Government of Malawi
Ministry of Health

REVISED MALARIA STRATEGIC PLAN 2017 – 2022

National Malaria Control Programme
Community Health Sciences Unit
Private Bag 65
Lilongwe
MALAWI

Acronym

ACT	Artemisinin-based Combination Therapy
ADC	Area development Committee
AfDB	African Development Bank
ANC	Antenatal Clinic
ASAQ	Artesunate Amodiaquine
BCC	Behaviour Change Communication
BLM	Banja Lamtsogolo
CHAM	Christian Health Association of Malawi
CMST	Central Medical Stores Trust
DFID	Department for International Development
DHIS2	District Health Information System 2
DHMT	District Health Management Team
DHO	District Health Officer
DOT	Direct Observation Therapy
DTIU	Drug Theft Investigation Unit
EDS	Electronic Data system
EHP	Essential Health Care package
GDP	Gross Domestic Products
HMIS	Health Management Information System
HSA	Health Surveillance Assistance
HSSP	Health Sector Strategic Plan
HTSS	Health Technical Support Services
iCCM	Integrated Community Case management
IPTp	Intermittent Preventive Treatment in pregnancy
IRS	Indoor Residual Spraying
IVM	Integrated Vector Management
KAP	Knowledge Attitudes and Practice
LLINs	Long-lasting InsecticidalNets
LMIS	Logistics Management Information System
LSM	Larval Source Management
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MDHS	Malawi Demographic Health Survey
MIP	Malaria In Pregnancy
MIS	Malaria Indicator Survey

MP	Member of Parliament
MPR	Malaria Programme Review
MSP	Malaria Strategic Plan
MTR	Mid-term Review
NAMS	National Archive for Malaria Slides
NCMP	National Malaria Control Programme
NGO	Non-governmental Organization
OTSS	Outreach Training and Supportive Supervision
PCR	Polymerase Chain Reaction
PMI	President's Malaria Initiative
PMPB	Pharmacy Medicines and Poisons Board
PPE	Personal Protective Equipment
PPP	Public Private Partnership
PSC	Procurement Supply Chain
PSM	Procurement and Supply Management
QA	Quality Assurance
QC	Quality Control
RBM	Roll Back Malaria
RDT	Rapid Diagnostic Test
RMS	Regional Medical Stores
RUM	Rational Use of Medicine
SDG	Sustainable Development Goals
SMEOR	Surveillance Monitoring Evaluation and Operational Research
SOPs	Standard Operational Procedures
TA	Traditional Authority
USAID	United States Agency for international development
VDC	Village Development Committee
VPP	Voluntary Pool Procurement
WHO	World Health Organization

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Introduction

Malaria is a major public health problem in Malawi with an estimated 6 million cases occurring annually. It is a leading cause of morbidity and mortality in children under five years and pregnant women. Malaria accounts for over 30% of outpatient visits and 34% of in-patients (HMIS 2018). Inpatient malaria deaths are pegged at 16.9 per 100,000 population (HIMS 2018). Malaria has a serious socioeconomic impact on families and the nation through work hours lost, school absenteeism and high levels of expenditures for prevention and treatment.

As part of the national planning process, the Government of Malawi developed the Vision 2020 as its long-term strategy and Malawi Growth and Development Strategy III (2017-2021) as the country's medium term strategies to guide national development. The national strategies are aligned to and incorporate the international obligations. The national strategies provide guidance and priorities for the different sectors of government. In both the long-term and medium term national strategies, the Government of Malawi prioritizes the health sector.

The Health Sector Strategic Plan II (2017-2022) articulates the priorities for health sector development in Malawi for the next six years. The HSSP II has placed an emphasis on malaria as one of the priority disease burdens to be addressed among others. Improved access to malaria prevention and treatment contribute directly to achieving SDG 3. NMCP developed 2017-2022 MSP in line with national and international development agenda including malaria Global Technical Strategy (GTS).

The main goal of 2017 - 2022 Malaria Strategic Plan (MSP) is to reduce malaria incidence by at least 50% from a 2015 baseline of 386 per 1000 population to 193 per 1000 and malaria deaths by at least 50% from 23 per 100,000 population to 12 per 100,000 population by 2022. The vision, goals, objectives, strategies and cost-effective interventions to maintain universal coverage and equitable distribution of these key malaria interventions have been set.

1.1 Rationale and process

This revised fourth Strategic Plan builds on the successes, challenges and lessons learnt during implementation of the three previous NMCP Strategic Plans (2001-2005, 2006-2010 and 2011-2016) and half of the implementation of the current 2017-2022 Malaria Strategic Plan.

The Ministry of Health in collaboration with Malaria Stakeholders developed a proposal and a roadmap outlining the 2017-2022 MSP's Mid Term Review process and plans for financial and technical support. The performance of the 2017-2022 MSP was measured through malaria Mid Term programme performance review (MTR). The MTR was aimed at assessing progress to improve performance and/or redefine the programme's strategic direction and focus. The findings and recommendations from MTR formed the basis for the development of the revised 2017 – 2022 malaria strategic plan.

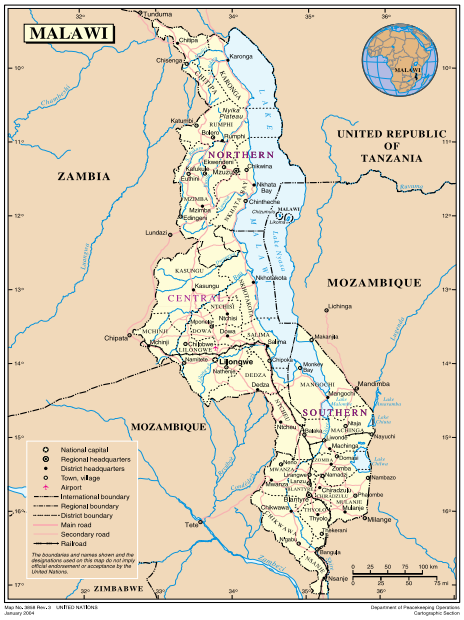
The Revision of the 2017-2022 MSP was consultative involving stakeholders in the country. The stakeholders included Government, bilateral partners, multilateral partners, academic institutions, Non-government organizations, faith based organizations and the private sector. The WHO provided Technical Assistance during the review and writing of the MSP.

The writing team composed of representatives from the following: Ministry of Health, bilateral and multilateral partners and academic institution. The MSP draft was circulated to all relevant stakeholders including civil society organization (CSOs) for comments followed by stakeholders meeting to scrutinize the proposed interventions. The final copy of MSP was successfully presented to MOH senior management for endorsement and approval.

1.0 Country Profile

Overview

Malawi is a landlocked country with a land area of approximately 118,485 square kilometers, of which 24,410 square kilometers are covered by Lake Malawi, Lake Malombe and Lake Chilwa. From north to south, the country is 901 kilometers long and varies in width from 80 to 160 kilometers. Malawi borders to the east and South-south-west by Mozambique, to the North north-west by Zambia and to the north by Tanzania. (Refer figure 1)



Malawi is part of the Great Rift Valley of East and Central Africa. The whole country from north to south is traversed by a deep trough running between two parallel faults or cracks in the Earth's crust, most of which is filled by Lake Malawi. The terrain of Malawi comprises of Plateaus, plains, hills and mountains. These include Nyika (over 1066 meters) and Viphya plateaus and Misuku hills to the North, and Dedza and Kirk Range mountains in the central region. In the south, the terrain is equally varied with escarpments, highlands (232 meters), mountains, and low marshy lands along the shire valley, Lake Malawi's outlet in the south. The Mulanje Mountain is the highest mountain in central Africa, with the highest point, Sapitwa peak, rising to 3,050 meters above sea level.

Malawi experiences a primarily tropical climate with three distinct seasons: cool–cold and dry (May to mid- August); hot and dry (mid-August to November); and rainy (November to April). The variable altitude of the country provides a wide range in climate. The low-lying lakeshore areas have longer hot seasons with higher humidity levels. The highest temperatures occur in the lower altitudes areas of the Shire Valley, and the rains are more prolonged in the north. Temperature levels are lower and rainfall levels are higher with rising altitude.

Malaria transmission is highest during the rainy season (November to April) when there is also an increase in malaria vector breeding sites. Low lying areas have hot temperatures which is more favorable for mosquito breeding hence transmission is also highest in these areas. However due to climate change there is an observation that even

highlands are experiencing increase in malaria, this could be attributed to increased temperature in these areas that also favours malaria vector breeding.

Administratively, the country is divided into three regions, namely the northern, central and southern regions. The country has 28 districts but 29 health districts, which are further divided into traditional authorities (TAs) ruled by chiefs. The Traditional Authorities are sub-divided into villages, which form the smallest administrative units. There is an Area Development committee (ADC) and Village Development Committee (VDC) which are responsible for development activities at TA and village level respectively. Politically, each district is divided into constituencies that are represented by Members of Parliament (MPs) in the National Assembly for purposes of legislations and each constituency is further divided into wards that are governed by Councilors to advance development agenda at ward level.

Malawi continues to enjoy uninterrupted peace and security which are essential preconditions for the nation to achieve social, economic and political prosperity. Furthermore, common experience has shown that countries in conflict always tend to lose their grip and fail to concentrate on improving the health sector and other national growth and development policies.

Demographically, the country has an estimated population of 18.6 million people in 2020[1] with an average annual growth rate of 2.9% (NSO, 2018) giving an estimated population of 19.7 million people by 2022, with a sex ratio of 94.2 males per 100 females. An estimated 84% of the population lives in the rural areas. Urban population in Malawi has been increasing from about 850,000 in 1987 to 1.4 million in 1998 to 2.0 million in 2008 and to 2.8 million in 2018. However, the proportionate increase has been small, rising from 14.4 percent in 1998 to 15.3 percent in 2008 to 16 percent in 2018.

Almost half (51 %)[1] of Malawi's population is under the age of 18 years and with 15% of the total population being under-five. Those aged 65 years and above represent 3% of the total population in 2017 and should continue to increase as expectation of life improves, which stands at 61.4 and 66.8 years in 2018 for males and females respectively.

[1] National Statistical Office in 2018 Malawi Population and Housing census

2.1 Economy

Malawi is a low-income country with an estimated annual GDP of $7,065 million at a growth rate of 3.5%. The gross domestic product (GDP) per capita is at 389 at a growth rate of 9.2% in 2018[2]. The economy of Malawi is based primarily on agriculture, which accounts for 30 percent of the gross domestic product (GDP). During the period 2017-2018, GDP per capita had an average annual growth rate of 9.2%[3]and the human development index (HDI) of 0.485 in 2018. Trends in HDI indicate a gradual increase in the HDI value from 0.355 in 2005 to 0.485 in 2018.

The country's major exports are tobacco, tea, and sugar. They account for approximately 85 percent of Malawi's domestic exports. GDP growth was estimated to be 5 percent in 2013 and is projected to increase, driven by tobacco exports and continued growth in the key sectors of agriculture, manufacturing and services—to 6.1 and 6.2 percent in 2014 and 2015, respectively (AfDB, 2014). Nearly 90% of the population is engaged in subsistence farming. In general, the majority of the population living in rural areas lack basic needs such as food, water, shelter, education and health. The 2011 Integrated Household Survey estimated that 50.7% of the population is below the national poverty line of 37,002 Malawi Kwacha per person per year and 25% of the population is considered ultra-poor[4]. The 63% live below the poverty line in the Southern region compared to about 60% in the Northern region and 49% in the central religion.

2.2 Health Indicators

The under-5 mortality rate has decreased from 118 per 1000 live births in 2006 to 64 per 1000 live births in 2015-2016 further down to 49.7 per 1000 live births in 2018. The infant mortality rate declined from 66per 1,000 live births in 2010 to 42 in 2015-16, further down to 35.3 in 2018, and child mortality is estimated at 23 per 1,000 live births. The maternal mortality ratio dropped from 807 per 100,000 live births in 2006 to 675 per 100,000 live births in 2010[5] further down to 439 per 1000 live births in 2018. According to DHS 2010 report, HIV/AIDS adult prevalence rate was 9.2 percent in 2018[8] .

[2] World Economic Outlook-IMF; 3 April 2018

[3] World Bank 2018-http://databank.worldbank.org/data/views/reports/tableview.aspx-ACCESSED 4/4/13 [4] Human Development Report 2018

[4] Integrated Household Survey, NSO 2011

[5] Demographic Health Survey 2015-16

8 www.unaids.org (Malawi)

Although malnutrition among children persists, stunting has declined from 53 percent in 2004 to 47 percent in 2010 (NSO and ICF Macro, 2011) and to 42 percent in 2013-14 (NSO, 2014). At the same time, anaemia prevalence among children has declined from 73 percent to 63 percent. The percentage of breastfeeding women with anaemia has decreased from 46 percent in 2004 to 29 percent in 2010. Among pregnant women, the percentage with anaemia decreased from 47 percent to 38 percent (NSO and ICF Macro, 2011).Table 3: shows data for demographic indicators for Malawi

Data from the Malawi Demographic and Health Survey 2016 (MDHS 2016) show some improvements in the health status indicators as shown in Table 2 below and that the sector is starting to achieve its targets for a number of age groups to attain the country's impact targets.

Table 2 : Performance for health impact indicators

HSSP I Indicator	Baseline 2011	Target 2016	Achieved 2016
Maternal Mortality Ratio (MMR)	675/100,000	155/100,000	574/100,000 lb
Neonatal Mortality Rate (NMR)	31/1,000	12/1,000	27/1,000 lb
Infant Mortality Rate (IMR)	66/1,000	45/1,000	42/1,000 lb
Under five Mortality Rate (U5MR)	112/1,000	78/1,000	64/1,000 lb
Under 5 anaemia (>12g/dl)	70% MIS 20110		97% MIS 2014
Under 5 severe anaemia (>8g/dl)	12% MIS 2010		6% MIS 2014 5% MIS 2017
Percentage of women who slept under ITN	49% MIS 2010	90%	62% MIS 2014 63% MIS 2017
Percentage of children who slept under ITN	55% MIS 2010	90%	67% MIS 2014 68% MIS 2017
Percentage of pregnant women with at least 2 doses of IPTp	60% MIS 2010	70%	63% MIS 2014 76% MIS 2017

Source: MDHS 2016 and MDG-End Survey 2014

2.3 Health System Analysis

2.4.1 Country Health System Structure

Malawi's health system comprises of the public sector, a non-profit private sector and private for-profit sectors. The public sector, the Ministry of Health, provides 63% of all health facilities, while the non-profit private sector CHAM provides 26% of health services and the Ministry of Local Government (MoLG)) provides 5% of health services, private for profit 4%. Other providers account for 2% of the total facilities and include non-governmental organizations (NGO) such as *Banja La Mtsogolo* (BLM) a not-for-profit NGO that specializes in the delivery of sexual and reproductive health services.

The MoH has an estimated 23,188 personnel (out of a total of 42,309 positions that exist in the MoH staff establishment) working in the public health sector, leaving a 45% vacancy rate. The total of frontline clinical staff in the country is 17,298 against establishment of 25,755 for both MoH and CHAM creating a vacancy rate of 33%. This total percentage is however skewed by the abundance of HSAs, which masks the significant vacancies in clinical posts of over 60% in most cases.

The leading factors influencing the size of the health workforce include high attrition due to migration, inadequate output of Training Institutions and low HRH financing with low salary levels. There is mal-distribution of health workers with majority of health workers working in hospitals in urban areas. This presents a misalignment between where the health needs are and where health workers are situated as the population distribution indicates 85% of the Malawi population lives in rural areas.

The Central Medical Stores Trust (CMST) main responsibility is to manage the Supply Chain of medicines and other medical supplies to public and CHAM health facilities. However storage and distribution of malaria commodities are being outsourced due to capacity challenges at CMST that are being worked on. The Health Technical Support Services (HTSS) pharmacy section of the Ministry of Health main responsibility is to coordinate PSM functions of all health commodities in the country in collaboration with disease programmes. The Pharmacy, Medicines and Poisons Board (PMPB) have the responsibility of registration and quality control of all drugs including malaria medicines.

The Ministry strives to provide high quality laboratory services to support the effective delivery of the EHP at all levels of health care. Setting up sufficient diagnostic capacity continue to be a major challenge. Health facilities at all levels do not have sufficient

numbers of well-trained staff or adequate standardized equipment, and resources are not sufficiently mobilized to address this need.

Physical access to health facilities (proportion of the population living within 8 km radius of health facility) stands at 76% in 2016 and has decreased from 81% in 2011. Now the Physical access revised to within 5km radius means access is even lower than 76%. Utility provision is particularly poor, with almost all facilities having electricity and water shortages. Whilst tertiary and secondary facilities all have back-up systems, few Primary facilities (3.2%) have a backup supply. Communications are reliant on personal cell phones. There are inadequate functional vehicles for both referral of patients and for general transport in the health sector. Only 24% of health facilities have a functioning ambulance due to poor maintenance of most vehicles.

Central monitoring and Evaluation department (CMED) under MoH continues to strengthen the collection and reporting of quality data through a harmonized HMIS system, which includes the District Health Information Software (DHIS2). All malaria routine data is being reported through DHIS 2. Health Technical Support Services (HTSS) is the responsible unit to manage Logistics management information system (LMIS) for all health products in the country. The LMIS is currently being linked to DHIS2 and there are ongoing plans to migrate to an open-source system, which has enhanced interoperability that will allow linkage to other existing information systems.

2.4.2 Health Financing

The GoM and development partners mobilized financial resources, which were expended for implementation of HSSP. HIV/AIDS and other Sexually Transmitted Diseases (STDs) received the highest allocation of funds during the period 2012/13-2014/15. HIV/AIDS received 33.1% (MWK85.9 billion), followed by malaria, at 17% (MWK44.2 billion) and thirdly by Reproductive Health at 10.4% (MWK27.2 billion) of Total Health Expenditure (THE). Almost 61% of THE was allocated to the three top diseases and conditions, leaving the remaining 39% of expenditure for all the other diseases, conditions and services. Public hospitals (central, district and mental hospitals) spent more than any level of care, spending 35.8 percent (MWK93.5 billion) of health resources. The primary health care comprising of health centres and clinics spent 7.4 percent of health sector expenditure (MWK19.3 billion). Health centres and clinics are not designated as cost centres and hence are not allocated financial resources.

2.0 Malaria Situation Analysis

3.1 Evolution of malaria control in Malawi

3.1.1 Historical perspective of the malaria problem

The malaria control in Malawi dates back as far as 1899. The early missionaries used mosquito nets and screening their houses with wire gauze. They also used quinine prophylaxis every other day from 1903.

Thereafter, between 1900 – 1949, the main interventions included a) mosquito reduction (periodic clearing of weeds, undergrowth and bush; filling up of hollows and depressions and draining of roads; screening of water tanks with wire gauze); b) personal prophylaxis: with quinine; use of mosquito nets and screening with wire gauze houses close to the Lake and river; and c) segregation of the general population in native locations. During this period these activities were being implemented under the sanitary board and the DCs were the chairperson. In 1930s, malaria accounted for 56% of all outpatient visits in public facilities while deaths accounted for 15%.

During the post second world war in 1950s – 1960s, there was an attempt at using Indoor Residual Spraying (IRS) using Gammexane in the densely populated districts of Zomba and Chiradzulu extending from Lake Chilwa to the Zomba plateau covering 230 square miles and over 43,000 houses [Federation of Rhodesia & Nyasaland, 1956]. This was extended to the Domasi area during the 1956/57 season. However, the Zomba, Chiradzulu, Lake Chilwa triangle area was not extended beyond 1958 due to lack of staff and resources [Federation of Rhodesia & Nyasaland, 1959].In 1960 IRS in the Zomba-Blantyre-Lake Chilwa area had to be abandoned because of the lack of cooperation of the people. The opposition began at the very beginning of the annual spraying campaign and chiefs and headmen announced that their people would not allow their houses to be sprayed. [Federation of Rhodesia & Nyasaland, 1960] In addition, from 1960, it was proposed that a single dose of pyrimethamine (60mg)-chloroquine (600mg) be given to all immigrant laborers at borders.

In the 1970s, the emphasis was on prophylaxis that was expanded nationwide during which pyrimethaminewas replaced by fortnightly Chroloquine (CQ). In Blantyre,Larval source management was being done such as spraying oil along verges and possible mosquito breeding sites and followed the work of 106 "grass-cutters". The Public Works Department maintained drainage systems for storm water. Larviciding using Malariol was reported in Lilongwe [Cheyabejara et al., 1974].

Malawi established its first National Malaria Policy in 1970's and in 1984 established a National Malaria Control Committee. This marked the start of organized effort to prevent and control Malaria in Malawi. Malawi continues to stand out as a pioneer of key changes in Malaria policies; it embraced Roll Back Malaria Global strategy for scaling up Malaria control country wide in 1999 and became a signatory to the Abuja declaration in 2000.

3.1.2 Past malaria control interventions or tools and strategic approaches and their effectiveness and operational feasibility;

The Vector Control Interventions currently in place such as the use of LLINs have demonstrated success in terms of coverage and use which can be attributed to the decline in malaria mortality and morbidity. However, the country has not managed to fully implement the IVM strategy due to financial constraints. The Implementation and effectiveness of key IVM interventions has also been affected by the emergence of resistance to pyrethroids. The implementation of planned MSP activies improved as the overall implementation moved fron 43% in 2011-2016 MPR to 60% in the recent MTR. Access to malaria diagnosis consistently increased to 99% from 2% at the introduction of mRDT services and the 1st line ACT in use is still efficacious at 99%. National Recommended treatment to severe malaria using injectable Artesunate is highly adhered to in the hospitals, except for its parasitological diagnosis using malaria microscopy is very low. Other interventions implemented included cross cutting SBCC, SMEOR and programme management.

3.1.3 Past successes and failures in malaria control and lessons learned.

Coordination and multi-sectoral collaboration and availability of a good platform for communication among partners may have consequences on the implementation of malaria interventions required to achieve the desired targets for impact. Availability of sustained funding and its quick disbursement coupled with efficient procurement, supply and management of essential malaria medicines and other commodities have significant bearing on achieving the set targets.

These lessons have informed the revised strategic directions of strengthening of epidemiological and entomological vector surveillance to ensure impact of interventions, strengthening the functionality of programme management support, development of financing strategy for malaria prevention, control and management in Malawi. To secure sufficient resources to deliver interventions and address threats relating to sustainability in the medium to long-term, engagement of top to bottom politicians and private sector has been prioritized in the revised Malaria Strategic Plan. Strengthening and expansion of vector control implementation and delivery of other preventive effective strategies, strengthening malaria chemoprevention, diagnosis and treatment and PSM services, strengthening advocacy, social mobilization and social and behavior change communication (SBCC), strengthening malaria surveillance and operational research

capacities, implementation of data quality audits and assessments will all be prioritized in the revised MSP..

3.2 Epidemiology

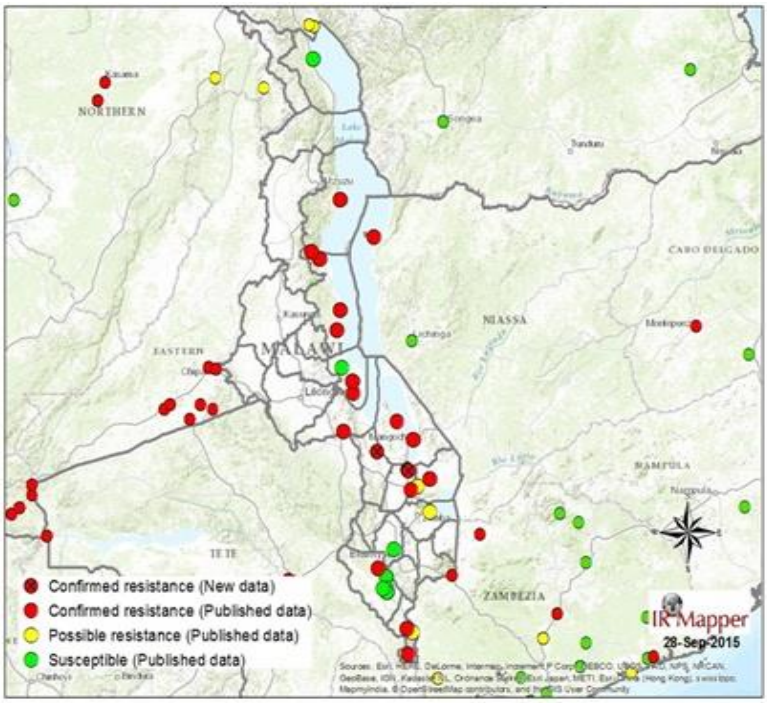
3.2.1 Malaria parasites

Malaria parasite prevalence in Malawi decreased from 43% in the 2010 MIS to 24% in the 2017 MIS. *Plasmodium falciparum* (Pf) is the most common (>90%) species in Malawi and is associated with significant morbidity and mortality. Other species include P. *malariae* and P. *ovale*, which sometimes occur as mixed infections with P. *falciparum*. P. *vivax* is very rare (<5 %). Results from efficacy study conducted in 2016, indicate high parasite susceptibility (99%) to the first line antimalarial regimen6 . This was sustained as shown by 97.9% susceptibility seen in a 2014 drug efficacy study[7]. Another therapeutic efficacy study is currently under way.

3.2.2 Malaria vectors

3.2.2.1 Vector Bionomics

There are three important vectors that transmit malaria in Malawi. These are Anopheles *gambiaes.s., An. arabiensis* and *An. funestuss.s.Anfunestus* is predominantly found in the southern and central part of Malawi whilst *An gambiae* is commonly found in the northern part of the country. The sporozoites rate is currently around 3.9% for *An.funestus* and about 6.6% for *An.arabiensis*.



In line with WHO standard procedures for vector resistance determination, there is clear evidence of wide spread resistance to pyrethroids and carbamates. This development is also noted across other neighbouring countries as shown in the map below. However, An Funestus and

[6] Antimalarial drug efficacy study 2016,

[7] Monica P. Shah, Melissa Briggs-Hagen, JobibaChinkhumba, Andy Bauleni, Alfred Chalira, DubulaoMoyo, Wilfred Dodoli4, Misheck Luhanga3, John Sande3, Doreen Ali3, Julie Gutman1, Don P. Mathanga2 and Kim A. Lindblade Adherence to national guidelines for the diagnosis and management of severe malaria: a nationwide, cross-sectional survey in Malawi, 2012 Malar Journal (2016) 15:369

An.gambiae are still susceptible to organophosphates (Malathion and pirimiphos methyl and fenitrothion).

Figure 3.1 shows insecticide resistance situation in Malawi and its neighboring countries

Source: MOH Entomological Study 2011- 2015

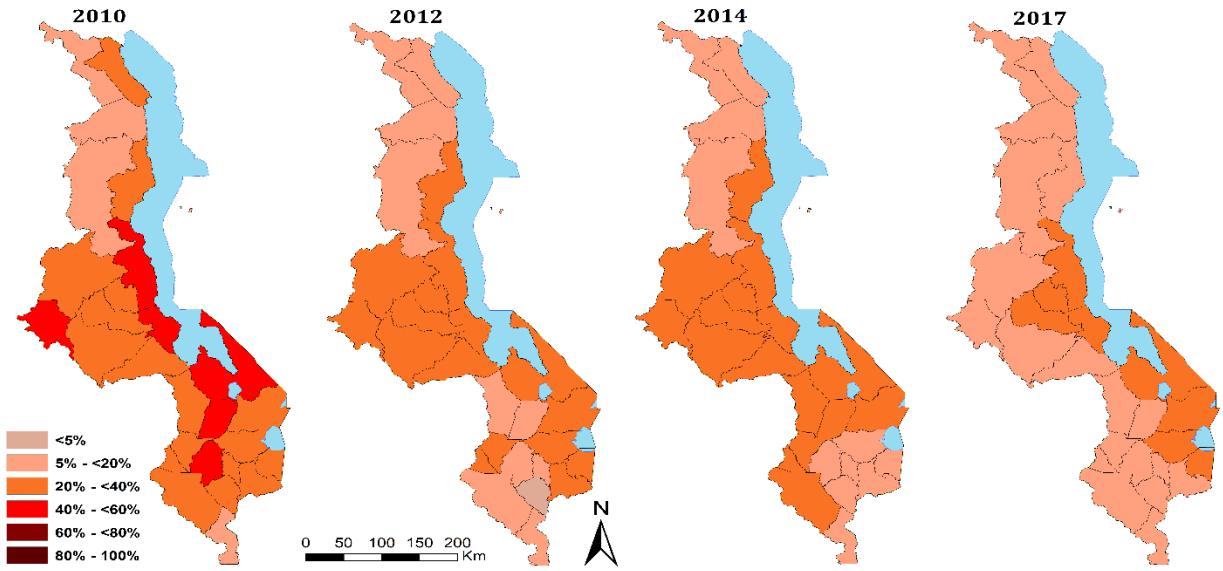
3.2.3 Dynamics of malaria transmission and level of endemicity

Malaria is hyper-endemic in Malawi and transmission occurs throughout the year in most areas. The entire population of Malawi is at risk of malaria; however pregnant women, people living with HIV and children under the age of five years are at the greatest risk of severe malaria. Malaria burden is a result of the interaction of the three determinants namely host (age, sex and immunity), environment (climate and altitude) and parasite/agent (antigenicity, strain, resistance and behaviour). Malaria transmission is higher in areas with high temperatures and during Malawi's rainy season (December through April), particularly along the lakeshore.

3.2.4 Malaria stratification and mapping

Among 6-59months, Malaria parasite prevalence in Malawi decreased from 43% in the 2010 MIS to 24% in the 2017 MIS. The achievement was more than the target of 27% as stipulated in the MSP. Mapping by district was done through triangulation of data and mathematical modeling showing a few districts in the central and southern regions more malaria parasite prevalent than others in 2017 as shown in figure 1 below.

Figure 1



3.2.5 Morbidity and mortality

For the first three years of implementation a reduction trend is observed in the incidence of malaria cases per 1000 population (Fig 3.2). The incidence of malaria (99% confirmed) had dropped from 386 in 2015 to 191 in 2019.

A malaria stratification map using incidence data from 2015 to 2018 by districts has been produced as depicted in Figure 2.

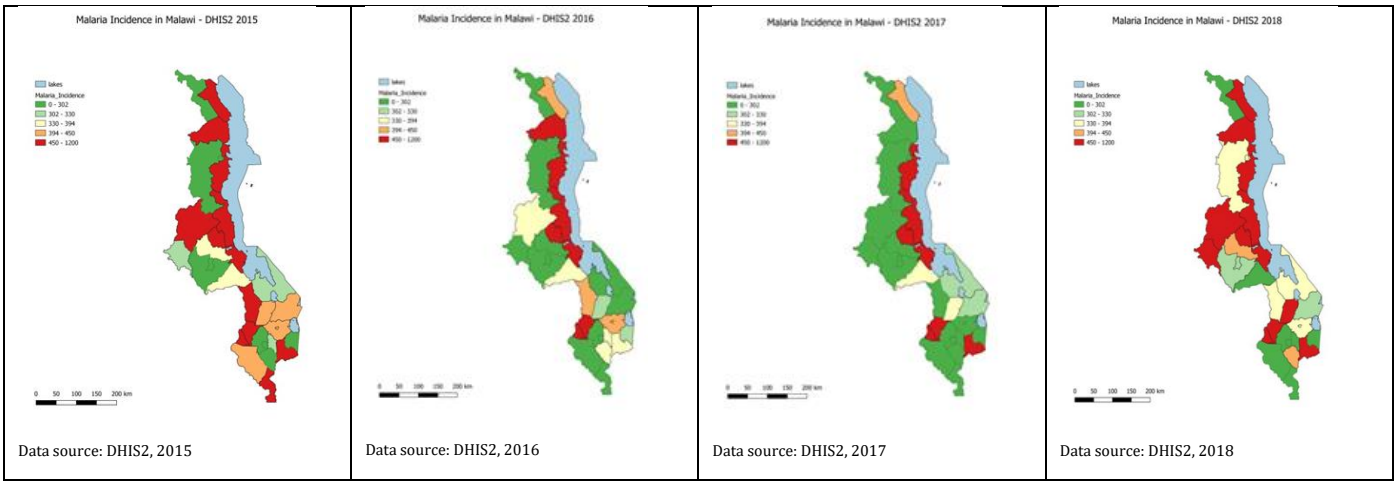
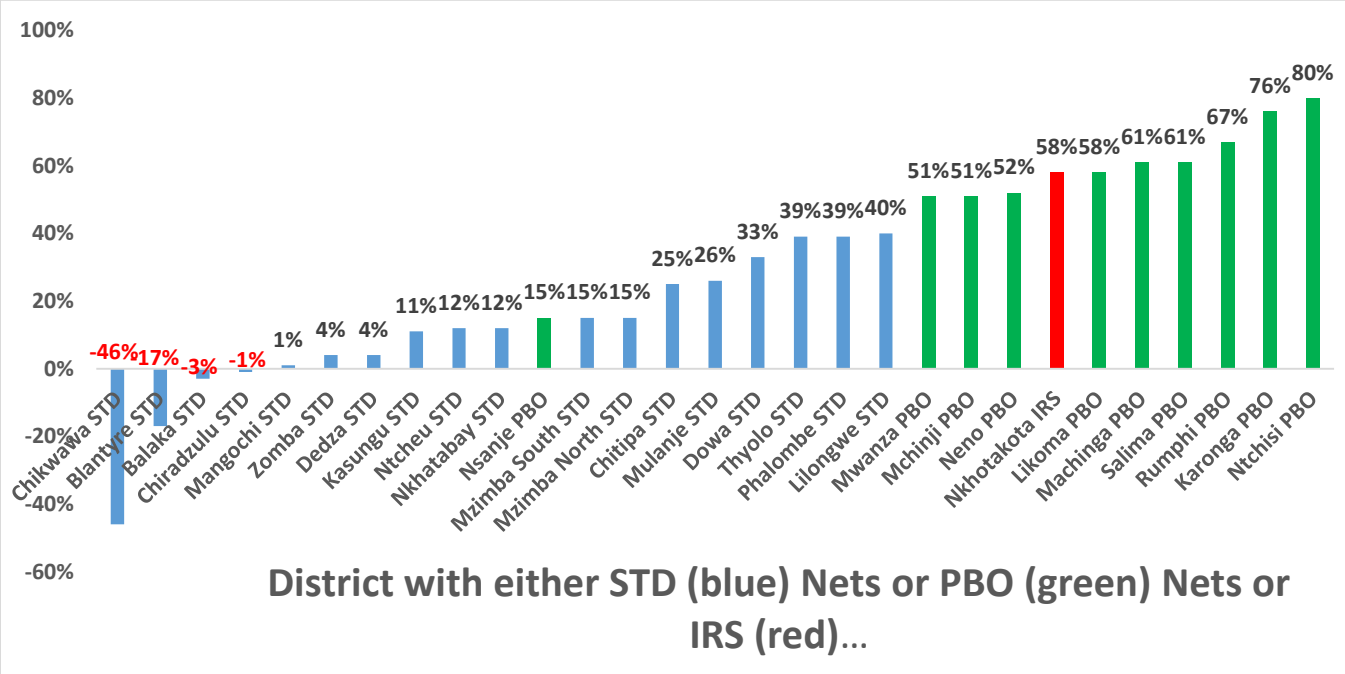


Figure 2: Trend of Malaria incidence per 1000 population from 2015 to 2018 by District

The annual district incidence maps shown in Figure 4 shows a declining district incidences from 2015 to 2017 ranging from 330 to 1200, mainly in districts along the lakeshore (Karonga, Rumphi, Nkhata Bay, Nkhotakota, Salima) and Shire River (refer to yellow and reddish colours). Though this decline could be attributed to control intervention efforts by NMCP, there were also some data challenges such as low reporting rates and higher denominators (population projection figures from NSO). The Malaria Incidence increased in 2018 in most districts due to increased reporting rates, use of actual population figures (denominators) from 2018 Population and Housing Census (PHC) from NSO, and delayed Mass net distribution in some districts in order to have a consolidated National Mass net distribution at the end of 2018 . From the turning point of decreased incidences in 2017 where only 8 districts of Karonga, Nkhata Bay, Nkhotakota, Salima, Dedza, Balaka, Mwanza and Thyolo had higher incidences, other districts such as Rumphi, Mzimba, Kasungu, Mangochi, Ntcheu, and Zomba recorded increased Malaria Incidence as well in 2018 for reasons explained above.

The above incidence up to 2018 was before the National Mass Net distribution that happened from September to November 2018 with the impact being felt in 2019 as shown in the Case reduction graph below.

Figure 3
Percentage Reduction of Malaria Cases Pre & Post LLIN Mass Campaign – Jan-Jun 2018 & 2019



2.1 Progress towards epidemiological impact of MSP

Generally, Malawi has seen changes in its malaria trend over the past five years as a result of the high investment in malaria control and improvement in data collection. Health Management Information System (HMIS) data, demonstrated Malawi has seen a general decrease in the incidence of malaria and mortality since 2014 due to sustained investment in malaria control. However there was a rise in the incidence of malaria in 2018 which was attributed to improved reporting, change of population denominator and to some extend delay in the replacement of LLINs. The incidence of malaria is at Mid Term Review was at 191/1000 population against a target of 193/1000 population in 2022.

Figure 4:

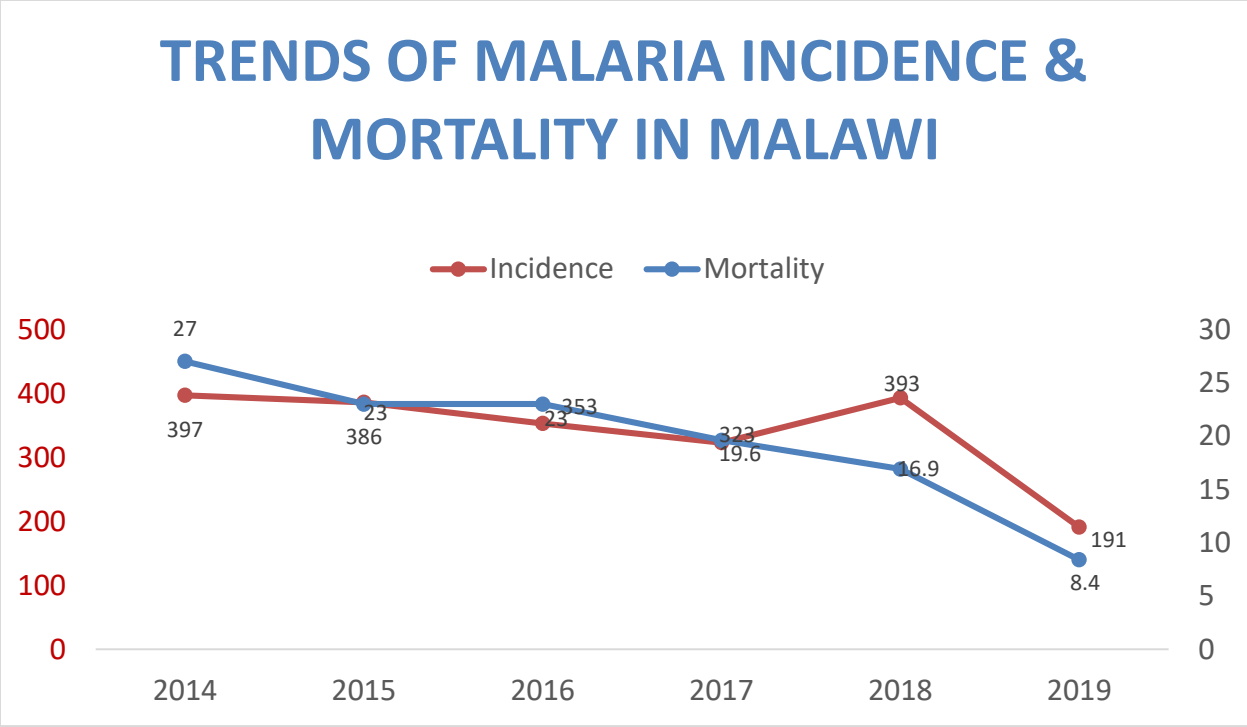


Figure 4: Trends of malaria incidence and Mortality in Malawi from 2014 – 2019 June

2.1.1 Trends in Malaria mortality

Mortality rate is currently at 8.4/100 000 population against a target of 12/100 000 population by 2022. This is a significant progress against a baseline of 27

3.3 Overview of the the first half of the 2017-2022 Malaria Strategic Plan

The overall goal of malaria strategic plan 2017 – 2022 was to reduce malaria incidence from 386/1000 in 2015 to 193/1000 by 2022 and malaria deaths by at least 50% of 2015 levels by 2022. The malaria programme Mid Term review showed that malaria incidence reduced by 51% from 386 per 1000 in 2010 to 191 per 1000 population in 2019, and that malaria mortality reduced by 62% from 23 per 100,000 population in 2015 to 8.4 per 100,000 population in 2019 (MTR Report 2019). There was also a reduction in prevalence from 43% in 2010 (MIS 2010) to 24% in 2017 (MIS 2017).

3.3.1 Key achievements, challenges and recommendation

3.3.1.1 Vector Control

The objective of vector control in the 2017-2020 MSP was that by 2022, at least 90% of the population would be protected by one or more malaria preventive interventions.

Indoor Residual Spraying (IRS) was resumed in one district in 2018, would be scaled up to two districts in 2029 and further in the coming years. The target is to scale up to eleven highly endemic districts through public, private and community partnerships. The population protected with IRS in the target district was 501,324 people protected, including 90,953 children under five and 11,066 pregnant women.

Long Lasting Insecticidal Nets (LLINs) distribution was the mainstay of vector control with significant improvement in the capacity to implement. The LLINs were distributed through mass distribution campaign the whole country at once in 2018 and routinely through Ante-natal Care (ANC) clinics. There was an increase in household ownership of at least one LLIN from 58% in 2010 to 70% in 2014 and 82% in 2017. The proportion of pregnant women who slept under a LLIN increased from 49% in 2010 to 62% in 2014 and stagnated at 63%, while for under-fives the rate increased from 55% in 2010 to 67% in 2014 (MIS, 2010, 2014) and stagnated at 68% (MIS 2017). The MIS 2019 was not done therefore the above figures may be improved since the Mass net distribution was done towards the end of 2018. Two million new nets (PBO) were deployed in a pilot approach with a huge impact compared to standard nets. See figure..... Above:

Routine monitoring of insecticide resistance in six sentinel sites and scaled up to other areas. There is also observed misuse of LLINs for fishing and fencing the vegetable gardens. Larval source management was planned but not implemented due to resource constraints. The national insecticide resistance management plan (IRMP) was developed.

Key recommendations:
Intensify resource mobilization to implement IRS in the targeted 11 high burden districts.
Build capacity to implement Integrated Vector Management (IVM) strategy.
Explore additional channels of distributing LLINs to increase and sustain coverage.
Include the following entomological indicators in the MSP;

1. *Vector densities and abundancy (both aquatic and terrestrial or adult stages)*
2. *Vector species and distribution*
3. *Vector susceptibility*
4. *Vector resting behavior*

Reinforce IRS guidelines that stipulate implementation of IRS targeting >85% of the population in 11 high burden districts areas

Community leaders to reinforce bye –laws for proper usage of nets

3.3.1.2 Malaria in Pregnancy

There was a slight increase in the uptake of two or more IPTp doses for malaria prevention during pregnancy from 64% in 2014 to 76% in 2017 (MIS 2014, 2017) against the target of 70%. The monitoring of IPTp3 started in 2014 following policy change in conformity with WHO guidelines. The proportion of pregnant women on IPTp3 increased from 13% in 2014 (MIS 2014) to 41% in 2017 (MIS 2017), there is high potential for further increase beyond this.

Other achievements included provision of DOT equipment to all health facilities, revision of the guidelines which in cooperated WHO recommendations and job aids. Malaria in pregnancy (MIP) policy as well MIP health workers training manuals were printed and distributed. Orientation of local leaders on focused antenatal care.

Nonetheless, attendance for ANC in first trimester was low at 12% in 2014 and 18% in 2017 thus affecting access to malaria in pregnancy interventions. Most health workers are not trained on MIP and there are no SBCC materials or job Aids for both communities and health workers. MIP indicators are not included in DHIS 2 and therefore depends on periodic surveys. The burden of Malaria in pregnancy is not determined in Malawi.

Explore the implementation of IPTp at community level through Health Surveillance Assistants (HSA) to improve access. Conduct local leaders' advocacy and intensify SBCC to improve ANC attendance. Print and distribute job Aids, intensify supervision and mentorship to health workers on improved delivery of IPTp and new guidelines. Include MIP indicators in monthly reporting forms and DHIS 2, to help determine the burden of MIP in Malawi.

3.3.1.3 Case management

The MSP objective for case management states that at least 95% of suspected cases of malaria are tested and 100% of confirmed cases are treated.

For malaria testing rate, the progress in 2017 and 2018 were 98% and 99% respectively against a target of 95%.
The first line antimalarial medicines (ACTs), Artemether Lumefantrine (AL) is still efficacious as per WHO recommendation (efficacy above 90%) as evident from studies conducted in 2012 (96%), 2014 (98%) and 2016 (99%).

The programme introduced and rolled out malaria rapid diagnostics test (mRDTs) at health facility and community level through integrated community case management (iCCM) in previous MSP. The proportion of malaria cases that were confirmed using microscopy or RDTs continued to increase from 2% in 2011 to 99% in 2018.

To ensure continued quality of care, the program conducted quarterly outreach training and supportive supervision (OTSS) on malaria case management in all health facilities.
Knowledge of health workers on diagnosis and management of severe malaria according to treatment guidelines improved from 79.8 in2017 to 92% in 2019. Patient monitoring has been a challenge as only 62% of health facilities meet average score. Furthermore, preparation and administration of injectable Artesunate has dwindled from 83% to 68%. It was also noted that only about 15% of the severe cases were confirmed by microscopy while 65% were diagnosed by mRDTs with the rest not tested at all in 2016, this has remained a challenge.

There is need to improve quality of patient care both at OPD and in wards through increased coverage of OTSS. There is need to maintain adequate stock for all antimalarials and supplies all the time to support Case Management and enforce adherence to treatment guidelines in both public and private sectors.

3.3.1.4 Procurement and Supply Chain Management

During the 2017-2022 strategic plan, the objective of PSM was to reduce all LA stock-out rates from 7% to 3%, this was achieved and the stock-outs were further reduced to 0.9%.

During the first half of MSP 2017-2022 the program is making good progress with regards to PSM activity implementation with 86% of planned activities carried out as at end June 2019. There has been a general improvement in PSM capacity including availability of funding for procurement, warehousing and distribution, LMIS and PSM officers at district level. There were no reports of major stock outs of malaria commodities in the period under review. There is availability of guidelines on commodity accountability and

transparency as well as distribution guidelines at all levels. Regular refresher trainings on Logistics system at district level .

Recommendations:

There is need to sustain availability of all malaria commodities in facilities at all times.

Strengthen PSM training and routine supportive supervision at district level to improve logistic data quality

To improve the LMIS to enable it to capture all the required data elements
PMPB should enforce the present donation guidelines.
HTSS should update the donation guidelines with regards to drugs procured and monitored at national level by the programs i.e. Malaria, TB, HIV, Family Planning.
HTSS should include the provision for expiry data reporting in the LMIS tools revision.

3.3.1.5 SBCC

The objective for SBCC in the 2011-2016 MSP was that by 2016, at least 80% of the populations would practice positive behaviors to prevent and control malaria.

The Malaria Communication strategy 2015 – 2020 was developed following the review of the previous strategy. National malaria days and other advocacy events were undertaken. The levels of knowledge on malaria in the community remained. The proportion of women of child bearing age who had heard of malaria remained above 93% between 2010 and 2015. Out of those that had heard of malaria, over 84% knew that use of mosquito nets is a malaria prevention method. Likewise, over 82% of the women who had heard of malaria knew that mosquito bites cause malaria.

However, coordination was inadequate within the malaria programme partnership including with Health Education Services (HES). Distribution of SBCC materials and engagement with local traditional leaders, political leaders particularly law makers such as parliamentarians were inadequate.

The key recommendations include: strengthen coordination through effective engagement of local and political leaders to empower, sustain knowledge and improve practice; broaden targeted audience for SBCC in-line with the communication strategy

3.3.1.6 SMEOR

The main objective of SMEOR in the 2017-2022 MSP is to strengthen systems for surveillance, monitoring, evaluation and operational research to provide timely and quality information necessary to effectively guide programmatic decision-making. The SMEOR builds on the observed challenges from the 2011-2016 MSP, embedding the OR into the ministry of health research agenda. The District Health Information System (DHIS) 2 served as the primary source of routine data for decision making.

Addressing key recommendations from the 2011-2016 MSP, the NMCP developed a comprehensive monitoring framework for all components of the MSP including surveillance, monitoring and evaluation. The current SMEOR is focusing on undertaking data quality audits and assessments and build capacity in data management at all levels; strengthening collaboration between NMCP and relevant MoH departments and stakeholders, ensuring interoperability between HMIS with other complementary systems, Collaborate with partners to facilitate development of a website or quarterly bulletin for data use and routine information sharing.

SMEOR within the Malaria Strategic Plan 2017-2022 is measured by Epidemiological and entomological indicators, and Data quality indicators (data completeness, timeliness and accuracy). A Monitoring and Evaluation plan was developed in the 2011-2016 MSP and same used for the MSP 2017-2022.

Overall substantial progress has been achieved since the start of the MSP in strengthening the routine surveillance system. Timeliness of reporting has improved from zero in 2011 to 55% in 2015 and 77% in 2018. Completeness of monthly reports increased from 3.3% in 2011 to 95% in 2015 and 97% in 2018 (HMIS, 2011, 2018). Data quality assessment involved a random sample of 100 facilities (from the approximately 700 facilities in country) the exercise is done twice a year, achieving a total sample size of 200. The malaria programme collaborated with universities and other research institutions in planning and conducting research. Malaria research priorities were embedded in the ministry of health research agenda. The District Health Information System (DHIS-2) served as the primary source of routine data for decision making. The programme planned to conduct research dissemination conferences annually but managed once due to organizational challenges. Prolonged process of revising data collection tools by other program departments and poor data quality and management at all levels affected the indicators performance. The reporting of malaria data into DHIS2 by Central hospitals has not yet started and a large proportion of private sector data is not part of the DHIS2 data capture system as only a few private clinics report through nearby public facilities.

The key recommendations include:

Improved staff capacity in data analysis and interpretation for well informed decision making at all levels should be reinforced.
Roll out of DHIS2 reporting to Central hospitals for capturing of all data
Strengthen data analysis and usage across all districts through regular data review meetings.
Procurement and operationalization of an electronic NMP data repository.

3.3.1.7 Programme management

The NMCP at national level is hierarchically two steps from the Minister and is ideally placed within the MoH structure. Fortunately, at that level of Deputy Director, NMCP leader is a member of Senior Management in the Ministry of Health and Population and sits in the Senior Management meetings that are held on Mondays fortnightly. This allows the Program Manager, who is also Deputy Director of Preventive Health Services, to take part in Senior Management decision making. However, the established positions for the rest of program staff are non-existent in the NMCP. In an effort to address this, the Program developed and submitted proposed posts and an Organogram structure in the recent functional review, awaiting approval from the Department of Human Resources Management and Development.

The 2017-2022 MSP focused on improving the program capacity to implement planned activities in the MSP and continued strengthening program management as a crucial component of the national malaria control program performance. The Program` s capacity to implement planned activity for the first half of the current MSP is at 60%, an improvement from 43% for the entire implementation period of the previous MSP (2011-2016).

Among other successes, the program continued to provide policy direction and guidance in planning and reviewing of malaria control strategies. Guidelines were developed and revised accordingly like the transparency and accountability guidelines, the Malaria treatment guidelines, the malaria Rapid Diagnostic Tests guidelines, the Insecticide Resistance Management Plan and others. Health workers were trained in relevant areas to improve their capacity to manage cases in facilities over the period. Quarterly integrated supportive supervisory visits were conducted at all levels of health care delivery. During the same period, technical committee meetings were held on a quarterly basis and the National Malaria Advisory committee met as need arose.

NMCP maintained partnerships with the malaria control community. There was also an increase in number of staff members from 16 in 2016 to 20 in 2019. Cross-border collaboration was initiated with Mozambique and Tanzania to harmonize malaria prevention and control activities in the border districts of the three countries. The program managed to mobilize resources from government, development partners such as global fund, PMI, and others.

There was inadequate coordination with partners. Although multi-sectoral collaboration was initiated with other government line ministries, regular meetings were not held. Supervision was inadequate, only a few health facilities could be reached at each quarterly supervision due to inadequate resources. Although the financial contribution to malaria has been on the increase, the programme operated on a financial gap of 60% during the first half of the MSP 2017-2022. The largest proportion of the gap was IRS financing.

The key recommendations: Develop and implement resource mobilization strategies/plans, Strengthen partner, stakeholders and multi-sectoral coordination, Strengthen data analysis and usage at all levels through regular training, Strengthen the LMIS to capture all the required data elements to inform Quantification, Procurement and distribution, Intensify cross boarder collaboration and Sustain capacity building efforts among the program staff.

4.0 Strategic Framework

4.1 Vision

All people in Malawi are free from malaria

4.2 Mission

To reduce malaria to a level where it is no longer of public health significance in Malawi

4.3 Strategic Goal

To reduce malaria incidence by at least 50% from a 2016 baseline of 386 per 1000 population to 193 per 1000 and malaria deaths by at least 50% from 23 per 100,000 population to 12 per 100,000 population by 2022

4.4 Guiding principles

The implementation of the Malaria Strategic Plan will be guided by the following principles:

- ***Human Rights Based Approach and Equity:*** The Government of Malawi will provide malaria control and prevention services to all people without distinction of ethnicity, gender, disability, religion, political belief, economic, social condition or geographical location. The rights of health care users and their families, providers, and support staff will be respected and protected.
- ***Gender Sensitivity:*** Gender issues will be mainstreamed in the planning and implementation of all malaria programmes.
- ***Ethical Considerations:*** The ethical requirement of confidentiality, safety and efficacy in both the provision of malaria control and prevention services and research will be adhered to.
- ***Efficiency:*** All stakeholders will be encouraged to use the resources dedicated to malaria control efficiently to maximize health gains.
- ***Accountability:*** All stakeholders will take full responsibility for the decisions made and actions taken in the course of providing care in malaria control and prevention.
- ***Community Participation:*** Community participation will be encouraged in the planning, management and delivery of malaria services.
- ***Evidence-based Decision Making:*** Interventions will be evidence based.
- ***Partnership and Multi-sectoral Collaboration:*** Public-Private Partnership (PPP) and multi-sectoral collaboration will be encouraged and strengthened in malaria control and prevention.

- ***Decentralization:*** Health services management and provision will be in line with the Local Government Act of 1998 which entails devolving health service delivery to Local Assemblies.
- ***Appropriate and innovative Technology*:** All health care providers will use health care technologies that are appropriate, relevant and cost effective

4.5 Strategic Objectives

The **objectives** of the Malaria Strategic Plan 2017-2022 are:

- By 2022, at least 90% of the population use one or more malaria preventative interventions.
- At least 95% of suspected malaria cases will be tested and 100% of confirmed cases treated by 2022.
- To increase uptake of at least three doses of Intermittent Preventive Treatment (IPTp) from 12% to 60% by 2022
- To reduce annual average stock out rate of all LA from 7% in 2016 to 3% by 2022.
- To increase proportion of caregivers of under-five children who take action to seek appropriate malaria treatment within 24 hours of the onset of fever from 31.2% to 50% by 2022
- To provide evidence-based malaria surveillance system that guide programme implementation, policy direction and accountability by 2022.
- To improve programme performance in implementing planned MSP activities from 43% to at least 90% by 2022.

4.6 Strategies and Key activities

This section presents the strategies and activities chosen for the achievement of the stated goal by2022. The plan focuses on high impact proven interventions which when correctly implemented will help to move towards achieving the required impact. The strategies and key activities will be presented according to thematic areas of Vector control, case management, and malaria in pregnancy, SBCC, Procurement and Supply chain management, Surveillance monitoring Evaluation and Operational Research and program management.

4.6.1 Malaria prevention and control

Objective 1: By 2022, at least 90% of the population use one or more malaria preventative interventions.

In order to achieve the objective NMCP will implement the Integrated Vector Management (IVM) which has been promoted by World Health organization (WHO) as the strategic approach for malaria control. IVM is the targeted use of different vector control methods in isolation or in combination to prevent and reduce vector contact with humans cost effectively hence making the environment unsuitable for vector breeding.

In the next five years NMCP will focus on the following strategies; Universal access to quality Long lasting insecticidal nets (LLINs), Implementation of quality IRS in selected, suitable epidemiological areas, larval source Management in targeted communities, Ongoing monitoring of vector control to ensure continuous monitoring of vector bionomics and continuous assessment of effectiveness of new vector control interventions and tools to address resistance.

1) Universal Access to Quality Long Lasting Insecticidal Nets (LLINs)
2) Quality IRS in selected, suitable epidemiological areas
3) Larval source Management in targeted communities
4) Vector surveillance and insecticide resistance management

4.6.1.1 Universal Access to Quality Long Lasting Insecticidal Nets (LLINs

4.6.1.1.1 Mass distribution of Long Lasting Insecticidal Nets (LLINs)

This strategy aims to have universal coverage of LLINS in all the districts. The programme will consolidate and distribute LLINs through mass distribution by giving one LLIN per 1.8 people. A mop-up campaign will follow each mass distribution, as needed. In addition, school-based distribution will be done to maintain high coverage of LLINs in between mass campaigns. Nets will also be distributed in IRS districts to fully cover the populations against year round transmissions if insecticides used covers for only about half a year.

4.6.1.1.2 Routine distribution of LLIN

Pregnant women and children under-5 are particularly vulnerable to malaria. In order to protect this population, routine distribution of LLINs through ANC clinics will be conducted where the beneficiaries will be children under one and pregnant women. Joint quarterly follow-up supervision, monitoring and reporting will be conducted in collaboration with the Directorate of Reproductive Health to ensure proper use of nets. Nets will also be distributed in schools to maintain coverage of nets between mass distributions.

4.6.1.1.3 Emergency distribution of LLINs

Some areas in Malawi are prone to natural disasters that place people at risk of malaria. In emergency situations, such as floods and earth tremors, victims will be identified and registered for distribution of LLINs using the national disaster management policy.

4.6.1.2 Quality IRS in selected, suitable epidemiological areas

Indoor Residual Spraying will be targeted in high burden districts/areas and scaled up in phases according to Malawi Integrated Vector Management Strategy. It will also be conducted at the right time of the year and in line with international / WHO standards. The programme in collaboration with all key stakeholders shall monitor all IRS projects to enforce compliance with set guidelines.

The guidelines for IRS implementation will be revised in line with new knowledge and innovations to address insecticide resistance. Environmental compliance inspections shall be conducted and to ensure high community compliance to the spraying campaign, community mobilization shall be intensified.

4.6.1.3 Larval source Management in targeted communities

Larval source management (LSM) will be used in addition to LLINs and IRS. This will entail application of bio-larvicides on mosquito breeding sites and modification of the environment to deprive the target vector population of its requirements for development and survival. This will be done in collaboration with other sectors such as the Ministry of Public Works, Ministry of Natural Resources Management, Ministry of Agriculture, the city, town and district councils and through community engagement.

4.6.1.4 Vector surveillance and insecticide resistance management

The programme will continue to conduct entomological studies to establish a national entomological profile that explores vector ecology and behavior, species composition and distribution vector density, and insecticide resistance. It will revamp and operate sentinel sites for the study and monitoring of the vector bionomics. It will enhance and motivate data collection and sharing on application of new vector control tools for their specific deployment. It will also establish entomological surveillance system at all levels through capacity building and infrastructure development.

The programme will update a comprehensive Insecticide Resistance Profile for Malawi that will guide the management of insecticide resistance. It will also develop and implement insecticide resistance management plan that shall detail actions to be taken at

country level to prevent resistance from emerging and preserve the effectiveness of current vector interventions in short, medium and long term.

4.6.2 Malaria case management

Objective 2: At least 95% of suspected malaria cases will be tested and 100% of confirmed cases treated by 2022.

Malaria case management is one of the key interventions for malaria control in Malawi. It comprises malaria diagnostics and treatment at facility level (public, CHAM and private) as well as community level. According to MPR 2016 Report, malaria still remains a public health burden. The incidence of malaria (confirmed and unconfirmed) in 2015 was 386 per 1,000 population. However, district level variation in the incidence of malaria incidence is observed over the years. Inpatient malaria mortality is pegged at 23 per 100,000 population. Therefore, the ultimate goal for this thematic area is to have all suspected malaria cases presenting to a health worker being tested and treated according to the national guidelines at health facility and community level. As such, this thematic area in collaboration with SMEOR will ensure tracking of confirmed malaria cases that are treated according to guidelines for regular monitoring. In addition, capacity of health workers on complete reporting of fever cases shall be enhanced. The key focus areas for case management will include: Expansion of community malaria case management services (in numbers of village clinics and age band extension), School Malaria Case Management through provision of Teachers Learners Kits (LTK), Capacity building for health workers, Private sector engagement, , Supportive supervision and mentorship, as well as quality of case management services.

1) Prompt Diagnosis and Effective treatment
2) Integrated Community Case Management (iCCM)
3) Private sector engagement
4) Supportive supervision and mentorship
5) Quality of case management services

4.6.2.1 Prompt Diagnosis and effective treatment

All suspected uncomplicated malaria cases will be tested using mRDTs at all levels (central, district, health center, clinic, community and schools). Light microscopy will be used to test suspected uncomplicated malaria cases (where capacity allows), diagnose severe malaria cases and confirm malaria treatment failure. Only confirmed cases will be treated in line with national treatment guidelines. The programme will broaden access to testing and treatment services at community level by further increasing the number of village clinics, expanding the age band and increasing microscopy centers by procuring

microscopes and provision of proper infrastructure for malaria microscopy services. It will also roll out the Learners Teachers Kit project currently in Zomba and Machinga only.

The program will scale up mRDT service provision by training recommended lower cadres in testing suspected malaria cases in health facilities and ensuring that task-shifting policy for malaria case management is in place.
The NMCP will ensure that refresher trainings of health workers (public, CHAM and private facilities) on malaria diagnostics and treatment are conducted at a minimum of every two years or soon after revision of the guidelines. In addition, tutors from pre-service health training institutions will be prioritized in the training on the revised malaria case management guidelines so that students graduate with updated knowledge and skills on malaria. The Program will continue providing refresher training in malaria microscopy and mRDTs.

4.6.2.2 Integrated Community Case Management (iCCM)

Community case management evolved into a comprehensive strategy called Integrated Community Case Management (iCCM) that addresses three main childhood killers namely; malaria, pneumonia and diarrhoea. It promotes early recognition, prompt diagnostic testing, and appropriate treatment of malaria among children under in the home or community. It is an equity-focused strategy that aims to improve access for under-five children in hard-to-reach areas thereby improving timely and effective treatment of malaria.

Community health workers mainly Health Surveillance Assistants (HSAs) are trained to diagnose, treat or refer malaria cases at community level as appropriate. Equipped with a three-lock drug box, HSAs are regularly supplied with mRDT for malaria parasitological testing, Lumefantrine-Artemether (LA) for treatment of confirmed uncomplicated malaria and rectal artesunate (RA) as pre-referral treatment of severe malaria at community level.

NMCP will collaborate with Integrated Management of Childhood Illnesses (IMCI) Unit and other supporting partners implementing iCCM activities, to ensure that implementation is in tandem with MSP, Malaria Treatment Guidelines, Diagnostics Guidelines and global best practices in line with WHO guidelines. The programme will also ensure a harmonised M&E Framework for reporting malaria cases at health facility and community levels. Village Clinics will be increased in numbers to satisfy the 5km radius Ministry of Health Policy for access to care and age band expansion will be piloted.

4.6.2.3 Private sector engagement

To effectively engage the private sector in case management, the programme will carry out mapping of private sector clinics in all districts. NMCP will mobilize resources for training and mentorship to improve malaria diagnostics and treatment in private sector.

In addition, private sector clinic representatives will be involved in district malaria review meetings.

4.6.2.4 Supervision and mentorship

To ensure continued quality of care the program will conduct quarterly outreach training and supportive supervision (OTSS) on malaria case management at all levels. The program will also follow up on all trained health workers in malaria case management within six weeks of training. The Programme will establish a core group of mentors and supervisors who will work with health workers to improve their knowledge and skills in malaria case management. NMCP will incorporate health facilities from private sector in each round of OTSS.

4.6.2.5 Quality of case management services

To ensure continued quality of care of uncomplicated malaria cases and severe malaria inpatients, the program will assess how malaria cases are managed in all health facilities. The assessment will include but not limited to the following areas; comprehensive patient assessment, treatment and monitoring, use of recommended treatment according to guidelines and how the dosages are prepared, scheduled and administered as well as how complications of severe malaria like convulsions, hypoglycemia, respiratory distress, severe anaemia and hypovolemia are managed.

The programs will build a team of WHO accredited microscopists who will provide on job training and mentorship to microscopists in health facilities. The Programme will establish National Archives for Malaria Slides (NAMS). The Programme will link Parasitology Reference Laboratory with other Reference Laboratories in the region to share experiences on external quality assurance (EQA). The programme will conduct in country lot testing apart from the pre shipment testing done by WHO as well as providing proficiency-testing materials. NMCP will ensure maintenance of microscopes by engaging with physical asset management (PAM) department and training quality technicians. Furthermore, the programme shall evaluate mRDT performance and recommend at least three brands for use every four years.

The Programme will ensure that malaria guidelines are reviewed and revised to incorporate current trends as recommended by WHO. NMCP shall also ensure that the updated guidelines and job-aids are available for use in all health facilities across the country.

4.6.3 Malaria In Pregnancy

Objective 3: To increase uptake of at least three doses of Intermittent Preventive Treatment (IPTp) from 12% in 2014 to 60% by 2022

Malaria during pregnancy remains an important public health problem of concern, generally as it poses a special challenge to pregnant women and their unborn baby, they are particularly vulnerable to malaria because their immune system is suppressed. Malaria causes anemia, low birth weight and spontaneous abortions.

In order to combat the problem of malaria during pregnancy, the country will support the delivery of a comprehensive package of interventions to ensure improved pregnancy outcomes and maternal survival. One of the current MIP strategy for the prevention and control of malaria during pregnancy consists uptake of Intermittent Preventive Treatment (IPTp) administered through antenatal clinics (ANC).

1) Health facility based IPTp
2) Community based IPTp
3) Provision of quality IPTp care

4.6.3.1 Health facility based IPTp

The ministry of health will promote malaria in pregnancy prevention through directly observed treatment (DOT) for IPTp that will further be strengthened by providing DOT equipment (cups and buckets) at all facilities.

4.6.3.2 Community based IPTp

The ministry will also explore multiple channels for delivery of IPTp in order to increase uptake of IPTp because currently delivery is dependent of one channel thus through ANC clinics only. In this case, the program will conduct pilot study on feasibility, acceptability and effectiveness of HSAs for community IPTp distribution. Results will guide the training for Health Surveillance Assistance on community IPTp.

4.6.3.3 Provision of quality IPTp care

The program will build capacity of HWs on quality of care through training, mentorship and provision of required job aids to ANC heath service providers. The programme still face the gap of inadequate funding leading to 19 districts not supported in trainings of HWs on revised IPTp policy. This will further be reflected in the revised implementation plan for attention. MOH will conduct quarterly integrated supervision on MIP& Safe motherhood to public, CHAM and extend to private facilities ANC health service providers to improve their level of knowledge, skills, and attitude in the provision of care to pregnant women, and to improve data collection and reporting on MIP indicators. The ministry will also conduct regular quarterly meetings of MIP Sub-Working Committee and

other related coordinating mechanism. The NMCP will strengthen collaboration with relevant stakeholders within and outside the ministry to improve utilization of ANC services. These will include Directorate of reproductive health, health education unit, community health services, Safe motherhood initiative, etc. The NMCP will link with Central Monitoring and Evaluation department within the ministry for inclusion of MIP indicators to measure burden of malaria in pregnancy including data quality management to monitor ANC performance.

4.6.4 Procurement and Supply Chain Management

Objective 4: To reduce annual average stock out rate of all LA from 7% in 2016 to 3% in 2022

Efficient and effective procurement and supply chain management (PSM) are fundamental to the program performance in the fight against malaria. In order to ensure access to effective and quality assured health commodities in the country, procurement and supply chain principles and set of policies were developed to support the following: timely procurement of quality assured health commodities in adequate quantities, attainment of cost effectiveness in procurement and supply chain activities, reliability and security of distribution systems, appropriate use of health products and ability to monitor all procurement and supply chain activities.

To ensure malaria commodity availability throughout the health system, the MOH's long-term objective is to establish a reliable, integrated national supply chain system capable of delivering health commodities to all public sector facilities as well as CHAM affiliates. The current national system is designed to deliver health commodities from the Central Medical Stores Trust (CMST) to regional medical stores (RMS), district hospitals, and health centres. Beyond health centres, it is the community health workers who handle selected commodities and disperse them through under-five and village clinics.

1) Improving LMIS data quality
2) Provision of malaria Commodities
3) Implementation of Transparency and Accountability mechanisms
4) Strengthening Quality Assurance Mechanism

4.6.4.1 Improving LMIS data quality

NMCP shall continue to work with Health Technical Support Services (HTSS) and other partners in the implementation of the current electronic LMIS system (OpenLMIS) and support future expansion to include new users of the system. NMCP shall advocate proposed review of the logistics management system, including but not limited to data collection tools and system parameters reviews. In addition, NMCP shall work with HTSS in strengthening the ability of district and health center staff to conduct LMIS data reviews at their respective levels to improve the quality of data available for decision making.

NMCP in collaboration with HTSS shall provide routine trainings to facility staff on revised data management system and data collection tools. NMCP shall also advocate for routine supportive supervision to all health facilities offering malaria services in the country to ensure adherence to relevant SOPs.

4.6.4.2 Provision of Malaria commodities

The Programme in collaboration with Health Technical Support Services-Pharmaceuticals, user units, procurement agents, distribution agents, warehousing agents and other partners will continue to conduct forecasting, quantification and procurement of malaria commodities. Quarterly pipeline reviews will be conducted to ensure that commodity shipments are well coordinated. Health workers and procurement personnel will be trained in forecasting, quantification, procurement of malaria commodities and Logistics management information system (LMIS). The program will continuously develop and update national malaria commodities supply plan in collaboration with partners; this will inform commodity procurement across all funding partners.

NMCP in collaboration with relevant departments will review all procurement and supply chain systems for medicines and other commodities to enhance timely delivery of quality medicines, commodities and proper storage capacity at all service delivery points. The NMCP will also coordinate distribution of malaria commodities. This will include collaborating closely with HTSS pharmaceuticals and PMPB to ensure strict adherence to donation guidelines, particularly for malaria commodities. This will ensure that the program has visibility into the commodities that are in the system as well as prevent commodity wastage due to overstocks and potential expiries. NMCP and HTSS will also facilitate the dissemination and implementation of the redistribution guidelines for health commodities. This will ensure that health commodities are proactively redistributed to correct any prevalent stock imbalances hence preventing any wastage and mitigating stock outs. As part of the redistribution process, NMCP and HTSS shall work with partners to institute a robust and cost-efficient reverse logistics system for malaria commodities.

NMCP shall work with HTSS to advocate for a system redesign that includes service delivery point LMIS data (dispensed to user and stock on hand). This is pursuant of improving accountability of commodity usage and enhancing the accuracy of reported LMIS data. Furthermore, NMCP shall work with HTSS to advocate for establishing and implementing of minimum standards for personnel and documentation requirements at the dispensaries/SDPs.

4.6.4.3 Implementation of Transparency and Accountability mechanisms

NMCP shall develop transparency and accountability guidelines to guide the intra-facility requisition and handover processes. NMCP shall also conduct on-job orientation of transparency and accountability guidelines. Supervision and mentorship on adherence to transparency and accountability guidelines for Malaria commodities shall be done in close collaboration with District Health Management Teams. NMCP shall will work with partners routinely identify and engage health facilities with accountability challenges; putting in place action plans to address the factors driving the accountability gaps with a view to graduating health facilities from low level accountability to higher level accountability. Thus, NMCP shall conduct supervision and validation of reports at all levels. NMCP will continuously collaborate with partners, DTIU and Audit Section of MOH, to ensure audits are periodically conducted at health facilities.

4.6.4.4 Strengthening Quality Assurance Mechanism

The NMCP will advocate for review and update of the PMPB Act. The NMCP will also support HTSS to advocate for PMPB to acquire WHO prequalification and strengthen Post Marketing Surveillance (PMS) and Pharmacovigilance for Malaria and other commodities. NMCP will support PMPB to conduct routine PMS for malaria commodities in a bid to ensure quality. NMCP will work with relevant partners to advocate for improvement of storage (and other related pipeline) conditions of malaria commodities at all levels thus guaranteeing the viability of malaria commodities procured in the country.

4.6.5 Social Behaviour Change and Communication (SBCC)

Objective 5: To increase proportion of caregivers of under-five children who take action to seek appropriate malaria treatment within 24 hours of the onset of fever from 31.2% to 50% by 2022

The goal of SBCC is to provide segmented community groups with correct information to improve knowledge, attitude and practices with the view of promoting adoption of positive malaria prevention and control behaviors through interactive and participatory communication methods e.g. interpersonal communication and mass media

1) National and Community led Advocacy
2) Media engagement
3) Social and community mobilization
4) Quality management
5) Enhance partnerships and coordination

4.6.5.1 National and Community led Advocacy

The programme will conduct strategic advocacy activities targeting political leadership, local leaders, policy makers and the private sector to create an enabling policy environment and sustained funding for malaria programming. Key stakeholders such as Fisheries, Tourism, Local Government, and Agriculture will be engaged to foster multi-sectoral collaboration. The programme will also provide Malaria advocacy kits for influential leaders such as political leaders and local leaders to improve uptake of malaria interventions. It is anticipated that the National Malaria Elimination Council will oversee national-level advocacy while community-level advocacy will be under the purview of the DHMT and NMCP.

During the implementation period of the MSP, commemorative days such as the World Malaria Day and SADC Malaria Week will be conducted at both national and district level under different themes. The NMCP with support from the Malaria Elimination Council will seek to engage high profile people to lobby for more resources as well as to place malaria issues on the national agenda.

The program will endeavor to align the malaria communication strategy to the MSP. In line with global best practices, the program will incorporate the Zero Malaria Starts with Me campaign in the MSP. The program will ensure that monitoring and evaluation of SBCC activities is informed by the Roll Back Malaria monitoring framework and implementation guidelines.

4.6.5.2 Media engagement

Backed by findings from MIS 2017, the media remains a trusted source of malaria information for community members. The NMCP will build alliances with the media to create awareness, create demand, initiate national dialogue and amplify malaria on the national agenda. A network of national and community media will be engaged to present an excellent vehicle to disseminate messages to targeted audiences and the general public. The will also play a critical role in advocacy efforts, demonstrating progress on malaria control, building partnerships particularly focusing on the private sector and mobilizing domestic resources for the programme. To ensure that they continue raising awareness and supporting demand-creation efforts, the programme will endeavor to improve the capacity of both national and community media houses on malaria programming. Guided by the malaria communication strategy, the programme will work with the media to develop relevant information packages on both existing and emerging malaria control strategies for dissemination to targeted audiences. The country's best

practices and success stories with regards to malaria control will be periodically documented and shared locally and globally using various media platforms.

4.6.5.3 Social and community mobilization:

Considering that successful malaria control efforts largely rely on human behavior, effective and innovative community engagement will enhance ownership of interventions and achieve demonstrable sustainable behavioral change on malaria. Social and community mobilization efforts will focus on home visits (door-to-door), community dialogue as well as community-wide campaigns in order to raise awareness and maintain high knowledge levels; address barriers and influence social norms; and create demand and build trust for malaria interventions. To facilitate peer learning and foster local leadership in malaria control efforts, malaria champions will be identified as behaviour change agents and champion communities created. For every target audience, mobilizers will disseminate standardized messages premised on the objectives as outlined in the malaria communication strategy. Where feasible, messages will be translated into local languages based on selected implementation districts.

Using community participatory appraisals, the NMCP will work with beneficiary communities to allow for mutual dialogue between malaria control service providers and users.

The NMCP will strengthen the technical and organizational capacities of these local structures to effectively address barriers affecting uptake of malaria interventions at community level. The programme will strengthen capacity of health workers and community change agents on use of mixed SBCC approaches to achieve sustained behavioral impact

4.6.5.4 Quality management

The SBCC component of the Malaria Strategic Plan will leverage on the already existing and adapted Quality Assurance/Quality Improvement (QA/QI) initiative that is being championed by the Health Education Section (HES) with the support of the Health Communication for Life (HC4L) Project. Building on the momentum of the QA/QI initiative, the malaria SBCC TWG will have a number of roles in order to support development, production and roll out and use of communication materials in an effective manner to engender large scale impact. The programme will set quality assurance standards for the production of malaria SBCC products as prescribed by the QA/QI guidelines, ensuring that gender issues are mainstreamed. In addition, the MSP will promote monitoring of the SBCC materials development processes and dissemination of correct and culturally appropriate messages on malaria. The MSP also appraises and appreciates the role of development partners and other stakeholders in the fight against malaria and therefore,

advocates for the adherence to SBCC quality assurance standards among all key stakeholders.

4.6.5.5 Partnerships and coordination

SBCC strategies outlined in the MSP can only be effective if they are implemented by diverse partners capitalizing on their strengths and competitive advantage. Therefore, the collaborative efforts of key malaria SBCC stakeholders at all levels (national, sub-national and community) remains critical. The list of partners includes but is not restricted to MoHP (NMCP, HES); other government departments and agencies, non-government organizations and community-level organizations; media; international partners and donors, private sector organizations, faith-based organizations and strategic communication practitioners. The coordination mechanism will be led by HES with NMCP as a secretariat.

4.6.5.6 Community-based monitoring

Train Community-based organizations and other community groups to independently monitor, document and analyze the performance of health services to provide feedback to service providers and as a basis for accountability and advocacy. Establish and implement mechanisms for ongoing independent monitoring of health policies and performance and quality of all services, activities, and interventions and other factors that are relevant to the disease by the CBOs,

Districts will also be supported to promote community ownership and monitoring of malaria commodities at health facility and community level. For example, communities will be sensitized on existing confidential channels to report any suspected pilferage of malaria commodities.

4.6.6 Surveillance Monitoring evaluation and operation Research (SMEOR)

Objective 6: Objective 6: To provide evidence-based malaria surveillance system that guide programme implementation, policy direction and accountability by 2022.

SMEOR is one of the crosscutting thematic areas of the malaria strategic plan and an essential component for the success of the malaria control program. A functional SMEOR system ensures that good quality; accurate, complete and reliable malaria data information is collected, collated, analyzed, and used to measure program performance and progress.

The objective of SMEOR is to improve malaria monitoring and evaluations systems towards achievement of enhanced data and program accountability by 2022. In order to do this, the ministry of Health will collaborate with other government departments and

key malaria monitoring and evaluation stakeholders in the country in performing the following activities. The following strategies will be deployed in order to achieve the objective.

1) Data Quality improvement
2) Implementation of the 'threes ones' principle
3) Disease surveillance, monitoring, and research
4) Information sharing

4.6.6.1 Data Quality Improvement

NMCP will continue the current improvements in timeliness, accuracy and completeness and consistency of routine program reporting and provide capacity building, mentorship and supportive supervision to all facilities in districts to enable timely collation of routine data for internal review and analysis, elaboration on root causes of undesirable patterns and adoption of problem-solving techniques. The program will also ensure collection of all relevant program indicators required for adequate data monitoring and evaluation and conduct regular data quality assessment exercises and external data verification to assure high data quality of routine program data available on DHIS2. The program will ensure functionality of validation rules in DHIS-2 and perform routine data cleaning at all levels.

4.6.6.2 Implementation of the 'threes ones' principle

NMCP will ensure that all partners, stakeholders, donors are complying to one coordinating mechanism, one national malaria strategic plan and one M&E plan. The program will update M&E plan and develop annual work plan yearly which will be implemented by all partners and stakeholders.

4.6.6.3 Disease surveillance, monitoring, and research

NMCP will conduct priority studies within the period of the plan as guided by the malaria research agenda and strengthen coordination with research institutions. The program will strengthen disease surveillance through use of thresholds. Malaria case tracking will be done on monthly and quarterly basis to respond accordingly. The program will also build capacity of the national malaria programme officers, monitoring and evaluation officers, district malaria coordinators and HMIS officers in malaria surveillance, data management, analysis and use for decision making. The program will start capturing malaria data from central hospitals upon rolling out of DHIS-2 through CMED. The program will strengthen coordination with Integrated Management of Childhood Illnesses (IMCI) when implementing data improvement activities. NMCP will also start capturing malaria data from private health facilities

4.6.6.4 Information sharing

NMCP will conduct district and zonal malaria data reviews on quarterly and biannual respectively. The program strengthen districts to develop quarterly reports and malaria bulletin. The program will develop and manage website for the national malaria control program to serve as a forum for sharing the quarterly and annual reports, bulletins, policy documents, data tools, guidelines and other relevant information to improve access to information on the program. Annual research dissemination workshop will be conducted to provide a forum for sharing of research and survey results on Malaria. It will develop and manage malaria data repository database. The program will strengthen governance, partnership, collaboration and stakeholder participation at national level by convening M&E technical working groups

4.6.7 Programme management

Objective 7: To improve programme performance in implementing planned MSP activities from 43% to at least 90% by 2022

Program management is a crucial component of the national malaria control program in Malawi. It consists of management tools such as policies and guidelines, supportive systems, and procurement and supply chain management. For other thematic areas, there cannot be substantial success without proper implementation of the management functions.

Strong programme management capacity is very important for effective malaria programme delivery and achieving the objectives. This MSP will focus on strengthening human resource capacity; programme planning and reviews; partnership and coordination; procurement and supply chain management; resource mobilization and cross-border initiatives. This will be achieved through strong leadership and creation of a supportive environment by the NMCP. In addition, the programme will aim to provide adequate infrastructure, equipment and supplies at all levels. It will also initiate cross-border malaria control activities with neighbouring countries with the goal of total regional elimination of malaria.

1) Human resource capacity building
2) Planning and reviews
3) Partnership and coordination
4) Malaria Programme Financing
5) Cross border Initiative
6) Malaria Epidemic Preparedness and response

4.6.7.1 Human resource capacity building

Implementation of malaria control interventions relies on integrated human resources at all health system levels. In the current set up, currently there are no established positions and no clear career paths for staff members at NMCP. Similarly, there are no established positions for Zonal and District Malaria Coordinators. This plan will seek to establish NMCP human resource structure from National to district level. To achieve this, the programme will advocate for the approval of the proposed NMCP structure, filling in of vacant posts and career paths for all program staff. Job descriptions for all the positions will also be developed.

The NMCP will during the period identify training needs of staff to facilitate appropriate capacity building programs. In addition, the program will develop induction manuals for orientation of new and existing staff. Induction course to all existing staff will be held to standardize their knowledge. The programme will encourage capacity building of health workers in specific training needs in each thematic area as prescribed by the strategic objective.

4.6.7.2 Planning and Reviews

The Ministry of Health will continue to provide policy direction and guidance in planning and monitoring of implementation of malaria control strategies. The NMCP will revise and disseminate relevant malaria policies, guidelines, and strategies in line with national, regional and global developments. At the beginning of each year, the programme, in collaboration with partners, will develop annual plans that will guide implementation of activities and annual reports will be produced at the end of each year. Quarterly and annual review meeting will also be conducted as part of program monitoring in addition to conducting Midterm and MPR review of the strategy. The Programme will also conduct district and stakeholder annual planning and review meetings and facilitate the inclusion of critical priority activities into annual District Implementation Plans.

4.6.7.3 Partnership and coordination

The fight against malaria requires strong partnership and coordination at all levels of health care delivery. In order to strengthen coordination among all partners in malaria control, the program will conduct partner and stakeholders remapping to identify key players in the sector. The program will continue with quarterly meetings for Malaria Stakeholders and when need arises Malaria Advisory Committee meetings will be held. The NMCP will engage private sector and regulatory bodies to enhance adherence to policies and guidelines and reporting. In addition, the program will implement a sanction and reward mechanism to enhance adherence to guidelines and policies. Annual joint programme reviews and planning meetings with stakeholders will be done and annual

partners meetings will be critical for enhancing partnership. Within the Ministry of Health, the Programme will continue to conduct planning and review meetings with relevant sister units and departments to strengthen collaboration and linkage.

4.6.7.4 Malaria Programme Financing

Malawi Government has been allocating funding to the health sector annually with focus towards remuneration, recurrent cost of health care facilities and capital expenditure. The budget allocations for the National Malaria Strategic Plan and proportion of the budget allocated to NMCP, shows low levels of financing the MSP. The average of about 60% gap in financing the planned interventions is quite substantial.

Successful implementation of MSP activities will continue to depend on timely availability of adequate domestic and external resources. The NMCP will develop a Business plan to guide resource mobilization drive. By 2022, the Ministry of Health will lobby from Parliament and treasury for increased domestic funding. It will also advocate for increased external financial resources for malaria control program and advocate for increases from the current donors and more funding from non-traditional partners. The NMCP staff will be trained in proposal development and resource mobilization, which will facilitate the programme to develop concept papers and proposals to be submitted to the funding institutions. The NMCP will also engage public- private partnership in resource mobilization and financing for malaria control activities. The Ministry will also advocate for the establishment of the Malaria Elimination Council that will support programme financing through a Malaria Fund.

4.6.7.5 Cross border Initiatives

In strengthening cross border collaborative activities, NMCP will work hand in hand with District Health Officers in the respective borders districts to develop terms of reference for cross border collaboration. The Programme will also advocate with neighboring countries for synchronization and harmonization of malaria control activities at border districts. Cross border collaborative meetings will be held across all borders with the partner countries to align malaria control activities across these borders. The program will organize annual exchange visits for benchmark with neighboring countries to agree on cross border control of malaria and discuss cross boarder pilferage of malarial commodities like LLINs, LA and mRDTs and learn on new initiatives on Malaria control measures

4.6.7.6 Epidemic Preparedness and Response

Preparedness action plans for malaria epidemic prevention and response are very critical at the time when the region is experiencing rise in Malaria Incidence as a result of climate change. This can be implemented effectively if they are supported by inter-agency

coordination, an infrastructure of well-trained personnel, adequate supplies and equipment, supervision and evaluation.

The NMCP with support from partners will develop the Malaria epidemic preparedness and response plan which will have epidemic thresholds at national and district levels calculated using five or more years of historical data. This plan will also have an integrated Malaria Early Warning Systems (MEWS) Framework developed as a decision support tool for improving epidemic preparedness and response planning. The successful implementation of MEWS will depend on close cooperation among several partners and the need for stronger collaboration within the health sector itself; among the health sector and the climate change and meteorological services, and other relevant sectors; and among the neighbouring countries in the region. The Malaria Epidemic Preparedness and response plan will form part of the health cluster epidemic preparedness and response plan for the National Epidemic Preparedness and response plan

The NMCP with support from partners will establish a strategic reserves of malaria commodities for emergency situations such as a sufficient stock of quality-assured essential laboratory diagnosis and treatment supplies for uncomplicated and severe malaria, including RDTs; bed nets (LLINs); and equipment, materials, protective clothing and insecticide for emergency prevention activities. Staff and transport – staff and transport for mobile teams as well as a standalone budget that could be accessed at a short notice.

5.0 Implementation Framework

5.1 Implementation Arrangements

5.1.1 Planning and implementation mechanisms;

The National Malaria Control Programme (NMCP) is an integral part of the Ministry of Health and is responsible for the control of malaria in the country. The NMCP provides policy direction and guidance in the implementation of malaria control strategies. This is achieved through the development, revision and dissemination of relevant malaria policies and guidelines in line with national and global developments.

Implementation of the 2017-2022 MSP will be through joint efforts by NMCP, partners and stakeholders at all levels. The NMCP will coordinate the consultative planning, implementation, research, monitoring and evaluation of malaria prevention and control activities. It will also be responsible for reporting strategic plan implementation progress

and performance to the Ministry of Health, WHO and RBM. The malaria advisory committee will continue providing technical guidance to the Secretary for Health when need arises.

At national level, implementation of MSP 2017-2022 will be in line with HSSP 2017 – 2022. It is expected that all implementing partners will work and contribute towards the achievement of this strategic plan through "three ones" principles, one plan; one coordination mechanism to ensure maximum synergy and avoidance of duplications, and one M&E plan to measure progress and assess impact. The NMCP will enhance district supervision through the zonal malaria coordinators based at zonal health offices.
At district level, the implementation will be through the District Implementation Plan (DIP) with the leadership of the District Health Management Team (DHMT). It will also be responsible for recommending potential candidates to the Secretary for Health for appointment as District Malaria Coordinators capable of enforcing all malaria interventions within the EHP.

The health centre malaria focal person will be involved in planning and supervising the implementation of malaria control activities in collaboration with health centre management team. In turn the focal person will work hand in hand with Health Surveillance Assistants (HSAs) who are the main link with the community.

5.1.2 Partnership coordination system;

In order to improve coordination, the NMCP will re-map the partners with specific details of areas of interest and location of implementation, conduct coordination quarterly and annual meetings. The thematic sub technical working group meetings will be held every quarter prior to each stakeholder's meetings. There will be annual research dissemination conferences to share information from research institutions.

5.1.2.1 Partners key roles and responsibilities

Other Government Ministries and Departments

The Ministry of Health through the NMCP will collaborate with a number of line ministries such as Ministry of Education, Ministry of Defence, Ministry of Agriculture water development and Irrigation, Ministry of Finance, Ministry of Home Affairs, Ministry of Labour and Ministry of Information in the implementation of this strategic plan. The NMCP will also work with the Department of Environmental Affairs, Department of Fisheries, Directorate of Reproductive Health, Epidemiology Unit, Health Education Services, district, city and town councils.

Their roles will include: promote LLIN use in schools and other institutions such as prisons, colleges, universities; integrate malaria prevention strategies in school curriculum; supplement the implementation of IVM including larvaciding and environmental management; participate in the planning of IVM activities such as larvaciding and IRS; participate in the planning and implementation of mass distribution of LLINs; vector control technical working group; enforce environmental management regulations for agricultural and water sectors, building and construction works including roads; participate in district and national malaria planning and review meetings; implement IRS activities in barracks, prisons and the dwellings of uniformed officers; support the implementation of LLIN and IPTp through ANC clinics; review BCC materials for the various interventions and participate in joint supervisions visits.

Political and other influential leaders

Political and other influential leaders will be critical in the implementation of the strategic plan. Their expected roles include: advocate for allocation of more resources for malaria prevention and control from the government; participate in resource mobilization for malaria preventions and control; advocate for community uptake of interventions including the use of LLINs, uptake of IPTp and acceptability of IRS; advocate for the recruitment of health workers to support programme delivery and advocate for enactment of by-laws to support malaria control.

Private sector and civil society

The contribution of the private sector and civil society in the implementation of this strategic plan will be important. The private sector will contribute in the service delivery areas particularly in activities related to case management and vector control. They will also be involved in direct contribution of resources. They will also play a critical role in IEC and BCC including advocacy though community outreach programmes. The civil society will advocate for quality malaria services and behaviour change on part of the community.

Communities

The implementation of MSP 2017-2022 will be done through existing structures at the community level such as: health centre advisory committee, Area development committees, village development committees (VDCs), village health committees (VHCs) and community-based organizations. Their specific roles will include: facilitate community mobilization; mobilize resources at the local level for malaria prevention and control; participate in identification and prioritization of health needs and support the production and dissemination of key messages to create demand for and utilization of malaria control interventions.

Development Partners and Other International NGOs

Bi-lateral, multi-lateral and funding organizations such as USAID/PMI, Centres for Disease Control and Prevention (CDC), Department for International Development (DfID), AfDB, GIZ, WHO, UNICEF, World Bank, Global Fund, Against Malaria Foundation (AMF), Save the Children, World Vision International, Concern Universal, will play a significant role in the implementation of this 2017-2022 National Strategic Plan.

Their specific roles will include: providing technical guidance in the implementation of malaria control interventions; providing financial resources for the implementation of malaria control interventions; providing evidence-based norms and standards to guide the implementation of interventions; providing technical assistance in sourcing, procurement and distribution of commodities and assisting in the conduct of monitoring and evaluation activities such as surveys.

Research Institutions

The successful implementation of the MSP 2017-2022 will rely on evidence generated from research within and outside Malawi by established research institutions. These will play a very important role in generation of research results to guide the implementation of the MSP strategies as well as the monitoring and evaluation of the Plan. In addition, research institutions will carry out essential research that will improve on existing interventions and support their delivery mechanisms and development of research agenda.

Their specific roles will include: participating in appropriate technical working groups; providing technical assistance in the monitoring of drug efficacy and insecticide resistance; providing technical assistance in the conduct of the Malaria Indicator Survey and other surveys; provide technical support in essential studies on case management, vector control, diagnostic services, M & E, BCC as well as malaria in pregnancy.

5.1.3 Procurement and Supply Chain Management

The main focus in the 2017 – 2022 MSP period will be to have uninterrupted supply of health and non-health products for malaria prevention and treatment. This will be achieved through accurate and timely forecasting, quantification, procurement and distribution of malaria commodities. The focus will also be on strengthening the malaria commodities supply chain system and improvement of data quality and availability. The flow of commodities will be from international and national suppliers to central and regional level warehouses from where they will be distributed further to district and health

center facilities. Thereafter, the relevant commodities will be allocated to village clinics for provision of community services. During the implementation of this plan, we will gradually transition to pull system. The NMCP in collaboration with HTSS-Pharmaceuticals and relevant partners will continuously build the capacity of health workers in PSM.

5.1.4 Resource mobilization and financial resources management

The successful implementation of NMCP will depend on the availability of adequate resources on a timely basis. In the next six years, the NMCP will advocate for more funding from traditional and non-traditional donors. The NMCP will conduct roundtable discussions to advocate for more funding with various institutions and agencies. Funding proposals will be developed and submitted to institutions and organizations. The programme resources will be efficiently managed to achieve value for money.

5.1.5 Key Assumptions

In order to achieve the set targets and objectives by 2022, the following assumptions have to be met by both Government of Malawi and the RBM Partnership.

- Political commitment will continue at all levels to support the Malaria Strategic Plan.
- Financial and technical support from government and partners will continue.
- Commodities and supplies at both local and international markets will be available to meet the country's needs.
- Improvement in health system performance, such as supply chain management, human resources and infrastructure will occur.
- The strong coordination among malaria stakeholders in Malawi will prevail during the period of the revised MSP.

5.1.6 Risk management

Implementation of this strategic plan will be subjected to several risks which will require timely and appropriate mitigation in order to avoid derailing the implementation of the plan. Table below presents a detailed analysis of the possible risks and proposed mitigation.

Table 3:

Risks	Mitigation strategy
Financial gap: financial gap to fully implement the MSP	Explore support from non- traditional donors Strengthen Public private partnership (PPP)

Natural disasters: Malawi has been experiencing natural disasters due to climate change such as floods in some parts of country that might have a bearing on malaria interventions.	Develop emergency preparedness and response plan Preposition of supplies to disaster prone areas.
Vector resistance to insecticides: Emergence and spread of malaria vector resistance to commonly used insecticides has potential to diminish the effectiveness of IRS and LLINs. This will necessitate rotation to more expensive insecticides with significant rise in programme costs.	Develop insecticide resistance management plan
Failure of some service providers to adhere to case management guideline: Provider behaviour to malaria case management.	Strengthening supportive supervision and mentorship at all service delivery points.

5.2 Budget of the MSP

- Budget Summary – the budget summary will be presented by intervention and by cost category;

- Resource mobilization plan – this should include budget gap analysis and plan for filling the funding gaps.

5.3 Summary budget 2017 – 2022

Table 4: Budget Summary 2017- 2022

Budget by Cost Category	'2017 Cost	'2018 Cost	'2019 Cost	'2020 Cost	'2021 Cost	2022 Cost	2017- 2022 Total Cost
1 Human Resource	39,705,300	37,800,000	37,800,000	37,800,000	37,800,000	37,800,000	**228,705,300**
2 Technical Assistance	67,958,112	61,258,112	67,958,112	61,258,112	61,258,112	61,258,112	**380,948,672**
3 Training Costs	10,631,135,508	6,908,530,853	10,340,552,017	4,535,838,725	12,909,127,340	4,162,110,008	**49,487,294,451**
4 Medicines and Pharmaceutical products	3,339,637,362	11,093,839,519	10,354,872,814	11,305,510,018	11,305,510,018	11,305,510,018	**58,704,879,749**
5 Health Products and Health Equipment	100,850,000	-	100,850,000	-	608,947,500	608,947,500	**1,419,595,000**
6 Procurement and Supply Management (PSM)	39,647,110,591	68,152,426,039	40,563,689,552	41,887,421,748	73,969,202,206	43,948,253,407	**308,168,103,543**
7 Infrastructure and Other Equipment	83,214,000	79,794,000	82,074,000	79,794,000	80,934,000	79,794,000	**485,604,000**
8 Communications Materials	244,127,600	1,398,632,210	124,375,150	100,919,200	1,421,664,986	189,765,300	**3,479,484,446**
9 Monitoring and Evaluation	2,407,804,233	4,639,867,903	2,470,477,720	2,222,367,788	5,074,061,638	2,310,333,216	**19,124,912,498**
10 Living Support Costs	2,042,066,576	2,042,066,576	2,042,066,576	2,042,066,576	2,042,066,576	2,042,066,576	**12,252,399,456**
11 Planning and Administration	230,412,643	1,285,374,164	159,815,985	159,443,147	1,392,593,329	171,511,528	**3,399,150,796**
12 Overhead Costs	241,026,979	169,304,618	168,091,229	163,355,229	171,862,618	163,355,229	**1,076,995,902**
Grand Total in Local Currency	**59,075,048,904**	**95,868,893,994**	**66,512,623,155**	**62,595,774,543**	**109,075,028,323**	**65,080,704,894**	**458,208,073,813**
Grand Total in $US	**$81,437,895**	**$132,160,041**	**$91,690,961**	**$86,291,390**	**$148,401,399**	**$88,545,177**	**$628,526,862**

6.0 Monitoring and Evaluation Framework

6.1 Performance framework

The Malaria Monitoring and Evaluation Plan will be developed in line with the 2017-2022 strategic plan to support implementation of MSP. The NMCP with partners will be developing annual implementation plans before the start of the new financial year.

The main sources of data for monitoring the implementation of the strategic plan will be national routine sources; HMIS which now operates through the DHIS platform, programme specific data sources and population-based surveys such as end user verification supervision, malaria indicator survey among others. Data from DHIS will be reviewed on a monthly, quarterly and annual basis to check on validity, quality and completeness.

The Mid-term review (MTR) was conducted by 2019 in order to provide comprehensive assessment mid-way implementation of the plan. During the strategic plan period three malaria indicator surveys will be conducted one in 2017, 2019 and 2021. The results of these surveys will input in the final evaluations of the strategic plan using the performance framework. The monitoring of the strategic plan will also take advantage of other surveys such as MICS and DHS and operational research findings to assess progress towards the achievement of the set targets. The final evaluation of the strategic plan (malaria Programme review - MPR) will be done in 2022 at the end of the strategic plan

The key indicators that will be used in monitoring the coverage and impact of the interventions laid out in the 2017-2022 Malaria Strategic Plan are as outlined in the following performance framework below.

6.2 Key Malaria Control Goals and Targets

Global Technical Strategy (GTS) for Malaria

- To reduce, malaria mortality rate and case incidence by 40% by 2020 and further reduce by 75% by 2025 and finally reduce by 90% by 2030, when compared with 2015.

Sustainable Development Goals

- **Target 3.3:** By 2030, end epidemics of HIV, Tuberculosis, Malaria and Neglected Tropical diseases and combat hepatitis, waterborne diseases and other communicable diseases
  - 3.3.3 Malaria incidence per 1,000 population

6.3 Malaria Strategic Plan 2017-2022 Coverage Targets

Table 5:

Type of indicator	Indicator	Source	Baseline Value		Targets					
				2017	2017	2018	2019	2020	2021	2022
Impact	Proportion of the population with evidence of infection with malaria parasites	MIS 2014	33	24			21		15	
	All cause, under 5 mortality rate	MDHS, 2016	63	53		47	37	31	26	20
	Number of Malaria cases per 1,000 population	HMIS 2015	386	323		395	274	246	218	193
	Outpatient malaria test positivity rate	HMIS	56%	52%		48%	47%	46%	45%	44%
	Number of deaths per 100,000 population	HMIS 2015	23	19		17	15	13	11	10

Type of indicator	Indicator	Source	Baseline Value		Targets					
				2017	2017	2018	2019	2020	2021	2022
	Outpatient confirmed malaria cases	HMIS	307		290	267	252	229	211	193
	Inpatient confirmed malaria cases	HMIS 2019	69,235				69,235	61,461	53,686	50,941
Outcome	Proportion of household population who slept under an insecticide-treated net the previous night	MIS 2014	53%	55%	60%		70%		80%	
	Percentage of households with at least one net for every two persons who stayed in the household last night	MIS 2017	42%		42%		51.2%		60.4%	
	Percentage of children under 5 years of age slept under an ITN	MIS 2014	67%	68%	75%		85%		90%	
	Percentage of pregnant women slept under an ITN	MIS 2014	62%	63%	75%		85%		90%	
	Percentage of population with access to an ITN within their household	MIS 2017	63%		63%		67%		69%	
	Proportion of population using an insecticide-treated net among those with access to an insecticide-treated net	MIS 2017	66%		66%		75%		83%	
	Proportion of population at risk protected by IRS within the past 12 months in IRS targeted areas	Administrative reports 2019	78%				78%	85%	85	86%

Type of indicator	Indicator	Source	Baseline Value		Targets					
				2017	2017	2018	2019	2020	2021	2022
	Percentage of households sprayed by IRS within the last 12 months in IRS targeted areas	Administrative reports 2019	78%				78%	85%	85%	85%
	Number of bites per person per year	Study reports								
	Proportion of mosquitoes infected with sporozoites	Study reports	3.5							
	Number of targeted districts with permanent breeding sites treated with larvicides and/or environmentally modified	Administrative reports	0					2	3	4
	Percentage of pregnant women who have access to and receive three or more doses of IPTp for malaria prevention	MIS 2014	12%	28%	20%		42%		58%	60%
	Number of high burden districts implementing IRS	Administrative reports 2015	2	5	0	5	7	9	10	11
	Percentage of caregivers of under-five children who take action to seek appropriate malaria treatment within 24 hours of the onset of fever	MIS 2017	31%		31%		39%		46%	50%
	Percentage of households owning at least one ITN	MIS 2014	70%	82%	75%		85%		95%	
	Percentage of suspected malaria cases that receive a parasitological test in the public health facilities	HMIS - 2015	82%	95%	85%	87%	90%	92%	95%	95%

Type of indicator	Indicator	Source	Baseline Value		Targets					
				2017	2017	2018	2019	2020	2021	2022
	Percentage of suspected malaria cases that receive a parasitological test in the community	HMIS - 2019	99.97%				99.97%	100%	100%	100%
	Percentage of confirmed malaria cases that received first-line antimalarial treatment at public sector health facilities	HMIS - 2019	97%				100%	100%	100%	100%
	Percentage of confirmed malaria cases that received first-line antimalarial treatment at community	HMIS - 2019	100%				100%	100%	100%	100%
	Percentage of expected facility monthly reports (for the reporting period) that are actually received	HMIS - 2019	97%				97%	98%	98%	98%
	Proportion of expected health facility reports received timely	HMIS - 2015	55%	80%		85%	90%	95%	95%	95%
	Percentage of discrepancies between malaria caseload and Artemether-lumefantrine (LA) issuance	HMIS - 2019	30%				30%	28%	26%	24%
	Percentage of health facilities providing diagnostic services with tracer items available on the day of the visit or day of reporting	HMIS - 2019	99%				99%	99%	99%	99%
	Percentage of health facilities with tracer medicines for the three diseases available on the day of the visit or day of reporting	HMIS - 2019	99%				99%	99%	99%	99%

6.4 Malaria M&E Plan Indicator Matrix

Table 6:

Indicator	Operational Definition	Baseline	Target	Source	Frequency	Level of measurement
6.4.1 Impact Indicators						
All cause, under-five mortality rate	The probability of dying between birth and the 5th birthday, expressed per 1000 live births	63	47	DHS	Every ~5 years	National
Inpatient malaria deaths per year: rate per 100,000 persons per year	Numerator: Number of inpatient malaria deaths per year x 1000 Denominator: Total Number of people in the population.	23	13	HMIS	Annual	National
Percentage of children aged 6-59 months with anaemia (<11gm/dl)	Numerator: Number of children aged 6 -30 months with aneamia (<11gm/dl) x100 Denominator: Total number of children aged 6-30 months in the survey	69.7%	34%	MIS, DHS	Every two years	National
Malaria parasite prevalence among under-five years children	Numerator: Number of children under five years with malaria parasites, tested either through microscopy Denominator: Total number of children under five years surveyed	33.3%	9%	MIS	Every 2 years	National, District
Malaria test positivity rate	Numerator: Number of confirmed malaria cases (by microscopy or mRDT). Denominator: Number of suspected malaria cases with a parasitological test (Microscope or RDT).	56%	44%	HMIS	Annual	National

Indicator	Operational Definition	Baseline	Target	Source	Frequency	Level of measurement
Reported malaria cases (presumed and confirmed)	Number of malaria cases (presumed and confirmed)	6130775	5256373	HMIS	Bi-annual	National
Confirmed malaria cases (microscopy or RDT): rate per 1000 persons per year	Numerator: Number of confirmed malaria cases (Microscopic or mRDT) per year x1000 Denominator: Total population at risk	307	229	HMIS	Annual	National
6.4.2. Outcome Indictors						
Malaria Prevention						
Percentage of households with at least one LLIN or sprayed by IRS within the last 12 months.	Numerator: Number of households surveyed with at least one Long-Lasting Insecticide Treated Net (LLIN) or sprayed with IRS within the last 12 months. Denominator: Total number of households surveyed	36.6%	80%	DHS, MIS	Every 2 years	National, District
Percentage of children under 5 years of age who slept under an LLIN the night preceding the survey	Numerator: Number of children under 5 years old who slept under an LLIN the night preceding the survey x 100 Denominator: Total number of children under five years surveyed.	69.1%	90%	DHS, MIS	Every 2 years	National, District
Proportion of population that slept under an insecticide-treated net the previous night	Numerator: Number of people who slept under an LLIN the night preceding the survey Denominator: Total number of people surveyed.	33.9	80%	MIS	Every 2 years	National, District

Indicator	Operational Definition	Baseline	Target	Source	Frequency	Level of measurement
Percentage of pregnant women who slept under an LLIN the night preceding survey	Numerator: Number of pregnant women slept under an LLIN the night preceding survey Denominator: Total number of pregnant women among in the surveyed populations	68.3%	90%	DHS, MIS	Every 2 years	National, District
Percentage of surveyed households sprayed within the last 12 months in IRS targeted districts	Numerator: Number of surveyed households sprayed in last 12 months in IRS targeted districts Denominator: Total number of households in surveyed IRS targeted districts	83%	90%	NMCP Programme Reports	Annual	National, IRS focus Districts
Percentage of women who received at least 3 doses of SP for IPTp	Numerator: Number of women who received at least 3 doses of SP for IPTp during the last pregnancy in two years preceding the survey Denominator: Total number of women who had pregnancy in the last two years preceding the survey.	29.9%	60%	DHS,MIS	Every 2 years	National, District
Proportion of population using an insecticide-treated net among those with access to an insecticide-treated net	Numerator: Number of individuals who slept under an ITN the previous night. Denominator: Total Number of individuals with access to an insecticide-treated net	58.6	90	MIS	Every 2 years	National
Proportion of population with access to an ITN within their household.	Numerator: Number of people who have access to an ITN within their household	38.8	70	MIS	Every 2 years	National

Indicator	Operational Definition	Baseline	Target	Source	Frequency	Level of measurement
	Denominator: Total number of individuals who spent the previous night in surveyed households					
Malaria Treatment						
Percentage of health facilities with no stock outs of antimalarial drugs in the last 3 months	Numerator: Number of health facilities with no stock outs of antimalarial drugs in the last three months. Denominator: Total number of health facilities reporting or surveyed x 100	74%	90%	HMIS, Health Facility Survey.	Quarterly, Biannial	National, District, Facility
Percentage of children under five years of age with fever in the previous two weeks preceding the survey who received antimalarial treatment according to national policy within 24 hours	Numerator: Number of children under 5 years old with reported fever in the previous 2 weeks who received antimalarial treatment according to national policy within 24 hours of onset of the fever Denominator: Total number of children under five years with fever in two weeks preceding the survey x 100	21.9%	50%	DHS, MIS	Biennial	National, District
Percentage accuracy of Malaria data elements	Tested cases	OIG	90%	DQA Report	Annual	National, District
	Confirmed cases		90%	DQA Report	Annual	National, District
	La Dispensed		90%	DQA Report	Annual	National, District

Indicator	Operational Definition	Baseline	Target	Source	Frequency	Level of measurement
Percentage of HMIS or other routine reporting units submitting timely reports according to national guidelines	Numerator: Number of HMIS or other routine reporting units submitting timely reports according to national guidelines. Denominator: Total number of HMIS or other routine reporting systems	68	90	HMIS	Bi-annual	National
Proportion of facility reports received over the reports expected during the reporting period	Numerator: Number of facility reports received during the reporting period. Denominator: Total Number of facility reports expected during the reporting period	99	100	HMIS	Bi-annual	National, District
6.4.3. Coverage Indicators						
Number of long-lasting insecticidal nets distributed to at-risk populations through mass campaigns	Number of LLINs distributed to venerable households during mass distribution of LLINs.	9,069,950	1,0958,223	Malaria Programme Reports	Every 3 years	National, District, Facility
Number of long-lasting insecticidal nets distributed to targeted risk groups through continuous distribution	Number of LLIN distributed to high risk groups during access to health services.	1,058,003	3,600,000	HMIS	Bi-annual	National, District
Proportion of suspected malaria cases that receive a parasitological test at	Numerator: Number of all suspected malaria cases that received a parasitological test at public sector health facilities.	99	100	HMIS	Biannual	National

Indicator	Operational Definition	Baseline	Target	Source	Frequency	Level of measurement
public sector health facilities	Denominator: Total Number of all suspected malaria cases that present at health facilities					
Proportion of suspected malaria cases that receive a parasitological test in the community	Numerator: Number of all suspected malaria cases that received a parasitological test in the community. Denominator: Total Number of all suspected malaria cases presented in the community	73	98	HMIS	Bi-annual	National
Proportion of facilities treating severe malaria cases according to the National Guidelines	Numerator: Number of health facilities treating severe malaria cases according to the national guidelines visited. Denominator: Total number of facilities visited during OTSS	82	90	OTSS	Bi-annual	National, District
Proportion of confirmed malaria cases that received first-line antimalarial treatment at public sector health facilities	Numerator: Number of confirmed malaria cases treated that received first-line antimalarial treatment according to national policy at public sector health facilities. Denominator: Total Number of confirmed malaria cases at public health facilities	99	100	HMIS	Bi-annual	National, District
Proportion of confirmed malaria cases that received first-line antimalarial treatment in the community	Numerator: Number of confirmed malaria cases treated that received first-line antimalarial treatment according to national policy in the community.	100	100	HMIS	Bi-annual	National, District

Indicator	Operational Definition	Baseline	Target	Source	Frequency	Level of measurement
	Denominator: Total Number of confirmed malaria cases in the community					

6.5 Data management system

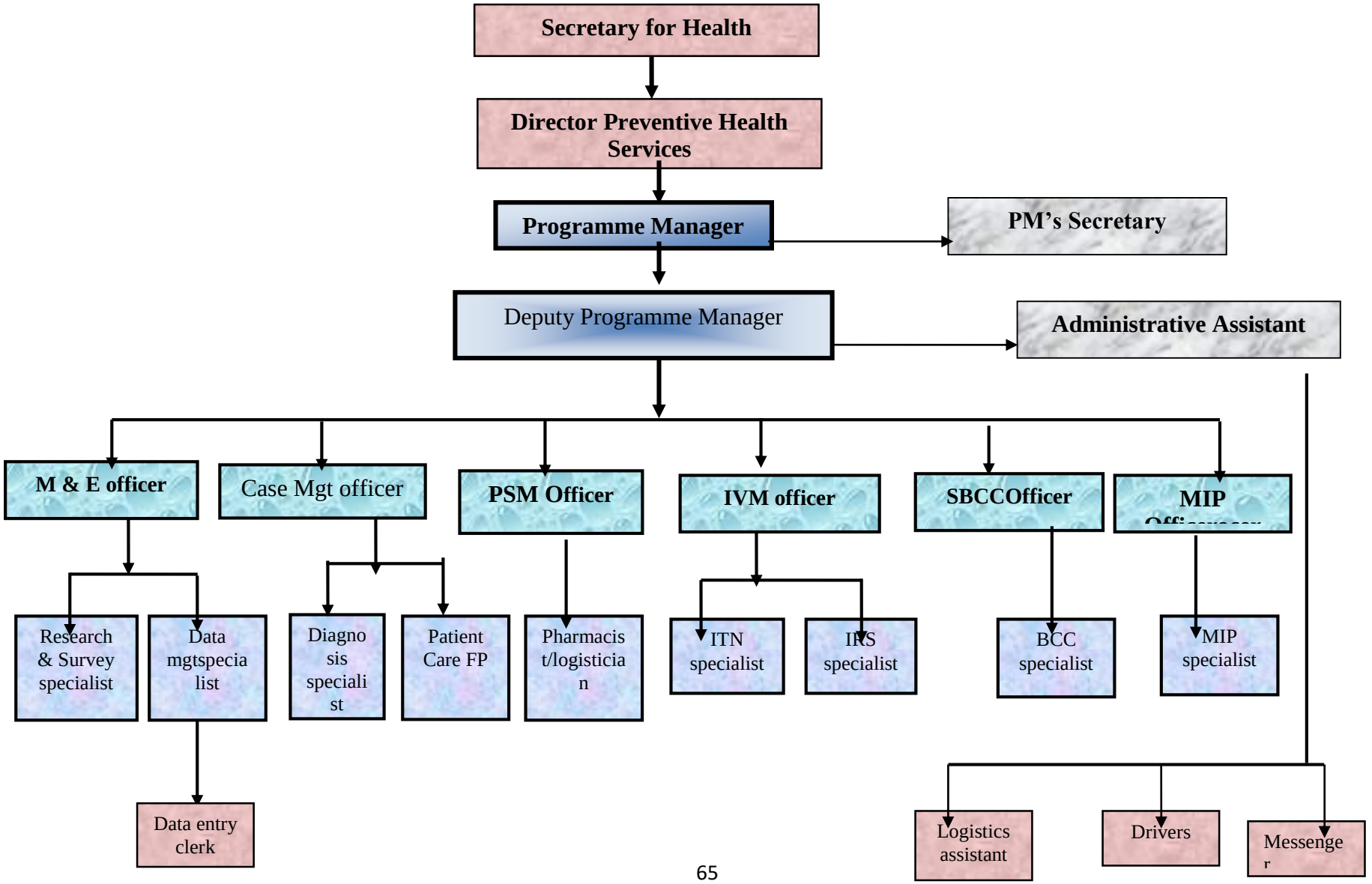
NMCP in collaboration with partners will develop a database as a repository of all malaria data from different sources. The database will enable the programme staff and stakeholders to have easy access to malaria data. This will also improve data analysis and decision making process by the programme and relevant stakeholders. The Microsoft access, Epi-info and Microsoft excel will be used for management of data while Stata, SPSS and Epi –info will be used for data analysis. The programme will also develop and manage a website for the NMCP to save as forum for sharing information.

In line with different data systems such as HMIS, LMIS, DHIS2 available within the ministry, the programme will ensure that all systems are interoperable.

6.6 M&E coordination mechanisms

NMCP has the Monitoring and Evaluation Subcommittee of the Malaria Technical Working Group comprising of different partners with M & E expertise. This subcommittee will be responsible for coordinating M & E activities of the MSP. They are expected to meet at least quarterly during which all partners will be providing updates on progress of implementation of the MSP against set targets. NMCP as a secretariat will be mandated to harmonize these updates and plans.

Annex 1: National Malaria Control Programme Organogram



Annex 2: Malaria Strategic Plan implementation framework 2017 - 2022

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
1.0 Vector control	By 2022, at least 90% of the population use one or more malaria preventative interventions	1	Universal Access to quality Long Lasting Insecticidal Nets (LLINs)	1	Procure LLINs for routing and mass distribution campaigns.		X			X	
				2	Conduct timely distribution of LLINs through periodic mass distribution campaigns;		X			X	
				3	Conduct consistent distribution of LLINs through routine channels	X	X	X	X	X	X
				4	Use additional distribution channels such as schools and mandatory use of LLINs in hospitals will be considered	X	X	X	X	X	X
				5	Compulsory registration of all LLINs will be conducted by PCB.	X	X	X	X	X	X
				6	Conduct Post mass net distribution monitoring					X	X
				7	Facilitate formation and Enforcement of Net use By-Laws				X	X	X
				8.	Conduct supportive supervision			X	X	X	X
				9 .	Conduct end user monitoring			X	X	X	X
		2	Quality IRS in selected, suitable epidemiological areas	1	Conduct geographical reconnaissance for the targeted areas	X	X	X	X	X	X
				2	Procure IRS equipment and consumables in time for the season.	X			X		
				3	Procured insecticides for IRS	X	X	X	X	X	X
				4	Revise IRS implementation guidelines		X			X	

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
				5	Conduct spraying in selected districts and targeted areas	X	X	X	X	X	X
				6	Conduct entomological monitoring				X	X	X
				7	Conduct supportive supervision	X	X	X	X	X	X
		3	Larval source Management in targeted communities	1	Mapping of permanent vector breeding sites				X	X	X
				2	Develop larval source management guidelines				X		
				3	procurement of insecticides, pumps personal Protective Equipment (PPE),for larviciding	X	X	X	X	X	X
				4	Community mobilization for the uptake of the interventions	X	X	X	X	X	X
				5	Conduct larval source management operations in collaboration with other sectors	X	X	X	X	X	X
		4	Vector surveillance and insecticide resistance management	1	Undertake regular entomological monitoring and insecticide resistance surveillance	X	X	X	X	X	X
				2	Revamp sentinel sites				X		
				3	Establish insectaries				X	X	
				4	Train entomologists				X	X	X
				5	Engage research institutions to conduct entomological monitoring	X	X	X	X	X	X
2.0 Malaria	At least 95% of suspected malaria cases	1	Prompt diagnosis and	1	Train support staff in mRDTs in order to scale up service provision in testing suspected malaria cases in health facilities	X	X	X	X	X	

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
Case Management	will be tested and 100% of confirmed cases treated by 2022		effective treatment	2	Develop task shifting guidelines	X			X		
				3	Refresher trainings of health workers on malaria case management every two years	X			X		X
				4	Train tutors from pre-service health training institutions on revised malaria case management guidelines	X			X		X
				5	Conduct refresher training in malaria microscopy and mRDTs	X	X	X	X	X	X
				6	Create demand for comprehensive patient assessment and treatment				X	X	X
		2	Integrated Community Case Management (iCCM)	1	Support establishment of new village clinic sites and train Health Surveillance Assistants (HSAs) in iCCM	X	X	X	X	X	X
				2	Establish a harmonized M&E Framework for reporting malaria cases at health facility and community levels.				X		
				3	Quarterly supportive supervision of community health workers				X	X	X
				4	Revise malaria community case management guidelines				X		
				5	Develop, print and distribute job-aids for iCCM				X	X	X
				6	Conduct review meetings				X	X	X
		3	Private sector engagement	1	Conduct private sector assessment to explore the extent of their involvement in malaria case management	X			X		

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
				2	Train all health workers in the private sector involved in malaria case management	X		X			X
				3	Support quarterly coordination meetings between DHMTs and private sector at zonal level	X	X	X	X	X	X
				4	Incorporate health facilities from private sector in each round of OTSS.	X	X	X	X	X	X
		4	Supportive supervision and mentorship	1	Conduct quarterly outreach training and supportive supervision (OTSS)	X	X	X	X	X	X
				2	Follow up on all trained health workers in malaria case management within six weeks of training.	X			X		X
		5	Quality of case management services	1	Develop a bank of case scenarios to be used in the assessment of KAP				X		X
				2	Evaluate mRDT performance for use every four years.				X		
				3	Review and revise malaria guidelines to incorporate recommendations by WHO	X		X			
				4	Print and distribute malaria treatment and RDT guidelines including job aides for both community and facility	X			X		
				5	Print and distribute malaria laboratory registers for all health facilities.	X			X		X
				6	Link Parasitology Reference Laboratory with other Reference Laboratories in the region to share experiences on external quality assurance (EQA)	X			X		
				7	Provide malaria laboratory data collection tools and equipment	X		X		X	

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
				8	Provide malaria diagnostics quality assurance and quality control (QA/QC) guidelines	X		X			
				9	Conduct in country lot testing apart from the pre shipment testing done by WHO.	X	X	X	X	X	X
				10	Maintain microscopes by engaging with physical asset management (PAM) department				X	X	X
				11	Participate in WHO accredited external competency assessment of malaria microscopists (ECAMM) training	X	X	X	X	X	X
				12	Participate in international advanced case management training				X	X	X
				13	Revive a core group of mentors and supervisors and facilitate quarterly field visits	X			X	X	X
3.0 Malaria in Pregnancy	To increase uptake of at least three doses of Intermittent Preventive Treatment (IPTp) from 12% in 2014 to 60% by 2022	1	Health facility based IPTp	1	Promote malaria in pregnancy prevention through directly observed treatment (DOT) for IPTp	X		X		X	
				2	Provide DOT equipment at all facilities, these will include cups and buckets	X		X		X	
		2	Community based IPTp	1	Explore multiple channels for delivery of IPTp at community level	X	X	X			
				2	Train HSAs on IPTp distribution at community level						
		3	Provision of quality IPTp care	1	Train ANC service providers on revised IPTp guidelines in 19 districts	X			X	X	X
				2	Print and distribute revised IPTp policy guidelines	X			X		
				3	Print and distribute training manuals for health workers for ANC service providers	X			X		
				4	Conduct quarterly integrated supervision on MIP & Safe motherhood to ANC health service providers	X	X	X	X	X	X

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
				5	Conduct regular quarterly meetings of MIP Sub-Working Committee and other related coordinating mechanism	X	X	X	X	X	X
				6	Engage Private sector in quarterly malaria supportive supervision to improve data management and reporting on MIP indicators				X	X	X
				7	Lobby with CMED for inclusion of MIP indictor to measure burden of malaria in pregnancy				X		X
				8	Development and printing MIP job aides on revised IPTp guidelines to improve knowledge and performance amongst ANC service providers				X		X
				9	Engage SBCC, partners, directorate of reproductive and health education unit to develop IEC materials to promote early attendance for ANC services				X	X	X
				10	Revision of IPTp guidelines				X		X
				11	Printing of IPTp guidelines				X	X	X
4.0 Procurement and Supply Chain Management	To reduce annual average stock out rate of all La from 7% in 2016 to 3% in 2022	1	Improving LMIS data quality	1	Conduct 100% supportive supervision to all facilities offering malaria services					X	X
				2	Support districts to ensure the reported data is reviewed periodically at district and health centre level to ensure LMIS data quality	X	X	X	X	X	X
				3	Train facility staff on revised data management system and data collection tools.					X	
				4	Conduct regular supportive supervision to health facilities to ensure adherence to SOPs.	X	X	X	X	X	X

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
		2	Provision of malaria Commodities	1	Conduct forecasting and quantification exercises annually.	X	X	X	X	X	X
				2	Procure malaria commodities	X	X	X	X	X	X
				3	Train health workers and procurement personnel in forecasting, quantification, procurement, storage and distribution of malaria commodities.					X	
				4	Train staff on revised Logistics management information system (LMIS).		X		X		X
				5	Conduct follow up on distribution of malaria commodities.	X	X	X	X	X	X
				6	Conduct TWG meetings	X	X	X	X	X	X
				7	Conduct quarterly pipeline review and updates	X	X	X	X	X	X
		3	Transparency and Accountability mechanisms at all levels	1	Conduct supervision and validation of reports at all levels	X	X	X	X	X	X
				2	Conduct periodic audits at health facilities on malaria commodities in collaboration with the DTIU and Audit Section of MOH.	X	X	X	X	X	X
				3	Develop transparency and accountability guidelines	X					
				4	Conduct orientation on transparency and accountability guidelines	X					
				5	Conduct supervision and mentorship on adherence to transparency and accountability for malaria commodities	X	X	X	X	X	X
		4	Quality Assurance	1	Conduct QC and QA for all malaria commodities	X	X	X	X	X	X
				2	Advocate for review and update the PMPB Act						
				3	Conduct pharmacovigilance and Post marketing surveillance for malaria commodities	X	X	X	X	X	X

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
		5	Reverse logistics and Commodity Re-distribution	1	Develop guidelines/SOPs for reverse logistics and commodity re-distribution	X					
				2	Develop template for commodity relocation at central level.	X					
				3	Conduct relocation verification and approval for facility emergency request.	X	X	X	X	X	X
5.0 Social and Behaviour Change Communication (SBCC)	To increase proportion of caregivers of under-five children who take action to seek appropriate malaria treatment within 24 hours of the onset of fever from 31.2% to 50% by 2022	1	National and Community led Advocacy	1	Engagement with influential community leaders (including identifying malaria champions and ambassador).	X	X	X	X	X	X
				2	Launch and roll out of zero malaria starts with me campaign				X	X	X
				3	Engage key departments (Fisheries, Tourism, Local Government, and Agriculture) to foster multi-sectoral collaboration on improve utilization of malaria interventions	X	X	X	X	X	X
				4	Provide Malaria advocacy kits for influential leaders such as political leaders, local leaders	X	X	X	X	X	X
		2	Media engagement	1	Orientation of media houses on malaria			X	X	X	X
				2	Develop and produce information packages for the media			X	X	X	X
				3	Document and disseminate malaria success stories through print, electronic and social media	X	X	X	X	X	X
				4	Conduct radio presenters' endorsements			X	X	X	X
				5	Development of SBCC materials (print, audio and audiovisual)			X	X	X	X
				6	Dissemination of malaria messages through social media platforms			X	X	X	X

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
		3	Social/community mobilization	1	Conduct malaria information dissemination sessions (malaria open days and community dialogues).	X	X	X	X	X	X
				2	Provide community structures with SBCC materials and messages	X	X	X	X	X	X
				3	Conduct community dialogue with service providers for accountability of service delivery as well as for the protection and promotion of human rights and gender equality.			X	X	X	X
				4	Conduct targeted Interpersonal communication (IPC) sessions			X	X	X	X
				5	Engage community structures (CHAGs, ADCs, VDCs, HAC, Radio Listening clubs, to review progress and plan community level SBCC interventions				X	X	X
		4	Quality assurance	1	Support Malaria SBCC monitoring to track progress at national and sub-national levels	X	X	X	X	X	X
				2	Conduct supportive supervision to districts and community level structures						
				3	Conduct a malaria behavior survey to monitor knowledge, attitudes and practices				X		X
		5	Enhance Partnerships and Coordination	1	Conduct quarterly Technical Working Group Meetings				X	X	X
				2	Conduct joint implementation of SBCC activities				X	X	X
				3	Engage stakeholders in joint SBCC review meetings				X	X	X

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
6.0 Surveillance Monitoring and Evaluation and Operational Research (SMEOR)	To provide evidence-based malaria surveillance system that guide programme implementation, policy direction and accountability by 2022	1	Data quality	1	Conduct regular DHIS 2 data quality assessments and validation	X	X	X	X	X	X
				2	Conduct data quality audits in selected facilities every six months focusing on malaria data	X	X	X	X	X	X
				3	Conduct bi-annual zonal malaria data review meetings at zonal level	X	X	X	X	X	X
				4	Conduct quarterly district malaria data review meetings at district level including private facilities	X	X	X	X	X	X
				5	Conduct supportive supervision and mentorship on data collection and reporting across all facilities bi-annual	X	X	X	X	X	X
				6	Training health workers in DHIS II data cleaning tools and methods				X	X	X
				7	Conduct data cleaning every month at district level	X	X	X	X	X	X
				8	Orientation of health workers from private facilities on malaria data collection tools					X	
				9	Conduct research dissemination workshop every year to provide a forum for sharing of SMEOR results on Malaria	X	X	X	X	X	X
				10	Train key staff on data management and use	X					
				11	Provide updated data collection and reporting tools	X	X	X	X	X	X
				12	Support to district HMIS II coordinator to follow up on routine data collection	X	X	X	X	X	X
				13	Print and distribute 2 booklets per facility for 670 facilities (routine data collection tools, reporting forms and registers)	X	X	X	X	X	X

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
				14	Support to districts with internet connectivity for the implementation of DHIS2 monthly subscriptions.	X	X	X	X	X	X
				15	Provide computers and other equipment to facilitate timely and completeness of reporting.	X					
		2	Implementation of the 'threes ones' principle	1	Develop annual work-plan				X	X	X
				2	Review M&E plan				X	X	X
				3	Review MSP strategy						X
		3	Disease surveillance, monitoring, and research	1	Conduct malaria drug efficacy studies		X		X		X
				2	Conduct malaria parasite species distribution study		X				
				3	Conduct entomological profile and insecticide resistance studies	X	X	X	X	X	X
				4	Conduct malaria indicator survey	X		X		X	
				5	Conduct malaria stratification study every 5 years					X	
				6	print and distribute malaria research agenda	X					
				7	Collaborate with research affiliates on priority studies as guided by the malaria research agenda	X	X	X	X	X	X
				8	Participate in DHS	X					
		4	Information sharing	1	Develop and manage website for the national malaria control program	X	X	X	X	X	X
				2	Develop and manage malaria data repository database			X			
				3	Develop annual work plan	X					

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
				4	Conduct quarterly M & E sub technical working group meetings	X	X	X	X	X	X
7.0 Program Management	To improve programme performance in implementing planned MSP activities from 43% to at least 90% by 2022	1	Human resource capacity building	1	Establish NMCP human resource structure from National to district level	X					
				2	Identify training needs of staff to facilitate appropriate capacity building programs	X	X	X	X	X	X
				3	Develop induction manuals for orientation of new and existing staff	X					
				4	Train programme staff and other district staff on relevant areas	X	X	X	X	X	X
				5	Conduct orientation of malaria coordinators on their roles	X					
		2	Planning and monitoring of implementation	1	Revise and disseminate relevant malaria policies, guidelines, and strategies in line with national, regional and global developments	X		X	X		X
				2	Develop annual implementation plans and produce annual reports.	X	X	X	X	X	X
				3	Conduct quarterly and annual review meetings	X	X	X	X	X	X
				4	Conduct Midterm (MTR) and end term reviews (MPR) of the strategic plan.			X		X	
				5	Conduct district and stakeholder annual planning and review meetings	X	X	X	X	X	X
				6	Facilitate the inclusion of critical priority activities into annual District Implementation Plans	X	X	X	X	X	X
		3	Partnership and coordination	1	Conduct partner and stakeholders remapping to identify key players in the sector	X					X
				2	Conduct quarterly meetings for Malaria Stakeholders and when need arises Malaria Advisory Committee meetings	X	X	X	X	X	X
				3	Engage private sector and regulatory bodies to enhance adherence to policies and guidelines and reporting	X	X	X	X	X	X

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
				4	Implement a sanction and reward mechanism to enhance adherence to guidelines and policies	X	X	X	X	X	X
				5	Conduct bi-annual partners meetings to enhance partnership	X	X	X	X	X	X
				6	Build capacity of DHMTs in order for them to coordinate partners at that level						
				7	Conduct planning and review meetings with relevant sister units and departments to strengthen collaboration and linkage.	X	X	X	X	X	X
		4	Malaria Programme Financing	1	Advocate for the establishment of the Malaria Elimination Council				X		
				2	Advocate for the establishment of Malaria Fund				X		
				3	Develop a Business plan to guide resource mobilization drive				X		
				4	Lobby for increased domestic and external financial resources for malaria control program	X	X	X	X	X	X
				5	Advocate for increased funding from current donors				X	X	X
				6	Advocate for more funding from non-traditional partners	X	X	X	X	X	X
				7	Capacity Building of staff in proposal development and resource mobilization, which will facilitate the programme to develop concept papers and proposals to be submitted to the funding institutions.	X	X	X	X	X	X
				8	Engage public- private partnership (PPP) in resource mobilization and financing for malaria control activities	X	X	X	X	X	X
		5		1	Develop terms of reference for cross border collaboration	X					X

Thematic Area	Objectives	Strategies		Activities		Time frame					
						2017	2018	2019	2020	2021	2022
			Cross border Initiatives	2	Advocate with neighboring countries for synchronization and harmonization of malaria control activities at border districts.	X	X	X	X	X	X
				3	Conduct Cross border collaborative meetings across all borders with the partner countries	X	X	X	X	X	X
				4	Organize annual exchange visits for benchmark with neighboring countries to agree on cross border control of malaria and discuss cross boarder pilferage of malarial commodities	X	X	X	X	X	X
			Epidemic Preparedness and Response (EPR)	1	Develop annual EPR action plan				X	X	X
				2	Orient health workers on EPR				X	X	X
				3	Establish a strategic reserves of malaria commodities for emergency situation such as AL, mRDTs, LLINs				X	X	X

Annex 3: Indicators for Monitoring and Evaluating Malaria Control in Malawi

Impact
All-cause, under 5 mortality rate
Malaria (clinical) incidence rate
Percentage of under five children with anemia
Malaria prevalence rate
~~Maternal anemia~~
Outcomes
Malaria prevention
Malaria prevention
Percentage of households with at least one ITN
Percentage of children under 5 years of age who slept under an ITN the previous night
Percentage of structures sprayed
Percentage of pregnant women who slept under an ITN the previous night
Malaria treatment
Percentage of health facilities with laboratory equipment and reagents to provide effective malaria laboratory diagnosis
Percentage of clinical malaria cases with laboratory diagnosis
Percentage of children under 5 years of age with fever in the previous 2 weeks who received antimalarial treatment according to national policy within 24 hours of onset of fever
Percentage of health care providers correctly diagnosing and treating malaria
Supportive Environment
Percentage of caregivers with appropriate malaria knowledge
Percentage of caregivers of children under five with appropriate recognition of signs and symptoms of malaria
Number of HMIS or other routine reporting units submitting timely reports according to national guidelines
Proportion of facility reports received over the reports expected during the reporting period
Percentage accuracy of Malaria data elements
Outputs
Malaria prevention
Number of districts implementing Larval source management
Number of insecticide-treated nets distributed through mass distribution
Number of structures sprayed
Number of staff trained in IRS
Number of sentinel sites established for monitoring insecticide resistance
Number of insecticide-treated nets distributed to pregnant women
Number of insecticide treated nets distributed to under five children
Malaria treatment
Number of health facilities with laboratory equipment and reagents to provide effective malaria laboratory diagnosis

Number of laboratory staff trained in malaria laboratory diagnosis
Number of malaria microscopy slides taken
Number of health personnel trained in use of RDTs
Number of Rapid Diagnostic Tests (RDTs) taken
Number of first-line antimalarial drugs distributed in health facilities for treatment of malaria
Number of health care providers trained in malaria diagnosis and treatment
Number of health facilities with no reported stockouts of antimalarial drugs
Number of districts implementing IMCI
Number of community workers trained in IMCI
Number of pre-packaged first-line antimalarial drugs distributed for community distribution
Number of sentinel sites established for monitoring antimalarial drug resistance
Number of studies of drug efficacy completed according to WHO protocol

Supportive Environment

Number of BCC materials produced
Number of districts receiving BCC materials
Percentage of facilities reporting consistent data element
Percentage of partners adhering to three one principle
Routine use of surveillance data and M&E products (disaggregated by bulleting, reports, DQA, validation, review meetings)
Number of research papers done and published
Number of research dissemination and policy symposium