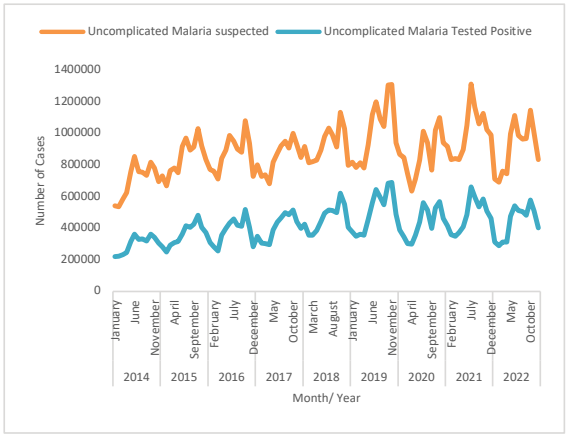


Figure 5: Monthly Trend of Malaria Cases in Ghana, 2014-2022 Source: DHIMS 2, 2022

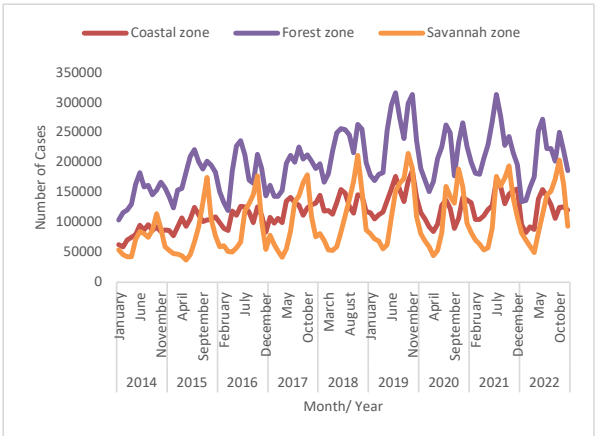


Figure 6: Monthly Trend of Malaria Cases in Ghana by Zones, 2014-2022 Source: DHIMS 2, 2022

3. Morbidity and Mortality

Trends and distribution of uncomplicated suspected malaria cases seen at the outpatients' departments of health facilities, the number who got tested, the number who tested positive as well as the number of cases treated with Artemisinin-based Combination Therapies (ACTs) is demonstrated in Figure 7. Confirmed malaria cases decrease by 5% from 2018 to 2022 (5,510,210 to 5,239,066), while malaria deaths declined by 65% (428 to 151) over the same period (see Figure 7 below).

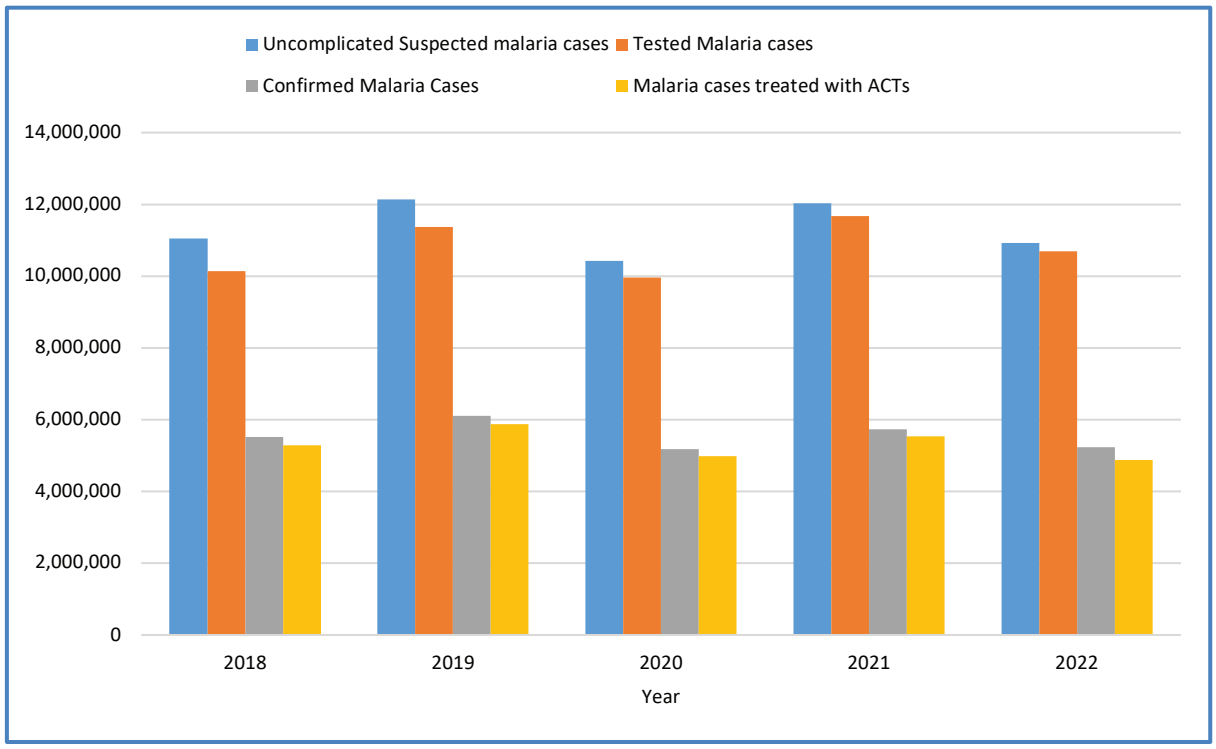


Figure 7: Number of OPD Suspected Malaria Cases, tested, outcome of testing and treatment with ACT, 2018-2022

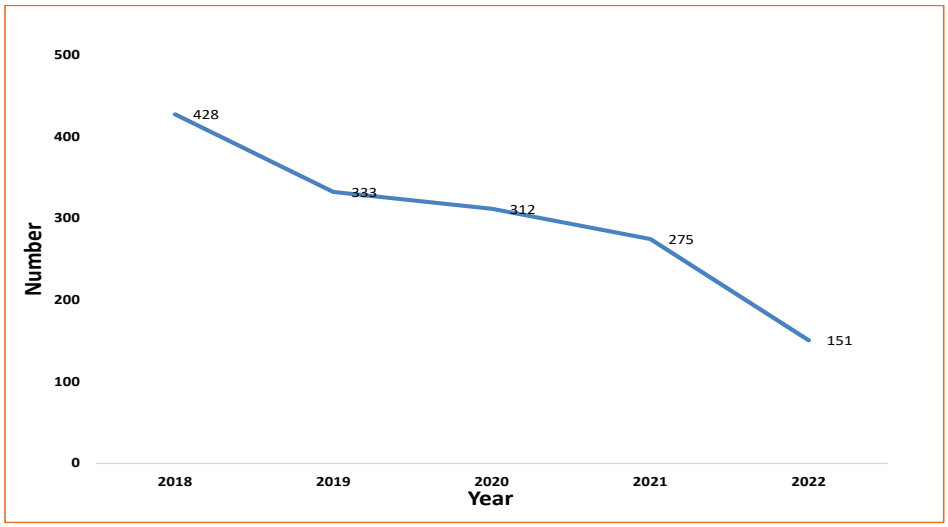


Figure 8: In-patient malaria Death, Ghana, 2018 -2022

3.4 Malaria Stratification and Mapping

Ghana is one of the 11 countries contributing to 80% of the world's malaria burden and is part of the High Burden High Impact Initiative (HBHI). One of the pillars of this initiative is the use of strategic information for decision-making. In this regard, the country has been stratified according to the malaria burden at the district level. The stratification aimed to ensure the implementation of appropriate and epidemiological context-specific interventions to maximize impact.

In 2019, Ghana NMEP (then NMCP) together with WHO and other stakeholders conducted a malaria burden stratification exercise to elucidate the variance in malaria transmission across the country, and to adapt and improve malaria control and preventive interventions that are the best fit for the microepidemiology. This stratification exercise was repeated in 2022 to allow for sub-national tailoring of malaria interventions per district.

The analysis process involved three main steps:

- Districts were stratified based on important epidemiological metrics i.e., parasite prevalence, malaria incidence, and all-cause mortality in children under the age of five years.
    - The country has been zoned into four epidemiological levels based on the m.alaria prevalence and incidence in the country. The zones include very low malaria burden (1-49 cases/1,000 population, <1% parasite prevalence), low malaria burden (50-199 cases/1,000 population; 1%-5% parasite prevalence), moderate malaria burden (200-499 cases/1,000 population; 5-<15% parasite prevalence) and high malaria burden (>/=500 cases/1,000 population; >15% parasite prevalence). More than 85% of the Ghanaian population live in the low, moderate, and high malaria transmission zones.
- Epidemiological strata obtained from above were recategorised using administrative areas (regions) to enhance operationalisation of assigned interventions. For instance, regions with many districts with high burden of malaria were classified as high burden districts.
- The above epidemiological information was combined with district-level measures of entomology, insecticide resistance, seasonality, urbanization, and access to care to identify core interventions to be implemented in each district.

3.4.1 Incidence of Malaria

The malaria incidence data was obtained from using confirmed malaria cases from the Health Management Information System (HMIS) adjusted for testing rate, reporting rate and care seeking behaviour (see figure 9 below).

	Public sector		Private sector & Community	
	Crude incidence	**Incidence adjusted for testing rates**	**Incidence adjusted for testing rates & reporting rates**	**Incidence adjusted for testing rates, reporting rates & care seeking behaviour**
Numerator	Confirmed cases	Adj1 = Confirmed cases + (Presumed cases * TPR)	Adj2= Adj1 + Adj1* (1-Reporting rate)	Adj2 + (Adj2/public seeking) * TPR-private sector + (Adj2/public seeking)* TPR-non-seekers

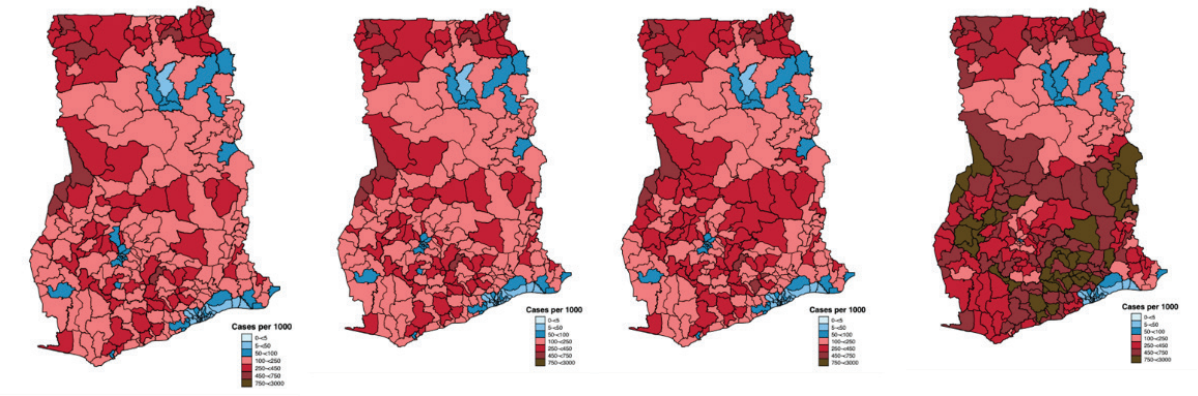


Figure 9: Incidence of malaria in Ghana

3.4.2 Prevalence of Malaria

Using geospatial methods, *P. falciparum* parasite prevalence (PfPR) data from the 2019 Malaria Indicator Survey (MIS), combined with climatic variables, were modelled (extrapolated) to produce estimates of parasite prevalence per year from 2019-2022 by districts. This analysis was done with the help of the Malaria Atlas Project. The estimates for 2019 to 2022 are shown in Figure 10.

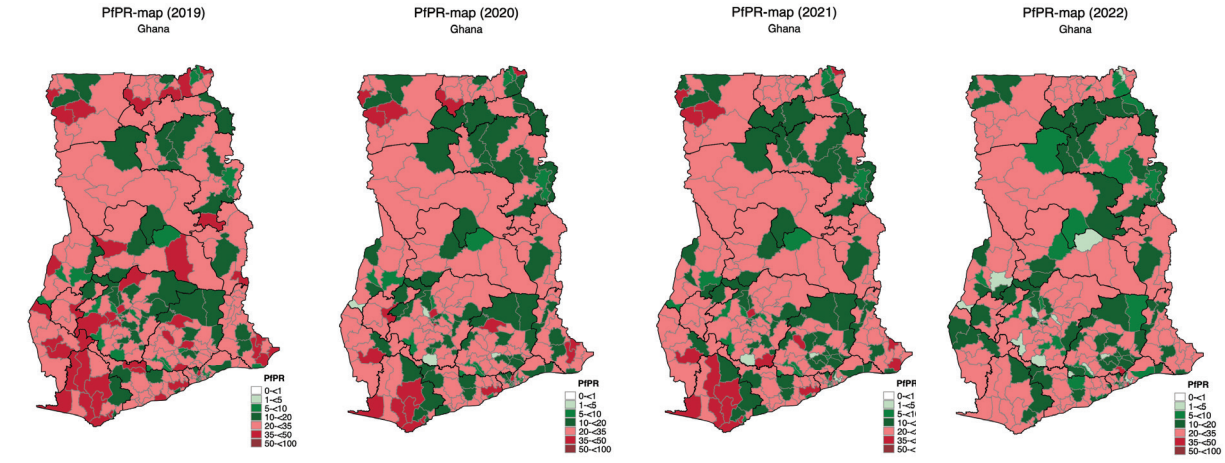


Figure 10: Prevalence of malaria in Ghana

3.4.3 All-cause Under-five Mortality

All cause under--5 mortality data for the year 2017 was obtained from the Institute of Health Metrics and Evaluation (IHME) and used as a proxy for malaria mortality for the stratification exercise. All cause under - 5 mortality for the years 2000 and 2017 are shown in the figure below.

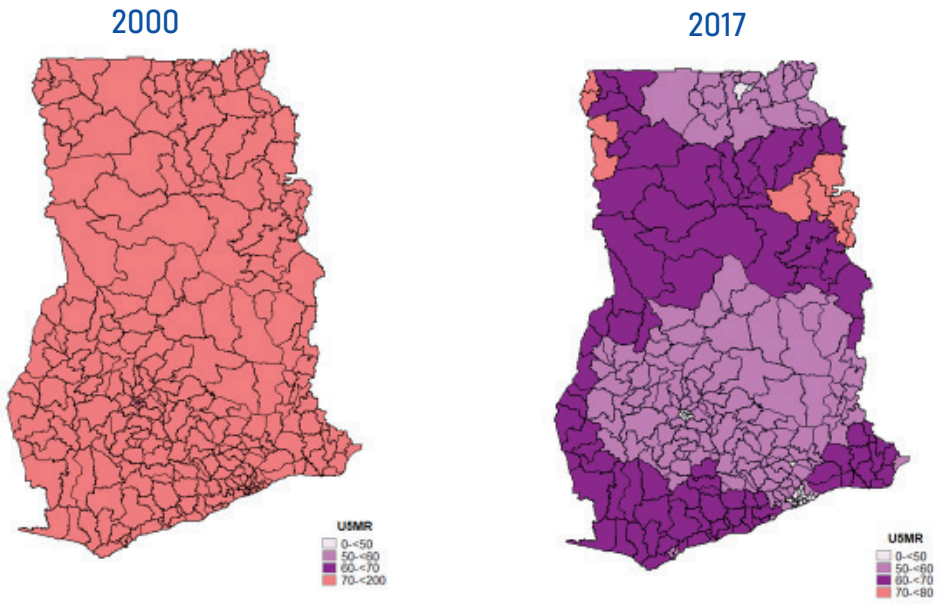


Figure 11: All-cause under-five mortality in Ghana

3.4.4 Stratification by Combination of Indicators

Based on the prevalence and incidence categories of districts in 2022, scores were assigned and summed up. These scores were used to stratify the districts based on the combined scores. The first set of strata according to prevalence and incidence scores were obtained and were used to generate new scores. In addition, the under-5 mortality rate (U5MR) estimates for 2017 were added to the combined prevalence and incidence strata scores to obtain a final composite set of strata which included prevalence, incidence, and U5MR (Figure 12).

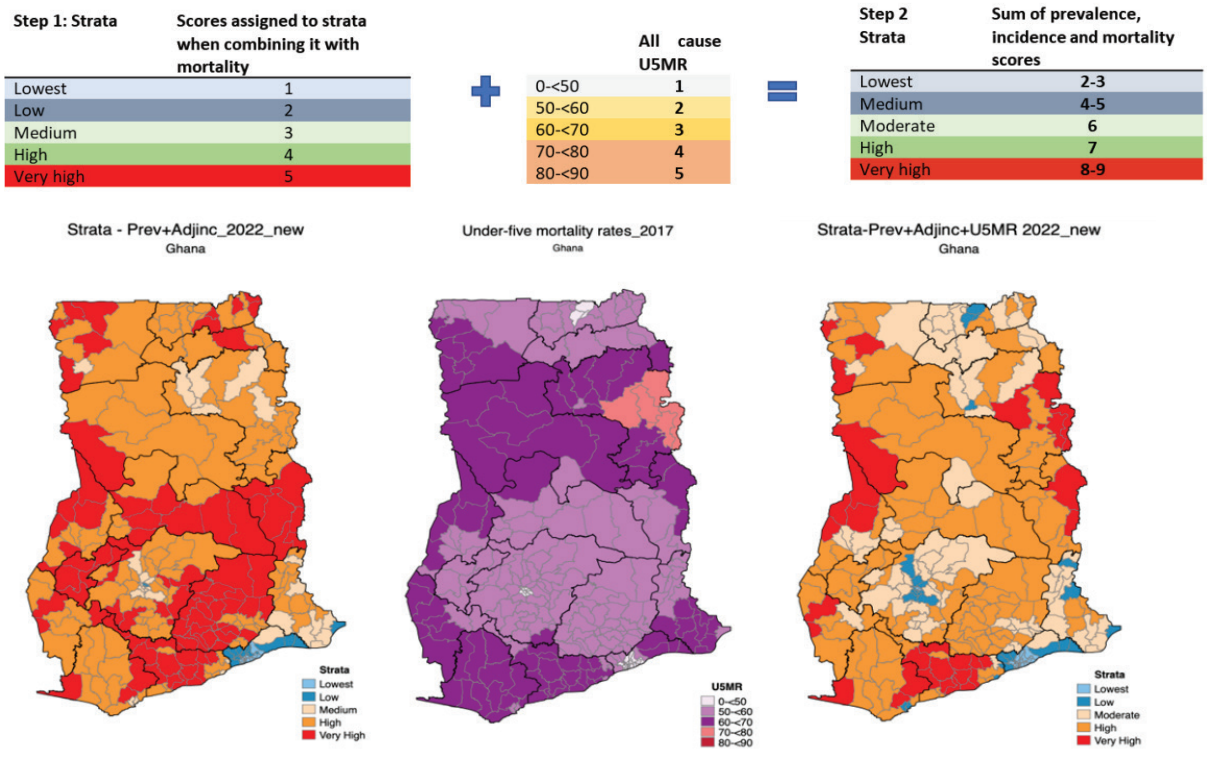


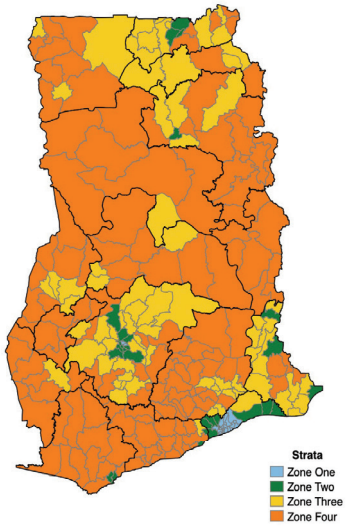
Figure 12: Stratification by combination of indicators

3.4.5 Stratification by Geographic/Administrative Areas (regions)

Strata obtained using a combination of indicators were re-stratified based on administrative areas to improve operationalisation of plans/ interventions. See figure 5 below for stratification based on operations zones.

With this, over 88% (232/261) of districts fall within moderate to high burden strata. twentyone (21) districts in the Greater Accra Region fall within the very low burden strata. These districts are: Ablekuma Central, Ablekuma North, Ablekuma West, Accra Metropolis, Adenta, Ashaiman, Ayawaso Central, Ayawaso East, Ayawaso North, Ayawaso West, Ga Central, Ga East, Korle Klottey, Kpone Katamanso, Krowor, La Dadekotopon, Ledzokuku, Okaikwei North, Tema Metropolis and Tema West Districts. The remaining 8 districts in the Greater Accra Region make up the eight (8) districts with low burden of malaria.

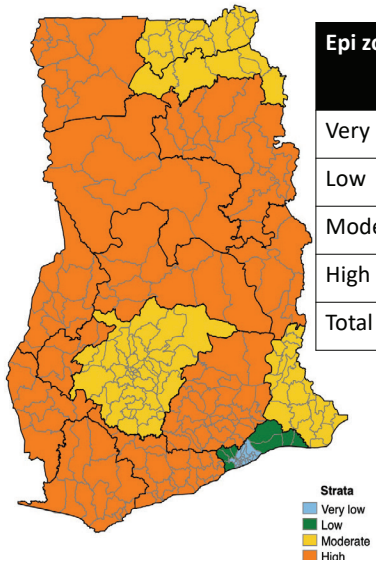
Epidemiological zones



Zone	Number of districts
1	23
2	27
3	71
4	140
Total	261

Zone1 = Very low
Zone 2 = Low
Zone 3 = Moderate
Zone 4 = High + Very High

Operation Zones



Epi zone	Number of districts
Very low	21
Low	8
Moderate	83
High	149
Total	261

Figure 13: Malaria burden stratification based on operational zones, 2023

3.4.6 Seasonality and Access to Health Services

Two main seasonal patterns for malaria transmission are identified in Ghana as illustrated in Figure 6. Most of the northern areas have 65% of rainfall in four consecutive months of the year. Access to malaria services by the population is also indicated in Figure 7. Access to health service (proportion of population within 5km radius of a health facility) in general is relatively better in the southern areas compared to the northern part of the country.

Seasonality	Access to health services
Areas where at least 60% of rainfall occurs in 4 consecutive months	Proportion of population living outside 5km radius of a health facility

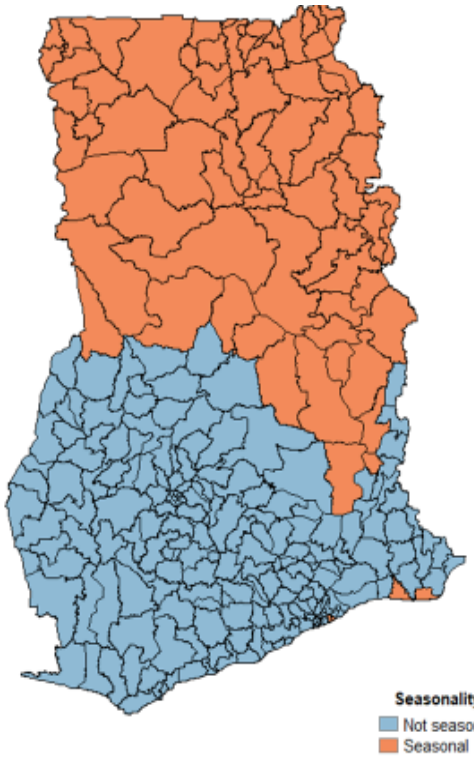


Figure14: Seasonal patterns of rainfall in Ghana

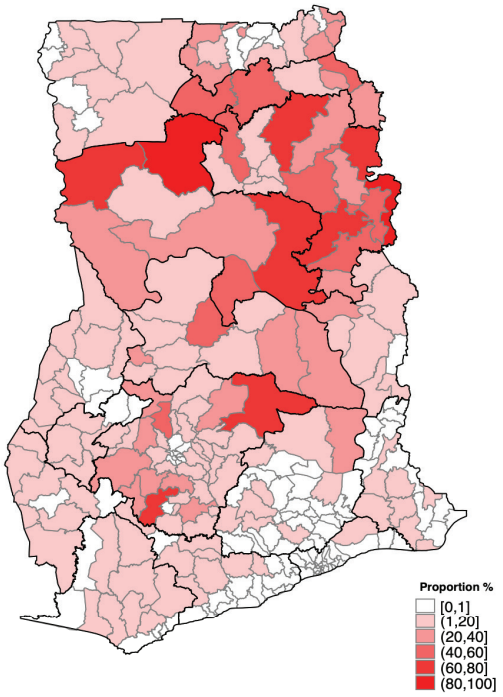


Figure 15: Access to malaria services by geographical location, Ghana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CHAPTER 4:
MID-TERM REVIEW OF THE NMSP 2021-2025

The mid-term review of the National Malaria Strategic Plan (2021-2025) was carried out to assess progress towards achievement of strategic goals and objectives of the NMSP 2021-2025 at mid-term; to review the malaria policy and programming framework, organisation, structure and management within the health system and national development agenda and to redefine the strategic direction and focus for malaria and make recommendations towards improving programme performance and malaria elimination.

The MTR was carried out in five (5) phases between December 2022 and July 2023:

i. Planning phase- which involved stakeholder meetings and consultations, development of the terms of reference, selection of national consultant, constitution of review committees as well as budgeting and fund mobilisation.
ii. Thematic desk review- Multistakeholder committees met to assess level of achievement of set targets and activities using relevant documents and evidence.
iii. Field review- Field teams interviewed key stakeholders as well as reviewed relevant records at the national and the regional, district, facility, and community levels across all key sectors (health and non-health) in 3 regions (Northern, Volta and Central Regions), to validate desk review findings, as well as obtain recommendations towards malaria elimination. Focused group discussions were also carried out in selected communities in the 3 regions.
iv. Validation of findings- Meetings were held to validate and reconcile the desk review and field findings. Draft review report was developed and disseminated for further inputs towards finalization.
v. Follow up- Further stakeholder meetings were held to finalise the MTR report, as well as disseminate findings.

This section provides a highlight of key findings from the MTR.

4.1. Governance, Programme Management and Capacity of the NMEP to Implement Activities

The success of malaria control interventions depends largely on government and partner political will, commitment, and policy decisions to provide adequate funding for delivering services. For this reason, the programme made considerable efforts to garner the political will needed to support the programme's activities.

Achievements

- Two engagement meetings were held with the parliamentary Select Committee on Health to brief them on malaria.
- Members of the parliamentary Select Committee on Health were oriented on malaria at Alisa Hotel, Accra, on 14th July 2022.
- Inauguration of the Parliamentary Select Caucus on malaria on 15th July 2022. Seventy-six participants attended, including 24 Members of Parliament (MPs). Thirty-two MPs and invited

guests pledged their support towards the fight towards zero malaria. Action plans were developed based on suggestions from members of the parliamentary Caucus on malaria. These action plans have been shared with the Chairman of the Caucus for input(s) and further action.

- The programme partnered with Ecobank to support private sector resource mobilisation activities to be implemented under the Zero Malaria Business Leadership Initiative (ZMBLI). Advocacy with political leadership formed a key component of this initiative.

4.2. Strengthen Coordination and Partnerships Including Private Health Providers

The work of the NMEP highly depends on the partnership and collaborative nature in which interventions are planned, implemented, and evaluated. Partners have been instrumental in all the steps required to deliver interventions nationwide.

Achievements

- NMEP staff participated in the annual Regional Review meetings. Four review reports were cited by the team of reviewers.
- The West African Health Organisation (WAHO) organised a cross border meeting for National Health Information Systems Managers and Technical and Financial Partners in the ECOWAS Region, which was attended by representatives from the Ghana NMEP.
- A four-year Memorandum of Understanding (MoU) has been signed with Zoomlion Ghana Limited to carry out Larval Source Management (LSM) in selected 120 districts across the country. NMEP and Noguchi Memorial Institute for Medical Research (NMIMR) were tasked to supervise the LSM. Regarding LSM, a total of 26,649 potential breeding sites were mapped, out of which 24,753 (92%) have been sprayed.

4.3. Build Capacity of National-Level Staff on Current and Emerging Information Technologies

Improved use of technology to monitor and improve programme performance was actively pursued by building staff capacity on current and emerging information technologies,upgrading the IT infrastructure of the NMEP to allow a more coordinated approach to service delivery through automation and ensuring that technologies procured were secure, reliable, and posed minimal risk to the programme. This strategy was intended to keep national-level staff updated on current and emerging information technologies for ease and efficiency of work. The year 2021 ushered in a renewed focus on Information and Communication Technology (ICT) due to changes necessitated by the COVID-19 pandemic. The pandemic triggered an unparalleled dependence on ICT. It also revealed the information technology knowledge gap of staff. The necessary training was tailored to address these gaps.

Achievements

- The team successfully carried out all planned training sessions for NMEP staff on basic ICT skills with reports available.
- Team successfully trained 3 Monitoring and Evaluation (M&E) officers and 3 Data managers in ICT with reports available.

4.4 Malaria Financing Landscape and Partnership

Even though there had been a steady increase in the budgetary allocation for both the national and health sector budgets, the rate of increase for the health sector budget is comparatively lower. For instance, between 2019 and 2020, there was about 71.75% national budgetary increase compared to 9.09% for the health sector over the same period. Nonetheless, the Ministry of Health has since 2019 continuously increased budgetary allocation to the programme. This shows the Ministry's commitment towards fighting malaria (See figure 16).

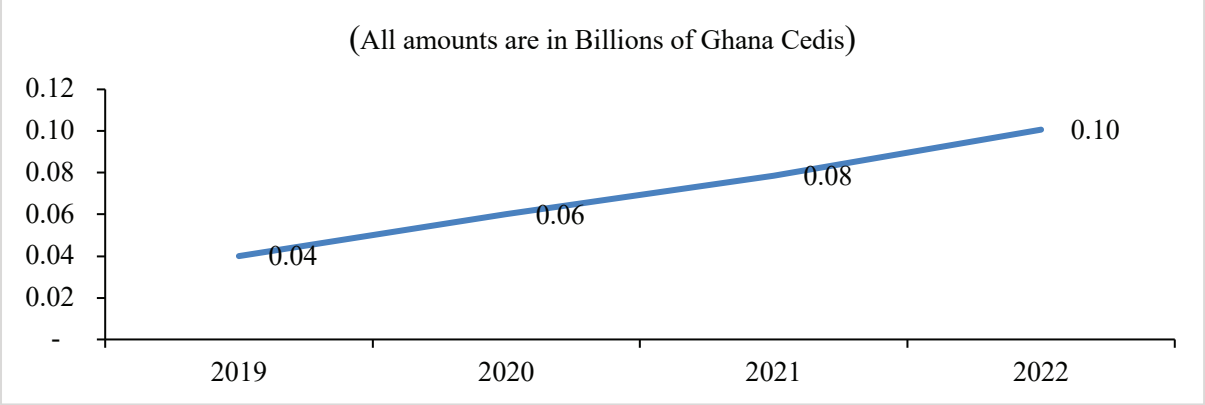


Figure 16: Trend of malaria budget, 2019 – 2022

4.5 Progress Towards Achieving National, Regional, and Global Objectives

Goal 1: To reduce the malaria mortality burden by 90% (using 2019 as baseline) by the year 2025

In 2021, the in-patient malaria deaths per 100,000 persons per year was 0.844, higher than the 0.71 set target for that year. However, the achieved in-patient malaria deaths per 100,000 persons per year in 2022 (0.48) was slightly lower than the set target (0.56). The targets for malaria case fatality among under 5 children for 2021 (0.09) and 2022 (0.06) were achieved (Table 2).

Goal 2: To reduce the malaria case incidence by 50% by the year 2025 (using 2019 as baseline)

In 2021, confirmed malaria cases (microscopy and RDT) per 1000 population per year was 176, lower than the 210 target for the year. Also, the number of confirmed out-patient malaria cases in 2022 was 4,999,607 lower than the 5,733,013 target for 2022 (Table 2).

Goal 3: Achieve malaria pre-elimination in at least 6 districts by 2025

Two indicators were considered in achieving malaria pre-elimination i.e., annual parasite index (number of positive slides per 1000 population at risk) and Slide Positivity Rate (SPR) from routine Health Management Information Systems (HMIS). In 2022, target for 6 districts earmarked for pre-elimination was not met (Table 2).

Table 2: Progress Towards Achieving National Objectives

Goals	Indicators	Baseline (2019)	Target 2021	Achievements 2021	Target 2022	Achievements 2022	Level of Achievement compared to 2022 Target
Goal 1: To reduce malaria mortality burden by 90% (using 2019 as baseline) by the year 2025	Inpatient malaria deaths per 100,000 persons per year	1.1	0.71	0.84	0.56	0.48	115.7%
	Number of malaria reported deaths	333	233	275	183	155	118.1%
	Children Under - 5 Case fatality	0.12	0.1	0.09	0.08	0.06	133.3%
Goal 2: To reduce the malaria case incidence by 50% by the year 2025 (using 2019 as baseline)	Malaria test positivity rate	22.4%	13.7%	11.1%	12.3%	11.6%	123.4%
	Confirmed malaria cases (microscopy and RDT) per 1000 population per year	192	210	176	219	155	138.6%
	Number of confirmed outpatient malaria cases	6,104,713	5,370,331	5,733,013	4,999,607	5,192,465	96.3%
Goal 3: Achieve malaria pre-elimination in at least 6 districts by 2025	SPR from Routine HMIS	8.0%	7.1	10.7	6.3	10.5	60.4%
	Annual parasite index (number of positive slides per 1000 population at risk)	8.6	8.2	21.6	8.0	15.1	53%

CHAPTER 5:
STRATEGIC FRAMEWORK OF THE NATIONAL MALARIA ELIMINATION STRATEGIC PLAN (NMESP) 2024-2028

5.1 Programme Vision

Malaria-free Ghana to contribute to economic and social development.

5.2 Programme Mission

To ensure that the entire population of Ghana have universal and equitable access to interventions for malaria prevention and treatment and to achieve malaria elimination.

5.3 Programme Guiding Principles

The NMEP's guiding principles are the shared rules and ethical standards that underpin its work as an organisation and its relationships with users and other stakeholders. The guiding principles are country ownership and leadership, inclusiveness and coordinated partnership, accountability, evidence-based and result-oriented management.

5.3.1 Country Ownership and Leadership

In Ghana, the Presidency, with the support of the Ministry of Health (MoH) and National Malaria Elimination Programme (NMEP) of the Ghana Health Service (GHS) will lead the malaria elimination efforts. The NMESP is aligned with the Health Sector Medium Term Development Plan as well as national and global goals.

5.3.2 Inclusive and Coordinated Partnership

Implementation of all malaria elimination-related activities will be strategically led by the Presidency and supported by GHS NMEP, MoH, all other Ministries, Departments, Agencies and Committees at the national level. At all other levels of governance and health care systems, stakeholders will replicate the national elimination committee composition to improve ownership and efficiency. In developing the NMESP, the NMEP continuously engaged all stakeholders to contribute to the goals, objectives, strategies, and activities. Participating ministries, department and institutions also shared how NMEP can effectively engage them, and what they will contribute to eliminating malaria in Ghana. Below are stakeholder commitments and how each can be engaged:

Table 3: Approach to engaging stakeholders and their commitment

Ministry/Department	Approach to engaging Ministry/Department	Commitment/Effort Towards Eliminating Malaria
Ministry of Local Government and Rural Development (MLGRD	1. MoH should officially writeto the MLGRD and engage the Ministry to support the malaria elimination agenda	1. Malaria elimination will be included in the District Performance Assessment Tool (DPAT) indicators. 2. Include malaria elimination as part of the ministry sector-wide monitoring. 3. Improve allocation, disbursement and utilization of 0.5% District Assembly Common Fund (DACF) towards malaria programming.
Regional Coordinating Councils (RCCs)	1. The team should hold a meeting with the Regional Ministers and Regional Coordinating Directors 2. Ensure follow-up visit to the Regional Coordinating Councils (RCCs) by the NMEP to further engage on malaria elimination in Ghana.	1. Review of District Medium Term Development Plans (DMTDPs) and Annual Action Plans (AAPs) to capture malaria elimination. Also, to include a budget line for malaria elimination. 2. Directives from MLGRD/National Development Planning Commission (NDPC)/ Office of the Head of Local Government Service (OHLGs) to all Metropolitan Municipal District Chief Executives (MMDCEs)/Metropolitan Municipal District Coordinating Directors (MMDCDs) on prioritizing malaria elimination. 3. Performance contracts/District Performance Assessment Tool (DPAT) assessment signed between Regional Coordinating Directors (RCD) and Regional Ministers (RM) will capture Key Performance Indicators

Ministry/Department	Approach to engaging Ministry/Department	Commitment/Effort Towards Eliminating Malaria
Ghana Education Service (GES)	1. An official letter on malaria elimination in Ghana should be sent to the Director General (DG) of the Ghana Education Service by the NMEP 2. An in-person meeting should be held with the DG and Ghana Education Service (GES) Management to discuss malaria elimination in Ghana and how the Education service	1. Develop malaria elimination content and infuse it into lesson notes for pre-service training and learning at schools. 2. Use school health clubs and peer educators to drive behaviour change towards malaria elimination. 3. Budget funds to coordinate and monitor school health and malaria elimination activities.
National Development Planning Commission (NDPC)	1. A letter should be addressed to the Director General of NDPC on malaria elimination and how the commission can support.	1. A directive will be sent by the NDPC to all Metropolitan Municipal District Assemblies (MMDAs) to review their Medium-Term Development Plans (MTDPs) to prioritize malaria elimination. 2.Prioritize malaria elimination at all levels.
Ministry of Works and Housing	1. A report on the two NMESP development meetings will be shared with the Ministry, highlighting the malaria elimination agenda and the role of the Ministry. 2. NMEP/ GHS should arrange a meeting with the Minister. Participants of the NMESP development process will be the point of contact to scheduling meetings at the Ministry. 3. Malaria Team should pay a courtesy call on the leadership of Parliament. 4. A meeting should be held with the Metropolitan, Municipal and District Assemblies (MMDAs) and the National Development Planning Commission (NDPC)	1. Advocate for improved housing design. 2. Advocate for inclusion of malaria elimination in SBC activities 3. Enhance collaboration with MLGRD, Ministry of Sanitation and Water Resources (MSWR), and Ministry of Roads and Highways (MRH) with

Ministry/Department	Approach to engaging Ministry/Department	Commitment/Effort Towards Eliminating Malaria
National Commission for Civic Education (NCCE)	1. Hold a meeting with the Deputy Chair, In-charge of Operations, Director and Deputy Director of Operations to discuss malaria elimination.	1. Information will be sent to the Regional and District NCCE offices on implementation hotspots or operational areas in all 16 regions. 2. Use the NCCE "Project Citizen" that targets school pupils to identify the malaria problems in their communities and find/ develop solution(s)to it/them.
Ghana Immigration Service	1. National Malaria Elimination Programme should send a letter requesting for a meeting with the Commissioner of Immigration to discuss the malaria elimination strategies.	1. Officers will be available to provide education on malaria elimination. 2. Will put in efforts to ensure malaria elimination strategies/ policies are enforced both at the approved a unapproved entries into Ghana.
National Chief Imam	1. Hold meetings with the National Chief Imam on malarial elimination in Ghana, requesting their support. 2. Hold meetings with leadership/heads of Arabic Schools (Makalanta) to discuss how they can contribute towards malaria elimination.	1. Develop content on malaria elimination, organise competitions and drama to change behaviours of the populace. 2. Disseminate information on malaria through the Muslim Women Associations, Muslim Radio and TV stations etc.
Christian Council of Ghana (CCG)	3. Send a letter to the General Secretary and Chairman requesting for a meeting with the Executives of the Council. 4. The meeting should request the support of the hierarchy to support the malaria elimination interventions.	1. Engage with church leadership on malaria elimination and how they can contribute.

5.3.3 Accountability

The NMESP will be used as a tool to hold the MoH, NMEP, partners and stakeholders accountable to their commitments and responsibilities, including beneficiaries.

5.3.4 Evidence-Based and Results-Oriented Management

Outputs from the Malaria Elimination Think Tank Meeting, the MTR (conducted according to WHO Practical Manual for MTR), together with the malaria burden stratification provided the baseline for this strategic plan. The plan must achieve the most effective and efficient use of resources as well as ensure rapid action with a strong feedback loop.

5.4 Goal and Strategic Objectives of the NMESP 2024-2028

5.4.1. Goals

- Goal 1: Reduce malaria mortality by 90% by the year 2028 (using 2022 as baseline)
- Goal 2: Reduce malaria case incidence by 50% by 2028 (using 2022 as baseline)
- Goal 3: Eliminate malaria in 21 districts with very low malaria burden by 2028.

5.4.2. Strategic Objectives

1. To ensure 100% of the population have adequate knowledge, attitudes, practices, and requisite skills for malaria elimination by 2028.
2. To ensure 100% of the population use at least one malaria preventive measure.
3. To ensure that 100% of suspected malaria cases tested by 2028.
4. To ensure that 100% of confirmed malaria cases are appropriately, effectively, and completely treated by 2028.
5. To strengthen surveillance, and monitoring and evaluation systems by 2028
6. Ensure timely and adequate supply of quality-assured malaria commodities to all service delivery points by 2028.
7. To strengthen and maintain capacity for governance and programme management to achieve programmatic objectives at all levels of the healthcare system towards malaria elimination by 2028.
8. To improve mobilisation of resources and efficiently use available resources towards malaria elimination.

5.4.3. Strategies and Strategic Actions by Intervention

5.4.3.1. Strategic Objective 1 : To ensure 100% of the population have adequate knowledge, attitudes, practices and requisite skills for malaria elimination by 2028

KEY INTERVENTION: SOCIAL AND BEHAVIOURAL CHANGE (SBC)

Strategies

The following strategies will be implemented:

Strategy 1: Develop a Communication and Advocacy Strategy Including Risk Communication.

The existing national communication and advocacy strategy will be updated, with contents oriented towards elimination of malaria in Ghana.

Strategy 2: Strengthen Structures to Facilitate SBC Activity Implementation.

The national SBC and advocacy committee will be reconstituted and supported to ensure capacity for enhanced SBC and advocacy towards malaria elimination. Past and existing interventions, including stakeholder engagements, will be improved. Interventions will be monitored, and impact evaluated. The World Malaria Day will continue to be commemorated at all levels (National, Regional, District and SubDistrict).

Strategy 3: Strengthen Community Engagement at Regional and District Levels for Increased Ownership for Malaria Elimination

Community sensitisation will be conducted through collaborations with stakeholders such as Civil Society Organisations (CSOs), Regional and District Health Promotion Officers, key champions among others to ensure ownership and promotion of malaria elimination interventions.

Strategy 4: Promote Inter-sectorial Collaboration, Develop, and Disseminate Malaria Guidelines (including chemoprophylaxis) for Travellers to Malaria-Endemic Countries/ Areas

The strategy will promote inter-sectoral collaboration, with entities such as airline companies, travel agencies, embassies, customs, and immigration, MMDAs and private sector organisations to intensify awareness through existing communication channels and platforms, including development and dissemination of malaria guidelines to travellers to malaria endemic countries/ areas.

Strategy 5: Document All Health Education and Community Engagement Plans Used to Achieve Elimination and to Support the Country/Sub-national Areas to Prevent Re-establishment

Under this strategy, data collection and reporting tools will be developed to facilitate proper documentation of all health education activities. A web portal on malaria elimination educational materials will also be created for easy reference.

Strategy 6: Use of mass and Social Media for Engaging the Public on Malaria Interventions

Develop creative content for mass media sensitisation, social media campaigns, posters, billboards, cue cards, and flip charts, and undertake capacity-building workshops to improve knowledge and awareness on malaria and its elimination.

Strategy 7: Build the Capacity of Health Workers and Stakeholders on Malaria Elimination at All Levels

Build the capacity of health workers, particularly Health Promotion Officers and related roles, and other stakeholders at all levels towards malaria elimination.

Strategy 8: Intensify Community-level Sensitisation on Malaria Elimination Interventions

Engage Non-Governmental Organisations (NGOs) to conduct community-level sensitisation. Train volunteers to carry out house-to-house, church, mosque, mobile van, Community Information Centre (CIC) education/ sensitisation on malaria elimination; undertake community durbars and sensitisation of schools on malaria.

Strategy 9: Develop/Update and Distribute SBC Materials

Develop, pre-test, validate and finalise malaria SBC materials as well as checklist to monitor SBC activities at all levels.

5.4.3.2 Strategic Objective 2: To ensure 100% of the population use at least one malaria preventive measure

KEY INTERVENTION 1: VECTOR CONTROL

Strategies

The following strategies will be implemented:

Strategy 1: Develop Guidelines for Vector Control

Review malaria-integrated vector management guidelines and Standard Operating Procedures (SOPs) and publish all guidelines on MOH/GHS and all other relevant platforms, including that of partners and stakeholders.

Strategy 2: Maximize Population-based ITN Campaigns (Routine and Targeted)

Activities aimed at implementing this strategy will include stakeholder engagement and coordination of ITN mass campaigns and routine distribution, supportive supervision, and SBC throughout implementation. Innovative and evidence-based means will be employed to improve quality of delivery and coverage.

Strategy 3: Conduct Indoor Residual Spraying (IRS)

Activities under this strategy will include stakeholder engagement and coordination of IRS implementation, supportive supervision, and SBC throughout implementation. Innovative and evidence-based means will be employed to improve quality of delivery and coverage.

Strategy 4: Conduct Larval Source Management (LSM)

Activities under this strategy will include stakeholder engagement, coordination and supportive supervision of LSM in targeted districts, and SBC throughout implementation.

Strategy 5: Use Alternative Vector Control Interventions

Engage the private sector, promote use of proven alternative vector control tools such as repellents and other locally proven adaptable vector control interventions per the Integrated Malaria Vector Management guidelines.

Strategy 6: Improve Infrastructure Management, Human Settlement, and Spatial Planning

Advocate for policies, bye laws and undertake SBC for improved housing and human settlement.

Strategy 7: Ensure Monitoring, Surveillance, and Data use

Undertake coordinated response to end transmission in focused areas. Conduct routine entomological surveillance and evaluate the effectiveness of vector control interventions implemented for programmatic decision-making.

Strategy 8: Ensure Capacity Building in Entomology

Advocate for curriculum updates, build capacity of staff in entomology, advocate for recruitment and placement of entomologists.

Strategy 9: Develop a Vector Control Epidemic Preparedness Strategy.

Develop a vector control epidemic preparedness plan and conduct regular stratification on changes in transmission/disease burden and intervention.

Strategy 11: Regulatory, Policy, Ethics, and Normative Support

Advocate for update and revision of regulatory and legislative controls for public health in line with the enhanced vector control measures outlined in this strategic plan. Collaborate and strengthen partnership with ethical and research review committees and Environmental Protection Agencies regarding Environment Impact Assessment mechanisms.

Strategy 12: Educational Reforms

Advocate with training and professional certification institutions to include in their training curricula, where absent, all key aspects of malaria entomology/vector control and malaria elimination.

KEY INTERVENTION 2: INTERMITTENT PREVENTIVE TREATMENT OF MALARIA IN PREGNANCY (IPTP)

Strategies

The following strategies will be implemented:

Strategy 1: Improve the Availability of Intermittent Preventive Treatment of Malaria in Pregnancy Using Sulphadoxine Pyrimethamine (IPTp-SP)

Conduct advocacy and procurement discussion meetings with Association of Ghana Industries (AGI), Pharmacy Council, Society of Private Medical and Dental Practitioners (SPMDPs), and other stakeholders respectively.

Strategy 2: Improve Availability and Use of MiP Data Management Tools/Systems

Strengthen collaboration between the Case Management, Surveillance Monitoring Evaluation and Operational Research (SMEOR), and the Procurement Supply Chain Management (PSM) units of the NMEP to improve availability of MiP data management tools/ systems, and also liaise with relevant institutions and units to harmonize the electronic reporting systems, undertake supportive supervisory visits to improve data capture/ reporting, and expand coverage of the system.

Strategy 3: Improve Access to Relevant and Current Guidelines/Protocol/Job Aids

Review and update Intermittent Preventive Treatment of malaria in pregnancy (IPTp) components of various documents. Develop MiP protocols, job aids and training manuals, and disseminate through various channels.

Strategy 4: Strengthen Community-level Partnership and Involvement for Malaria Elimination in Pregnancy [through NGOs, Faith-based Organisations (FBOs), etc.]

Conduct annual training for relevant community-level agencies, institutions, and volunteers on MiP. Strengthen collaboration with SBC to undertake community-level partnership and involvement activities.

Strategy 5: Build the Capacity of Health Staff Involved in IPTp Implementation (pre- service and in-service training)

Advocate for health education institutions to inculcate malaria elimination into their training curriculum. Train tutors of health training institutions to serve as trainers, particularly Nursing and Midwifery Training Colleges (NMTC). Train MiP implementers at all levels and share periodic updates on MiP to staff at all levels of the healthcare system.

Strategy 6: Explore Alternatives to Sulphadoxine Pyrimethamine (SP) for IPTp

Conduct research to explore alternative medicines for IPTp besides SP.

Strategy 7: Enhance Pharmacovigilance/Efficacy Monitoring for SP

Enhance collaboration with research institutions and the Food and Drugs Authority (FDA) in the conduct

of SP resistance monitoring and pharmacovigilance. Train healthcare staff on pharmacovigilance, and promote Adverse Drug Reaction (ADR) reporting and availability of ADR reporting tools.

Strategy 8: Improve Community-level IPTp-SP Coverage

Train midwives, Community Health Nurses (CHNs) and clinicians on IPTp administration, as well as defaulter identification and care; review and revise components of selected MiP registers; advocate for use of e-tracker for outreach services, including community IPTp.

Strategy 9: Improve Access to IPTp among Pregnant Adolescents

Collaborate with the Family Health Division (FHD) of the GHS to review and revise components of the e-tracker to include IPTp among pregnant adolescents (10-14 years and 15- 19 years)

KEY INTERVENTION 3: SEASONAL MALARIA CHEMOPREVENTION (SMC)

Strategies

The following strategies will be implemented:

Strategy 1: Improve Coordination at All Levels (National, Regional, District, Subdistrict)

Organise planning meetings, including cross border engagement meetings. Conduct SMC national and sub-national review meetings.

Strategy 2: Improve Access to Hard-to-Reach Populations

Identify and map out hard-to-reach areas, allocate funds, deploy appropriate logistics, and enhance channels for social mobilisation.

Strategy 3: Build Capacity of Health Staff at All Levels and Community Health Volunteers to Implement SMC

Develop and update training tools, distribute guidelines, conduct trainings at all levels, evaluate SMC training, and organise Information Technology (IT) boot camps.

Strategy 4: Create Information Communication and Technology (ICT)-enabling Environment to Support SMC Implementation

Procure virtual cloud services, perform landscape assessment, redesign digital tools, pilot new tools, develop training manuals and monitor data for security and privacy.

Strategy 5: Implement SMC Dosing Exercise in All Eligible Districts

Identify volunteers to administer SMC medicines from door to door or using any appropriate means whilst systematically collecting data on medicine administration and carrying out supportive supervision. Conduct mop-up exercises, post-SMC campaign activities, rapid impact assessments.

Strategy 6: Improve Surveillance and Pharmacovigilance on SMC Medicines

Conduct training on pharmacovigilance as part of SMC implementation. Identify and report ADRs. Conduct chemopreventive efficacy studies on SMC medicine(s).

KEY INTERVENTION 4: MASS DRUG ADMINISTRATION (MDA)

Strategies

The following strategies will be implemented:

Strategy 1: Constitute an Expert Group for Malaria Chemoprevention and Develop Guidelines and Standard Operating Procedures (SOPs) for Malaria Chemoprevention

Establish a committee to develop SOPs and guidelines on all malaria chemopreventive interventions.

Strategy 2: Establish National Planning and Coordinating Committee on Malaria Chemoprevention

Establish the National Planning and Coordinating Committee on Malaria Chemoprevention to plan and coordinate malaria chemopreventive interventions across the country.

Strategy 3: Establish MDA Coordination Teams at All Levels

Establish teams at all levels and organise national and sub-national implementation planning meetings.

Strategy 4: Build Capacity of Health Staff at All Levels to Implement MDA

Develop training tools, conduct training, evaluate MDA training, organise IT boot camps for sub-national level staff and community volunteers.

Strategy 5: Implement MDA Campaign in All Eligible Areas

The team will identify appropriate health workers for the Mass Drug Administration (starting in pilot areas), register target groups, administer medicines, provide supportive supervision, mop-up exercise, post-MDA campaign activities, including rapid impact assessments.

Strategy 6: Establish Surveillance and Pharmacovigilance on MDA medicine(s)

Training will be conducted to sensitise clinicians on pharmacovigilance, community members on ADRs and data monitoring. Monitoring of parasite resistance markers for medicine(s) used for MDA will be undertaken.

KEY STRATEGY 5: INTERMITTENT PREVENTIVE TREATMENT IN SCHOOL CHILDREN (IPTSC)

Strategies

The following strategies will be implemented:

Strategy 1: Establish a Coordination Team at All Levels

Organise national and sub-national planning meetings.

Strategy 2: Build Capacity of Health Staff at All Levels to Implement IPTsc

Develop training tools and conduct training of trainers at the national level. This is expected to be replicated at all levels among health staff, School Health Education Programme (SHEP) coordinators and relevant Ghana Education Service (GES) staff.

Strategy 3: Implement IPTsc Campaign in All Eligible Districts

The team will identify appropriate health workers/ school/community workers for drug administration (initially in pilot areas), administer medicines and provide supportive supervision. The team will also, conduct post-IPTsc meetings, including rapid and impact assessments.

Strategy 4: Institute Surveillance and Pharmacovigilance on IPTsc medicine(s)

Sensitise clinicians and communities on pharmacovigilance to identify, monitor and report ADRs. Monitor parasite resistance/ markers for medicine(s) used for IPTsc.

KEY INTERVENTION 6: POST-DISCHARGE MALARIA CHEMOPREVENTION (PDMC)

Strategies

The following strategies will be implemented:

Strategy 1: Establish PDMC Coordination Teams at All Levels

Organise national and sub-national planning meetings.

Strategy 2: Build Capacity of Health Staff at All Levels to Implement PDMC

Develop training tools, conduct training, evaluate PDMC training, organise IT boot camp for sub-national levels.

Strategy 3: Implement PDMC in All Eligible Districts

The team will identify appropriate health workers and community volunteers for the PDMC, administer medicines (starting in pilot areas), provide supportive supervision, mop-up exercise, conduct review meetings and rapid impact assessment.

Strategy 4: Establish Surveillance and Pharmacovigilance on Medicine(s) Used for PDMC

Training will be conducted to sensitise clinicians and health workers in general on pharmacovigilance, community members on ADRs and data monitoring. A surveillance system will be established to monitor parasite resistance and markers of drug resistance associated with PDMC.

KEY INTERVENTION 7: MALARIA VACCINE

Strategies

The following strategies will be implemented:

Strategy 1: Enhance Coordination and Partnerships

Enhance collaboration with the Expanded Programme on Immunization (EPI) programme of the GHS in planning and implementation of malaria vaccinations through active participation and advocacy in committees/ working group meetings such as the National Immunization Technical Advisory Group (NITAG) and the Malaria Vaccine Technical Working Group.

Strategy 2: Build Capacity of Health Staff at All Levels on Malaria Vaccination

Continue orientation on the malaria vaccine to health workers across all levels, with evaluation of outcomes.

Strategy 3: Malaria Vaccine Implementation

Expand coverage of malaria vaccine. Undertake supportive supervision of malaria vaccine implementation.

Strategy 4: Enhance Surveillance and Pharmacovigilance on Malaria Vaccine

Sensitise health workers, caregivers, community members on detecting, reporting and management of Adverse Events Following Immunization (AEFI).

5.4.3.3 Strategic Objective 3 : To ensure that 100% of malaria cases are identified and tested by 2028

KEY INTERVENTION: DIAGNOSTICS

Strategies

The following strategies will be implemented:

Strategy 1: Improve Access to Parasitological Testing; Including Private Facilities, Pharmacies, Over-the-Counter Medicine Shops (OTCMS) and Herbal Medical Shops/Units

Case Management Unit to collaborate with PSM unit to quantify, procure and supply laboratory logistics and supplies to all levels of health care in Ghana. The team will also establish malaria microscopy in all health centres. Establish malaria diagnostic networks across Ghana where all service delivery points without microscopy services will be mapped and linked to those offering malaria microscopy services, to allow for easy referrals.

Strategy 2: Facilitate Appropriate Staffing at All Laboratories at All Levels of the Healthcare System.

Engage the Ghana Health Service Human Resource Directorate to staff all health facilities with the right numbers of qualified laboratory personnel.

Strategy 3: Ensure Guideline/SOP/SBC Material Development, Distribution and Use

Update guidelines for laboratory diagnosis of malaria. Evaluate status of training curricula on diagnostics of malaria and Glucose-6-Phospate Dehydrogenase (G6PD) for health training institutions, and support in updating training curricula where necessary.

Strategy 4: Build Diagnostic Capacity of All Lab Staff and RDT Users (pre-service and in-service)

Conduct refresher training for lecturers/tutors and preceptors at health facilities providing training for laboratory personnel on malaria diagnostic and G6PD testing. Support trained lecturers/ tutors/ preceptors to train their students. Strengthen collaboration with professional regulatory bodies and training institutions to update curricula on malaria and G6PD diagnostics.

Strategy 5: Improve Quality Assurance of Malaria Diagnostics

Engage the Food and Drugs Authority (FDA) and the Ghana Standards Authority (GSA) to develop standards for Giemsa stain and establish a country standard for malaria RDT. The Ghana Health Service Institutional Care Division (ICD) and the NMEP to provide oversight responsibility on malaria quality assurance whilst the Public Health and Reference Laboratory (PHRL) undertakes malaria Quality Assurance (QA) measures.

Strategy 6: Establish Sentinel Sites for Parasite Population Dynamic Studies in Very Low Burden Areas

Conduct molecular surveillance on Histidine Rich Protein 2/3 (HRP2/3) detection and gene deletion, and parasite strains in very low transmission zones of the country.

Scout for p.vivax across the country.

Strategy 7: Ensure All donor Blood Units are Screened for Malaria Infection Before Transfusion

Engage the National Blood Services and other stakeholders to develop policies and guidelines to effectively screen donor blood units for transfusion for malaria parasites, and build capacity to identify malaria parasites.

5.4.3.4. Strategic Objective 4 : To ensure that 100% of confirmed malaria cases are appropriately, effectively and completely treated by 2028

KEY INTERVENTION: TREATMENT (MALARIA CASE MANAGEMENT)

Strategies

The following strategies will be implemented:

Strategy 1: Develop and Distribute Guideline/Protocol/SBC Materials

Constitute committee to develop/update Case Management guidelines/policies/ SBC materials. Develop and deploy malaria case management guidelines/ protocols, job aids, posters, flyers using relevant and appropriate channels, including online channels.

Strategy 2: Build the Capacity of Health Students and Workers on Malaria Case Management (pre-service and in-service training)

Conduct annual malaria case management training for all health facilities and community pharmacies/ OTCMSs in Ghana. Collaborate with professional regulatory bodies to orient newly qualified health professionals on malaria case management, severe malaria and its complications and develop and deploy strategies to improve engagement. Train lecturers of health training institutions and teaching hospitals on updates on malaria case management, and support lecturers to train their students.

Strategy 3: Improve Adherence to Guidelines (including severe malaria management, follow-up reviews and retesting)

Conduct targeted post-training follow-up coaching visits to trainees, undertake annual onsite training and supportive supervisory visits to all levels of health facilities and to community pharmacies/OTCMSs, provide regular feedback, and advocate for inclusion of MCM indicators into Quality Improvement (QI) systems/ initiatives. Undertake targeted supportive supervisory visits, including malaria admissions and death audits, to health facilities and community pharmacies/ OTCMSs.

Strategy 4: Institute Systems for Supervision of Patient Treatments to ensure Adherence, and Follow-up to Ensure Parasite Clearance

Include follow-up scheduling and retesting for clearance of malaria parasites into MCM training and supervisory tools, establish malaria diagnostic and treatment networks, and establish network committees in each district, in line with the Network of Practice (NoP) policy of the GHS, to oversee network creation and operations to improve adherence and follow-up testing for parasite clearance.

Strategy 5: Improve Severe Malaria Management and Strengthen Referral Systems

Engage MoH and NHIA to review Standard Treatment Guidelines (STG) and Essential Medicines List (EML), conduct equipment needs assessment, institute systems to ensure deaths due to malaria are identified, reported, and audited with remedial actions developed and implemented. The MCM Unit

will also collaborate with the PSM unit to improve availability of injectable antimalarials and suppository artesunate at relevant levels of the health system and encourage remote support for severe malaria cases. Collaborate with institutions involved in referral improvement to identify leverage points for severe malaria referral improvement.

Strategy 6: Improve Access to Malaria Case Management

Institute community management of malaria in areas with poor access to health services using Community Health Nurses (CHNs), or Community Health Volunteers or Pharmacies/OTCMS attendants where appropriate and engage MoH to expand the Essential Medicines List to include all antimalarials and associated medicines [to include Artesunate pyronaridine, dihydroartemisinin piperaquine (DHAP), Injection artesunate for pre-referral management and primaquine].

Strategy 7: Improve Pharmacovigilance and Efficacy Monitoring of Antimalarials, Including Herbals and Chemoprophylactics, and Take Remedial Actions

Support the FDA to continue post-market surveillance/ pharmacovigilance on malaria commodities at least once a year.

Collaborate with the NMIMR to conduct Therapeutic Efficacy Surveillance (TES) on antimalarials. Deliberately deploy multiple first-line antimalarial therapies.

Strategy 8: Improve Data Collection and Management on Malaria Case Management

Engage the SMEOR unit of the NMEP and other stakeholders to update statement of in-patient forms and other case management data collection registers and reporting forms.

Strategy 9: Conduct Operational Research on Malaria Case Management

Advocate for research to generate more local evidence on operational challenges with malaria case management to guide future actions.

Strategy 10: Institute Transmission-Blocking Strategies such as Single Low-dose Primaquine (SLDP) for Gametocyte Clearance

Quantify, procure and distribute primaquine for SLDP implementation in areas with very low burden of malaria. Monitor implementation and collaborate with SMEOR unit to determine effectiveness.

Strategy 11: Incorporate Antimalarial Therapeutic Efficacy Study into the Routine Surveillance Systems of Very Low Burden Areas

Incorporate therapeutic efficacy studies into routine surveillance in districts with very low malaria burden.

5.4.3.5. Strategic Objective 5: To strengthen passive and active surveillance, and monitoring and evaluation systems by 2028

KEY INTERVENTION: SURVEILLANCE, MONITORING, EVALUATION AND OPERATIONAL RESEARCH (SMEOR)

Strategies:

The following strategies will be implemented:

Strategy 1: Conduct Stratification of Disease and Transmission at All Levels

Continue annual malaria stratification, ensure easy navigation for information, develop malaria surveillance guidelines, and develop case and focus investigations guidelines aligned with WHO recommendations.

Strategy 2: Intensify Malaria Surveillance at All Levels

Develop and disseminate malaria surveillance guidelines, job aids, posters, training manuals, e-lessons ; print malaria reports, bulletin and posters, disseminate biannual and annual reports and engage regulators to enact policy for reporting case-based malaria data into Health Information Management Systems (HIMS) in very low transmission areas. Scale up case-based reporting of malaria in all low transmission areas in Ghana.

Strategy 3: Strengthen Technical Capacity for Malaria Surveillance at All Levels in All Transmission Settings

Train staff to develop stratification maps, conduct task-based training, conduct post-training supervision, and undertake study trips to countries that have eliminated malaria.

Strategy 4: Strengthen the Logistics Structure for Surveillance at All Levels

Design and develop malaria surveillance IT system, integrate data collection tools/platforms with National Health Information Systems, maintain ICT infrastructure, and improve internet connectivity.

Strategy 5: Improve Malaria Data Quality Assurance System at All Levels

Implement a malaria data repository to help decision making at all levels. Conduct quarterly and bi-annual reviews.Map pharmacies and over-the-counter medicine sellers (OTCMS) across Ghana. Oversee/ ensure regular conduct of data validation meetings at all points where data is collected.

Strategy 6: Establish a Surveillance System for Reporting Malaria Data from Community Pharmacies, Over-The-Counter Medicine Sellers (OTCMS) and Alternative Health care Providers

Develop a national policy to include malaria reporting from community pharmacies, over-the-counter medicine shops (OTCMS), herbal medical facilities and alternative health providers. Activities will

also include training private sector (community pharmacies and OTCMS) and alternative health providers, develop data capture and reporting system, and conduct supportive supervision.

Strategy 7: Strengthen Surveillance at Sentinel Sites

Update sentinel site protocols to reflect the different transmission settings, and train staff at malaria epidemiological and entomological sentinel sites and ensure supervision.

Strategy 8: Conduct Operational Research to Inform Programme Direction

Conduct needed research in collaboration with identified partners to fill information gap and guide implementation of the strategic plan. Update the GHS research agenda. Conduct annual malaria research conference to disseminate research findings, and to help mobilize resources to address research funding gaps.

Strategy 9: Enforce Monitoring and Evaluation of Surveillance Activities

Develop and implement malaria surveillance, monitoring and evaluation plan for the NMESP. Support population-based surveys and conduct mid-term and end-term reviews.

5.4.3.6. Strategic Objective 6: Ensure timely and adequate supply of quality-assured malaria commodities to all service delivery points by 2028

KEY INTERVENTION: PROCUREMENT AND SUPPLY CHAIN MANAGEMENT (PSM)

Strategies:

The following strategies will be implemented:

Strategy 1: Accurate Data-driven Forecasting and Supply Planning of Malaria Commodities

Conduct annual quantification, timely review of malaria commodities and monitoring of implementation. The PSM team will also conduct segmented and targeted forecasting and supply planning taking into consideration the different stages of elimination.

Strategy 2: Effective Procurement and Timely Delivery of Malaria Commodities

Establish a flexible procurement framework that allows adjusting shipments according to the changing needs and track timely procurement and delivery of commodities including GoG- funded ones. Strengthen capacity for supply chain operators at all levels, especially in inventory management and adherence to Last Mile Distribution (LMD) cycle.

Strategy 3: Efficient Warehousing and Sustainable Distribution System Across the Supply Chain

Support the optimization of warehousing facilities at all Regional Medical Stores to Pharma- grade standards. Coordinate and effectively monitor commodity availability at national warehouses. Additionally, design an efficient and sustainable distribution network that allows commodity exchange and redistribution among health facilities (within both public and private healthcare).

Strategy 4: Strengthen Quality Assurance Systems for Malaria Commodities

Coordinate QA processes for commodity management and leverage on technology to identify and verify malaria commodities at all levels as outlined in the pharmaceutical traceability strategy.

Strategy 5: Support the Full Implementation of the Logistics Management Information System (LMIS) for the Provision of Accurate and Timely Data for Decision-Making at All levels

Improve Ghana Logistics Management and Information Systems (GhiLMIS) by conducting quarterly data quality assessments, user trainings, procuring more electronic devices, conducting monthly stock reviews and developing and implementing systems for end-to-end data visibility.

Strategy 6: Strengthen the Capacity of Healthcare Workers involved in Commodity Management at Sub-national Levels

Advocate for rationalization of supply chain human resource distribution to align with disease burden, recruitment of more supply chain practitioners, and leverage on training planned for other programmes/ activities/interventions to conduct training on PSM.

Strategy 7: Private Sector Engagement in Promoting Effective Malaria Supply Chain

Identify, engage and support local manufacturers to produce antimalarial commodities. Engage with distributors, and advocate for early response to evolving needs.

Strategy 8: Institute a Proactive and Well-Coordinated Governance Structure Across All Sectors

Advocate, align and form a well-coordinated Technical Working Group (TWG) which includes the private sector to strengthen supply chain governance.

5.4.3.7. Strategic Objective 7 : To strengthen and maintain capacity for governance and programme management to achieve programmatic objectives at all levels of the healthcare system towards malaria elimination by 2028.

KEY INTERVENTION: LEADERSHIP AND GOVERNANCE

Strategies

The following strategies will be implemented:

Strategy 1: Enhance Political will for Malaria Elimination

Engage the Presidency and Ministries to establish a high-level inter-ministerial malaria elimination oversight body to be termed the National Malaria Elimination Oversight Committee (NMEOC) with clear Terms of Reference (ToRs). Facilitate regular meetings of the independent NMEOC.

Strategy 2: Strengthen Multi-sectorial Coordination and Partnerships including the Private Sector

Identify key partners and sectors for engagement, establish national and sub-national task teams/ working groups [Example National Malaria Elimination Techinical Coordination Committee (NMETCC)], develop multisectoral coordination guidelines, hold quarterly working group meetings, and ensure all sectors are aligned with the NMESP.

Strategy 3: Develop Strategic Documents and Guidelines for Malaria Elimination

Develop sub-national operational plans and guidelines for the various malaria interventions.

Strategy 4: Redesign the National Programme Structure to Reflect the Change in Function for Elimination

Assess staffing needs, address human resource needs, and conduct capacity strengthening and staff training activities.

Strategy 5: Oversight Supervision of Elimination Interventions Country-wide

Conduct regular supervisory visits of all malaria elimination activities.

Strategy 6: Effective Coordination and Communication Among Neighbouring Countries for the Implementation of Malaria Elimination Activities

Collaborate with Economic Community of West African States (ECOWAS), West African Health Organisation (WAHO) and other Regional/ sub-regional bodies to share technical expertise across countries, undertake joint planning and review meetings, as well as joint/ coordinated implementation (where applicable and possible) of malaria interventions. Also collaborate, especially with Municipal Chief Executives (MCE)/District Chief Executives (DCEs) of districts bordering neighbouring countries, on malaria elimination.

Strategy 7: Enhanced Coordination of Programme Progress Towards Malaria Elimination.

Support sub-national levels on planning and implementation of malaria elimination programmes and establish committee/task force at district levels to improve planning and implementation.

5.4.3.8. Strategic Objective 8 : To improve mobilisation of resources and efficiently use available resources towards malaria elimination

KEY INTERVENTION: PROGRAMME FINANCING

Strategies

The following strategies will be implemented:

Strategy 1: Assess and Adopt Innovative Financing Mechanisms [non-traditional] to address decreasing donor funding

Engage private companies and present investment case in order to increase domestic resource mobilisation.

Strategy 2: Keep Malaria Financing High on the Political Agenda

Engage Government, ministry of finance, MoH and other Governmental Agencies to enhance advocacy and increase resource allocation to malaria, including release and utilization of the 0.5% DACF for malaria programming across districts.

Strategy 3: Ensure Efficient Use of Available Resources

Train finance staff at all levels and conduct monitoring and supportive supervisory visits to ensure adherence to financial policies and guidelines.

5.4.4 Intervention Packages for the Various Epidemiological Strata

The stratification of different indicators for malaria in the country provides a guide to prioritize interventions and for resource allocation. This stratification was duly considered in guiding the selection and prioritization of strategic interventions for specific strata (geographic areas and populations) in the NMESP 2024-2028. Table 4 below shows the interventions to be implemented in the various epidemiological strata.

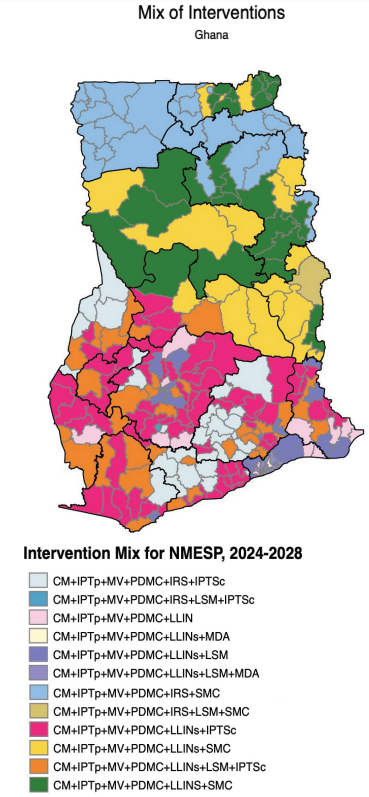
Table 4: Summary of Intervention package/activities per epidemiological strata, NMESP 2024-2028»

Epidemiologic Level (Stratum)	**Criteria for Intervention Selection**	**Intervention Packages/Activities**
1 (Very low malaria transmission/ burden)	1-49 cases/1,000 population, <1% parasite prevalence	**Very low malaria transmission** 1. Mass Drug Administration (MDA) 2. Single low dose Primaquine (SLDP) administration 3. Enhanced Epidemiological surveillance 4. Enhanced entomological surveillance
2 (Low malaria burden/ transmission)	1-50-199 cases/1,000 population; 1%-5% parasite prevalence	**Low malaria transmission** 1.Enhanced Entomologic surveillance 2.Enhanced Epidemiologic surveillance
3 (Moderate Malaria Burden/ transmission)	200-499 cases/1,000 population; 5-<15% parasite prevalence	**Moderate malaria transmission** 1. Seasonal Malaria Chemoprevention(SMC) 2. Intermittent Preventive Treatment of malaria in school children (IPTsc)
4 (High Malaria Burden/ transmission)	>/=500 cases/1,000 population; >15% parasite prevalence	**High malaria transmission** 1. Indoor Residual Spraying (IRS) 2. Seasonal Malaria Chemoprevention(SMC) 3. Intermittent Preventive Treatment of malaria in school children (IPTsc)

5 All Malaria burden/transmission settings		**All transmission settings** 1. Quality case management 2. Intermittent Preventive Treatment of Malaria in Pregnancy (IPTp) 3. Post Discharge Malaria Chemoprevention (PDMC) 4. Availability and rational use of quality malaria commodities 5. Distribution of Long-Lasting Insecticide-treated Nets (LLINs) 6. Larval Source Management (LSM) 7. Entomological surveillance 8. Epidemiological surveillance 9. Research 10. Social Behaviour Change (SBC) 11. Effective programme leadership and management at all levels. 12. Malaria Vaccination

5.4.5 Intervention Mix

The mix of interventions to be deployed in the various districts based on stratification are indicated in figure 17 below:



Malaria Strategic Plan – evolution over time : NSP 2024-2028

Strategic Interventions	Coverage (Scope and Scale)/ Districts	
	NSP 2021-2025	NMEP 2024-2028
ITN distribution; Routine	**261** (Nationwide)	**261** (Nationwide)
IRS	**43 [25]**	**53 [28]***
ITN distribution; Mass Campaign	**217/261 [235]** (Except IRS dist)	**207/261** (Except IRS dist)
Larva Source Management	**105**	**105**
IPTp	**261**	**261**
SMC	**69** (NR, UE,UW, Oti, Bono East [5 dist])	**69** (NR, UE,UW, Oti, Bono East [5 dist])
Case Management	**261** (Nationwide)	**261** (Nationwide)
Malaria Vaccine	42-93*	261
Mass drug administration (MDA)	-	**21**
Intermittent Preventive Treatment in School Children (IPTSc)	-	**132**
Post Discharge Malaria Chemoprevention (PDMC)	-	**261**
Enhance surveillance	**261** (Nationwide)	**261** (Nationwide)
Malaria Vaccination	**261** (Nationwide)	**261** (Nationwide)

Figure 17: Malaria Intervention mix based on stratification, 2023.

CM= Case Management, IRS= Indoor Residual Spraying, SMC= Seasonal Malaria Chemoprevention, IPTp= Intermittent Preventive Treatment of Malaria in pregnancy, LLIN= Last-Lasting Insecticide-treated Nets, LSM= Larval Source Management, MDA= Mass Drug Administration, PDMC= Post-Discharge Malaria Chemoprevention, MV= Malaria Vaccine

CHAPTER 6:
IMPLEMENTATION FRAMEWORK

6.1 Information on NMESP Timeframe and Alignment

The new implementation approach takes into consideration the NMEP capacity to deliver malaria interventions; lessons learned implementing the 2021-2025 NMSP and global malaria strategic framework. The implementation approach for the new strategy takes advantage of the larger health system improvements and the national policy environment.

The NMESP will run from 2024 – 2028.

6.2 Implementation Arrangements

In this current Strategic Plan, the NMEP will continue to have technical oversight over all malaria interventions at national and subnational levels in both the private and public sectors. This will be done through designated focal persons at the national and sub-national levels for a coordinated response. The NMEP will continue to ensure that all stakeholders and partners align with the National Malaria Strategic Plan which guides the implementation of malaria interventions in the country. There are in place mechanisms for review and assessment of the programmatic performance at mid-term and at end-term. The NMEP will ensure that the findings and recommendations from these reviews will further inform implementation moving forward.

6.3 Partnership Coordination System

The National Malaria Elimination Programme (NMEP) plays the leading role in coordinating all implementation strategies related to malaria elimination by both development partners and the Ministry of Health. NMEP has partnered with several relevant agencies, divisions, units, partners and programmes within and outside of the health sector to solicit their input into malaria elimination.

NMEP will work closely with divisions, departments, and units within the Ghana Health Service, agencies of the MoH and other sectors for programme planning, implementation as well as monitoring. The entities within the GHS to be engaged include the Health Promotion Division (HPD), Institutional Care Division (ICD), Family Health Division (FHD), Public relations, Policy Planning Monitoring and Evaluation Division (PPMED) among others.

Technical working groups/committees exist to support programming. These include:

1. Malaria Vector Control Oversight Committee (MaVCOC)
2. Malaria Case Management
3. Malaria in Pregnancy
4. Research, Innovation & Surveillance, Monitoring & Evaluation
5. Malaria Vaccine Technical Working Group
6. Procurement and Supply Chain Management (PSM) Technical Working Group
7. Social & Behaviour Change
8. Advocacy and Resource mobilization

These technical working groups provide platforms for improved collaboration and coordination among the different divisions, departments, and units.»

The NMEP will also work closely with other sectors, ministries, departments, and agencies, some of which are:

i. The Ministry of Local Government and Rural Development
ii. Ministry of Finance
iii. Ministry of Agriculture
iv. Ministry of Education
v. Ghana Education Service
vi. Interior Ministry
vii. Ministry of Environment, Science, Technology, and Innovation etc.

Efforts will be geared towards enhancing inter-sectoral and inter-ministerial collaboration and partnerships through mechanisms such as the National Malaria Elimination Oversight Committee (NMEOC) and the National Malaria Elimination Technical Coordination Committee (NMETCC).

6.4 Financial Resource Management

The Public Financial Management Act, 2016 (Act 921), the Accounting Treasury and Financial Reporting Rules and Instructions and the Ghana Integrated Financial Management Information System (GIFMIS) are the key guides to the accountability of funds received and managed in the health sector. In addition, for the efficiency of disbursements of funds, project and grant agreement documents provide guidance on fund disbursements, accounting and reporting. These government and donor partner documents together provide regulations and guidance on how public funds should be managed including revenue receipts, expenditure, records, auditing and so on.

The three main sources of health sector financing in Ghana are: Government of Ghana or the public sector, development partners, and the private sector, including households. Funding is channelled to the sector through a variety of mechanisms as summarized below:

Government funding follows two main routes. First, discretionary funds are allocated to the sector through the MoH as part of the national budget. Second, statutory funding is allocated to the governing body of the National Health Insurance Authority and the National Health Insurance Council, in the form of the National Health Insurance Fund.

The National Health Insurance Fund is funded from several sources: the National Health Insurance Levy, a 2.5% levy on goods and services collected under the Value Added Tax (VAT), 2.5% of Social Security and National Insurance Trust (SSNIT) contributions per month, premiums paid by informal sector subscribers and returns on Fund investments. Government contributions complement these funding sources by covering the premiums for certain population groups: over two-thirds of total National Health Insurance Scheme (NHIS) membership covers those who are exempted from premium payment, including those age 70 years and above, children under 18 years and pregnant women.

Development partners also provide funding to the health sector. The sector-wide approach has evolved

towards a move to increase the use of government systems as agreed under the Paris Declaration and re-affirmed in the Accra Agenda for Action. Consequently, partners that earlier supported the MoH Health Fund have moved either to Multi-Donor Budget Support (i.e., general support of the Government of Ghana) or to Sector Budget Support, which is channelled to the MoH through the Ministry of Finance (MoF). In addition, a significant number of development partners provide earmarked funding for specific activities. These include bilateral and multilateral programmes, as well as international health initiatives such as the Global Fund and the Global Alliance for Vaccines and Immunizations (GAVI). Partners provide earmarked funding through a combination of grants and loans. The range of partners is expanding to include bilateral arrangements with additional countries, and partnerships between governments and financing institutions, particularly for infrastructure projects.

Health facilities have relied on Internally Generated Funds (IGF), such as Cash & Carry and user fees, to supplement funding from other sources for over a quarter of a century. The government granted the facilities dispensation from the requirement to submit all such revenues back to the treasury so the facilities can use the moneys to improve their service provision. With the introduction of the NHIS, the level of Internally Generated Funds (as reported by facilities) has increased significantly. However, a distinction must be made between direct household contributions such as Cash & Carry and user fees, which are a net addition to the sector resource envelope, and NHIS claims revenue, which comes primarily through the statutory budgetary allocation to the Insurance Fund, supplemented to a limited extent through premium contributions of informal sector employees.

6.5 Accounting and Reporting

All accounting and reporting procedures of the MoH are guided by the Public Financial Management Act, 2016 (Act 921) and the Accounting, Treasury and Financial reporting rules and instructions. The NMEP, as part of the GHS and MoH, also adheres to the rules and guidelines governing accounting and reporting as per the above-mentioned regulatory acts.

In all GHS facilities, authorized bank accounts are opened in line with the Public Financial Management Act. All funds received are deposited into the designated bank account(s) and disbursed from these accounts. All disbursements are approved by the head of department and authorized by the head of finance. Authorization involves checking to ensure there is a budget available for the activity and whether the budget is approved. Authorization also involves checking to ensure that the activity is being performed according to specification and that all details on the payment documents are accurate and attached.

In most cases, payment vouchers are pre-audited by internal auditors or designated officer(s) who do compliance checks before the transfers are made to designated recipients. Programme activity budget ledgers are maintained to track the movement of funds on key programmes and activities. In addition, Standard Operating Procedures have been developed to guide retirement and transfer of funds at both national, and at sub-national levels.

Global Fund grants, however, have separate accounts which are managed to align with government accounting mechanisms. USAID uses a different accounting system in line with the U.S. Government policies as per the bilateral agreement.

6.6 Procurement and Supply Management System

The NMESP contains strategies aimed at strengthening the malaria commodity Procurement and Supply Chain (P&SC) System. The current direction of the programme is towards malaria elimination which requires an agile and resilient approach to meet the current objectives of the programme in alignment with the MoH National Supply Chain Master Plan 2021-2025.

In executing these strategies, there is the need to strengthen multi-sectorial collaboration, advocacy, and partnership with relevant stakeholders particularly MoH, GHS Directorates, Divisions and Partners including the private sector. Furthermore, sustaining the implementation of all supply chain reforms including Last Mile Distribution (LMD) and Warehouse Improvement, Ghana Integrated Logistics Management System (GhiLMIS) as well as capacity building for staff involved in the supply chain must be intensified.

The rollout of the Ghana Integrated Logistics Management System (GhiLMIS) is being implemented across all levels of the public supply chain to improve malaria supply chain data capture, notably consumption data to ensure real-time data for decision making. Generally, there are few stock-outs at the central and regional levels, and when these do occur, they can have dire impact at the facility level. Optimal utilization of GhiLMIS will provide visibility at all levels of the supply chain for timely resolution of stockouts or otherwise. The private sector, which constitutes an important aspect of the country's supply chain, has not been included in the interventions of the programme in the past. To ensure all inclusion and leverage on the existing structures of the private sector supply chain, NMEP will enhance engagement aimed at improving the efficiency of the supply chain (including manufacturing and distribution sectors). It will further support the development and implementation of systems for end-to-end data visibility in the private sector on a phased-in approach (based on disease burden) for decision-making towards malaria elimination.

6.7 Risk Management Plans

Table 5: Risks and mitigation measures

Risk Category	Key Risk	Mitigating Actions
Programme performance risk	1.Despite advocacy, sociocultural norms in communities may result in low uptake of ITNs and other interventions, as well as limit continuity of care. 2.Public health and clinical emergencies at the international or national level may affect malaria elimination efforts. 3.New and emerging interventions at the global or national level may affect malaria elimination efforts	1.Readjust sensitisation approaches and messages by community opinion leaders to suit the community members. 2.Readjust Programme delivery and comply with national strategic directives during pandemics, epidemics, or disasters in line with the emergency preparedness component of Ghana's Universal Health Coverage (UHC) roadmap. 3.Re-align Programme delivery, and comply with national strategic guidelines and directives

Risk Category	Key Risk	Mitigating Actions
Procurement Risk	1.Maldistribution leads to expiry of medicines and loss of malaria commodities. 2.Inadequate communication between regions/districts and facilities on the availability of commodities which leads to maldistribution and shortages	1. Strengthen the full rollout of GHiLMIS at all levels of the health system 2. Review and make recommendations for the improvement of the Last Mile Distribution (LMD) strategy
Financial Risk	1.Inadequate systems of internal controls, especially at the sub-national level may result in financial mismanagement or inefficient use of resources. 2.Poor management oversight may result in inability to meet donor requirements and account for the use of funds. 3.Failure to reimburse facilities for NHIS claims may result in poor adherence to case management protocols and increase fatality rate. 4.Low transparency in funding allocation process	1. Enforce public financial management Act 2016 (921). To complete this, routine technical monitoring will include monitoring receipts and acquittals of funds at the regional and district levels. 2. Pursue high level advocacy for the timely release of government counterpart funds, through intensified engagement with key government agencies such as MoH and MoF 3. Scale-up the financial resource tracking tool to cover all known sources of funds and review current financial accounting systems to capture and report partner support 4. Develop and institutionalize standardized mechanisms or format for requesting, receiving, and tracking malaria funding
Surveillance Risk	1.Emergence and spread of parasite resistance and resurgence of malaria cases. 2.Non - existence of a surveillance application system to track interventions. 3.Limited utility of RDTs in the case of emergence of high HRP2/3 gene deletion levels	1. Rational use of drugs/ deliberate deployment of multiple first-line antimalarial therapy Continuously monitor the efficacy of antimalarial medicines and drug resistance markers. 2. Finalize the surveillance application system to support the initiative 3.Continue surveillance on HRP2/3 gene deletions with attendant remedial measures

Sleep under ITNs every night and throughout the night to prevent malaria

"Protect yourself and your family by sleeping under the treated net"

CHAPTER 7:
BUDGET AND RESOURCE MOBILISATION PLAN

The National Malaria Elimination Strategic Plan (NMESP) 2024-2028 was costed following WHO's guide for Malaria Strategic and Operational Plan Costing. This approach facilitates transparent and detailed costing for planned tasks, activities, strategies, and objectives. The unit costs are based on policy documents and historical expenses adjusted for inflation, as guided by the Bank of Ghana medium term target inflation rate. Health products and related commodity costs are based on global reference prices. The budget was converted to United States Dollars using a 200-day exponential moving average on 1 March 2023.

Table 6: Costing Summary by Module

	Amounts (USD)				
Modules	**2024**	**2025**	**2026**	**2027**	**2028**
Vector Control	426,251,314.15	36,784,060.81	41,485,435.59	491,439,835.96	49,283,087.18
Specific Prevention interventions (SPI) -IPT	8,581,062.27	7,890,828.04	11,017,106.04	9,808,299.25	12,911,431.16
Specific Prevention Interventions (SPI) - SBCC	36,294,347.42	37,824,950.44	42,742,194.00	47,016,413.40	50,783,699.23
Specific Prevention Interventions (SPI) - Others	1,766,021.20	2,745,287.61	3,120,337.14	3,409,318.37	3,688,335.34
Case Management	113,316,480.19	129,448,763.47	146,030,408.11	160,633,448.92	173,683,125.16
Procurement Supply Chain Management (PSCM)	118,931,890.67	126,434,268.17	137,979,480.21	148,445,872.19	158,571,340.51
Surveillance, Monitoring and Evaluation and Operational Research (SMEOR)	13,468,582.88	15,586,927.91	17,623,070.65	19,351,833.91	20,911,673.04
Programme Management	2,310,072.25	99,484.99	113,089.55	123,659.84	134,350.38
Total	**746,239,070.19**	**381,260,264.71**	**438,305,734.59**	**909,775,397.86**	**511,312,350.99**

Table 7: Costing Summary by Interventions

	Amounts (USD)				
Interventions	**2024**	**2025**	**2026**	**2027**	**2028**
Vector Control - Long-lasting insecticidal Nets (LLIN) - Mass Campaign	394 519 342	-	-	445 806 857	-
Vector Control - Long-lasting insecticidal Nets (LLIN) - Continuous Distribution	6 590 145	7 644 568	8 638 361	9 502 198	10 262 373
Vector Control - Indoor Residual Spraying	13 520 917	15 684 264	17 723 218	19 495 540	21 055 183
Vector Control - Entomological Monitoring	10 446 851	12 118 347	13 693 733	15 063 106	16 268 154
Other Vector Control Measures	1 174 059	1 336 882	1 430 123	1 572 135	1 697 376
Specific Prevention Interventions (SPI) - Intermittent Preventive treatment (IPT) - In pregnancy	3 073 827	1 578 085	3 883 707	1 961 560	4 436 953
Specific Prevention Interventions (SPI) - Seasonal Malaria Chemoprevention (SMC)	36 294 347	37 824 950	42 742 194	47 016 413	50 783 699
Implement Mass Drug Administration (MDA) in all eligible districts	101 518 224	117 005 908	132 216 676	145 438 343	157 073 411
Specific Prevention Interventions (SPI) - Intermittent Preventive Treatment in School Children (IPTsc)	5 507 235	6 312 743	7 133 399	7 846 739	8 474 478
Malaria Vaccine	7 475 595	8 223 154	9 045 469	9 950 016	10 945 018
Case Management - Facility-Based Treatment	101 026 662	112 043 194	124 316 767	135 544 799	146 388 383
Case Management - Integrated Community Case Management (iCCM) & Private Sector	17 905 229	14 391 074	13 662 713	12 901 073	12 182 957
Procurement Supply Chain Management (PSCM) - Other	13 468 583	15 586 928	17 623 071	19 351 834	20 911 673
Social and Behavioural Change Communication (SBC)	6 088 683	6 964 989	7 888 600	8 654 408	9 353 032
Programme Management - Grant Management	2 310 072	99 485	113 090	123 660	134 350
Health Information Systems and M&E - Other	13 115 978	3 084 043	20 523 969	3 278 468	20 352 584
Health Information Systems and M&E - Routine reporting	11 815 610	19 667 516	15 756 273	24 162 440	18 718 452
Health Information Systems and M&E - Surveys	387 712	1 694 134	1 914 371	2 105 808	2 274 273
Total	**746,239,070.19**	**381,260,264.71**	**438,305,734.59**	**909,775,397.86**	**511,312,350.99**

Table 8: Costing Summary by NMESP Objectives

		Amounts (USD)					
Objective	Intervention	2024	2025	2026	2027	2028	**TOTAL**
Ensure 100% of the population use at least one malaria preventive measure	Vector Control	426,251,314	36,784,061	41,485,436	491,439,836	49,283,087-	**1,045,243,734**
	Malaria in Pregnancy	3,073,827	1,578,085	3,883,707	1,961,560	4,436,953	**14,934,132**
	Seasonal Malaria Chemoprevention	36,294,347	37,824,950	42,742,194	47,016,413	50,783,699	**214,661,604**
	Implement Mass Drug Administration (MDA) in all eligible districts	101,518,224	117,005,908	132,216,676	145,438,343	157,073,411	**653,252,562**
	Intermittent Preventive Treatment in School Children (IPTsc) -	5,507,235	6,312,743	7,133,399	7,846,739	8,474,478	**35,274,595**
	Malaria Vaccine	7,475,595	8,223,154	9,045,469	9,950,016	10,945,018	**45,639,252**
		580,120,542	**207,728,901**	**236,506,881**	**703,652,908**	**280,996,646**	**2,009,005,879**
To ensure that 100% of all confirmed malaria cases are appropriately, effectively and completely treated with parasite clearance within 72 hours by 2028	Case Management	94,511,461	101,744,693	109,265,420	118,064,050	125,758,973	**549,344,597**
		94,511,461	**101,744,693**	**109,265,420**	**118,064,050**	**125,758,973**	**549,344,597**
To ensure that 100% of suspected malaria cases tested by 2028	Diagnostics	24,420,429	24,689,575	28,714,060	30,381,822	32,812,368	**141,018,255**
		24,420,429	**24,689,575**	**28,714,060**	**30,381,822**	**32,812,368**	**141,018,255**

Ensure timely and adequate supply of quality-assured malaria commodities to all service delivery points by 2028.	Procurement and Supply Chain Management	13,468,583	15,586,928	17,623,071	19,351,834	20,911,673	86,942,088
		13,468,583	**15,586,928**	**17,623,071**	**19,351,834**	**20,911,673**	**86,942,088**
Ensure 100% of the population have adequate knowledge, attitudes, practices and requisite skills for malaria elimination by 2028.	Social and Behavioural Change (SBC)	6,088,683	6,964,989	7,888,600	8,654,408	9,353,032	**38,949,712**
		6,088,683	**6,964,989**	**7,888,600**	**8,654,408**	**9,353,032**	**38,949,712**
Strengthen surveillance and monitoring and evaluation systems by 2028	Surveillance, Monitoring and Evaluation and Operational Research (SMEOR)	25,319,299	24,445,693	38,194,613	29,546,716	41,345,309	**158,851,631**
		25,319,299	**24,445,693**	**38,194,613**	**29,546,716**	**41,345,309**	**158,851,631**
Strengthen and maintain capacity for Governance and programme management to achieve programmatic objectives at all levels of the health care system towards malaria elimination	Leadership and Governance	2,305,736	95,049	107,405	118,146	127,598	**2,753,934**
		2,305,736	**95,049**	**107,405**	**118,146**	**127,598**	**2,753,934**
Improve mobilisation of resources and efficiently use available resources towards malaria elimination	Programme Financing	4,336	4,436	5,684	5,514	6,753	**26,723**
		4,336	**4,436**	**5,684**	**5,514**	**6,753**	**26,723**
Total		**746,239,070.19**	**381,260,264.71**	**438,305,734.59**	**909,775,397.86**	**511,312,350.99**	**2,986,892,818**

CHAPTER 8:
MONITORING AND EVALUATION FRAMEWORK OF THE NMESP

8.0 Monitoring and Evaluation Framework

8.1 Data Management System and Flow

Data is generated from service delivery sites and recorded in standard registers from various units. Monthly summaries of all data collected are documented on reporting forms, are verified by In-charges, and entered into District Health Information Management System 2 (DHIMS 2) through the use of respective reporting forms. Facilities shall validate their data before entry into DHIMS 2. Facilities without access to computers shall submit their verified data to the sub- district for verification and data entry. Apart from facilities within areas of lowest (very low) malaria burden, which will be reporting weekly, all facilities and districts will report monthly. Districts are to collate quarterly activity reports of sub-districts/facilities and submit to regions. Regions shall collate quarterly activity reports from districts and submit to the programme and the national level. Data/ reports from Regional Hospitals and some specialized health facilities will be transmitted manually or electronically through the Region (Regional Health Directorate) to the national level. Data generated from private sector service delivery shall report into DHIMS 2 using fit-for-purpose recording and reporting tools designed for the private sector. The NMEP in collaboration with the Family Health Division of the Ghana Health Service has rolled out a web-based Africa Leaders Malaria Alliance (ALMA) scorecard to routinely track key performance indicators including malaria indicators. A malaria data repository has been integrated into DHIMS 2 as an instance and will facilitate availability and utilization of data at all levels. For the lowest burden/transmission areas, a weekly analysis will be undertaken with corresponding response action to unusual trends and outbreaks.

There exist standard operating procedures to ensure standardization of the data collection, reporting, and validation. Staff at all levels will continue to be trained in the use of DHIMS 2 for data collection, collation, analysis, and use. Maintaining and improving quality of surveillance data is expected to result from conducting routinely scheduled data quality audits, facilitative supervision, and data management training at all levels. The institution of automated data quality checks at all levels will also help to ensure the quality of data in the DHIMS 2. The NMEP will support periodic data validation assessment of DHIMS 2.

8.2 Malaria M&E Coordination Mechanisms

Joint planning, supervision, monitoring, and evaluation processes will form the basis for coordination and promoting partnerships. Information regarding programme management, epidemiological and entomological data, and IRS operations will be shared with funding agencies, and implementing partners at all levels. This will enhance data exchange, information flow, and promote the sharing and discussion of critical performance indicators to help advance and improve the national programme. Quarterly progress reports will

be submitted by all implementing agencies to NMEP. The M&E Plan developed along with NMESP outlines strategies for monitoring and evaluation. These include mid-year and annual NMEP reviews and reports with stakeholders and annual sub-national reviews where key performance indicators and information is disseminated.

The Ghana Statistical Service and partners will implement standardized periodic surveys such as Demographic and Health Survey (DHS), Multiple Indicator Cluster Survey (MICS), and Malaria Indicator Survey (MIS). Therefore, planning, implementation, monitoring, and oversight will include adherence to validated surveillance methodologies and data quality assurance standards. This also applies to donor-funded research and surveillance sites (the GF/NMEP drug efficacy and epidemiological sentinel surveillance sites), and the AGAMal and PMI entomological surveillance.

The implementers shall also adhere to all guidelines provided by the programme and the Malaria Research, Surveillance, Monitoring and Evaluation Technical Working Group (RSMETWG). In addition, programme implementers may also be required to respond to RSMETWG specific information requests. These requests might include:

1. Baseline reports from entomological and/or epidemiological surveys conducted prior to the implementation of intervention(s) within the country.
2. Surveys and operational research within the context of their activities.

The RSMETWG is a multi-stakeholder initiative bringing together the expertise of representatives of government, private sector, business, and civil society to find solutions to complex issues; and identify new and improved solutions to advance policy direction. It will collaborate with all committees under the programme to ensure the full implementation of the M&E plan.

Table 9: Monitoring Mechanism

Mechanism	***Frequency***	***Lead Agency***
NMEP Review	Half Yearly	NMEP
Regional and District Reviews	Half Yearly	RHD and DHD
Population Surveys (MIS, GDHS, MICS)	3-2 years	GSS, NMEP, TGF, WHO, USAID
ALMA Score Card	Quarterly	NMEP, PPME
Data Quality Audits	Half Yearly	GHS/PPME
End User Verification	Annually	NMEP/PSM, USAID-GHSC-PSM
Mid-term review	3-2 years	NMEP
End-term review	6-5 years	NMEP

Table 10: Performance Framework

PERFORMANCE FRAMEWORK FOR NATIONAL MALARIA ELIMINATION STRATEGIC PLAN 2024-2028										
INDICATORS		**BASELINE**			**TARGETS**					
		Data	**Year**	**Sources**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
IMPACT INDICATORS										
Goal 1: Reduce malaria mortality by 90% by the year 2028 (using 2022 as baseline)										
1	Inpatient malaria deaths per 100,000 persons per year	0.48	2022	HMIS		0.32	0.25	0.18	0.11	0.04
2	Number of malaria-reported deaths	151	2022	HMIS		106	83	60	38	15
3	Children Under 5 case fatality	0.05	2022	HMIS		0.02	0.01	0.00	0.00	0.00
Goal 2: Reduce malaria case incidence by 50% by 2028 (using 2022 as baseline)										
1	Malaria test positivity rate	11.1	2022	HMIS		9.7	8.7	7.7	6.8	5.8
2	Malaria parasite prevalence: Proportion of children aged 6-59 months with malaria infection	8.6	2022	GDHS			6.5			4.3
3	Confirmed malaria cases (microscopy and RDT) per 1000 population per year	166.5	2022	HMIS		133.0	117.3	102.1	87.5	73.46
4	Number of confirmed OPD malaria cases	5,239,236	2022	HMIS		4,366,030	3,929,427	3,492,824	3,056,221	2,619,618
Goal 3: Achieve malaria elimination in 21 districts with very low burden by 2028										
1	Malaria Slide Positivity Rate (SPR)	22.7	2022	HMIS		15.6	11.7	7.8	3.9	0

PERFORMANCE FRAMEWORK FOR NATIONAL MALARIA ELIMINATION STRATEGIC PLAN 2024-2028										
INDICATORS		**BASELINE**			**TARGETS**					
		Data	**Year**	**Sources**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
2	Annual Parasite Index (API)	37.0	2022	HMIS		24.7	18.5	12.3	6.2	0.0
3	Proportion of 21 Districts reaching elimination	0	2022	HMIS		0	0	19%	62%	100%
OUTCOME AND OUTPUT INDICATORS										
Objective 1: To ensure 100% of the population have adequate knowledge, attitudes, practices and requisite skills for malaria elimination by 2028										
1	Percentage of women aged 15-49 who recall seeing or hearing a message about malaria through various sources in the past 6 months	59%	2019	MIS			79.5			100%
2	Percentage of women aged 15-49 with knowledge that sleeping under a mosquito net or ITN can prevent malaria	79%	2019	MIS			89.4			100%
Objective 2: To ensure 100% of the population use at least one malaria preventive measure										
1	Number of Long-Lasting Nets (LLNs) distributed to delivery points health facilities, schools (Routine)	3,336,675	2022	School Health report and DHIMs 2/Campaign report		1,545,481	4,270,115	4,348,401	2,118,467	4,487,316
2	Percentage of population in target areas sprayed with indoor residual spraying in the last 12 months	91%	2022	Administrative Records		90%	90%	90%	90%	90%

PERFORMANCE FRAMEWORK FOR NATIONAL MALARIA ELIMINATION STRATEGIC PLAN 2024-2028										
INDICATORS		BASELINE			TARGETS					
		Data	Year	Sources	2023	2024	2025	2026	2027	2028
3	Number of targeted districts implementing IRS	25/43	2022	Administrative Records		100% (52/52)	100% (52/52)	100% (52/52)	100% (52/52)	100% (52/52)
4	Number of targeted districts which received appropriate larvae source management	105	2022	Activity Report		105	105	105	105	105
5	Percentage (%) of pregnant women on Intermittent preventive treatment (at least three doses of SP) according to national policy	60.13	2022	HMIS		66.8	70.2	73.5	76.9	80.0
6	Percentage (%) of pregnant women on Intermittent Preventive Treatment (at least three doses of SP) according to national policy	60.2	2022	GDHS			70.1			80.0
7	Percentage of children aged 3–59 months who received the full number of courses of SMC (3 or 4) per transmission season in the targeted areas	99	2022	SiCapp		100	100	100	100	100
8	Percentage of households with at least one insecticide-treated net for every two people	47.4	2022	GDHS			66.2			85
9	Percentage of de-facto household population who could sleep under an	61.1	2022	GDHS			73.1			85

PERFORMANCE FRAMEWORK FOR NATIONAL MALARIA ELIMINATION STRATEGIC PLAN 2024-2028										
INDICATORS		BASELINE			TARGETS					
		Data	Year	Sources	2023	2024	2025	2026	2027	2028
	ITN if each ITN in the household were used by up to two people (Access)									
10	Percentage of children under 5 years old who slept under an insecticide-treated net the previous night	49.0	2022	GDHS			67			85
11	Percentage of pregnant women who slept under an insecticide-treated net the previous night	47.6	2022	GDHS			66.3			85
12	Percentage of household population who slept under an insecticide-treated net the previous night	39.7	2022	GDHS			59.9			80
13	Proportion of population using an insecticide-treated net among those with access to an insecticide-treated net	54.0	2022	GDHS			69.5			85
14	Number of districts implementing Malaria Vaccination	42	2022	EPI Vaccination report		93	138	261	261	261

PERFORMANCE FRAMEWORK FOR NATIONAL MALARIA ELIMINATION STRATEGIC PLAN 2024-2028										
INDICATORS		**BASELINE**			**TARGETS**					
		Data	**Year**	**Sources**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Objective 3: To ensure that 100% of suspected malaria cases are tested by 2028										
1	Percentage of suspected malaria cases that Received a Parasitological Test (RDTs or microscopy)	97.8	2022	HMIS		100.0	100.0	100.0	100.0	100.0
2	Number and percentage of uncomplicated malaria cases (tested positive) treated with ACT at health facilities.	93.1	2022	HMIS		100.0	100.0	100.0	100.0	100.0
3	Percentage of children under 5 with a fever in the 2 weeks before the survey who had blood taken from a finger or heel for testing	40	2022	GDHS			45			50
Objective 4: To ensure that 100% of all confirmed malaria cases are appropriately, effectively, and completely treated by 2028										
1	Number and percentage of uncomplicated malaria cases (tested positive) treated with ACT at health facilities.	93.1	2022	HMIS		100.0	100.0	100.0	100.0	100.0
Objective 5: To strengthen surveillance and monitoring and evaluation systems by 2028										
1	Development of malaria SMEOR plan 2024 - 2028	N/A	N/A	Programme report	1	0	0	0	0	0

PERFORMANCE FRAMEWORK FOR NATIONAL MALARIA ELIMINATION STRATEGIC PLAN 2024-2028										
INDICATORS		BASELINE			TARGETS					
		Data	Year	Sources	2023	2024	2025	2026	2027	2028
2	Development of malaria surveillance guideline	N/A	N/A	Programme report, HMIS		1	0	0	0	0
3	Percentage of health facilities submitting timely reports according to national guidelines	90.5	2022	HMIS		95	95	95	95	100
4	Percentage of health facilities submitting complete reports according to national guidelines	96	2022	HMIS		100	100	100	100	100
Objective 6: Ensure timely and adequate supply of quality-assured malaria commodities to all service delivery points by 2028										
1	Undertake quantification and review of forecasting for malaria commodities	1	2022	Quantification report		2	2	2	2	2
2	Number of monitoring and supervision undertaken to service delivery points to check on availability of malaria commodities including non-consumable malaria logistics	2	2022	Quantification report		2	2	2	2	2
Objective 7: To strengthen and maintain capacity for governance and program management to achieve programmatic objectives at all levels of the healthcare system towards malaria elimination by 2028.										
1	Advocate and engage the malaria caucus and the parliamentary select committee	2	2022	Programme report		2	2	2	2	2

PERFORMANCE FRAMEWORK FOR NATIONAL MALARIA ELIMINATION STRATEGIC PLAN 2024-2028										
INDICATORS		BASELINE			TARGETS					
		Data	Year	Sources	2023	2024	2025	2026	2027	2028
	on health to intensify support for malaria elimination in Ghana									
2	Establishment of the national malaria elimination committee	0	2022	Committee meetings		4	4	4	4	4
3	Engage CSOs in garnering political support for malaria elimination in Ghana	2	2022	Programme report		2	2	2	2	2
4	Conduct periodic reviews of the NMESP	2	2022	Programme report		2	2	2	2	2
5	Conduct national and subnational malaria reviews	2	2022	Programme report		2	2	2	2	2
Objective 8: To improve mobilisation of resources and efficiently use available resources towards malaria elimination										
1	Number of institutions engaged	5	2022	Annual reports or Presentations, engagement update reports		20	20	20	20	20
2	Number of institutions supporting the malaria elimination agenda	1	2022	Annual reports or Presentations, engagement update reports		6	9	12	15	18

PERFORMANCE FRAMEWORK FOR NATIONAL MALARIA ELIMINATION STRATEGIC PLAN 2024-2028										
INDICATORS		BASELINE			TARGETS					
		Data	Year	Sources	2023	2024	2025	2026	2027	2028
3	Proportion of regions providing financial reports within 90 days of fund receipt	62.5	2022	Statement of Expenditure (SOE) Report		100	100	100	100	100
4	Number of financial monitoring carried out	2	2022	Annual Report		4	4	4	4	

9.0 ANNEXES

Annex 9.1 List of Participants involved in the Development of the NMESP 2028-2024

No.	Name	Organisation/ Designation
1	Abdul Gafari Mohammed	Ghana Field Epidemiology and Laboratory Training Programme (GFELTP)
2	Abraham Nartey	National Malaria Elimination Programme- Ghana Health Service (NMEP- GHS)
3	Abukari Ashia	NMEP- GHS
4	Adela Ashie	Food and Drugs Authority (FDA)
5	Albert Ampofo	National Health Insurance Authority (NHIA)
6	Alexander Asamoah	NMEP- GHS
7	Alfred Akoto-Darko	Ministry of Lands and Natural Resources
8	Alhaji Umar Farooq	Office of the National Chief Imam
9	Ama Kafui Okine	Ministry of Health (MOH)
10	Amoah Kwakye S.	GHSC-PSM
11	Anthony Nsiah Asare	Presidential Advisor on Health
12	Augustus K. Awity	Regional Coordinating Council (RCC)- Volta Region
13	Beatrice Kwarteng Osei-Asare	RCC-Ashanti Region
14	Belynda Amenkwa	United Nations Development Programme (UNDP)
15	Benjamin Abuaku	Noguchi Memorial Institute for Medical Research- University of Ghana (NMIMR- UG)
16	Brenda Yayra Opong	Pharmacy Council
17	Christian Atta Obeng	NMEP- GHS
18	Chrysantus Kubio	Savannah Regional Health Directorate
19	Constance Bart-Plange	Independent Consultant
20	Damaris Forson	USAID Global Health Supply Chain- Procurement and Supply Management (GHSC-PSM)
21	David Dosoo	Kintampo Health Research Center (KHRC)-GHS
22	Delphine Agbaglo	NMEP- GHS
23	Donne Ameme	GFELTP
24	Doris Amarteifio	Family Health Division (FHD)- GHS
25	Joel Narh Balbaare	NMEP/GHS
26	Edwin Afari	GFELTP
27	Elizabeth Juma	World Health Organization (WHO)
28	Eric Djabatey	National Commission on Civic Education (NCCE)
29	Ernest Amoah Ampah	School Health Education Programme- Ghana Education Service (SHEP-GES)
30	Ernest Bekoe	Ghana Immigration Service (GIS)
31	Ernest Boampong	NMEP-GHS
32	Ernest Kenu	School of Public Health- University of Ghana (SPH-UG)- Consultant
33	Ernest Ortsin	Country Coordinating Mechanism (CCM) of The Global Fund
34	Eunice Mintah-Agyemang	NMEP-GHS
35	Evans Opata	Ghana Coalition of NGOs in Malaria (GCNM)

36	Evans Owusu	Ministry of Environment, Science, Technology, and Innovation (MESTI)
37	Evelyn Ansah	University of Health and Allied Sciences (UHAS)
38	Farooq Abdurrahman	Office of the National Chief Imam
39	Felicia Owusu Antwi	World Health Organization (WHO)
40	Francis Anughar	Food and Drug Authority (FDA)
41	Francisa Martey	Ghana Meteorological Agency (GMet)
42	Franklin Asiedu-Bekoe	Public Health Division-GHS
43	Fred Binka	University of Health and Allied Sciences (UHAS)
44	George Asumah Adu	NMEP- GHS
45	Gifty Boateng	National Public Health and Reference Laboratory (NPHRL)- GHS
46	Grace Adza	NMEP- GHS
47	Grace Kankam	Temporary Central Medical Stores (TCMS)-GHS
48	Hafez Adam Taher	Ministry of Health
49	Hagar Ampah	National Commission on Civic Education (NCCE)
50	Hammond Sarkwah	Information Communication and Technology (ICT) Unit-GHS
51	Ihsan Issaka	NMEP- GHS
52	Imurana Mohammed	NCCE
53	Irene Andoh	GHSC-PSM
54	Ivy S. Forson	NMEP-GHS
55	Jacob A Andoh	Public Relations Unit- GHS
56	Janet A.Y. Tiah	SPH-UG
57	Jennifer Dugbatey	Ministry of Gender, Children and Social Protection (MOG-CSP)
58	Jennifer Nai-Dowetin	GFELTP
59	Jennifer Twum-Barimah	Nursing and Midwifery Council (NMC)
60	Jerry Danquah	Disease Surveillance Department- GHS
61	Joel J. Idun-Acquah	National Malaria Elimination Programme (NMEP)- GHS
62	Joel Naa Balbaare	NMEP- GHS
63	John Ayivase	Clinical Laboratory Unit, Institutional Care Division (CLU- ICD)- GHS
64	Juliet Darko	RCC-Greater Accra Region
65	Justice Boakye Yiadom	NMEP- GHS
66	Karikari Acheampong	RCC- Ashanti Region
67	Keziah L. Malm	NMEP-GHS
68	Kofi Adomako	NMEP- GHS
69	Kwaku Saffu	Ministry of Health (MOH)
70	Kwaku Saffu-Mensah	Ministry of Health
71	Kwame Ankobea	USAID Presidents Malaria Initiative (PMI)
72	Kweku Blankson	Christian Health Association of Ghana (CHAG)
73	Lawrence Lartey	Port Health- GHS
74	Lily B. Sampong	NMEP- GHS
75	Mabel Kissiwah Asafo	Health Promotion Division- GHS
76	Magdalene Odikro	GFELTP
77	Margaret A. Okine	MLGDRD

78	Mavis Boakye-Yiadom	Centre for Plant Medicine Research (CPMR), Mampong-Akuapem
79	Maxwell Kwao	RCC- Volta Region
80	Mildred N. Komey	NMEP- GHS
81	Miriam Nana Ama Amoah	Ministry of Local Government and Rural Development (MLGDRD)
82	Muniratu Venu	NMEP-GHS
83	Mustapha A. Hamidu	Finance Division- GHS
84	Nana Wilson	USAID PMI
85	Nana Yaw Peprah	NMEP- GHS
86	Olivetta Dela Alomenu	National Service Scheme (NSS)/ NMEP
87	Otubea O. Akrofi	NMEP- GHS
88	Patrick Kuma-Aboagye	Office of the Director General -GHS
89	Paul Boateng	NMEP- GHS
90	Paul Dsane-Aidoo	The United Nations Children's Fund (UNICEF)
91	Paul Edem Ashilelepey	Ministry of Works and Housing (MWH)
92	Phyllis Owusu Achau	NMEP- GHS
93	Roland Glover	Volta Regional Health Directorate, Ghana Health Service (GHS)
94	Sammy Oppong	NMEP-GHS/ USAID-PMI
95	Samuel A Adotey	Allied Health Professions Council (AHPC)
96	Samuel Asiedu	AngloGold Ashanti (Ghana) Malaria Control (AGAMaL)
97	Samuel Dadzie	NMIMR- UG
98	Samuel O. Sackey	GFELTP
99	Selina Danso	NMEP- GHS
100	Shelter Hodinyah	Mullen Lowe Accra
101	Sixte Zigirumugabe	USAID PMI
102	Sophia Kesewa Ampofo Kusi	Policy, Planning, Monitoring and Evaluation Division (PPMED)- GHS
103	Stephen Appiah Nyamekye	NMEP-GHS
104	Tabong Fuseini Zulkarinene	Nahona Chief
105	Vanessa Aryee	Supplies, Stores and Drugs Management Division (SSDM)- GHS
106	Veronica Acquah	Christian Council of Ghana
107	Wahjib Mohammed	NMEP-GHS
108	Victoria F. Luther	SPH-UG
109	William Dokyi Asare	National Development Planning Commission (NDPC)
110	William O. Asante	NMEP-GHS
111	William Okoe	Environmental Protection Agency (EPA)
112	Zaidu Aysha	Regional Coordinating Council (RCC), Upper West Region (UWR)

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