REPUBLIC OF
ZAMBIA

MINISTRY OF
HEALTH

NATIONAL MALARIA ELIMINATION STRATEGIC PLAN 2022-2026

A strengthened, tailored approach to accelerate burden reduction and establish malaria-free communities

NATIONAL MALARIA ELIMINATION CENTRE

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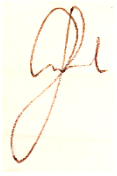
Preface

The Ministry of Health of the Republic of Zambia, in collaboration with partners, has developed the National Malaria Elimination Strategic Plan (NMESP) for 2022 to 2026. This document is in line with the WHO Global Technical Strategy (GTS) for Malaria 2016–2030 and the Southern Africa Malaria Elimination 8 (E8) Initiative.

To achieve the program targets, it will be imperative to mobilize the requisite resources, strengthen the capacity of malaria programme management, implement and monitor a package of high-impact malaria interventions driven by local epidemiology, and build and sustain a strong surveillance system.

I trust that this document will serve as a framework for a coordinated and collaborative approach to malaria burden reduction in Zambia. It is also meant to serve as a basis for the development of detailed and costed plans of action at the national level adapted to the provincial, district, and local realities and the response to the specific needs of each location in Zambia.



Prof. Lackson Kasonka
Permanent Secretary - Health Services
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Acronyms

ACT	Artemisinin-based combination therapy
ANC	Antenatal care
CDF	Constituency Development Fund
CHA	Community health assistant
CHW	Community health worker
CPs	Cooperating Partners
DHAP	Dihydroartemisinin-piperaquine
DHIS2	District Health Information Software 2
E8	Malaria Elimination 8
EMC	End Malaria Council
EMF	End Malaria Fund
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
HFCA	Health facility catchment area
HiAP	Health in All Policies
HMIS	Health Management Information System
IPTp	Intermittent preventive treatment during pregnancy
IRS	Indoor residual spraying
ICCM	Integrated Community Case Management
ITN	Insecticide-treated mosquito net
LLIN	Long-lasting insecticide-treated mosquito net
MACEPA	Malaria Control and Elimination Partnership in Africa
MCI	Malaria Case Investigation
MDA	Mass drug administration
MIS	Malaria Indicator Survey
MOH	Ministry of Health
MRRS	Malaria Rapid Reporting System
MTEF	Medium Term Expenditure Framework
NGO	Non-Governmental Organisation
NHCP	National Health Care Package
NHI	National Health Insurance
NMEC	National Malaria Elimination Centre
NMEP	National Malaria Elimination Programme
NMESP	National Malaria Elimination Strategic Plan
NMSP	National Malaria Strategic Plan
RDT	Rapid Diagnostic Test
RAS	Rectal Artesunate
SADC	South African Development Community
SAG	Sector Advisory Group
SBC	Social and behaviour change
SDGs	Sustainable Development Goals
SP	Sulfadoxine-pyrimethamine
SWAPs	Sector Wide Approaches
UHC	Universal Health Care
ZAMMSA	Zambia Medicines and Medical Supplies Agency
ZDHS	Zambia Demographic Health Survey

Executive Summary

Zambia remains a high burden malaria country. In 2021 there were 7,050,968 malaria cases; malaria case incidence was estimated to be 340/1,000 population/year; prevalence in children under 5 was found to be 29% (RDT-based); and the incidence of inpatient malaria deaths was 8/100,000 population per year (HMIS 2021; MIS 2021). Malaria transmission occurs all year round, with variations in transmission intensity across the country. In Zambia, 77% of the total population reside in rural areas (ZSA, 2020), where risk of malaria infection is 4.5 times greater than in urban areas (2021 MIS). The economic burden of malaria arises from the costs associated with service delivery of interventions, income loss among infected individuals, effects on workforce time, productivity losses and potential declines in investment. Annual malaria expenditures in Zambia increased from USD 50 million in 2017 to about US D61 million in 2021, creating further pressures on the already constrained health sector. In Zambia, malaria elimination remains as a “Legacy Goal” of the Ministry of Health (MoH). The National Malaria Elimination Program (NMEP) in Zambia is making strides in sustaining the political support, country ownership and evidence-based programming.

Malaria programs in Zambia are integrated within the health care system at all levels from national to community level. Planning and implementation is aligned with the national health strategic planning (NHSP) and national development plans (NDP). Various tools, linkages, coordination mechanisms, governance structures, program monitoring and partnerships are in place and continually being improved upon. The private sector, both for profit and not-for-profit and civil society, is involved in supporting government efforts towards a malaria free Zambia. However, challenges of low implementation rate of planned activities, limited financing in light of the need, inherent health system issues, competing health priorities, socio-economic status continue to be a risk to the national malaria elimination goals.

The National Malaria Elimination Strategic Plan 2022-2026 (NMESP) builds on progress made and lessons learned in implementing the 2017-2021 NMESP. The process for developing the NMESP 2022-2026 emanates from the end term review (ETR) process which included thematic desk reviews, data analysis and field visits culminating into stakeholder consultation at national and subnational levels. The ETR was conducted in accordance with the WHO guidance on conducting malaria programme reviews (WHO, 2019). The low funding levels, procurement and supply chain challenges, COVID-19 pandemic and ongoing restructuring of the program led to low implementation rate of the planned NMSEP activities and MTR recommendations. This resulted in inefficiencies in the delivery of malaria services across all service delivery areas, leading to reductions in epidemiological and entomological impact during 2017-2021.

The ambition levels of the new strategy, 2022-2026, is to reduce malaria related morbidity and mortality nationally while pursuing subnational malaria elimination. Strategic directions will include lowering the burden in high-transmission settings, eliminating malaria in low-transmission settings and preventing the reintroduction of malaria transmission in malaria free HFCAs. The main goals are to: Reduce malaria infection, disease and death in Zambia by 2026; increase proportion of the population living in malaria free HFCAs and maintain malaria-free status and prevent reintroduction and importation of malaria into areas where the disease has been eliminated.

The strategic objectives for 2022-2026 are to: Increase implementation rate of interventions from 72 percent in 2021 to 95 percent by 2026; Reduce malaria incidence from 340 cases per 1,000 population in 2021 to 201 cases per 1,000 population by 2026; Reduce malaria deaths from 8

deaths per 100,000 population in 2021 to 4.7 deaths per 100,000 population by 2026 and increase malaria free HFCAs from 10 in 2021 to 260 in 2026.

The malaria program will require a total of US$ 384,167,400.47 for full scale implementation for the period 2022-2024. The main cost drivers for this are costs related to the provision of case management services at all levels and vector control, primarily indoor residual spraying, long lasting insecticide treated bed nets and larval source management. Of this total need, 18% (US$ 71,845,593.80) has been committed to the program for the period 2022-2024, however a significant gap amounting to US$ 312,321,806.67 (82%) remains. This will require the development of a resource mobilization plan to meet this gap in a timely manner and ensure that the gains made towards malaria burden reduction are not lost but scaled up across the country.

CHAPTER 1: INTRODUCTION

1.1 Policy and programming environment

Malaria in Zambia is both a health and economic problem. Zambia remains a high-burden malaria country. In 2021, Zambia reported 7,050,968 annual malaria cases, an estimated malaria incidence of 340/1,000 population/year, and a parasite prevalence of 29% (RDT-based). Zambian hospitals reported 1,499 total deaths from malaria, a mortality rate of 8 inpatient deaths per 100,000 population (HMIS 2021; MIS 2021). Malaria transmission occurs all year round, with variations in transmission intensity across the country. Zambia is among numerous countries in sub Sahara Africa that have recorded a stagnation in malaria burden during recent years (WHO Malaria Report 2021).

In Zambia, 77% of the total population reside in rural areas (ZSA, 2020). Malaria prevalence in rural areas is 36%, contrasting to urban prevalence of 8% (MIS, 2021). Rural residents in Zambia are likely to live near environments, which are conducive to *anopheles* mosquito breeding, reside in poor housing, engage in outdoor activities, which disproportionately exposes them to more infected mosquito bites than their urban counterparts. Residing in a house with a thatch roof is associated with higher odds of malaria than residing in a house with corrugated metal (Nawa et al, 2020; Sikalima et al, 2021). Outdoor economic activities such as agriculture and fishing also pose a higher malaria risk (Chan et al, 2022). *Anopheles gambia*e and *An. funestus* tend to breed well in fresh waters, but some *An, gambiae* have propensity to breed in urban polluted waters as well (Coulibaly et al, 2016). Recent expansion of small dams in many parts of Zambia, including the Zambezi river basin sustains, the efficient vectors *An. gambiae, An. funestus* and *An. arabiensis*, exposing the populations living within 5km of the dams to higher annual malaria incidence and stable transmission all year round (Kibret et al, 2021). Economic expansions of aquaculture and irrigation farming provide a conducive haven for malaria vectors and are thus expected to have adverse effects on malaria control efforts (Chan et al, 2022). Occupations such as deployment of service and security wings, wildlife professionals, and others also further predisposes these groups to more malaria than indoor occupations**.**

Thus, health sector goal of eliminating malaria is met with the challenges of expansions in economic activities which may threaten the attainment of health sector goals by creating opportunities where malaria vectors thrive, further increasing the malaria risk**.** Changes in the environment including climate change, deforestation and urbanisation affect malaria vector composition and distribution, while agricultural practices such as indiscriminate use of pesticides is expected to contribute to mosquito resistance to insecticides (Chandra and Mukherjee, 2022).

The economic burden of malaria arises from the costs associated with service delivery of interventions, income loss among infected individuals, effects on workforce time, productivity losses and potential declines in investment. Annual malaria expenditures in Zambia increased from USD 50million in 2017 to about USD 61 million in 2021, creating further pressures on the already constrained health sector (MPR, 2021). Malaria episodes confer external economic loses because of the opportunity cost of caregivers' time, with externalities stronger among the low-income high burden regions (Masiye and Rehnberg, 2005). Productivity losses are also expected among malaria-affected individuals due to lost workdays both in the formal and informal sector, with loss in earnings expected to be more detrimental among the poor. Data from a Zambian agricultural processing company, which implements workplace malaria control programs, shows that sick days off were positively correlated with malaria incidence (RBM, 2011). In the mining

sector, integrated malaria control was associated with improvements in company revenue, positive pay offs for public health and socio-economic development (Utzinger et al, 2002). A study in Northern Zambia indicated that children aged between 5 and 17 were at higher risk of malaria infection throughout the year (Pinchoff et al, 2016). Thus, malaria among school-going children is likely to lead to lower school attendance in areas of high malaria transmission zones. Consequently, multisectoral collaboration is key to avert economic losses and premature death due to malaria in Zambia.

In Zambia, malaria elimination remains as a "Legacy Goal" of the Ministry of Health (MoH). The National Malaria Elimination Program (NMEP) in Zambia is making strides in sustaining the political support, country ownership and evidence-based programming. Malaria programs in Zambia are integrated within the health care system at all levels from national to community level. Planning and implementation is aligned with the national health strategic planning (NHSP) and national development plans (NDP). Various tools, linkages, coordination mechanisms, governance structures, program monitoring and partnerships are in place and continually being improved upon. The private sector, both for profit and not-for-profit and civil society, is involved in supporting government efforts towards a malaria-free Zambia. However, challenges of low implementation rate of planned activities, limited financing, inherent health system issues, competing health priorities, socio-economic status endanger the national malaria elimination goals.

The malaria program in Zambia operates under The Public Health Act, Chapter 295 of The Laws of Zambia as the legislative framework for malaria control. Zambia does not have one manual covering the programme but has separate guidelines for the intervention areas. The guidelines draw from the World Health Organisation (WHO) guidance for the various thematic areas. Zambia is also part of the SADC E8 countries and aligns itself with the WHO global malaria elimination strategy.

Zambia's efforts to reduce the malaria burden and address other health challenges are part of a broader agenda aimed at attaining significant and sustainable socioeconomic development. The country's long-term development agenda is guided by the Vision 2030 Strategy, which seeks to transform Zambia into 'a prosperous middle-income nation by 2030.

1.2. The Malaria Strategic Plan and the national planning cycle

1.2.1 The planning and budgeting cycle

The national malaria strategic planning (MSP) process is aligned with the NHSP which derives its mandate from and contributes to achievement of Article 28(1) of the 2016 Zambian Constitution, Vision 2030, 8th National Development Plan (ENDP), the 2012 National Health Policy, Universal Health Coverage (UHC) principles and the Sustainable Development Goals (SDGs). The NHSP is reviewed every five years with planning following the Medium-Term Expenditure Framework (MTEF). The Planning Department of the MOH guides overall planning processes at each level of the health system each year in line with the NHSP priorities and budget ceilings based on the health sector allocation from the Ministry of Finance (MOF). The financial year for annual plans is January to December of each year.

1.2.2 Alignment of the MSP with the national planning cycle

The 2022-2026 NHSP will be implemented through national annual work plans and budgets developed jointly by the MOH and CPs in line with the National Planning and Budgeting Act of 2020 (GRZ, 2020) within the structure of the MTEF. Following this system for the NHSP planning

and budgeting, the National Malaria Elimination Strategy (NMESP) is developed along with the associated operational and annual plans. Malaria control planning and implementation occurs within this health system context at national, provincial, district and Health Facility Catchment Areas (HFCAs).

1.2.3 Process of developing the current strategic plan

The NMESP 2022-2026 builds on progress made and lessons learned in implementing the NMESP 2017-2021. The process for developing the NMESP 2022-2026 emanates from the end term review (ETR) process which included thematic desk reviews, data analysis and field visits culminating into stakeholder consultation at national and subnational levels. The ETR was conducted in accordance with the WHO guidance on conducting malaria programme reviews (WHO, 2019).

The NMESP 2022-2026 is aligned with the National Health Strategic Planning process which guides the health sector in Zambia to directly contribute to the achievement of health and other development commitments at global, regional and national levels.

Furthermore, the NMESP 2022-2026 brings to the fore the challenge of implementing malaria activities during pandemic times, growing concerns of impacts of climate change on vector borne diseases and an increase in global connectedness. Other highlights include strengthening procurement and supply chain, epidemic preparedness and response, adopting emerging innovations, improving inclusivity and strengthening evidence-based decision-making. In view of the lessons learned in the past five years, this malaria strategy calls for scaling up interventions to reduce malaria incidence and mortality nationally while expanding areas attaining subnational elimination. The ambition levels of the NMESP 2022-2026 new strategy is to reduce malaria related morbidity and mortality nationally while pursuing subnational malaria elimination. This will be achieved through:

- Strengthening the capacity to plan and implement planned activities, execute payments on schedule, and to rapidly reallocate or mobilise funds to deal with unexpected events.
- Strengthening procurement and supply chain to ensure availability of appropriate commodities, supplies and equipment to ensure uninterrupted service delivery at all service delivery points.
- Sustaining the national political support, improving technical and operational capacity, and financial resources for malaria elimination.
- Timely use of data driven evidence to improve program performance and guide resource allocation.

CHAPTER 2: COUNTRY PROFILE

2.1. Sociopolitical system

Zambia is a land-locked country located in sub-Saharan Africa, with a total surface area of 752,612 square kilometres. Zambia shares borders with eight countries: the Democratic Republic of Congo and Tanzania to the north, Malawi and Mozambique to the east, Botswana and Zimbabwe to the south, Namibia to the southwest, and Angola to the west (**Figure 1**). The country is divided into ten provinces and 116 districts; the capital city is Lusaka. Zambia is a democratic country, which follows a multiparty political system since 1991; it is a stable and peaceful country, which has successfully held elections every five years to date (World Bank, 2021).

Figure 1: Zambia, provincial subdivisions and neighbouring countries

Source: https://ontheworldmap.com/zambia/

2.2. Demographic data

Zambia's projected population in 2020 totaled 17,885,422, comprised of 9,033,248 females and 8,852,174 males; 77% of the total population resided in rural areas (ZSA, 2020). The Lusaka and Copperbelt provinces are predominantly urban, while the other provinces are largely rural. The projected population growth rate has remained similar from 2.9% per year in 2015 to 2.8% per year in 2020 (CSO, 2020). In 2017, crude birth rate (CBR) was 41.6/1,000 population; crude death rate (CDR) was 12.6/1,000 population; infant mortality rate (IMR) was 72.4/1,000 live births and total fertility rate (TFR) was at 5.5 births per woman (CSO, 2017). The Zambian population is relatively young; almost half of the population (48%) is in the age range of 0-14 years, 16% are under five years while only 3% are aged 65 or older (ZDHS, 2018). The average household size in 2017 was 5 individuals (ZDHS, 2018). In 2021, the population density in Zambia was 25 people per square kilometre, calculated on a total land area of 743,390 square Kilometers (UN

projections, 2021 https://www.macrotrends.net/countries/ZMB/zambia/population). Trends in national and subnational population are shown in **Table 1**.

Table 1: Zambia population distribution, national and subnational, 2015-2021.

Province (Annual growth rate)	2015	2017	2018	2019	2020	2021
National	15,473,905	16,405,229	17,351,708	17,861,030	17,885,422	19,145,090
Central (2.5%)	1,515,086	1,591,7878	1,631,581	1,672,371	1,734,601	1,868,932
Copperbelt (2.2%)	2,362,207	2,414,176	2,467,287	2,521,568	2,669,635	2,734,299
Eastern (2.4%)	1,813,445	1,856,968	1,901,535	1,947,172	2,065,590	2,121,626
Luapula (2.3%)	1,127,453	1,179,912	1,207,050	1,234,812	1,276,608	1,308,257
Lusaka (3.6%)	2,777,439	2,981,014	3,088,331	3,199,511	3,360,183	3,407,539
Muchinga (3.9%)	895,058	966,234	1,003,917	1,043,069	1,095,535	1,159,491
Northern (2.9%)	1,304,435	1,381,189	1,421,244	1,462,460	1,520,004	1,546,775
North Western (2.4%)	833,818	874,3222	895305	916,793	950,789	975,327
Southern (2.7%)	1,853,464	1,954,902	2,007,685	2,061892	2,135,794	2,192,883
Western (1.5%)	991,500	1,021,468	1,036,790	1,052,342	1,076,683	1,094,335

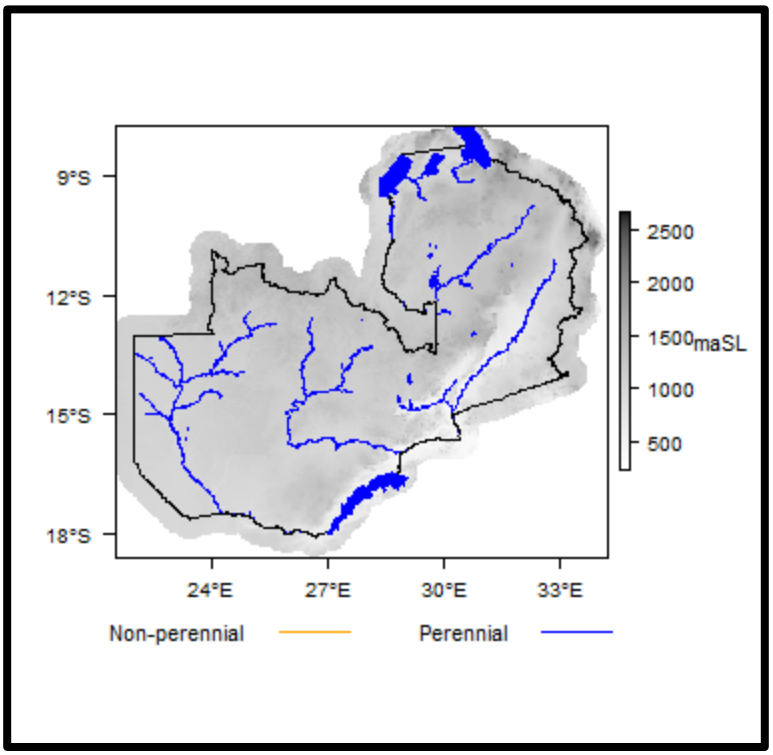
Sources: CSO, 2020; ZDHS, 2018; UN, 2021

With a population growth rate of 2.8% per year, Zambia is one of the world's youngest countries by median age (World Bank, 2021). This entails a growing population exerting pressure on health and other services. Thus, the population at risk of malaria is expected to grow each year as most of the country continues to experience high malaria transmission.

2.3. Ecosystem, environment, and climate

Various surface water bodies in the form of rivers, lakes and dams traverse Zambia and are used both for domestic and commercial purposes (Nkhuwa et al, 2018). The surface water bodies are composed of mainly the Zambezi river basin and its tributaries (**figure 2**). Major Lakes of Zambia include Bangweulu, Mweru and Tanganyika (World Atlas, 2021). Zambia is mostly a low-lying plateau, with few mountains in Central and Northern regions. The vegetation comprises savannah grasslands and miombo woodlands rich in biodiversity, some of which is conserved in protected areas, with seasonal variation in humidity having a bearing on ground cover (WorldAtlas, 2021). Zambia lies between 8° and 18° south latitudes and longitudes 22° and 34° east, with a tropical climate. The tropical climate, presence of large and small freshwater water bodies coupled with vegetation provide a conducive environment for the proliferation of malaria vectors (Kibret et al 2021; Kabaria et al, 2016). Thus, populations at lower altitudes and/or living close to surface water bodies, that may be potential mosquito breeding sites, are at high risk of malaria (Kibret et al, 2021).

Figure 2: Distribution of surface waterbodies across Zambia



Source: British Geological Survey, 2015

Zambia's tropical climate is characterized by three distinct seasons: a hot and dry season (mid-August to mid-November), a wet rainy season (mid-November to April) and a cool dry season (May to mid-August). Rainfall is strongly influenced by the movement of the Inter-Tropical Convergence Zone (ITCZ) as well as the El Niño/Southern Oscillation (ENSO) phenomenon the annual rainfall in Zambia averages between 700 mm in the south and 1,400 mm in the north. The hot months are very dry, receiving almost no rainfall between May and August. The rainy season is between October and April with an average of 150-300 mm per month. Mean annual temperature has increased by 1.3°C since 1960, an average rate of 0.29°C per decade with increasing trends in the frequency of hot days and nights in all seasons. The rainfall season in the south-western region is becoming critically shorter. Zambia has also been reporting frequent annual episodes of droughts, dry spells and floods (World Bank, 2020). The northern parts of Zambia are prone to higher rainfall and experience relatively higher malaria incidence compared to the drier southern parts of the country (MIS 2015; 2018). Vegetation cover indices, rainfall and temperature are suitable indictors for malaria risk prediction (Amadi et al, 2018). Elevated temperatures reduce time for mosquito larvae to mature and in females the rise in temperature improves blood meal digestion leading to increase in biting frequency (Chandara and Mukherjee, 2022). Reduced precipitation in areas with rivers leads to formation of pools which are potential breeding grounds for malaria vectors hence likely to increase malaria transmission (Chandra and Mukherjee, 2022). These changes in climatic conditions have the potential to alter environmental conditions and as such require ongoing exploration of climate data to anticipate impacts, vulnerabilities and adaptation measures.

2.4. Socioeconomic situation

Zambia's economic growth has slowed in recent years and inflation is in the double digits. The projected declines in GDP, and a growing population partly due to a high fertility rate, is expected to increase demand for health care and other services. Income inequalities are lower than the previous years but remains high as indicated by a Gini Coefficient of 0.44 in 2018 from 0.57 in 2015 (World Bank, 2015). Zambia remains in the lower middle-income (LMIC) category with per capita health expenditure in 2018 estimated at $76 (ZDHS, 2018). Zambia faces double burden of communicable diseases and non-communicable diseases due to a shift in lifestyle and improvement in social economic status especially in urban areas. While life expectancy has been improving, signaling a demographic transition, maternal, child and infant mortality is still high. The increase in life expectancy means that the health sector faces resource allocation pressures to cater for both infectious diseases and non-communicable diseases. Additionally, since malaria contributes to maternal and child mortality, the new strategy should prioritize high malaria intervention coverage among the children and pregnant women who are known high-risk groups for malaria. The delivery of interventions must address prevailing inequalities and minimize malaria related catastrophic health expenditure especially that majority of the population in Zambia is poor (54% in 2015). The high adult literacy levels provide a great opportunity for social and behaviour change communication. **Table 2** outlines the status of selected socio-economic indicators in Zambia.

Table 2: Zambia, selected socio-economic indicators

Indicator	Value	Year
Real GDP growth (%)	3.5	2021
Inflation (%)	14.2	2022
Per capita GNI ($)	1,190	2020
Human Development Index	0.584	2019
Poverty head count ratio (%)	54.4	2015
Gini-coefficient	0.44	2018
Adult literacy rate (%)	86.8	2018
Infant mortality rate (per 1000 live births)	42	2018
Under-5 mortality rate (per 1000 live births)	61	2018
Maternal mortality rate (per 100,000 live births)	252	2018
Life expectancy at birth (years)	64.12	2021
Total fertility rate (number of births per woman)	4.6	2018
Per capita health expenditure ($)	76	2018

Sources: ZDHS, 2018; UN projections, 2021; World Bank,2015, 2021

In 2020, the share of economic sectors in the gross domestic product (GDP) were 53.6% for services, 40.3% for industry and 3% for agriculture, with 3% unspecified (O' Neill, 2022). Declines in economic activity were reported in 2020 in the industry and services sectors while mining and services suffered from declines in demand due to COVID-19 social distancing measures (World Bank, 2021). The mining sector forms the backbone of the Zambian economy with most mines concentrated on the Copperbelt and North Western provinces. Artisanal and small-scale mines are spread across other towns of Zambia (Mining for Zambia, 2016). In the agriculture sector,

large-scale farms are located along the transport corridor or else known as line of rail with small-holder farms dotted all across Zambia (Lay et al, 2021). Fishing camps are found around surface water bodies of Zambia. Small-holder irrigation schemes are located in close proximity to wetlands and these have recently been expanded as part of a national response to climate change (Ngoma et al, 2019). Road construction activities are largely concentrated in the urbanised areas of the country.

2.5 Health system analysis

The healthcare system in Zambia is decentralised into three levels: hospitals, health centres and health posts. Hospitals are further tiered into primary, secondary and tertiary levels at district, provincial and central levels respectively. The health care system in Zambia includes 2,922 health facilities comprising 6 tertiary level hospitals, 34 secondary level hospitals, 99 first level hospitals, 17 clinics, 661 urban health clinics, 1,161 rural health clinics and 953 health posts (MOH, 2017). All health facilities serve as diagnostic and treatment centres for malaria while hospitalization is confined to health centres with admission space/wards. The NHSP is implemented using the sector organisational and management structures at national and subnational levels in alignment with the National Development Plans. Various partners are coordinated through the sector advisory group (SAG). Coordination is achieved by harmonised actions of the MOH, line ministries, local government, provinces, districts, Cooperating Partners (CPs), Non-Governmental Organizations, public and private institutions and local communities. The health sector coordination uses the Health in All Policy (HiAP) Strategic Framework as a platform for multisectoral collaboration at all levels of the health care system in Zambia.

A Health Management Information System (HMIS) serves as a database to generate routine information for service and disease indicators that are used to inform programming as well as policy decisions. District Health Information Software 2 (DHIS2), the mobile version of an open-source web-based health information system platform, (https://dhis2.moh.gov.zm/hmis/dhis-web-commons/security/login.action) has been rolled out to all districts as part of technological adaptation and the Malaria Rapid Reporting System (MRRS) is also in use. Systems are in place to collate and collect data through periodic surveys in collaboration with the Zambia Statistics Agency (https://www.zamstats.gov.zm/). A human resource development plan for the sector is implemented to cater for the human resource needs at all levels of the system. Decentralization is one of the key principles for the organization and management of the health sector.

The Sector Wide Approach (SWAp) is a mechanism for ensuring efficient and effective mobilization and utilization of financial resources from the Government and CPs. MOH leads in ensuring that appropriate financial and administrative management systems and control procedures are in place to ensure transparency and accountability. Planning and budgeting for the health sector is in line with the National Planning and Budgeting Act of 2020 within the structure of the Medium-Term Expenditure Framework (MTEF). Health care services at the primary health care level are provided free of charge to the population as per National Health Care Package. Other services are accessed either out of pocket or through the National Health Insurance scheme benefit package or indeed private health insurance. Zambia introduced the National Health Insurance scheme in 2020, and the malaria health care services package is provided for in this scheme.

Procurement, storage and distribution of pharmaceutical products or commodities is centralized with some regional hubs in Eastern, Southern, Western, Muchinga and Copper-belt provinces. The Zambia Medicines and Medical Supplies Agency (ZAMMSA) is the main entity managing the

procurement, storage and distribution of medical supplies and other logistics on behalf of the Ministry of Health (MoH). The Churches Hospital Association of Zambia (CHAZ), under a Global Fund grant, provides complementary procurement and distribution system for malaria medications and supplies in Eastern, Southern and North Western provinces.

The National Malaria Elimination Centre (NMEC) in Zambia is a Ministry of Health (MOH) directorate mandated with overall coordination of all malaria control activities in Zambia (https://www.nmec.org.zm/). The malaria programme has a structure at all levels of service delivery - central, provincial, district and community – with clear management systems. The NMEC has strong linkages with other directorates within MOH. Malaria Elimination Officers (MEOs) have been introduced at district level. There are strong linkages between the community and health facilities. The number of Community Health Workers (CHWs) and Community Health Assistants (CHAs) has expanded to support implementation of malaria programs at community level.

Malaria control follows a multipronged approach. The success of malaria control and eventual elimination is dependent upon a strong partnership collaboration, which includes public, private, non-governmental, academic and faith-based institutions from both local and international networks. A strategy to mobilize resources is key and to achieve this a business strategy was developed and is in place. Zambia also established the End Malaria Council, which support advocacy and resource mobilization through the End Malaria Fund. Zambia, a landlocked country, has a significant mobile and migrant population and thus the need for cross border collaborations has heightened.

The health sector budget has a separate budget line for malaria elimination. The Programme has benefited from engagements with the regional bodies such as E8 and SADC. Technical Working Groups (TWGs) and Directorate meetings at national level provide oversight. Integrated reviews are undertaken at provincial and district levels.

CHAPTER 3: SITUATION ANALYSIS

3.1 Historical Perspectives

Past national and international political commitment and engagement:

- 2016: Zambia aligns the malaria national strategic plan to the WHO Global Technical Strategy (GTS 2016-2030).
- 2017: Malaria elimination is anchored on the Seventh National Development Plan (7NDP2017-2021).
- 2018: Windhoek Declaration on Eliminating Malaria in the SADC region.

The NMESP 2017-2021 set the following targets:

- Increase the implementation rate of interventions from 36% in 2015 to 95% by 2018
- Reduce malaria incidence from 336 cases per 1,000 population in 2015 to less than five cases per 1,000 population by 2019.
- Increase malaria-free health facility catchment areas (HFCAs) from 0.5 percent in 2015 to 100 percent in 2021.
- Reduce malaria deaths from 15.2 deaths per 100,000 population in 2015 to less than five deaths per 100,000 population by 2021.
- Achieve 100 percent malaria-free status by 2021.
- Maintain 100 percent malaria-free status, following 2021.

The NMESP 2017–2021 focused on malaria elimination in Zambia around select interventions by transmission strata. These included:

- **Malaria diagnosis and case management**: prompt diagnosis and effective treatment with artemisinin-based combination therapy (ACT) within 24 hours of symptom onset; management of severe malaria.
- **Integrated vector management:** provision of LLINs, IRS and larval source management.
- **Prevention of malaria in pregnancy**: provision of LLINs and IPTp with Sulphadoxine-pyrimethamine (SP) to pregnant women at antenatal clinics (ANCs).
- **Surveillance:** Parasitological and entomological surveillance and potential use of molecular testing techniques for monitoring at clinic and community level.
- **Malaria case investigation and malaria foci investigation and transmission containment:** Extension of case surveillance at community level, including reporting of confirmed cases and investigation of households and local neighbourhoods; identification and detection of ongoing transmission foci and active clearance of local transmission.
- **Use of 'malaria elimination accelerator strategies' (e.g., mass drug administration (MDA)):** Time-limited and geographic targeted population-wide treatment in line the national treatment guidelines (80 percent coverage) to clear the infectious reservoir and prevent infection for a time interval
- **Advocacy, communication, education, and social mobilisation**.

Under the NMESP 2017-2021, the Program noted a number of accomplishments:

- Malaria mortality declined from 15.1/100,000 to 8/100,000.
- The Zambian NMEP has increased its capacity to generate quality entomological and epidemiological data to inform decision-making.
- Training and deployment of CHWs of malaria community case management and surveillance totaling over 16,000.

- Successfully conducted two national mass ITN campaigns (2017 and 2020).
- Institutionalization of best practices in program management such as score card, harmonised work plan, monthly review of key indicators with partner, among others.
- Conducted annual national IRS campaigns, characterised by improved quality of operations in terms of timeliness, data capture and access including maps to inform planning of IR operations.

However, as will be detailed in section 3.3, the available NMEP data shows that results have fallen far short of the 2017-2021 targets. The ambition levels in the NMESP 2017-2021 were too high, the resources required to achieve malaria elimination were less than the commitments, and the commitments did not always lead to disbursements. Human resource capacity at various levels remains requires strengthening. Even though the technical strategy were sound, changes in tactical approach were required including adherence to the technical approaches during implementation. Challenges in the procurement and supply chain, have posed a great risk to the program capacity to deliver interventions timely and confer negative consequences on key performance indicators.

The historical perspective makes it clear that, moving forward, the program needs to review ambition levels in line with the existing capacities and timeframes while aligning with the global malaria technical strategy and building on the identified accomplishments. There is need to implement strategies to improve financing levels commensurate with programme needs including strengthening financial management systems, expanding domestic and external sources of funding and strengthen the NMEP capacity at all levels.

3.2 Epidemiology

Malaria transmission is all year round with seasonal variations, peaking between January and April. The variation in malaria epidemiology results from a myriad of geographic, climatic and social factors that are conducive or restrictive to malaria. Not only is Zambia a highly malaria-endemic country, but malaria is also endemic in all eight neighbouring countries. The following sections will highlight aspects of malaria epidemiology. In brief, as mentioned previously, in 2021 there were 7,050,968 reported total malaria cases; malaria case incidence was estimated to be 340/1,000 population/year; prevalence in children under 5 was found to be 29% (RDT-based); and the incidence of inpatient malaria deaths was estimated to be 8/100,000 population per year (HMIS 2021; MIS 2021). Malaria transmission occurs all year round, with variations in transmission intensity across the country. In Zambia, 77% of the total population reside in rural areas (ZSA, 2020), where risk of malaria infection is 4.5 times greater than in urban areas (2021 MIS)

3.2.1 Malaria Parasites

Parasite prevalence is highest at the end of the transmission season in April and May. Among the four types of Plasmodium parasites that can cause malaria in humans, *Plasmodium falciparum* is the most predominant, causing the most severe form of malaria. *P. falciparum* accounts for 98 percent of all malaria infections in the country. It occurs as both mono- and mixed-infection, with *P. malariae, P. ovale* and *P. vivax*. Zambia routinely monitors the therapeutic efficacy of Artemether-lumefantrine (AL), which is used as first line malaria treatment, and Dihydroartemisinin-piperaquin (DHAP), which is reserved for MDA. There has been no change in parasite resistance to both drugs with adequate clinical and parasitological response (ACPR) still at 100% (TES Report, 2017, 2019, and 2021). In view of this, the drugs of choice remain AL for

first line malaria treatment and DHAP for MDA. Sulphadoxine-pyrimethamine (SP) is used for pregnant women as intermittent preventive treatment.

3.2.2 Malaria Vectors

Malaria vector species composition is heterogeneous at the national level with the three species *An. funestus s.s, An. gambiae s.s* and *An. arabiensis*, as the primary vectors of malaria. Variations in entomological inoculation rates have been reported in Zambia. Average entomological inoculation rate (EIR) for *An. funestus* s.l. ranges from 0.183 to 0.832 infective bites per person per night, and that of *An. gambiae* s.l. from 0 to 0.128 infective bites per person per night (TAC Report 2021; Field Report, 2020). Traditionally the malaria vectors bite between 22:00 hours - 04:00 hours and exhibit endophilic and endophagic behavior (TAC Report, 2021; Field Reports, 2020)**.** Changes in vector biting behaviour have been reported in *An*. *arabiensis* to bite between 16:00 hours -10:00 hours, with exophilic and exophagic behaviour (TAC Report, 2021; Field Report, 2020). Both *An. funestus s.s* and *An. gambiae s.s* are highly anthropophilic, with a few mixed human/animal blood meals identified in both vectors. Most of the bites by both vectors take place indoors late at night.

Vector resistance to pyrethroid insecticides is known to be widespread in the country. Vectors are susceptible to DDT in some parts of the country but resistant in others (**table 3**). All the three-vector species; *An. gambiae s.s, An. funestus* and *An. arabiensis* are susceptible to Clothianidin and Pirimiphos-methyl. To address the challenge posed by insecticide resistance, Zambia has developed and continues to update the Insecticide Resistance Management and Monitoring Plan (IRMMP 2019) which guides the selection of insecticides for the IRS program, in order to mitigate vector resistance. It also informs the choice of products used in ITN and LSM programs. Given the documented pyrethroid resistance, especially in *Anopheles gambiae*, Zambia's policy is to use non-pyrethroid pesticides in IRS and implement a mosaic that includes clothianidin, DDT, clothianidin-deltamethrin, among others, and with regards to ITNs, to switch from standard to PBO nets. The Program expanded functional sentinel sites for entomological monitoring and surveillance from 12 in 2017 to 22 in 2021, and plans are in place to expand to 39 sites from 2022 onwards. Entomological surveillance monitoring will be key in the new strategy to provide representative and updated evidence for decision making in vector control.

Table 3: Insecticide resistance profile, Zambia, 2010-2019

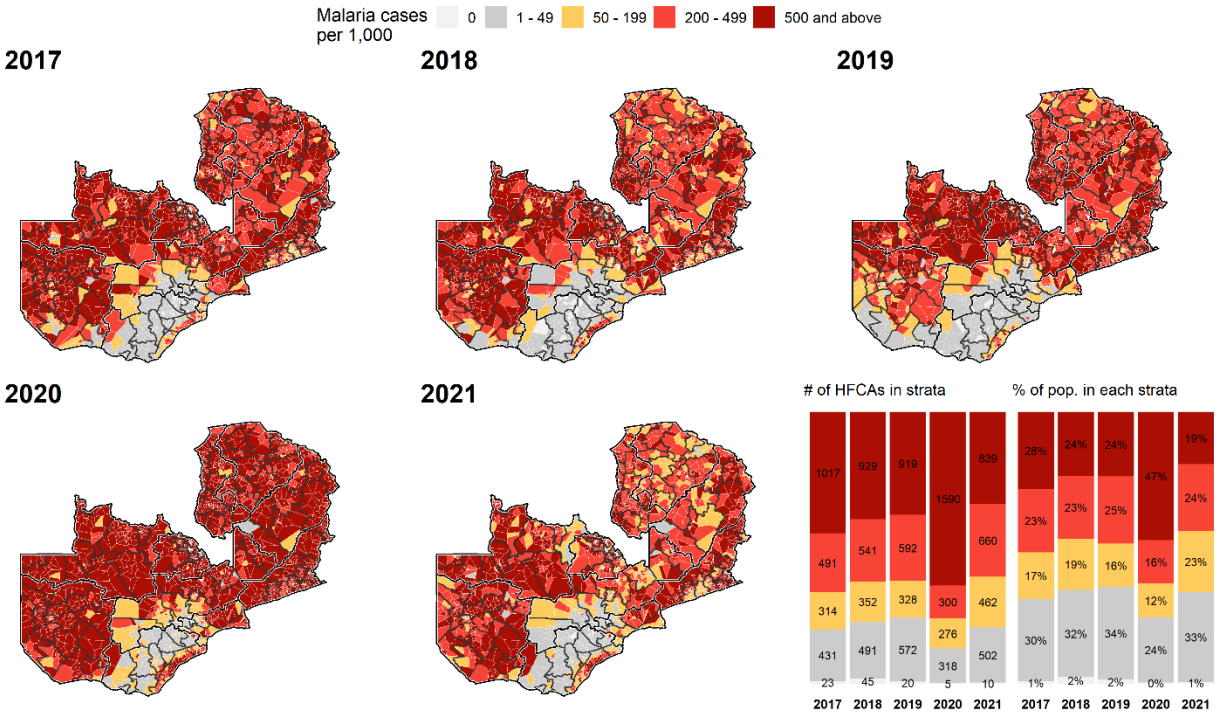
Year	Reported insecticide resistance
2010	Resistance to pyrethroids and organochlorines
2012	Resistance to carbamates
2014-2019	*An. gambiae s.l*. and *An. funestus* susceptibility to organophosphate (pirimiphos methyl).
2017-2019	*An. gambiae s.l*. and *An. funestus* susceptibility to DDT and bendiocarb restored in some parts of the country such as Southern, Northern, Central, Eastern and Luapula provinces
2017-2019	*An. gambiae s.l.* and *An. funestus* resistance to pyrethroids and carbamates continues to be reported in some parts of Zambia

3.2.3 Malaria Risk Stratification

Zambia has a well-established annual program of stratifying each health facility catchment area (HFCA). The levels of malaria transmission intensity are stratified as **"high" level 4** (above 500 cases per 1000 population/year), **"moderate" level 3** (between 200 and 500 cases per 1000 population per year), **"low" level 2** (between 50 and 200 cases per 1000 population/year), **"very low" level 1** (between 0 and 50 cases per 1000 population/year), or **"no malaria" level 0**. Stratification is also done at the district level to inform certain operations which are best targeted by district instead of by HFCA. **Figure 3** depicts the national malaria stratification by HFCA, including estimated proportion of the national population at each epi strata.

Based on this stratification of malaria incidence in 2021, 19% of the population of Zambia lived in level 4 areas where malaria incidence is above 500/1,000; 24% are in the level 3 areas with 200-499 per 1,000; 23% in level 2 areas with 50-199 per 1000; and 33% in the level 1 areas with above zero but less than 50 cases per 1000 (HMIS/MRRS, 2021). Ten (10) HFCAs reported no malaria cases in 2021, meaning that only 1% of the population lived in malaria-free (Level 0) HFCAs in 2021. The NMESPs define an evolving package of interventions for each stratum in all the HFCAs. The new strategic approach addresses both lowering the burden in higher transmission settings (levels 2-4, where the majority live) and eliminating malaria in lower transmission settings (levels 0-1).

Figure 3: Malaria risk stratification at HFCA level, 2017-2021 (Source: PATH/NMEC)



As the malaria program implements high impact interventions, it is anticipated that as the burden reduces, there will be areas that may be prone to epidemics and as such EPR guidelines have been developed to provide a criterion for epidemic detection based on the malaria strata.

The risk groups for severe illness and death include:

- Children less than five years of age.
- Pregnant women.
- HIV-infected persons (especially those not on treatment and with compromised immune responses).
- Persons with compromised immune systems.

The risk groups for infection include:

- Rural populations
- Populations at lower altitudes and/or living close to water bodies that may be potential mosquito breeding sites.
- Poorer and less educated populations.
- Mobile populations that shift seasonally for work (e.g., farming, fishing, construction, artisanal mining, among others) and therefore pose a risk to themselves and to reintroducing infection into their home communities.
- Children and adolescents
- Military and police forces deployed on national security operations.

3.2.4 Malaria Morbidity and Mortality

Malaria remains a significant cause of illness and death in Zambia. National estimates for incidence were 340 cases per 1,000 population and mortality at 8 deaths per 100,000 population in 2021 (HMIS, 2021). Malaria incidence across the country varies widely from zero to more than 500 cases per 1,000 population. Malaria prevalence differs among provinces from as high as 63% in Luapula province to 3% in Lusaka and Southern provinces RDT-based prevalence, MIS, 2021). Malaria prevalence is nine times higher in children aged five years and below from the lowest wealth quintiles than among the highest wealth quintile (MIS, 2021). Among children under 5 years of age, malaria prevalence increases exponentially with age from 19% among the 6-11 months to 35% among those aged 48-59 months, as expected for high-burden settings. As previously mentioned, rural areas reported 4 times higher malaria prevalence than the urban areas (MIS, 2021). **Table 4** shows the distribution of malaria cases by province.

Table 4: Malaria cases by province, 2015-2021

Total Malaria Cases								
Organisation Unit	Source	2015	2016	2017	2018	2019	2020	2021
Central	HMIS	418,242	596,101	627,788	487,869	521,236	774,572	500,406
	MRRS	8,763	17,438	22,431	13,501	28,898	23,923	41,371
	HMIS + MRRS	427,005	613,539	650,219	501,370	550,134	798,495	541,777
Copperbelt	HMIS	844,269	1,022,764	934,394	845,315	926,277	1,228,600	937,548
	MRRS	9	925	2,174	7,028	115,718	75,760	9,335
	HMIS + MRRS	844,278	1,023,689	936,568	852,343	1,041,995	1,304,360	946,883
Eastern	HMIS	680,715	806,431	930,442	881,039	885,011	1,144,025	758,023
	MRRS	0	53	134	960	164,639	407,144	367,513
	HMIS + MRRS	680,715	806,484	930,576	881,999	1,049,650	1,551,169	1,125,536
Luapula	HMIS	801,162	793,587	737,623	700,874	780,597	974,668	872,015
	MRRS	-	-	-	14,194	33,268	11,444	20,316

Total Malaria Cases								
Organisation Unit	Source	2015	2016	2017	2018	2019	2020	2021
	HMIS + MRRS	801,162	793,587	737,623	715,068	813,865	986,112	892,331
Lusaka	HMIS	93,420	115,614	122,152	76,383	75,775	146,519	122,859
	MRRS	2,306	1,719	2,301	1,112	633	1,366	2,806
	HMIS + MRRS	95,726	117,333	124,453	77,495	76,408	147,885	125,665
Muchinga	HMIS	459,346	562,054	490,954	416,422	487,960	722,792	539,748
	MRRS	-	-	-	1,759	48,645	44,337	60,968
	HMIS + MRRS	459,346	562,054	490,954	418,181	536,605	767,129	600,716
Northern	HMIS	631,724	708,380	710,612	529,759	639,786	855,767	828,485
	MRRS	-	-	0	615	22,489	4,077	12,077
	HMIS + MRRS	631,724	708,380	710,612	530,374	662,275	859,844	840,562
North-Western	HMIS	713,246	809,913	768,564	686,071	741,654	1,023,842	780,101
	MRRS	-	-	544	3,942	87,630	195,542	159,669
	HMIS + MRRS	713,246	809,913	769,108	690,013	829,284	1,219,384	939,770
Southern	HMIS	52,900	41,904	30,518	47,418	30,775	59,461	55,605
	MRRS	35,262	28,318	29,312	35,101	23,961	61,860	61,209
	HMIS + MRRS	88,162	70,222	59,830	82,519	54,736	121,321	116,814
Western	HMIS	505,075	616,498	770,219	591,421	276,021	719,844	859,312
	MRRS	3,201	17,056	113,598	178,028	119,585	121,114	61,602
	HMIS + MRRS	508,276	633,554	883,817	769,449	395,606	840,958	920,914
National	HMIS	5,200,099	6,073,246	6,123,266	5,262,571	5,365,092	7,650,090	6,254,102
	MRRS	49,541	65,509	170,494	256,240	645,466	946,567	796,866
	HMIS + MRRS	5,249,640	6,138,755	6,293,760	5,518,811	6,010,558	8,596,657	7,050,968

3.3 Review of Previous Malaria Strategic Plan: Implementation Status by Intervention 2017-2021

During the implementation of the NMESP 2017-2021, Zambia continued to prioritise resource allocation to the malaria program, scale up interventions to improve access to prevention and treatment while strengthening the capacity of the program to deliver malaria interventions at all levels. This was achieved through strong collaboration with the various partners and stakeholders. However, the program did experience some challenges that may have hampered full scale implementation of interventions. These included financial and logistical challenges compounded by the COVID-19 pandemic. Moving forward, the program has considered these as lessons learnt to guide future programing.

3.3.1 Case Management (Facility and Community based)

NMEP continued to make investments in ensuring commodity availability at all service delivery points through increased capacity for forecasting, quantification and enhanced commodity tracking. This was also supported by the expansion of hubs to strengthen access and last mile distribution of essential commodities by the health sector. Additionally, community health workers

were trained in integrated community case management (iCCM) and deployed to enhance prompt access to diagnosis and treatment services in hard to reach communities in line with the ministry of health's aspiration of providing health care services as close to the family as possible. The program continued to update its national treatment guidelines to reflect WHO emerging evidence and global best practices such the use of ACT in the first trimester, IPTp use up to delivery and rectal artesunate in children among others. This led to the rollout and scale up of injectable artesunate in all health facilities managing severe malaria and rectal artesunate (RAS) from an initial two districts to 45 districts.

3.3.1.1: Coverage of case management interventions

According to the Malaria Indicator Survey (MIS) conducted in May 2021, 18% of children under the age of five were reported to have had a fever in the previous two weeks (13% urban versus 19% rural). Of children with fever, 63% (60% from urban versus 63% rural) reported to have sought treatment, 59% (55% urban versus 59% rural) reported receiving a finger or heel stick, 36% (10% urban versus 41% rural) reported having a positive test for malaria, and 38% (7% urban versus 44% rural) reported receiving an antimalarial drug. Of the children who took an antimalarial drug, 30% took the drug within 24 hours of symptom onset, 31% from urban and 30% rural areas. Of those who took antimalarial, 96.9% took AL, 2.6% SP, 0.9% other and 0% Quinine. The majority of those who took antimalarials sourced them from government health facility (77%) with 9% from a shop, 8% from home, 4% from CHWs, and 2% from a private facility. Facility source of antimalarial has increased from 59% in 2018 to 77% in 2021 while CHW source has declined from 22% in 2018 to a low of 4% in 2021 (MIS 2018, 2021).

The program has improved the capacity to train CHWs. However, even though more CHWs were trained and deployed, a large proportion fell inactive due to inadequate provision of ACTs and RDTs to the CHWs in most provinces in late 2019 through 2021. Notable exceptions were Southern and Eastern provinces. The country experienced erratic distribution of RDTs and ACT's due to a host of bottlenecks in the supply chain, among which were inadequate stocks exacerbated by disruptions of shipments during the COVID-19 pandemic. Furthermore, there was no national buffer stock to fall back on during disruptions in the supply chain.

3.3.1.2: Case management supply chain

There is a system for forecasting and quantification of case management commodities which is coupled to the availability of funding, technical support, quantification tools and a core team. Both GRZ and donors provide resources for procurement of commodities. The institutional framework for warehousing and storage provided by ZAMMSA and CHAZ at central level and 7 regional hubs. Ongoing quality control is undertaken by ZAMMSA in country while partners provide pre-shipment quality control in line with international best practices. There are in-country facilities to process required orders including availability of eLMIS for data management. Mechanisms are in place to ensure commodities are distributed to both facility and community level.

Some of the challenges include: Delays in procurements, use of proxy data to determine patient consumption/use of antimalarials and RDTs, CHWs do not have sufficient RDTs and ACTs to test and treat malaria at community level, facility-level e LMIS does not capture malaria seasonality and gaps in commodity accountability at various levels. To ensure uninterrupted availability and rational use of malaria commodities and supplies at all service delivery points.

Deliberate actions are required to improve service availability at community and facility level to improve outcomes in malaria case management ensuring high levels of quality of care. Discrepancies between those tested and receiving antimalarials call for actions to address gaps in the supply chain, such as commodity security, forecasting and quantifications and allocations, including prescription practices at all levels. There is need to ensure uninterrupted access to quality assured malaria diagnosis and treatment at all levels.

3.3.2 Vector Control

Under the NMESP 2017-2021, the Program aspired to provide universal access to malaria vector control interventions. Operationally, the approach relied largely on ITN and IRS deployments, with an additional small-scale contribution from LSM in selected urban settings.

ITNs were distributed through (1) mass campaigns conducted in 2017-18 and 2020-21 nationwide, (2) routine distributions through ANC and EPI clinics nationwide, and (3) school-based distributions in selected districts. Of note, the 2017-18 ITN mass campaign was aimed to provide maximal ITN coverage in most of the country, whereas for the 2020-21 campaign the country adopted the tactic of an IRS/ITN "mosaic" at sub-district level, where roughly half of the population was to receive one or the other intervention. A significant innovation in the latter campaign was the incorporation of customized Geo-referenced Infrastructure and Demographic Data for Development (GRID3) satellite-based maps of structures and populations to inform ITN and IRS targeting.

IRS was conducted in annual campaigns, typically in 115 out of 116 districts. To maximize impact, IRS campaigns were meant to start in October/November during the early rainy season, but in 2017-2020 many areas received IRS late, due largely to procurement bottlenecks. However, timeliness of IRS delivery improved greatly in the 2021 campaign. Reactive IRS was introduced in 2020 and 2021 in targeted districts, whereby focal IRS campaigns were deployed to address upsurges in malaria cases in areas which had not received IRS during the annual campaign. Another innovation was the introduction of community-based IRS, characterized by local recruitment of spray operators and bicycle transportation.

Coverage of insecticide-treated mosquito nets (ITNs)
The 2021 MIS results show that overall ownership of nets has declined from 80% in 2018 to 53% in 2021. ITN ownership declined in all provinces except Copperbelt. ITN ownership was lower in the lowest wealth quintile than the highest (42% versus 55%). Overall, in households with an ITN, 30% had enough ITNs to cover every sleeping space with variations between rural and urban areas (20% rural versus 35% urban). There were variations in the ITN-to-sleeping-space ratio across provinces between 2018 and 2021, notable declines in Lusaka, Luapula and Copperbelt and increases in Western, Central and Southern provinces. ITN use among households with at least an ITN was 68% (71% rural and 63% urban). ITN use among under five children declined from 69% in 2018 to 46% in 2021; with a 31% decline in rural areas and 12% decline in urban areas. ITN use among under five children declined across all provinces except Copperbelt, where use stagnated at a low baseline. ITN usage among pregnant women declined from 71% in 2018 to 41% in 2021; with declines from 63% to 37% while among rural pregnant women ITN use declined from 74% in 2018 to 42% in 2021.

Coverage of indoor residual spraying (IRS)
During the 2021 MIS, an estimated 39% of Zambian households reported having benefited from IRS in the previous 12 months, a slight increase from 35% in 2018. There was an increase in

households reporting IRS in the previous 12 months in Luapula, Eastern, Copperbelt and Central provinces. IRS coverage has generally been increasing in the lowest, third and fourth wealth quintiles. IRS was initially deployed in more urban and peri-urban areas, but has recently been expanded to include more malarious, rural areas. As such, the households reporting IRS in the previous 12 months has been increasing in the rural areas while the urban areas have reported a decline. However, the coverage of IRS has been insufficient to cover for the gap left by the decline in ITN coverages.

The insecticides used for IRS have been rotated using different compound classes based on evidence of resistance patterns generated by the malaria programme. The IRS program has benefited from longstanding political will and is well established in all the districts, with community structures and strong partnership support. However, inadequate funds, delays in implementation, low acceptance in urban areas and high implementation costs have had a negative impact on effective IRS coverage in the targeted population. The emergence of insecticide resistance limits the classes of WHO prequalified insecticides to choose from going forward. IRS requires stringent management of commodities and adherence to SOPs. Moving forward, opportunities for expansions of community IRS is expected to improve acceptance rates and coverage of targeted structures. The Constituency Development Fund (CDF) presents an opportunity for financing at the local level, hence the need to engage local government. Ongoing and expanded support from the private sector (e.g. mines, plantations) is also required.

The country aspired to 100% population access to vector control. However, there has been a decline in the households protected by either IRS or ITN from 84% in 2018 to 71% in 2021. Additionally, households protected by both IRS and ITN declined from 31% to 22% (MIS 2021) This points to a general decline in household vector control coverage in Zambia. Simply put, the modest increase in IRS coverage achieved under the “mosaic” approach did not make up for the drastic decline in ITN ownership and use. Lessons learnt from the period show that a shift in approach is needed to achieve universal access to vector control in line with the global technical strategy (WHO 2017-2030).

3.3.3 Intermittent preventive treatment during pregnancy (IPTp)

IPTp has been adopted in Zambia as a key intervention for improved birth outcomes. In this regard, this intervention has been implemented for over 10 years. The national IPTp guidelines have been updated from the initial target of at least 3 doses to 6 doses or until delivery. Malaria indicator surveys show steady progress in IPTp coverage. In 2021, 68% pregnant women reported receiving at least three doses of IPT (76% urban vs 65% rural). There has been notable progress in access to four doses (16% in 2021, compared 5% in 2015 and 2018). Variations in IPTp coverage by province and wealth quintile were observed. Northern and Western provinces have been reporting an upward trend in IPTp coverage while declines were reported in Central, Southern, Eastern, Lusaka and North Western provinces. The program needs to ensure availability of adequate supplies of SP and strengthen coordination with other reproductive health stakeholders so as to encourage women to attend ANC early within the first trimester.

3.3.4 Mass Drug Administration (MDA)

MDA is the administration of drugs to a population regardless of individuals’ disease status. In Zambia, it is used as an accelerator in reduction of parasite prevalence in target populations. The criteria for implementation of MDA includes; 1) low parasitemia 2) high vector control coverage 3) high access to diagnosis and treatment and 4) enhanced surveillance. MDA was adopted as a key intervention in the NMESP 2017-2021. By 2021 MDA was scaled up to 10 districts covering a population of over 500,000 from 184 HFCAs, attaining coverage of 90.5% of the targeted

population. Moving forward, implementation will be guided by the outlined criteria to ensure maximum impact of this intervention.

3.3.5 Social and Behaviour change

SBC is key in reducing the malaria burden across the country. In this regard, the program developed a national malaria communication strategy 2017-2021 to guide messaging and SBC interventions for malaria. Additionally, there were engagements with key leaders - traditional, religious, business and political - to create awareness and to enable them advocate for malaria intervention uptake. Since the previous strategic plan, advocacy around malaria in Zambia intensified with the establishment of the End Malaria Council, the first ever EMC at country level. The program also commemorated all global, regional and national malaria events. There was also a notable increase in the use of visual and audio media to raise awareness about malaria.

Between 2017 and 2021, the implementation rate of SBC activities was low, with less than 75% of planned activities fully implemented due to low funding levels (MPR, 2021) and a significant reduction community engagement and other interpersonal communication (IPC) activities due to COVID-19. IPC is still the most effective method of conveying health information with health facilities and community health workers (CHWs) remaining the top sources of malaria messages. Women in more rural, malarious areas continued to report an increase in CHWs as a source of malaria messaging (MIS 2021). Prompt health care seeking increased from 20% in 2018 to 30% in 2021 (MIS 2018, 2021). But targeted improvements in awareness and knowledge were not met as exemplified by the reduction in recognition of fever as a symptom of malaria from 71% in 2018 to 64% in 2021 (MIS 2018, 2021).

Due to the Country's heterogenous malaria burden, from areas of control to pre-elimination, SBC must address the whole range of behavioral determinants and manage expectations. High levels of knowledge alone did not translate into increased uptake (behavior change). Despite the high knowledge levels, there will be need to optimize the other communication platforms and implement SBC as a primary intervention to encourage uptake and correct use of the interventions using all available channels. For example, ownership of phones in rural areas increased by 64 percent in the previous three years, representing a growing opportunity to reach those most affected by malaria (MIS 2021).

3.3.6 Epidemic Preparedness and Response

EPR remains an important component of the National Malaria Elimination Program. Guidelines for epidemic preparedness and response have been developed in 2022 and implementation is expected to begin under the new strategic plan. In addition, data management remains a strong component to facilitate EPR implementation. The SMEOR team has provided coordination to ensure that EPR implementation is in place.

In spite of the progress made in EPR, challenges remain such as lack of a national contingency plan for malaria epidemics as well as guidelines that incorporate recent updates. Additionally, there are limited skill sets to detect epidemics and respond at the district and provincial levels. Moving forward, strengthening the capacity of the program to address malaria surges and withstand external shocks will be a priority through strengthened data access and improved capacity for districts and provinces.

3.3.7 Surveillance, Monitoring and Evaluation, Operations Research

The NMEP has robust systems in place for routine and periodic data collection. These include the District Health Information System version 2 (DHIS2), Malaria Rapid Reporting System (MRRS), Integrated Disease Surveillance and Response (IDSR), MIS and Zambia Demographic and Health Survey (ZDHS). Routine data collection helps to monitor key program indicators while periodic surveys assess coverage and performance for the period under review.

The reporting rate increased from 71.3% in 2015 to 90% in 2020 and the timeliness of reporting increased from 49.2% in 2015 to 68% in 2021 although the target of 100% was not reached. The research agenda was based on a systematic priority-setting framework to ensure information generated is relevant to the local context and inclusive of all malaria research stakeholders. Research activities are conducted based on prioritised activities and in line with the national system for health research regulation. Moving forward, the program will continue to harmonize various data sources into one platform, which will be used for routine data visualization. In addition, research will continue to be conducted in line with the national agenda.

3.3.8 Program Management

The NMEP has five thematic areas: vector control, case management, SBC, SMEOR and program management. The programme has a structure at all levels of service delivery, namely central, provincial, district, health facility and community with clear management systems. Currently the Malaria Elimination Officer (MEO) position has not been formalized within the district establishment. Moving forward, in order to strengthen coordination and in line with the decentralization framework, the position of the MEO should be formalized.

The program has linkages with other line ministries, FBO, CSO, the private sector and other partners. In addition, Zambia has established the End Malaria Council (EMC) and the End Malaria Fund (EMF) which is tasked to advocate and mobilize domestic resources. The program has established robust coordination mechanisms through regular directorate meetings and functional technical working groups in key thematic areas. The program also benefits from a strong partnership base that provides not only financial but also technical and implementation support at all levels. The programme has benefited from engagements with regional bodies such as SADC's Elimination 8 initiative. Separate guidelines for each thematic area exist to guide implementation updated in line with current WHO recommendations.

On average the annual budget of the NMEP is over $131 million annually. In order to meet this, the program is supported by various partners that contribute financially to meet the cost of malaria programming in Zambia. These include: The Global Fund, The U.S. President's Malaria Initiative (PMI), PATH-MACEPA, Rotary International, World Vision, Isdell:Flowers Foundation, SADC Elimination 8, EMC/EMF among others. However, financial gaps still remain to be addressed in order to implement the NMESP at full scale. External funding support has remained fairly constant over the period of the NMESP2017-2021 where as the population has been increasing at a rate of 2.9% annually (ZSA, 2020) which could negatively affect the annual per capita malaria expenditure. Going forward, there is need for continued resource mobilization to support overall program implementation with an emphasis on advocacy for increased domestic resources. The program will continue to strengthen evidence-based target setting for program implementation based on the updated national malaria policy document.

CHAPTER 4: STRATEGIC FRAMEWORK

4.1 Vision

A malaria free Zambia.

4.2 Mission

To provide equitable access to cost-effective, quality malaria services as close to the family as possible.

4.3 Strategic directions, policy priorities and guiding principles

4.3.1 Strategic directions

- Lower the burden in high-transmission settings
- Eliminate malaria in low-transmission settings
- Prevent the reintroduction of malaria transmission in malaria-free Health Facility Catchment Areas (HFCAs)

There are three key tactical approaches incorporated in this strategy:

i) Lower the burden in high-transmission settings:

Despite visible progress in reducing the malaria burden across Zambia, malaria transmission is still high or moderately high in most parts of the country (levels 2-4). In these settings, specific recommended actions include:

- Achieve and maintain effective coverage with malaria curative and preventive services.
- Improve the quality and timeliness of information systems for decision-making to further reduce malaria transmission.
- Reduce the malaria burden to a sufficiently low level to enable implementation of parasite-clearance strategies.

ii) Eliminate malaria in low-transmission settings:

In settings with very low transmission rates (level 1), or where recent progress has markedly reduced transmission, priority should be given to progressing to full elimination. In these settings, specific recommended actions include:

- Interrupt malaria transmission.
- Report and respond to all confirmed cases and prevent continued transmission.
- Determine the underlying causes of residual transmission.
- Maintain and document malaria elimination.

iii) Prevent the reintroduction of malaria transmission:

HFCAs, districts, and provinces that have become malaria-free (level 0) must implement measures to prevent the reintroduction of malaria. In these settings, specific recommended actions include:

- Notify all confirmed cases of malaria.
- Detect any possible reintroduction of malaria transmission.
- Determine the underlying causes of resumed malaria transmission.
- Apply rapid curative and preventive measures

4.3.2 Policy priorities

The policy priorities are to ensure the following:

- Sustained access to vector control interventions.
- Universal access to quality case management services at all levels.
- Uninterrupted availability and rational use of malaria commodities and supplies at all service delivery points.
- Availability of accurate and timely information for evidence-based malaria programming.
- Community uptake /correct use of key malaria interventions.
- Detection and timely control of malaria epidemics.
- Capacity of the Program to deliver malaria services at all levels.

4.3.3 Guiding Principles

The guiding principles of this NMESP are as outlined in the national health strategic plan (2022-2026). The following will be used to operationalize the malaria strategic plan:

- The unit of intervention implementation will be the HFCA.
- For operational efficiency and impact, IRS will be deployed at the district level following eligibility criteria.
- Malaria incidence thresholds will guide the intervention package towards the goal of malaria elimination.
- Epidemiologic and entomological data will be used to guide program implementation and tracking progress.
- Community level systems will be strengthened to support implementation – for example iCCM, community-based IRS.
- Continue to strengthen SBC with an emphasis on identifying barriers and changing behaviour for intervention uptake and use.

4.4 Goals and Objectives

4.4.1 Goals

- To reduce malaria infection, disease and death in Zambia.
- To increase the proportion of the population living in malaria-free HFCAs.
- To maintain malaria-free status and prevent reintroduction and importation of malaria into areas where the disease has been eliminated.

4.4.2 Objectives

- Increase the implementation rate of planned interventions from 72 percent in 2021 to 95 percent by 2026.
- Reduce national malaria case incidence from 340 cases per 1,000 population in 2021, to 201 cases per 1,000 population by 2026.
- Reduce national malaria death incidence from 8 deaths per 100,000 population in 2021, to 4.7 deaths per 100,000 population by 2026.
- Increase malaria-free HFCAs from 10 in 2021 to 260 in 2026

4.5 Strategies and Strategic actions by intervention

The key interventions to be used in this strategic plan include:

Vector control

- Insecticide-treated mosquito nets (ITNs)
- Indoor residual spraying (IRS)
- Larval source management

Case management

- Diagnosis
- Treatment
- Integrated community case management
- Malaria in pregnancy
- Intermittent preventive treatment during pregnancy (IPTp)

Parasite clearance

- Mass drug administration (MDA)
- Reactive case investigation

Health promotion

- Advocacy with key stakeholders (traditional, religious, business, political) on malaria reduction and elimination.
- Community engagement and other IPC activities.
- Tailor SBC messaging, materials and activities, including for mobile and migrant populations including cross-border collaboration.
- Targeted behaviour change to improve utilization of interventions.

Enhanced surveillance, monitoring, evaluation, and research

- Complete, correct, consistent and timely facility/community reporting.
- Incorporation of emerging tools as they become available and are epidemiologically relevant.

Health systems capacity

- Strengthen the capacity of Program staff at all levels.
- Decentralisation

Financing

- Domestic
- Cooperating partners/Donor
- Non-traditional/innovative sources (private, religious, community, etc.)

The intervention packages/activities planned for each level of transmission are shown in **table 5**.

Table 5: Intervention Package/Activities

Epidemiologic Level (Stratum)	Malaria Indicator	Intervention Package/Activities
0	0 cases, No local transmission	**No malaria - Maintenance of malaria-free zone** ● Ensure uninterrupted availability and rational use of malaria commodities in health facilities and communities ● Maintain quality case management at facility and community levels – Malaria case investigation ● Reactive case detection ● Primaquine administration ● ITN continuous distribution ● ITN mass campaigns, except in Lusaka city ● Responsive IRS in eligible HFCAs ● LSM in select urban sites ● Entomologic surveillance ● Enhanced epidemiologic surveillance ● Social and Behaviour Change
1	1–49 cases/1,000 population, <1% parasite prevalence	**Very low malaria transmission** ● Ensure uninterrupted availability and rational use of malaria commodities in health facilities and communities ● Maintain quality case management at health facility and community levels ● Maintain and scale up community case management – Malaria case investigation ● Reactive case detection ● Targeted Mass Drug Administration ● Primaquine administration ● ITN continuous distribution ● ITN mass campaigns, except in Lusaka city ● Responsive IRS in eligible HFCAs ● LSM in select urban sites ● Entomologic surveillance ● Enhanced epidemiologic surveillance ● Social and Behaviour Change
2	50-199 cases/1,000 population; 0.5%-5% parasite prevalence	**Low malaria transmission** ● Ensure uninterrupted availability and rational use of malaria commodities in health facilities and communities ● Maintain quality case management at health facility and community levels ● Maintain and scale up community case management ● Reactive case detection ● Targeted Mass Drug Administration ● Deploy administration of Primaquine (annual incidence <125/1000 population, the lower half of level 2) ● ITN distributions – mass campaigns and continuous ● Targeted IRS in eligible districts ● Entomologic surveillance ● Enhanced epidemiologic surveillance ● Social and Behaviour Change
3	200-499 cases/1,000 population; 5-<15% parasite prevalence	**Moderate malaria transmission** ● Ensure uninterrupted availability and rational use of malaria commodities in health facilities and communities ● Maintain quality case management at health facility and community levels ● Maintain and scale up community case management

Epidemiologic Level (Stratum)	Malaria Indicator	Intervention Package/Activities
		• Strengthen quality assurance activities and mentorship at all levels • ITN distributions – mass campaigns and continuous • Targeted IRS in eligible districts • Entomologic surveillance • Enhanced epidemiologic surveillance • Social and Behaviour Change
4	>/=500 cases/1,000 population; >15% parasite prevalence	**High malaria transmission** • Ensure uninterrupted availability and rational use of malaria commodities in health facilities and communities • Maintain quality case management at health facility and community • Maintain and scale up community case management • Strengthen quality assurance activities and mentorship at all levels • ITN distributions – mass campaigns and continuous • Targeted IRS in eligible districts • Entomologic surveillance • Enhanced epidemiologic surveillance • Social and Behaviour Change

4.5.1. Case Management

Strategic objective

To ensure that there is universal access to quality case management services at all levels.

Specific Objectives:

- To ensure that 100% of suspected malaria cases are subjected to malaria parasitological test (RDT's or microscopy), from the baseline 96.4% in 2021.
- To ensure that 100% of confirmed cases are promptly treated (within 24 hours) with an effective antimalarial according to national guidelines, from the baseline of 88% in 2021.

Strategies and Key Interventions for Case Management

Strategy 1: Ensure 100% universal access to quality malaria diagnosis by 2024 from 96.4% baseline in 2021

- Ensure adequate supply and rational use of malaria rapid diagnostic tests and malaria microscopy services at all designated levels.
- Conduct regular training and mentoring of all malaria diagnosis service providers.
- Ensure lot testing of all procured RDT's.
- Designate, capacitate and activate teams to perform proficiency testing and External Quality Assurance (EQA) for all service delivery points.

Strategy 2: Maintain universal access to quality treatment for uncomplicated malaria

- Ensure adequate supply and use of recommended first-line treatments for uncomplicated malaria in all facilities and communities.
- Conduct regular training and mentoring of all individuals involved in malaria treatment on treatment according to national guidelines.
- Complete routine drug resistance monitoring of recommended first-line treatments.
- Routinely review and disseminate updated national treatment guidelines.

Strategy 3: Maintain universal access to quality treatment for complicated malaria

- Ensure adequate supply and use of recommended first-line treatments for complicated malaria in all facilities and communities
- Conduct regular training and mentoring of all individuals involved in complicated malaria treatment according to national guidelines.
- Conduct malaria mortality audits for every malaria death.

Strategy 4: Increase access to malaria diagnosis and treatment especially in underserved and hard to reach areas

- Conduct training of community health workers to manage malaria cases within their communities according to national guidelines.
- Provide regular supervision and mentoring of community health workers on malaria case management.
- Ensure provision of malaria commodities to CHWs.

Strategy 5: Parasite clearance

- Conduct targeted MDA in eligible HFCA's in level 1 and 2.
- Roll out primaquine single dose for clearance of gametocytes in level 0 and 1
- Implementation of reactive case detection (RCD) in levels 1 and 2.

Strategy 6: Conduct timely annual forecasting and quantification (FAQ) exercises

- Develop malaria commodity supply plan.
- Review forecasting and consumption trends on a quarterly basis.
- Regularly monitor pipeline to ensure up-to-date supply plan.
- Generate high-quality logistics data from the service delivery point.
- Ensure availability of data collection tools at all service delivery points.

Strategy 7: Monitoring of rational use of malaria commodities all levels

- Conducting supply chain data quality audits.
- Conduct regular End User Verification exercises.
- Roll out the CHWs logistic management system.
- Collaborate in the evaluation of efficacy of the antimalarial medicines, diagnostics and reagents in use in Zambia.
- Collaborate with ZAMRA in tracking of any adverse drug events of antimalarial medicines.
- Provide technical specification on the quality of antimalarial medicines, diagnostics and reagents procured in Zambia.

Strategy 8. Improve the uptake of intermittent presumptive treatment to eligible pregnant Women

- Ensure adequate supplies of commodities for IPTp
- Strengthen collaboration with the maternal reproductive health unit (ANC) to increase early booking for pregnant and increased uptake of this intervention.

- Streamline management of MIP in the ANC clinic (currently MIP is managed in both OPD and ANC leading to confusion in reporting).

4.5. 2 Vector Control

Strategic Objective

Provide universal access to vector control, from baseline of 57% (2021) to 86% (2026) *.

**Where universal access is defined as households having access to one ITN per two people or IRS within the past 12 months.*

Strategies and Key Interventions for Vector Control

Strategy 1- Insecticide treated bed nets, mass campaigns

- Conduct mass ITN campaigns every 30-36 months.
- Target all areas at all levels (0-4) except Lusaka city.

Strategy 2- ITNs, continuous distribution/ routine:

- **ANC clinics:** Ensure provision of ITNs to pregnant women during first ANC attendance.
- **EPI clinics:** Ensure provision of ITNs to children at their 9 months well-child visits.
- **Schools:** Scale up school-based ITN distributions in levels 2-4.
- **Community distribution**. Pilot and scale-up community distributions to reach full population, based on community hubs and coupon use. Prioritize rural areas in level 2-4.

Strategy 3-Indoor residual spraying (IRS), targeted campaigns

- Conduct IRS according to established national guidelines
- Conduct high-quality IRS campaigns annually in targeted areas in levels 2-4.
- Strengthen key quality parameters include, among others, timeliness, high coverage at settlement level (>80% of residential structures), correct techniques, longevity of insecticides on sprayed surfaces and enhanced supervision.

Strategy 4 - Responsive IRS

- Conduct responsive IRS as and when needed in low-burden areas (levels 0-1) which are not targeted by traditional IRS campaigns.
- Target hot spots with Responsive IRS as identified by epidemiologic and entomologic surveillance data.

Strategy 5- Larval Source Management

- Map breeding sites and establish needs for LSM.
- Conduct targeted larval source management; environmental management and Larviciding.
- Conduct post LSM evaluation.

Strategy 6 - Entomologic Surveillance

- Conduct routine and periodic entomological data collection and analysis in all levels.
- Conduct regular monitoring of vector habits, vector densities, and sensitivity to the insecticides being used.

- Implement the national insecticide resistance management and monitoring plan [IRMMP] and evaluate the plan every two years.
- Increase entomological sites nationwide from 19 to 39.

Strategy 7 – Strengthen Public-Private Sector engagement

- Promote private sector involvement in implementation and quality control of IRS that is done by private sector.
- Collaborate with local government as per decentralization policy

Integration of Vector Control Strategies

In an effort to increase vector control access and deploy limited resources more strategically to increase impact, this NMESP designates ITNs as the primary vector control intervention. This will be complemented by the other strategic interventions under vector control, namely: IRS, larval source management, and entomologic surveillance. The vector control strategies will be deployed in a stratified approach, as highlighted in and **Table 6**.

Table 6: Summary of the Stratified Approach to Vector Control Interventions

Level of Transmission	*Intervention →*	ITNs (PBO, NextGen)		IRS		LSM	Entomol Surveill.
		Mass ITN campaign	Continuous Distribution	Targeted IRS campaigns	Responsive IRS		
	Operational Stratific. Level →	District	District	District	HFCA	HFCA	N/A
High Malaria Transmission >500/1000/yr	4	√	√	√	--	--	√
Moderate Malaria Transmission >200 <500	3	√	√	√	--	--	√
Low malaria transmission <200 >50	2	√	√	√	--	--	√
Very Low Transmission <50 >0	1	All except Lusaka District	√	--	√	Selected urban	√
No malaria, maintenance of malaria-free zone	0	All except Lusaka District	√	--	√	Selected urban	√

KEY TO TABLE:

- *Mass ITN campaigns*: Targeted to all areas except Lusaka city. Based on historical operational challenges, high refusals and very low malaria burden, Lusaka city will no longer be targeted in ITN mass campaigns.
- *Continuous ITN distribution.* Health facilities throughout the country will be supplied with ITNs for distribution to vulnerable populations, namely young children and pregnant women. School- and community-based distributions also feature in the new NMESP, although at a smaller scale.
- *Targeted IRS campaigns.* Zambia aims to continue a robust IRS program, but under the new NMESP, the footprint for IRS will be reduced. Targeted IRS campaigns will be conducted in selected areas in levels 2-4. Areas in level 0-1 will no longer be targeted in annual campaigns. Areas targeted for IRS campaigns would not be targeted for ITN mass campaigns.
- *Responsive IRS* will be conducted periodically as needed in low transmission areas (levels 0-1) to address malaria hot spots when such are identified through epidemiologic and entomologic surveillance.
- *Larval source management. (LSM).* The new NMESP calls for targeted LSM in urban areas of levels 0-1.

4.5.3. Procurement Supply Management (PSM)

Strategic objective

To ensure uninterrupted availability and rational use of malaria case management and vector control commodities and supplies at all service delivery points.

Strategies and Key Interventions for Procurement Supply Management

Strategy 1: Strengthen logistics management systems to ensure accurate data for planning and distribution of malaria commodities and supplies

- Accurately capture national malaria commodity consumption data through improved data collection and analysis at all levels of the supply chain system.
    - Enhance capacity building and communication efforts to improve unit of measure reporting for formulations of ALs to ensure harmonization between eLMIS and WMS systems.
- Expand logistics management to include roll-out of eLMIS to all service delivery points (to include CHWs).
- Capture patient consumption data for antimalarial drugs in eLMIS.
- Capture issues data for routine ITN distribution at service delivery points.

Strategy 2: Ensure timely planning, procurement, and delivery of malaria commodities and supplies to meet country need

- Conduct annual forecasting and quantification exercise
    - Identify and strengthen data and studies, surveys, and research that can strengthen forecasting and quantification inputs.
- Develop malaria commodity supply plan in line with MOH strategy.
- Procure and deliver malaria commodities and supplies
- Ensure timely order processing and distribution of malaria commodities and medical supplies to service delivery points in response to the individual health facility needs.
    - *For all commodities, this process is managed under the warehouse management system and health facility logistic tools.*
    - *In addition, for case management commodities, the Essential Medicines (EM) system through Essential Medicines Logistics Improvement Program (EMLIP) are also deployed.*
- Review forecast and consumption trends on a quarterly basis.
- Regularly monitor pipeline to ensure updated supply plan.
- Advocate for increased fund allocation towards the procurement of malaria medicines and medical supplies to include buffer stocks.

Strategy 3: Strengthen systems for quality assurance and quality control of malaria commodities and supplies

- Ensure quality assurance of malaria commodities and supplies by the relevant mandated authorities (ZAMRA and ZAMMSA) at the central level prior to distribution.
- Conduct ongoing surveillance to assess continued efficacy and safety of malaria commodities and supplies.

- Strengthen pharmacovigilance activities for malaria medicines and medical supplies.

Strategy 4: Advocate for Strengthened warehousing and storage capacity to ensure continued availability at all service delivery points

- For medication and medical supplies, advocate for completion of the provincial hubs and improve storage modalities at lower levels.
- For bulky vector control commodities, improve storage capacity at subnational levels.

Strategy 5: Strengthen security of malaria commodities and supplies at all levels of the supply chain system

- Implement best practices in inventory and loss assurance at all levels of the supply chain system.
- Strengthen regular sub-national visits to ensure adherence to the Standard Operating procedures (SOPs) in the management of all malaria commodities and supplies.
- Strengthen collaborations with the Anti-Theft Task Force and enhance the use of Delivery Expert /ePOD system to facilitate task force activities.
- Enhance use of data to monitor anomalies that may indicate security concerns. Examples include anomalies in forecast issues versus actual issues data and discrepancies in IRS insecticide issued versus housing structures sprayed.

4.5.4 Epidemic Preparedness and Response

Strategic objectives

- To improve detection and timely control of malaria epidemics.
- Specifically, to detect and effectively manage at least 95% of malaria epidemics, and to respond within one week in level 0 and level 1 or within one month in level 2,3 and 4 by 2024.

Strategies and Key Interventions for Epidemic Preparedness and Response

Strategy 1: Establish and maintain a functional malaria Early Warning System, including monitoring of entomological, meteorological and epidemiological data.

- Develop an epidemic and emergency response plan.
- Routinely estimate and forecast epidemics based on transmission settings at health facility level as guided in the EPR manual.
- Build capacity in malaria EPR in all provinces.

4.5.5 Surveillance Monitoring Evaluation and Operational Research (SMEOR)

Strategic Objectives:

- Ensure accurate and timely information is available for evidence-based malaria programming
- Roll out to scale the harmonised Malaria Rapid Reporting System across the country to 100% of HFCAs by 2026, from baseline of 74% in 2021.

- Provide timely and accurate quality data on all interventions for decision-making.
- Translate research findings into policy.

Strategies and Key Interventions for Surveillance Monitoring Evaluation and Operational Research

Strategy 1: Track implementation rate and progress of the malaria program on a monthly basis

- ALMA malaria scorecard
- Zambia Health Analytics Platform
- Tableau dashboard

Strategy 2: Implement the MRR in all levels with weekly reporting in health facilities and monthly for CHWs

- Provide phones and other reporting modalities
- Conduct training of health facility staff, CHWs, and their supervisors

Strategy 3: Strengthen data sharing and use at all levels

- Produce monthly malaria statistical bulletin.
- Conduct data review meetings and data management trainings.
- Hold and support quarterly Technical Working Groups meetings.
- Regularly monitor and provide technical supportive supervision to HF and CHWs to improve accuracy.

Strategy 4: Ensure the program sets SMART (specific, measurable, achievable, realistic/relevant, time-bound) objectives across all interventions and monitors performance

- Develop evidence-based, realistically ambitious targets.
- Develop the monitoring and evaluation plan.
- Assess NMESP progress through the Midterm in 2024 and End-term Review in 2026.
- Incorporate the RBM SBC module into the next MIS.

Strategy 5: Measure and report coverage of malaria interventions and disease burden

- Conduct MIS in 2024 and 2026 to support the mid-term and end-term review, respectively.
- Report on Zambia's progress to regional and global bodies.

Strategy 6: Foster a conducive environment for malaria research in Zambia

- Conduct operations research to guide evidence-based programming.
- Regularly update the research agenda.
- Hold annual malaria research dissemination conferences.
- Provide malaria modelling to inform program implementation.
- Participate in National Health Research conferences.
- Build capacity in malaria research based on malaria research guidelines.

4.5.6 Elimination

Strategic Objective

- To increase malaria-free HFCAs from 10 to at least 250 by 2026.

Strategies and Key Interventions for Elimination

Strategy 1: Scale up coverage of the tools for malaria elimination in eligible areas (Table 5)

When an HFCA is in level 1 or 0, the following strategies will apply:

- Real-time reporting through MRR - in all HFCAs.
- Reactive Case Detection - in all HFCAs.
- Malaria Case Investigation (MCI) (1,3,7 approach) – low transmission eligible areas.
- Mass Drug Administration - in eligible areas.
- Responsive Indoor Residual Spraying - in eligible areas.
- Larval Source Management - in eligible areas.
- Primaquine administration - deployment of Primaquine will be done in HFCAs with annual incidence <125/1000 population (includes Level 0,1 and lower half of 2).

Strategy 2: Innovations

- Adapt, adopt and validate key interventions as they become programmatically relevant/available
- Where appropriate, use malaria modelling to inform elimination programing

4.5.7 Social and Behaviour Change

Strategic objective:
Contribute to the increased uptake of behaviours and correct use of key malaria interventions.

Specific objectives:

1. **Use:** Contribute to the increase in correct use of LLINs to at least 96 percent from the 2021 baseline (46 percent).
2. **Uptake:** Contribute to the increase in uptake of iPTp3+ to at least 88 percent from the 2021 baseline (68 percent).
3. Early care seeking for children under 5.
4. **Messaging:** To increase national malaria message recall to least 78 percent from the 2021 baseline (48 percent).

Strategies and Key Interventions for Social and Behaviour Change

Strategy 1: Develop tailored messaging and SBC materials, taking into consideration local behavioural determinants, transmission levels, and urban/rural classifications

- Inform both control and elimination messaging and SBC interventions with latest evidence (MIS 2021, Barrier Analysis) to ensure SBC is relevant to the local malaria burden and addresses key determinants, including myths and misperceptions.

- Assess, update, and/or develop messages and materials for interventions according to guidelines that are new or recently adapted: MCI, MDA, LSM, RAS, Responsive IRS, Primaquine.
- Ensure accurate and appropriate malaria messaging through enhanced mass media engagement, local media, and other channels.
- Establish the NMEC website as a curated repository of approved messages and materials to be accessed by MOH personnel and malaria partners.

Strategy 2: Prioritize Interpersonal Communication (IPC): Community engagement, Health Facility talks, Household visits

- Health facility personnel and community health workers continue to be the top trusted sources of health information. These health providers can share messages when interacting with pregnant mothers at ANC and during household visits.
- For new interventions, or when introducing an existing intervention into a new area, ensure intensive community engagement with trusted local leaders, followed by community mobilization in advance of implementation.
- Develop traditional and faith leader toolkits for community engagement, incorporating global best practices and engagement of these leaders.
- Orient and coordinate with Neighborhood Health Committees (NHCs) on malaria messages and SBC interventions appropriate to the local burden.

Strategy 3: Strengthen SBC harmonization and coordination at all levels

- Develop national SBC malaria strategy focused on behavior change and innovative approaches that will address key leading behavioral determinants (barriers and motivators).
- Orient health providers and other stakeholders on the new SBC malaria strategy, e.g., subnational End Malaria Councils on the transmission levels found in their province to tailor engagement with local partners.
- Coordinate with Ministry of Education for a school campaign centered on the national brand, *Malaria Ends With Me*.
- Develop and disseminate standardized guidance for SBC activities including: messaging, materials, and other activities (training manuals, toolkits, etc).
- Partner with the CSOs and CBOs and other community-based volunteers to increase coverage of SBC in the community.

Strategy 4: Regularly monitor and evaluate social behaviour change interventions to strengthen the SBC evidence base

- Develop the M&E framework for social and behaviour change interventions
- Develop appropriate SBC indicators for tracking progress implementation, at all levels, of the SBC activities. Standardize and disseminate M&E SBC guidelines
- Develop dashboard of key SBC indicators to review progress at TWG meetings and sub-nationally
- Strengthen SBC evidence-base through the regular collection, analysis, and visualization of SBC data

- Develop provincial SBC coordination teams that brings in partners to advocate for SBC activities

4.5.8 Programme Management

Strategic Objective

To ensure effective planning, resource mobilisation, resource tracking, policy and administration annually.

Strategies and Key Interventions for Programme Management

Strategy 1: Effectively coordinate malaria program through the roll out harmonized workplan to scale at all levels (Districts, Health Centres)

- Orientation on the scorecard.
- Ongoing mentorship – (district parenting).
- Annual review meeting.
- Engage MoH directorates to share the harmonised work plan.
- Present the harmonised work plan to Senior Management at headquarters.
- Mobilise resources to support the expansion of the harmonised work plan.

Strategy 2: Strengthen advocacy for resource Mobilisation through the following:

- Update business plan to continue to guide on innovative financing mechanisms to fund the strategic plan.
- Update the gap analysis quarterly.
- Respond to ad hoc funding opportunities as aligned to the National Strategy.
- Expand resource basket including NHIMA benefit package, New Partners, CDF, strengthen public-private partnerships (PPP) in malaria.

Strategy 3: Decentralise malaria programmatic and financial responsibility and accountability to all levels as appropriate for effective implementation

- Financial decentralization.
    - GRZ – 116 districts
    - Explore opportunities for Bilateral Direct Funding to the subnational levels
        - GF – 80 districts in 2021 and 116 in 2023 – newly created districts have no capacity
- Strengthen malaria visibility by participating in the MTEF process at all levels.
- Build capacity on management and administrative procedures for the malaria program.
- Conduct periodic orientation for NMEC staff management and administrative procedures as they become available

Strategy 4: Strengthen monitoring and resource allocation across thematic and geographical areas through planning and expenditure tracking

- Perform annual equity resource distribution across thematic and geographical areas
- Harmonise resource monitoring/tracking systems.

Strategy 5: Adopt and adapt future innovations and technologies in all key thematic area as made available and programmatically relevant.

- Support efforts of adopting and adapting new innovations in vector control (e.g., ATSBs, new generation ITNs and insecticide, improved housing), case management (e.g. new medication and diagnostics), SMEOR (e.g., digital technologies), SBC (e.g., innovative use of communication platforms), and others.
- Operationalize delivery of malaria vaccines to target populations, including identifying areas of prioritised vaccine use, as they become available by way of engagement with key national and international stakeholders e.g., Zambia Immunization Technical Group (ZITG), EPI, GAVI, UNICEF.

CHAPTER 5: IMPLEMENTATION FRAMEWORK

5.1. Information on NMESP timeframe and alignment

The new implementation approach takes into consideration the NMEP capacity to deliver malaria interventions; lessons learned implementing the 2017-2021 NMESP 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 as enshrined in the NHSP 2022-2026. The NMESP will run from 2022-2026.

5.2. Implementation arrangements

Implementation of the NMESP will be coordinated by the NMEC and its partners including stakeholders from the private sector, development partners such as the Global Fund and the U.S. President's Malaria Initiative, NGOs, CHAZ, CSOs and relevant sectors from line ministries. The priorities of the NMESP will also be articulated in the NHSP to ensure conformity to the national development plans. The overall planning process is guided by the Planning Department of the MOH. Program level planning is aligned with the health sector and is undertaken annually in line with the annual planning cycle.

5.3 Planning and implementation mechanisms

The Program follows the annual medium-term expenditure framework (MTEF) development process of the MOH. The Program conducts harmonized annual work planning for the national, provincial and district levels using the electronic work-planning tool integrated on the ALMA scorecard platform. The Program plans to expand the scorecard to health facilities and communities. The implementation unit for malaria activities is the HFCA. All malaria activities are implemented within the larger Zambian health system at all levels of care. The NMEP tracks activity implementation in "real time" using the "Tracker" functionality on the ALMA score card. This allows for assessment of timely implementation of planned activities at all levels in the annual harmonised work plan. The malaria programme has linkages with the Child Health and Safe motherhood units through participation in the technical working groups and direct collaboration. Other linkages involve Health Promotion unit, community health unit, clinical care department, M&E Unit and linkages with MSL to adjust commodity supplies for CHWs. Monthly directorate meetings provide oversight and guidance in malaria programming. At the central level, thematic technical working groups (Case Management, Vector control, SMEOR, SBCC) play a vital role in providing oversight and guidance. Provincial and District integrated review meetings provide oversight and guidance at sub national levels.

5.4 Partnership coordination system

The NMEC and its partners use the monthly Directorate and partners meetings, which are held every first Tuesday of the month to review program implementation and address any threats to program implementation. Partnership coordination mechanisms also exist through the various TWGs where both technical and policy issues are discussed. The results, challenges and recommendations arising from implementation are a shared responsibility. Task Forces also play a critical role in coordination. Quarterly coordination meetings are held to support and coordinate implementation. The Global Fund application and grant-making process, and the PMI malaria operational plan (MOP) processes are extensive and consultative exercises for coordinating

partners and making funding decisions. Partners and donors also have separate implementation meetings for coordination among cooperating partners supplemental to the monthly directorate meetings.

5.5 Procurement and supply management system

The Zambia Medicines and Medical Supplies Agency (ZAMMSA), formerly, Medical Stores Limited, will have procurement, storage and distribution of medicines and medical substances in line with its mandate. Strengthening of forecasting, storage and distribution of malaria commodities and supplies will continue in the new malaria strategy.

5.6 Financial resource management

The MOH has adopted the use of NAVISION Financial Management System. The malaria program will continue to contribute to the roll out of financial management system (NAVISION) while strengthening financial management systems (FMS) for CSO and FBO implementers, such as, the installation of *QuickBooks* to enhance data integrity and storage of financial information. There are systems in place for on-going in-service training of staff to contribute to strengthening financial management capacity.

5.7 Risk management and mitigation

The MoH has an internal audit that places financial controls on financial management and procurement. Under the Office of the Auditor General, systems are in place for oversight and early detection of financial mismanagement across sectors. **Table 7** outlines some risks and proposed mitigation measures.

Table 7: Risks and mitigation measures

Risk Category (Functional area)	Key Risk	Mitigating Actions
COVID-19 and/or other outbreaks	Interruption to program implementation at all levels and reduction in internal financial commitments to malaria HR shifted to COVID activities. Disruption to the international supply chains has affected the local commodities pipelines. Changes in health seeking behaviour Increased cost of implementation of intervention, e.g., training.	Developed, adopted and implementing COVID-19 guidelines. Program provided guidance to provinces on prioritizing commodities for clinical case management and strengthening adherence to testing treatment guidelines. If COVID-19 gets out of hand then develop and implement contingency plan (consider MDA, mini LLINs campaign, targeted messaging, engagement of local leaders and others).
Increased rainfall	Increase in transmission of malaria leading to strained stock levels of ACTs & RDTs. Flooding leading to places being cut off and the malaria commodities and management of severe malaria in far to reach areas is compromised.	Timely detection of the upsurge in cases and deaths from the routine info system and stockpile emergency commodities. Reinforce malaria early warning system.

Risk Category (Functional area)	Key Risk	Mitigating Actions
		Contingency planning for responsive IRS, LLINs distribution and MDA. Enhanced surveillance and follow up action. Access regional emergency resources to facilitate rapid response to trouble spots.
Economic downturn	Reduction in internal resources committed to malaria	Continuous resource mobilisation.
Cross-border malaria elimination and importation of cases	Zambia continues to experience imported cases across borders	Expand cross border initiatives to include Malawi, Tanzania, Angola & DRC. Harmonization and synchronization of interventions & services with the neighbours.
Inadequate financing	Absolute financial gaps Delayed flows of committed resources	End Malaria Council and Fund have been established. NHIS has been established. Continuous and innovative resource mobilization through enhanced private sector & international organization engagement.
Reduction of efficacy of insecticides	Emergence and spread of vector resistance and resurgence of malaria cases	Rotational use of insecticides as per IRMMP. Continuously monitor vector susceptibility to insecticides.
Potential risk of reduction of efficacy of drugs	Emergence and spread of parasite resistance and resurgence of malaria cases	Rational use of drugs. Continuously monitor the efficacy of drugs.
Procurement Supply Chain Management	Quantification of malaria commodities remains a challenge given the lack of robust and reliable consumption data	Building systems for consumption data.
Low community uptake of malaria services	Increase in malaria cases and deaths	Develop the national malaria SBC strategy to complement the strategic plan priorities, and improve stakeholder engagement with particular attention to health worker training and to late care seeking behaviour, low utilisation of ITNs by community members, low IRS acceptance rates and Knowledge action gap.

CHAPTER 6: BUDGET AND FINANCING OF THE NMESP

6.1 Budget summary

The National Malaria Elimination Program conducted an exercise to estimate the cost of implementing this NMESP for a period of 3 years as outlined in the National Malaria Operational Plan 2022-2024. The cost estimates were made using current pricing models and extrapolating costs in subsequent years assuming an average 0.1 annual increase. This was linked to the scale of implementation for all costed activities. This process provided a preliminary estimate of overall and by thematic area defining the needs and commitments (known or anticipated). This resulted in the determination of the programmatic financial gap to guide the resource mobilization plan.

Assumptions around implementation and changes in prevalence:

Implementation is assumed to be completed according to the following schedule in the first 3 years of implementation:

- 2022: Deployment of interventions at full scale following the sub-national stratification which would result in a 10% decline from baseline in morbidity and mortality from 340 cases / 1000 population and 8 deaths / 100,000 population to 306 cases / 1000 population and 7.2 deaths/100,000 population respectively. With an anticipated increase malaria free HFCAs from 10 in 2021 to 60 in 2022.

- 2023: Deployment of interventions at full scale following the sub-national stratification which would result in a 20% decline from baseline in morbidity and mortality from 306 cases / 1000 population and 7.2 deaths / 100,000 population to 272 cases / 1000 population and 6.4 deaths/100,000 population respectively. With an anticipated increase malaria free HFCAs from 60 in 2022 to 110 in 2023.

- 2024: Deployment of interventions at full scale following the sub-national stratification which would result in a 30% decline from baseline in morbidity and mortality from 272 cases / 1000 population and 6.4 deaths / 100,000 population to 190 cases / 1000 population and 4.5 deaths/100,000 population respectively. With an anticipated increase malaria free HFCAs from 60 in 2022 to 160 in 2024.

The total budgeted financial need for the program from 2022-2024 is US$ 276,038,745.62. This is primarily driven by the needs the case management for the whole period and vector control needs in 2022 to support IRS and the planned 2023 ITN mass distribution campaign. Commitments amounting to US$ 65,306,103.15 have been made during this period to support program implementation, however a gap of US$ 210,732,642.47 exists for full scale program implementation.

Table 8: Projected Costs, Commitments and Gaps by Year (US$)

Year	Need	Commitments	Gap
2022	138,435,635.25	57,907,302.55	80,528,332.70
2023	72,515,095.71	5,418,142.27	67,096,953.44
2024	65,088,014.66	1,980,658.33	63,107,356.33
Total	**276,038,745.62**	**65,306,103.15**	**210,732,642.47**

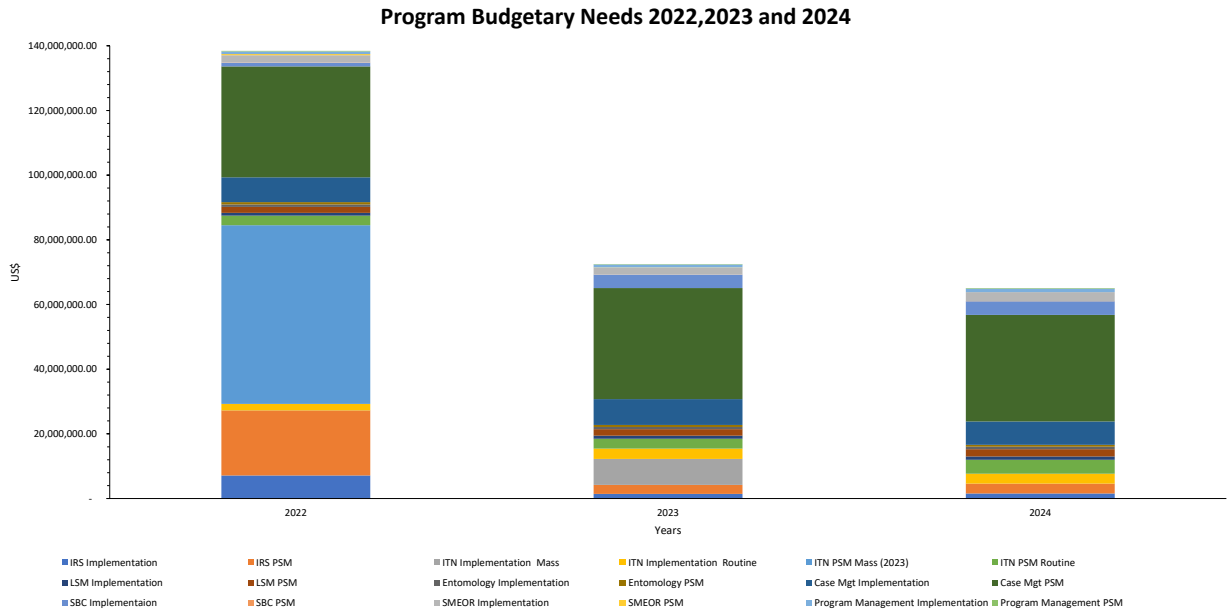


Table 9: Thematic Program Projected Costs by Year (US$)

Thematic Area	Program	2022	%	2023	%	2024	%
Vector Control	IRS Implementation	7,151,258.31	5.2	1,429,469.43	2.0	1,572,416.43	2.4
	IRS PSM	20,082,224.00	14.5	2,787,832.70	3.8	3,066,615.97	4.7
	ITN Implementation- Mass	3,107.60	0.0	8,033,453.42	11.1	-	-
	ITN Implementation-Routine	2,022,898.78	1.5	3,189,240.74	4.4	3,014,233.43	4.6
	ITN PSM Mass (2023)	55,257,233.96	39.9	-	-	-	-
	ITN PSM Routine	2,953,773.85	2.1	3,036,478.40	4.2	4,331,571.41	6.7
	LSM Implementation	865,526.00	0.6	952,078.60	1.3	1,047,286.46	1.6
	LSM PSM	1,842,168.00	1.3	2,026,384.80	2.8	2,229,023.28	3.4
	Entomology Implementation	759,167.76	0.5	693,657.76	1.0	742,152.77	1.1
	Entomology PSM	704,151.24	0.5	587,093.67	0.8	618,137.13	0.9
Case Management	Case Mgt Implementation	7,709,878.96	5.6	8,027,580.96	11.1	7,191,482.96	11.0
	Case Mgt PSM	34,294,196.00	24.8	34,305,300.00	47.3	32,970,300.00	50.7
SBC	SBC Implementation	1,098,610.83	0.8	4,161,231.74	5.7	4,203,066.90	6.5
	SBC PSM	93,153.19	0.1	45,023.95	0.1	28,717.37	0.0
SMEOR	SMEOR Implementation	2,267,249.00	1.6	2,094,403.00	2.9	2,797,999.00	4.3
	SMEOR PSM	330,250.00	0.2	100,000.00	0.1	-	-
Program Manageme	Program Management Implementation	799,960.68	0.6	879,956.75	1.2	1,092,510.77	1.7
	Program Management PSM	200,827.09	0.1	165,909.80	0.2	182,500.78	0.3
Total		**138,435,635.25**	**100.0**	**72,515,095.71**	**100.0**	**65,088,014.66**	**100.0**

CM- Case Management, SBC – Social Behaviour Change, SMEOR- Surveillance, Monitoring, Evaluation and Research, PM-Program Management

The National Malaria Elimination program will require funding support to meet the costs of full-scale implementation of this strategy. It is imperative to ensure that this financial support does not decline in light of the various emerging global health emergencies. Thus, the program must incorporate resilient systems to cushion any shocks that may present during the life of this strategic plan. Taking recognisance of the global plateauing of resources for malaria. The process of financing will rely heavily on domestic financing through the Zambian Government and local partners that may include the private sector, non-governmental organisations, faith mother bodies and the End Malaria Council/ End Malaria Fund at National, Provincial and District levels. These commitments are critical to ensuring maintenance of the gains made thus far and enhance burden reduction of malaria as well as subnational malaria elimination. As malaria epidemiology across the country changes, there will be need for greater flexibility to implement, in a timely manner high impact interventions as guided by this strategic plan. In order to synergise the efforts towards raising funds for the program a detailed resource mobilization plan will be developed and operationalised.

CHAPTER 7: MONITORING AND EVALUATION FRAMEWORK

7.1. Data management system

Health sector data is routinely collected using the HMIS to generate evidence to support planning and management of the health system. During the implementation of the NHSP and program-specific strategic plans, ongoing capacity strengthening in HMIS is undertaken to ensure that high-quality, timely, accurate and reliable information is collected. The malaria program supports the training of national, provincial, district and health facility staff in HMIS. The training covers health information collection, analysis and reporting principles. These improvements in data and information management have improved capacity of M&E staff in the health sector. The program has adopted the MRRS to complement the national HMIS (in 1,954 health facilities). The NMEP has rolled out web-based ALMA scorecard to routinely track key malaria indicators. A robust national surveillance reporting system (HMIS and MRRS) exists. These systems for data collection, reporting and use are institutionalised at national and sub-national levels. Technological adaptation was achieved by rolling out the MRRS to all districts to capture vector control data and 86 districts to capture case management data. Progress has been made in utilizing DHIS2 to capture and integrate data from epidemiological and entomological sources (HMIS + MRRS +entomological surveillance) as well as implementation of data quality assurance.

In addition to the routine collection of data, periodic surveys/studies are commissioned by the MOH and partners to monitor progress in implementation of interventions and the impact such interventions are having. The ZDHS and MIS are examples of studies that are undertaken every few years and these surveys collect information on intervention coverages and impact-level indicators.

7.2 M&E coordination mechanisms

The Monitoring and Evaluation section of the MOH has the overall responsibility of monitoring and evaluating the performance of the health sector including the NMEP. A malaria M&E plan is developed alongside the strategic plan. The malaria program has mechanisms for M&E at regional, national and subnational levels. National malaria program reviews are undertaken annually (for action plans), mid-term and at end-term (for the strategic plan) in line with international best practices. Provincial and district malaria review/planning meetings are held annually at sub-national levels. The MTEF and data review meetings are held annually by MOH for all disease programs/ service delivery areas including malaria. Quarterly mechanisms for program reviews include end user verifications, performance reviews, routine HMIS and surveillance reviews, data quality audits, the ALMA malaria score card, and the monthly E8 situation room. Details of the mechanisms, frequency and lead agency are outlined in **Table 8**. Key performance indicators (KPIs) are reviewed monthly by the NMEP. These include incidence data, program implementation and intervention coverage data.

Table 8: Monitoring Mechanisms

Mechanism	Frequency	Lead agency
Mid-Term Review	Every 5 years, mid way in strategic plan	NMEC, WHO and Partners – All thematic groups
End-Term Review	Every 5 years, end of strategic plan	NMEC, WHO and Partners – All thematic groups

Mechanism	Frequency	Lead agency
Directorate meetings – review of HMIS, MRRS and workplan	Monthly	MOH/NMEC and partners – All thematic groups
ALMA Malaria score card	Quarterly	NMEC and ALMA- All thematic groups
Provincial and district malaria review/planning meeting	Annually	Provincial and district health offices
National performance review meeting	Bi-annually	NMEC and partners
Medium-term expenditure framework (MTEF) and data review meeting	Annually	Led by MOH Directorate of Budget and Planning
End user verification	Quarterly	NMEC CM unit and PMI-PSM project
Data quality audits	Quarterly	MOH and NMEC M&E units, PHOs, DHOs and partners
Malaria Indicator Survey	Every 2-3 years (2024, 2026)	MOH, NMEC, ZamStats and partners
Demographic and Health Survey	Every 5 years	MOH M&E, ZamStats and partners
Partner M&E activities including site visits, as required	Variable frequency	NMEC and partners
E8 situation room	Monthly	NMEC and E8 Secretariat M&E units

7.3 Targets for the NMESP 2022-2026

Implementation of the Zambia NMESP 2022-2026 will be according the following timeline with accompanying targets, (**table 9**).

Table 9: Timeline and Targets for NMESP 2022-2026 implementation

Year End	Targets

2022	● Launch and roll out the national malaria strategy and planning exercise at all levels.
	● Develop and implement the national malaria policy.
	● In support of the NMESP 2022-2026, develop and implement
	  ○ Malaria Operational Plan
	  ○ M&E Plan
	  ○ Business/Resource Mobilization Plan
	● Revise/update technical guidelines for vector control, case management and SBC, as appropriate.
	● Design and launch a social and behaviour change strategy to ensure stakeholder buy-in.
	● Introduce specified actions in eligible HFCAs for malaria elimination (Table 5).
	● Increase malaria free HFCAs from 10 in 2021 to 60 in 2022.
	● Reduce malaria incidence by 10% of the 2021 baseline.
	● Reduce malaria mortality by 10% of the 2021 baseline.

Year End	Targets
2023	• Increase malaria free HFCAs from 60 in 2022 to 110 in 2023. • Reduce malaria prevalence due to imported cases to less than 5 percent in HFCAs where malaria has been eliminated. • Reduce malaria incidence by 20% of the 2021 baseline. • Reduce malaria mortality by 20% of the 2021 baseline.
2024	• Conduct MIS. • Conduct the mid-term review. • Increase malaria free HFCAs from 110 in 2023 to 160 in 2024. • Reduce malaria prevalence due to imported cases to less than 5 percent in HFCAs where malaria has been eliminated. • Reduce malaria incidence by 30% of the 2021 baseline. • Reduce malaria mortality by 30% of the 2021 baseline.
2025	• Increase malaria free HFCAs from 160 in 2024 to 210 in 2025. • Reduce malaria prevalence due to imported cases to less than 5 percent in HFCAs where malaria has been eliminated. • Reduce malaria incidence by 40% of the 2021 baseline. • Reduce malaria mortality by 40% of the 2021 baseline.
2026	• Conduct MIS. • Conduct end-term review. • Develop NMESP 2027-2031. • Increase malaria free HFCAs from 210 in 2025 to 260 in 2026. • Reduce malaria prevalence due to imported cases to less than 5 percent in HFCAs where malaria has been eliminated. • Reduce malaria incidence by 50% of the 2021 baseline. • Reduce malaria mortality by 50% of the 2021 baseline.

7.4 Key Performance and Outcome indicators

Table 10: Key Performance and outcome indicators - baseline and targets

Indicator	**Baseline**	**Source**	**Targets**				
	2021		**2022**	**2023**	**2024**	**2025**	**2026**
Impact							
Malaria incidence rate* (confirmed and clinical cases) per 1,000 persons per year	340	HMIS	306 (10%)	275 (10%)	248 (10%)	223 (10%)	201 (10%)
Malaria incidence rate (confirmed and clinical cases) per 1,000 persons per year	351	HMIS+MRRS	316 (10%)	284 (10%)	256 (10%)	230 (10%)	207 (10%)
Malaria incidence rate (confirmed per 1,000) persons per year	313	HMIS	282 (10%)	254 (10%)	229 (10%)	206 (10%)	185 (10%)
Malaria incidence rate (confirmed cases) per 1,000 persons per year	330	HMIS+ MRRS	297 (10%)	267 (10%)	240 (10%)	216 (10%)	195 (10%)

Indicator	Baseline	Source	Targets				
	2021		2022	2023	2024	2025	2026
Malaria parasite prevalence: Percentage of children aged 6-59 months with malaria infection by RDT	29	MIS	N/A	N/A	21	N/A	16
In-patient malaria deaths** (all ages) per 100,000 persons per year	8	HMIS	7.2	6.5	5.8	5.2	4.7
Number of malaria free HFCAs	10	HMIS	60	110	160	210	250
Proportion of confirmed outbreaks responded to within 7 days in level 0 to 1 HFCAs	30%	MRRS	40%	80%	100%	100%	100%
Outcomes							
Percentage of households with at least one insecticide-treated net	53	MIS	N/A	N/A	90	N/A	95
Proportion of households with at least one insecticide-treated net for every two people or sprayed by IRS within the last 12 months	57	MIS	N/A	N/A	90	N/A	95
Percentage of households with at least one ITN and/or sprayed by IRS in the last 12 months	71	MIS	N/A	N/A	90	N/A	95
Percentage of household members who slept under an ITN the previous night	39	MIS	N/A	N/A	80	N/A	90
Percentage of pregnant who slept under an ITN the night before	41	MIS	N/A	N/A	80	N/A	90
Percentage of children under five years old who slept under an ITN the previous night	46	MIS	N/A	N/A	80	N/A	90
Percentage of women who received 3+ doses of intermittent preventive treatment during antenatal care (ANC) visits during their last pregnancy	68	MIS	N/A	N/A	80	N/A	90
Percentage of households receiving indoor residual spraying (IRS) in the previous 12 months among all households in Zambia	39	MIS	N/A	N/A	10	N/A	10
Percentage of children under 5-years old with fever in the last 2 weeks who had a finger or heel stick	59	MIS	N/A	N/A	90	N/A	95

Indicator	Baseline	Source	Targets				
	2021		2022	2023	2024	2025	2026
Percentage of children under five years old with fever in the last two weeks who received treatment with ACTs within 24 hours of onset of fever	30	MIS	N/A	N/A	90	N/A	95
Percentage of facility reports received out of reports expected during the reporting period	92.6	HMIS	94	94	95	95	95
Percentage of women ages 15–49 years who recognized fever as a symptom of malaria (Knowledge)	64	MIS	N/A	N/A	90	N/A	95
Percentage of women ages 15-49 years who reported mosquito bites as a cause of malaria (Knowledge)	79	MIS	N/A	N/A	90	N/A	95
Percentage of women who reported hearing any malaria message (recall)	48	MIS	N/A	N/A	80	N/A	90

*Assuming a linear reduction in incidence of 60/1000 per year. The 60/1000 was the largest average decline in incidence over the past 5 years. This translated into approximately 10% annual reduction.

****** Assuming a linear reduction of mortality by 1.4/100,000 annually. The 1.4/100,000 was the largest average decline in mortality over the past 5 years.

CHAPTER 8: REFERENCES AND ANNEXES

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8.2 Annexes

Annex 1: Major partners and areas of support

Organisation	Type	Focus Area
Global Fund to Fight AIDS, Tuberculosis, and Malaria	Funding Partner	All thematic areas
US Presidents Malaria Initiative	Funding / Implementing Partner	All thematic areas
Churches Health Association of Zambia (CHAZ)	Implementing Partner	Case Mgt, SMEOR, SBC
End Malaria Council/ End Malaria Fund	Resource Mobilisation	All thematic areas
SADC Elimination 8 (E8)	Funding Partner	Case Mgt, SMEOR, SBC
PATH – MACEPA	Implementing Partner	All thematic areas
Bill & Melinda Gates Foundation	Funding Partner	SMEOR
RBM Partnership to End Malaria	Technical Assistance	All thematic areas
Rotary International	Implementing Partner	Case Mgt
African Leaders Malaria Alliance (ALMA)	Technical Assistance	All thematic areas
Isdell Flowers Cross Border Malaria Initiative	Implementing Partner	Case Mgt, SMEOR, SBC
Macha Research Trust	Research Institution	Research
Tropical Disease Research Centre	Research Institution	Research
World Health Organisation (WHO)	Funding Partner/Technical Assistance	All thematic areas
Private Sector – e.g. Mining Companies (FQM, KCM, Barrick GC), Nakambala Sugar among others	Funding/Implementing Partner	Vector Control, Case Mgt, SMEOR, SBC
Faith Leader Advocacy For Malaria Elimination (FLAME)	Advocacy/ Resource Mobilization	SBC
Akros Research	Technical Assistance	Vector Control
ZENYSIS	Technical Assistance	SMEOR

Annex 2: List of Stakeholders

Name	Designation	Organisation	Mobile Number	ail
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