

Republic of Zambia
Ministry of Health

NATIONAL MALARIA CONTROL PROGRAMME STRATEGIC PLAN FOR FY 2011-2015

"Consolidating malaria gains for impact"

National Malaria Control Programme
Ministry of Health
Lusaka, Zambia

2011



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FOREWORD

Zambia's overall development framework is guided by the Zambia Vision 2030 Strategy, which aims to transform Zambia into a prosperous middle-income nation by 2030. The Vision 2030 Strategy is being implemented through Five-Year National Development Plans, with the current one being the Sixth National Development Plan 2011–2015 (SNDP). At sector level, the Ministry of Health has developed the National Health Strategic Plan 2011–2015, which is linked to, and forms part of the SNDP.

Malaria is a major driver of poverty and thus a major obstacle to socioeconomic development. In view of the foregoing, malaria has been prioritized in the national development agenda, particularly in the Vision 2030 Strategy and the SNDP.

Over the past five years, significant progress has been made in malaria control in Zambia and other parts of the African sub-region. However, significant challenges still remain. The lessons learned from the Malaria Indicator Survey 2010, which reported some resurgence of malaria incidence and impact in some parts of the country, calls for focused and sustained implementation of high impact malaria interventions, differentiated on the basis of evidence. In this respect, the Malaria Program Review 2010 proposed to fine-tune the strategies by packaging the high impact malaria interventions according to the identified malaria epidemiological patterns.

This document presents the National Malaria Strategic Plan 2011–2015. It provides a strategic framework for comprehensive and coordinated delivery of targeted evidence-based packages of high impact malaria control interventions in order to achieve the national vision of “a malaria-free Zambia by 2030.”

In this respect, I wish to call upon all our partners, including the bilateral and multi-lateral partners, faith-based organizations, private sector, civil society, and community partners, to maintain their commitment and scale up their support in order to consolidate the gains and achieve the objectives of this new strategic plan.

I sincerely hope that this plan will lead our country closer to the 2030 vision of a malaria-free Zambia.

Dr. Peter Mwaba
Permanent Secretary
MINISTRY OF HEALTH



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I wish to acknowledge, with thanks, the participation and support of various stakeholders and partners including: government ministries and departments; the World Health Organization (WHO); the United Nations Children's Fund (UNICEF); the United States President's Malaria Initiative (PMI); the Malaria Control and Evaluation Partnership in Africa (MACEPA), a program at PATH; faith-based organizations, under the coordination of the Churches Health Association of Zambia (CHAZ); research and academic institutions; civil society organizations, including World Vision, and Malaria Consortium; and the private sector. All these partners participated in the process of developing this strategic plan, under the leadership and coordination of the Ministry of Health (MOH) Directorate of Public Health and Research.

I also wish to take this opportunity to thank all the members of staff at the National Malaria Control Programme (NMCP) of MOH, and officials from partner institutions who actively participated in the process of developing this strategic plan. Special mention goes to Dr. Mulakwa Kamuliwo (NMCP), Dr. Chibesa S. Wamulume (NMCP), Dr. Emmanuel Chanda (NMCP), Busiku Hamainza (NMCP), Mercy Mwanza Ingwe (NMCP), Pauline Wamulume (NMCP), Chadwick Sikaala (NMCP), Kapelwa Wambinji, Cecilia Katebe (NMCP), Dr. Freddie Masaninga (WHO), Nora Mweemba (WHO), Dr. Rodgers Mwale (UNICEF), Dr. Richard Steketee (MACEPA), Dr. Boniface Mutombo (MACEPA), Dr. John Miller (MACEPA), Bertha Simwaka (MACEPA), Kafula Silumbe (MACEPA), Todd Jennings (MACEPA), Dr. Anna Winters (Akros Research), Benjamin Winters (Akros Research), Drs. Allen Craig and Oliver Lulembo (PMI), and Mr. Boniface Chiluba (CHAZ). I also wish to thank the two consultants who provided technical support at different stages of the planning process, Bonah Chitah (at the early stages) and Alex Nondo Chikwese (at finalization).

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The strategy significantly benefited from the rich and diverse technical expertise and guidance from the NMCP Technical Working Groups and was financed with resources from MOH, MACEPA, and the Southern Africa Roll Back Malaria Network. We are most grateful for their support.

I thank you all.

Dr. Elizabeth Chizema Kawesha
Director, Public Health and Research
MINISTRY OF HEALTH



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ACRONYMS AND ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AIDS	Acquired Immune Deficiency Syndrome
AL	Artemether-Lumefantrine
BCC	Behaviour Change Communication
CBO	Community-based organization
CHAZ	Churches Health Association of Zambia
CHI	Church Health Institutions
CHW	Community Health Worker
CSO	Central Statistics Office
DfID	Department for International Development (United Kingdom)
DMO	District Health Offices
EPR	Epidemic Preparedness and Response
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
HC	Health centers
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HP	Health Posts
IEC	Information Education, Communication
EPR	Epidemic preparedness and response
MDGs	Millennium Development Goals
MACEPA	Malaria Control and Evaluation Partnership in Africa
MIS	Malaria Indicator Survey
MOH	Ministry of Health
MPR	Malaria Programme Review
NGO	Nongovernmental organizations
NHC	Neighborhood Health Committee
NHSP	National Health Strategic Plan
NMCC	National Malaria Control Centre
NMCP	National Malaria Control Programme
NMSP	National Malaria Strategic Plan
PHC	Primary health care
PHO	Provincial Health Office
PMI	President's Malaria Initiative
PRA	Pharmacy Regulatory Authority
PMU	Programme Management Unit
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
SADC	Southern African Development Community
SAG	Sector Advisory Group
SM&E	Surveillance, monitoring, and evaluation
SNDP	Sixth National Development Plan
TWG	Technical Working Groups
WHO	World Health Organization
ZDHS	Zambia Demographic and Health Survey



DEFINITIONS OF SELECTED TERMS

Activity	An action or series of inter-related actions, necessary to deliver a service implemented to achieve an objective.
Goal	A statement of the medium or long-term result that the organization or institution will achieve in pursuit of its mission.
Impact	Long-term or medium-term effects produced by the implementation of a specific programme or intervention. This could be positive or negative.
Indicator	A prior agreed or prescribed measure of programme performance in specific areas over prescribed timelines (may be a numeric value, a ratio, or a rate).
Milestone	An activity or event that marks significant progress in delivering a product or service.
Mission statement	A broad description of what the organization does, and with, for whom, and why the organization exists, i.e., has a sense of “fundamental purpose.”
Monitoring	Continuous follow-up and assessment of activities and programme delivery to ensure that they proceed according to plan and meet the established goals, objectives, and targets.
Objective	A statement of specific shorter-term results which contributes to the achievement of a goal. It should be SMART (Specific, Measurable, Achievable, Relevant, and Time-bound).
Operational Plan	An annual, semi-annual, or quarterly based plan aimed at achieving short and medium-term goals and objectives that are in turn related to the longer term strategic plans and objectives.
Output	The immediate result of activities.
Strategic Plan	A plan providing information on where the organization should be in the future.
Strategy	A course of action or an approach (usually involving a group of activities) adopted by an organization to achieve its goals to fulfill its mission, in the face of existing and anticipated strengths, weaknesses, opportunities, and threats.
Values statement	Description of the fundamental principles on which the organization is founded. This statement describe how an organization intends to operate on a day-to-day basis as it implements its vision and mission, normally ethical considerations best expressed in terms of behaviour.
Vision statement	A future-oriented statement of the “ideal,” it describes the future the organization intends to create. The Vision Statement also provides direction and inspiration for organizational goal-setting and conveys a sense of “future direction.”



1 EXECUTIVE SUMMARY

1.1 Introduction

This document presents the National Malaria Strategic Plan for 2011 to 2015 (NMSP 2011–2015). It seeks to provide the strategic framework for the National Malaria Control Programme (NMCP), for the next five years, ending in 2015.

The plan is linked to, and forms a part of, the National Health Strategic Plan 2011 to 2015 (NHSP 2011-2015), and through it, to the Sixth National Development Plan 2011 to 2015 (SNDP), and the Vision 2030 strategy for Zambia, which provide the broader national development agenda. It is also linked to global health and malaria control initiatives, particularly the Roll-Back Malaria (RBM) strategy, and the Millennium Development Goals (MDGs).

1.2 Situation Analysis

1.2.1 Malaria Epidemiology

Malaria remains one of the leading causes of morbidity and mortality in Zambia. However, over the past 5 years, based on the available evidence, significant reductions in the malaria burden have been achieved. This was demonstrated by the substantial declines in in-patient malaria cases, deaths (more than a 60% decline) and anemia in under-five children, reported in the 2001-2008 analysis of routine surveillance data. However, during the period from 2009 and 2010, an upsurge in malaria cases and deaths was observed in some provinces, particularly the Northern and Luapula provinces.

Over the past 5 years, ending in 2010, emerging evidence from routine information systems, national surveys, and focused studies consistently reported declining malaria trends, evident in three malaria epidemiological zones in Zambia, which are as follows:

- Zone 1:** Areas where malaria control has markedly reduced transmission and parasite prevalence is <1% (Lusaka city and environs).
- Zone 2:** Areas where sustained malaria prevention and control have markedly reduced transmission and where parasite prevalence is between 1% and 14% in young children at the peak of transmission (Central, Copperbelt, North-Western, Southern, and Western Provinces).
- Zone 3:** Areas where progress in malaria control has been attained, but not sustained; where lapses in prevention coverage have led to resurgence of infection and illness; and where parasite prevalence in young children is 15% or more at the peak of the transmission season (Eastern, Luapula, and Northern Provinces).



1.2.2 Malaria Programme Performance

Malaria control has been prioritized in the national development agenda, and enjoys significant political will. The country's vision is "a malaria-free Zambia by 2030."

Over the past five years, significant success was achieved in scaling up high-impact, internationally proven malaria control interventions in prevention and malaria case management. As a result of these efforts, the percentage of homes with at least one long-lasting insecticide-treated net (LLIN) increased from 13.6% in 2001 to 38% in 2005 and to 64% in 2010, and over 6 million LLINs were distributed. As of 2010, indoor residual spraying (IRS) had been successfully implemented in 54 districts, an increase from 5 districts in 2003. The percentage of targeted homes actually sprayed remained above 85% (in most cases over 90%), meeting, and exceeding expectations. Households that either owned an LLIN or had been sprayed increased from 43% to 73%. Intermittent preventive treatment during pregnancy (IPTp) and diagnosis and treatment activities were also significantly scaled up.

Major challenges in this area included: the resurgence of malaria in Luapula, Northern, and Eastern Provinces; emergence of insecticide resistance; human resource challenges, including shortages of health workers, and skills gaps; inadequate resources for malaria control commodities and activities; data and information management gaps; and organizational challenges.

1.3 Vision, Mission, and Goals

The vision, mission, and goals for the National Malaria Control Program (NMCP) for the period of 2011 to 2015 are as follows:

Theme: To consolidate malaria control gains, for higher impact.

Vision: A malaria-free Zambia by 2030.

Mission: To facilitate equity of access to quality-assured, cost-effective malaria prevention and control interventions, close to the household.

Goals:

- To reduce malaria incidence by 75% of the 2010 baseline by 2015.
- To reduce malaria deaths to near zero by 2015
- To reduce all-cause child mortality by 20% of the 2010 baseline by 2015.
- To establish and maintain five "malaria-free areas" in Zambia by 2015.

1.4 Proposed Strategies

The proposed strategies have been aligned to, and structured along, the "Six Health Systems Building Blocks" framework in order to facilitate a comprehensive analysis. These building blocks include: health service delivery; health workforce; medical products, infrastructure, and equipment; health information; healthcare financing; and leadership and governance.



1.4.1 Health Service Delivery

The following are the proposed strategies in each of the main malaria service delivery areas.

1. *Integrated Vector Management (IVM)*

- By 2015 achieve 100% coverage of households with access to vector control interventions and 80% coverage of people living in malaria-risk areas using appropriate vector control interventions.
- Ensure IRS coverage of at least 85% of all the targeted structures/households in low to high transmission epidemiological zones, and focused application of surveillance-driven IRS in very low transmission zones by the end of 2011, and maintain through 2015.
- Achieve universal coverage (100%) of targeted households and 80% utilization of LLINs by 2015.

2. *Malaria Case Management*

- Ensure 100% of all malaria suspected cases in all districts receive parasitological (microscopy or rapid diagnostic test [RDT]) analysis, and 100% of parasitologically confirmed malaria cases receive prompt, effective antimalarial treatment by 2015.

3. *Information, Education and Communication/Behaviour Change Communication (IEC/BCC)*

- Increase public awareness and knowledge on malaria prevention and control, and improve uptake and correct use of interventions.

4. *Epidemic Preparedness and Response*

- Ensure that all districts have the capacity and preparedness to respond to malaria epidemics by 2015.

1.4.2 Health Workforce

- Improve the availability and distribution of qualified health workers in the country.
- Significantly increase the annual outputs of the health training institutions in order to mitigate the critical shortages of qualified health workers.

1.4.3 Medical Products, Infrastructure, Equipment and Transport

- Ensure availability of adequate, quality, efficacious, safe, and affordable malaria commodities and consumables at all levels of service delivery through efficient and effective procurement and logistics management.
- Ensure availability and equitable distribution of essential infrastructure in order to facilitate equity of access to essential health services.



- Improve on the availability and condition of transport and communication equipment, in order to facilitate efficient and effective implementation of malaria control activities at all levels.

1.4.4 Health Information and Monitoring and Evaluation

- Strengthen surveillance, monitoring, and evaluation systems in order to ensure timely availability of quality, consistent, and relevant data on malaria control performance to guide policy and decision-making, during the course of this strategic plan.
- Strengthen operations research to generate evidence to support informed decision-making on policy and implementation of the malaria programme.

1.4.5 Leadership and Governance

- Significantly strengthen the leadership and governance frameworks in order to improve organization, coordination, partnerships, transparency, and accountability for efficient and effective management of the NMCP.

1.5 Costing and Gap Analysis

A detailed costing of the NMSP 2011–2015 has been done. The indicative total cost of the strategies is US\$291,668,539. The total financing gap, after considering the projected funding from the Ministry of Health (MOH) and pledges from Cooperating Partners (CPs), is US\$184,021,465.

1.6 Implementation Framework

The plan will be implemented within the existing policy, legal, institutional, planning, financing, and monitoring and evaluation frameworks, which will be periodically reviewed and strengthened. The interventions proposed in this plan will be integrated into the Primary Health Care (PHC) systems and implemented through the established MOH structures and partnerships at national, provincial, district, facility, and community levels. MOH, through the National Malaria Control Centre (NMCC), will be responsible for overall coordination of the implementation of this plan. Deliberate efforts will be made to continuously review capacity needs and take appropriate capacity building measures during the course of implementing this plan.



2 INTRODUCTION

2.1 Context

Malaria is a major public health concern in Zambia, and fighting the disease is a national priority that requires a focused, comprehensive, and consistent approach in order to achieve the vision of “a malaria-free Zambia by 2030.” Even though significant reductions in the malaria burden have been recorded over the past ten years, the disease is still among the major causes of morbidity and mortality in the country, particularly in high-endemic areas and among the vulnerable population groups, which include pregnant women and children less than five years of age. In 2009, malaria incidence per 1,000 populations was reported at 246, a reduction from the 358 recorded in 2006. However, in 2010 it increased to 330 due to resurgence experienced in some parts of the country, particularly the Eastern, Northern, and Luapula provinces¹. In 2010, 4.2 million clinical and laboratory-confirmed cases were reported, representing an increase of 31% from 2008².

From 2006 to 2010, Zambia implemented a comprehensive five-year National Malaria Strategic Plan (NMSP 2006–2010), which provided the overall strategic framework for the fight against malaria in the country. Following the end of this plan, in 2010, the MOH, together with the NMCC and partners, identified the need to develop a new malaria strategic plan.

This document presents the National Malaria Strategic Plan 2011 – 2015 (NMSP 2011–2015). It seeks to provide the strategic focus and framework for malaria control in Zambia for the next five years, ending in 2015. The plan was developed through a broad-based consultative process, involving all the key stakeholder groups, including MOH, NMCC, relevant government line ministries and departments, the faith-based health sector under the coordination of the Churches Health Association of Zambia (CHAZ), the private sector, civil society and communities, and the international CPs. The plan is linked to, and will be implemented within, the existing policy, regulatory, institutional, and monitoring and evaluation (M&E) frameworks, which will be further strengthened as proposed in the implementation framework. The plan is complemented by the National Malaria Operational Plan 2011–2013 and the National Malaria Monitoring and Evaluation Plan 2011–2015, which will guide implementation.

2.2 Purpose

The purpose of this plan is to provide, for the period of 2011 to 2015, a comprehensive strategic framework for the fight against malaria that contributes to the attainment of the national vision of “a malaria-free Zambia by 2030.” The plan seeks to:

1. Provide a comprehensive situation analysis highlighting the performance trends and status of the malaria programme against the objectives and targets of the NMSP 2006–2010.
2. Identify the strengths, weaknesses, opportunities, and threats for the national malaria programme in Zambia.



3. Develop an appropriate strategic direction and framework that is evidence-based and aimed at significantly contributing to the attainment of the national vision of a “malaria-free Zambia.”
4. Carry out comprehensive programmatic and financial gap analyses and costing of the strategy.
5. Propose an implementation framework aimed at ensuring efficient and effective coordination of the implementation of the plan.

The plan provides a strategic focus and comprehensive framework for moving from “Scale-up for impact,” which was the main focus for the NMSP 2006–2010, to “Consolidated delivery of malaria prevention and control services,” based on the available evidence.

2.3 Structure

The plan is divided into the following chapters: executive summary, introduction, background, situation analysis, strategic focus, proposed strategies implementation framework, and annexes. The detailed structure of the plan is presented in the table of contents.

2.4 Critical Linkages

The NMSP 2011–2015 is linked to other important and relevant policy and strategic frameworks at sector, national, regional, and international levels. The implementation of this strategic plan will therefore be influenced by, and have an impact on, such frameworks.

At the national level, the plan is directly linked to, and forms a chapter of, the NHSP 2011–2015, through which the plan is also linked to the SNDP and Vision 2030, which form the overall national development agenda. Vision 2030 is the country’s long-term development strategy, whose goal is to transform Zambia into a “prosperous middle-income nation by 2030.” The NMSP 2011–2015 is also linked to other disease-specific strategies and programmes within the health sector, including the maternal and child health strategies, the School Health and Nutrition strategy, and other relevant programmes.

At regional and international levels, the plan is linked to the MDGs³, the RBM strategy, the Southern African Development Community (SADC) Malaria Strategy, and other international frameworks relevant to malaria, to which Zambia is a signatory. The plan is also closely linked to, and significantly dependent on the technical and financial support, and active participation of various local and international partners, who have continued to significantly contribute to the fight against malaria in Zambia.



3 BACKGROUND

3.1 Justification

From 2006 to 2010, Zambia implemented the NMSP 2006–2010, whose theme was “Scale--up for Impact”. While the implementation of this strategic plan resulted in significant progress and impact on malaria burden, morbidity, and mortality in Zambia, the plan came to an end in 2010. Considering the foregoing, it became necessary to develop a new strategic plan to provide the strategic framework for the next five years, from 2011 to 2015.

The NMSP 2011–2015 seeks to build upon previous successes and address current and emerging challenges in the fight against malaria. It is therefore focused on sustaining impact, delivering an integrated package of high impact malaria control interventions by epidemiologic strata, strengthening provincial and district capacities for delivery of key malaria control interventions, scaling up expanded use of malaria diagnosis for effective case management, and improved targeting of interventions through strengthening of surveillance, monitoring, and evaluation (SM&E).

3.2 Methodology and Process

The NMSP 2011–2015 was developed through a broad-based and highly consultative process, which aimed at achieving consensus and promoting ownership of both the process and the plan by all the key stakeholders. In this respect, all key stakeholder groups, including NMCC/MOH, other relevant government line ministries and departments, CHAZ, the private sector, civil society, community health partners, the communities, and CPs participated and contributed to the development of this plan. The planning process was coordinated by the Directorate of Public Health and Research of MOH, with strong technical back-up from the Directorate of Policy and Planning at MOH, with NMCC playing the role of secretariat for development. The process included the following main stages: preparation/inception, data collection and analysis, preparation of the draft, review of the draft, and finalization.

3.2.1 Preparation/Inception Phase

In order to ensure coordination, a roadmap for the preparation of the NMSP 2011–2015 was developed and a technical team was established to support the process. The technical team comprised members from various agencies, including NMCC/MOH; the World Health Organization (WHO); the Zambia Integrated Systems Support Program; the Malaria Control and Evaluation Partnership in Africa (MACEPA), a program at PATH; and the United States President’s Malaria Initiative (PMI). This team was intended to provide technical leadership, support, and coordination to the strategic planning process. The technical team worked closely with the existing National Malaria Control Programme (NMCP) technical working groups (TWGs) in the following thematic areas: programme management; integrated vector management (IVM); insecticide-treated nets (ITNs); IRS; malaria case management; information, education, and communication (IEC); behaviour change communication (BCC); epidemic preparedness and response (EPR); operational research; and SM&E.



3.2.2 Data Collection and Analysis

Data collection and analysis formed a critical component of the strategic planning process. Relevant data were collected mainly through desk review of relevant literature and reports, strategic planning meetings/workshops, and detailed analysis.

3.2.2.1 Desk Reviews

The desk reviews and analysis involved the identification, collection, and analysis of critical literature and reports relevant to malaria control in Zambia. The main documents reviewed included:

- National Malaria Control Programme Reports. These included the NMSP 2006–2010, National Malaria Monitoring and Evaluation Plan 2006–2010, National Malaria Annual Action/Operational Plans for the period of 2006 to 2010, the Zambia Malaria Programme Review 2010 (MPR 2010) report, Malaria Indicators Survey (MIS) reports for 2006, 2008, and 2010, national malaria progress reports, and other relevant reports and surveys.
- Health sector level documents. These included the National Health Strategic Plan 2006–2010 (NHSP 2006–2010); Human Resource for Health (HRH) Strategic Plan 2006–2010⁴; Medium-Term Expenditure Framework Plans (MTEF); annual action plans and budgets, Health Management Information System (HMIS) reports; Sector Advisory Group (SAG)* reports; the Health Sector Mid-Term Review 2008 report; Zambia Demographic and Health Survey (ZDHS)⁵; successful proposals and progress reports from the Global Fund to Fight AIDS, Tuberculosis and Malaria⁶; regulatory instruments and frameworks on the use and disposal of chemicals; and other relevant reports.
- National level documents. These included Vision 2030⁷, the Fifth National Development Plan 2006–2010 (FNDP), health-related legislation, FNDP Performance Assessment Framework, annual budget speeches by the Minister of Finance and National Planning, annual budget allocations/yellow book, and annual economic reports for the period 2006 to 2010.
- International level documents. These included the MDGs⁸, RBM strategy and progress reports, WHO policy guidelines and reports on malaria control, SADC Malaria Strategy, Human Development Index reports, and other relevant documents.

3.2.2.2 Strategic Planning Meetings/Workshops

In order to provide for broader participation of stakeholders at all levels, a participatory “bottom up” consultative process was adopted.

* The SAG is the highest policy making and coordination body under the Sector-wide Approaches (SWAPs) in Zambia. It comprises MOH, other government line ministries and departments, the faith-based health sector, represented by the Churches Health Association of Zambia (CHAZ), the civil society, and Cooperating Partners (CPs).



This was largely facilitated through the holding of strategic planning meetings/workshops, which drew participants from all the key stakeholder groups. The draft strategic documents were also widely circulated to obtain feedback from all the key stakeholders at national, provincial, district, and community levels.

3.2.3 Preparation of the Draft NMSP 2011–2015

Following the strategic planning workshops, a consolidated draft NMSP 2011–2015 and the associated documents were developed, which were then widely circulated to stakeholders at different levels (i.e., national, provincial, district, and community levels) for review and comments. Circulation of the draft strategic documents was through a combination of methods, including hand deliveries, by post, by emails, and via the NMCC Website. Communication with the communities was facilitated through the District Health Offices (DHOs) and Neighborhood Health Committees (NHCs).

3.2.4 Review of the Draft NMSP 2011–2015

The draft NMSP 2011–2015 was subjected to comprehensive internal and external reviews before being finalized. In this respect, the review was guided by the Joint Assessment of National Strategies (JANS) guidelines and tools, which is a comprehensive tool developed by the International Health Partnerships and related initiatives (IHP+) team at WHO used for assessing national-and programme-level health strategies⁹. This approach was also a requirement for countries intending to apply for GFATM support through the National Strategy Application route, which Zambia intended to do.

3.2.5 Finalization of the NMSP 2011–2015

Following receipt of the JANS Report from the external reviewers, a two-day national malaria stakeholders' workshop was held to analyse and respond to the issues raised by the external JANS review team and finalize the strategic plan¹. Participants at this workshop were drawn from a wide range of stakeholders at national, provincial, district, and community levels. NMSP-TWGs provided the necessary technical leadership and coordination in their respective thematic areas.

The final consolidation and editing of the strategic plan was carried out by the Joint Assessment Organising Body with technical support from a local consultant. The final version of the plan was also presented to MOH Senior Management and SAG meetings for consideration and approval. The plan was also presented to the Country Coordinating Mechanisms of the GFATM.

4 SITUATION ANALYSIS

4.1 Country Profile

4.1.1 Geography



Zambia is a land-locked country located in Sub-Saharan Africa. It covers a surface area of approximately 752,612 square kilometers, and shares borders with the Democratic Republic of Congo and Tanzania in the north, Malawi and Mozambique in the east, Zimbabwe and Botswana in the south, Namibia in the South-West, and Angola in the West. Administratively, the country is now divided into 10 provinces and 80 districts, following the recent reorganization. Lusaka and Copperbelt provinces are predominantly urban, while the rest of the provinces are predominantly rural. The capital city is Lusaka.

4.1.2 Political Overview

Since its independence in 1964, Zambia has remained among the most peaceful and politically stable countries in Africa. The country has also prioritized the fight against malaria, which has continued to receive significant political will and support at all the levels within the Government structures.

4.1.3 Demography

The country has experienced a rapid population increase, from 5.7 million people in 1980 to 13.05 million people in 2010. Population density increased from 7.5 people per km in 1980 to 13.1 in 2000, and 17.3 in 2010. Table 1 presents selected demographic indicators derived from previous Central Statistics Office (CSO) census reports and ZDHS reports.

Table 1: Selected Demographic Indicators

Indicator	Source	Status
Population	CSO 2010 Census, interim results	13.05 million
Sex ratio (males per female)	CSO	0.99
Average annual population growth rate	CSO projections	2.7%
Life expectancy at birth	CSO projections	51.3 years
Population under the age of 15 years (%)	CSO, 2000 Census	47%
Urban population	CSO, 2000 Census	34.7%
Poverty levels	ZDHS 2007	67% (overall)

4.1.4 Socio-economic Situation

Zambia is endowed with abundant mineral wealth, water resources, a varied biodiversity, arable land, and climate favourable to agriculture. The economy largely depends on mining and agriculture.

The country's long-term development agenda is guided by the Vision 2030 Strategy, which aims at transforming the country into "a prosperous middle-income nation by 2030." This national strategy is being implemented through successive five-year national development plans, with the current one being the SNDP. Malaria control was among the key priority areas identified in Vision 2030 and the FNDP for the period of 2006 to 2010¹⁰.

Since 1991, Zambia has been implementing wide-ranging socio-economic reforms, aimed at attaining meaningful and sustainable socio-economic development. In 2010, the country



graduated from the Highly Indebted Poor Countries category to that of a Low-to-Medium Income developing country.

4.1.5 Health Sector Development

Health sector development in Zambia is firmly linked to the overall national development agenda. During a five-year span ending in 2010, health sector development was guided by the NHSP 2006–2010, which was directly linked to the FNDP and Vision 2030. The health component of Vision 2030 seeks investments that will contribute to the attainment of health for all by 2030, with a mission of providing “equitable, cost-effective health services close to the household.”

Zambia is a country inundated with a huge burden of disease, leading to high morbidity and mortality levels among the population, with significant impact on socio-economic development. The disease burden is largely influenced by the high prevalence of preventable and treatable communicable diseases, such as malaria, HIV and AIDS, sexually transmitted infections, and tuberculosis (TB). Zambia is also among the countries with the highest levels of maternal and child mortality levels in the world, with a Maternal Mortality Ratio of 591 per 100,000 live births. The country is also experiencing a growing burden of non-communicable diseases, particularly hypertension, cardio-vascular diseases, diabetes mellitus, mental health, trauma, and various forms of cancer.

Even though major achievements have been made in malaria control, malaria still remains among the top 10 leading causes of morbidity and mortality in Zambia, particularly among pregnant mothers, children under five years of age, and other vulnerable population groups.

4.2 Malaria Epidemiology

The MPR 2010 reported a more than 60% decline in malaria morbidity and mortality in Zambia from 2001 to 2008¹¹. However, the review also observed that malaria still features among the top 10 diseases of public health concern and will therefore require continued investments and efforts to control.

4.2.1 Geographical Distribution of Malaria

The epidemiology of malaria in Zambia is a result of two major forces: the geographic, climatic, and social features of the country that establish factors conducive or restrictive to malaria; and the introduction and scaling up of malaria control interventions across the country, which alter transmission and the consequent infection, morbidity, and mortality rates associated with malaria.

4.2.2 Malaria Parasites

In Zambia there are four types of *Plasmodium* parasites that can cause malaria in humans: (1) *Plasmodium falciparum*, (2) *Plasmodium malariae*, (3) *Plasmodium vivax*, and (4)



Plasmodium ovale. Out of these, *P. falciparum* constitutes the most predominant, causing the severest form of malaria. *P. falciparum* accounts for 98% of all malaria infections in the country, with low frequency of infections from *P. malariae* (>1%) and *P. vivax* (<1%), and little or no transmission of *P. ovale*.

4.2.3 Malaria Vectors

Malaria in Zambia is transmitted by the members of the *Anopheles gambiae* complex and of the *Anopheles funestus* group. The main vector species are *Anopheles gambiae* s.s., *An. Arabiensis*, and *An. funestus*. Recent field research demonstrated the presence of *An. nili* in the *An. nili* complex, and *An. funestus*-like and *An. Rivulorum* within the *Anopheles funestus* group. However, their role in malaria transmission has yet to be established.

4.2.4 Vector Susceptibility to Insecticides

Currently, the insecticides used for IRS in Zambia include two classes, the organochlorines (DDT, for dichlorodiphenyltrichloroethane) and pyrethroids (Alphacypermethrin, lambdacyhalothrin, and deltamethrin). Insecticide resistance to DDT and pyrethroids has been detected in both *An. gambiae* s.l. and *An. funestus*. There is a great variation in the level of resistance between IRS and LLIN localities, with an exceptionally higher level resistance being detected in IRS areas. Knock-down resistance mutation has been detected in some parts of the country, particularly in the Copperbelt Province, with cross resistance between pyrethroids and DDT. Although larviciding is part of the IVM strategy, it has only been implemented in a few areas, by the private sector. *Bacillus thuriengensis* and Larvex 100, have been used or are currently being used for larviciding.

4.2.5 Efficacy of Antimalarial Medicines

Therapeutic efficacy testing has been conducted in Zambia since 1995 and provided policy direction. Based on such evidence, in 2003 the MOH adopted the use of artemisinin-based combination therapy (ACTs), using artemether-lumefantrine (AL), as a front line antimalarial medicine for uncomplicated malaria in all patients except children below 5 kg and pregnant women in the first trimester. Efficacy of AL is at 99%, as per a 2009 therapeutic efficacy study.

Quinine remains efficacious in the treatment of severe malaria in both children and adults. The efficacy of Sulfadoxine-Pyrimethamine (SP) for use in IPTp is still being evaluated.

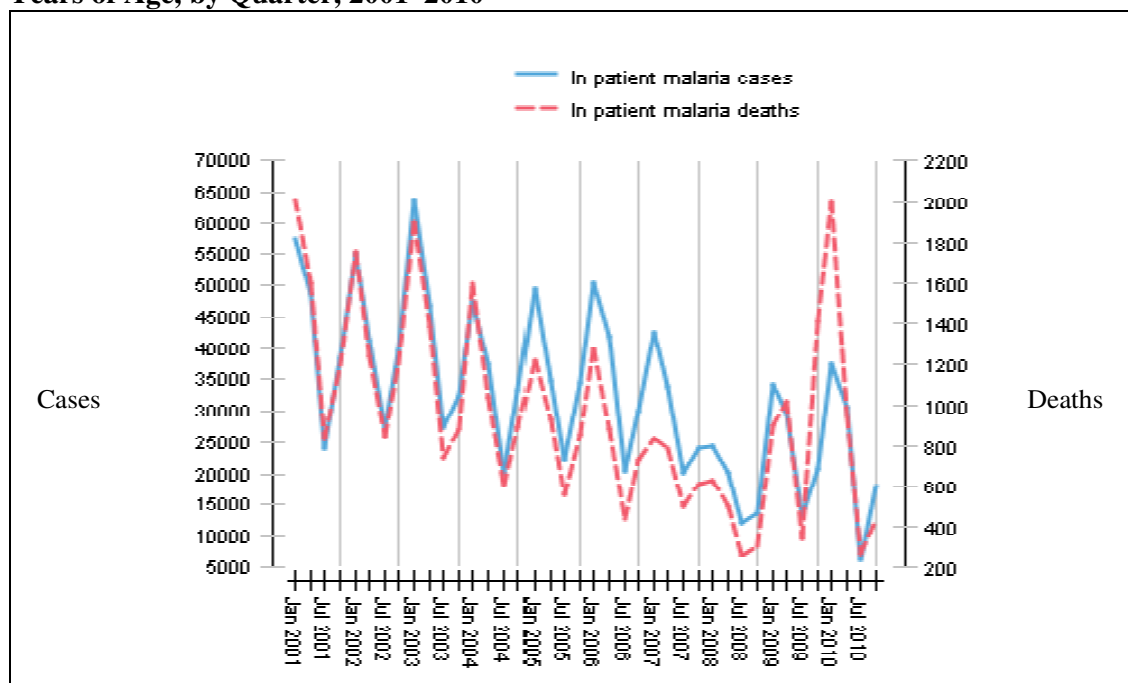
4.2.6 Disease Trends

Malaria remains one of the leading causes of morbidity and mortality in Zambia, and still remains among the top 10 major causes of visitation to health facilities. However, significant achievements have been made in malaria control in the last decade. Substantial declines in inpatient cases, deaths (more than a 60% decline), and anemia in children under five years of age have been reported in the 2001–2008 analysis of routine surveillance data. This is also



evidenced in the 2006 and 2008 MIS reports. Figure 1 presents trends in annual reported malaria inpatient cases and deaths among children under the age of five.

Figure 1: Trends in In-patient Malaria Cases and Deaths Among Children Under Five Years of Age, by Quarter, 2001–2010



Source: Zambia, Malaria Programme Review 2010 (MPR 2010)

4.2.7 Risk Groups

The entire population of Zambia is at risk of malaria. However, children under the age of five years, pregnant women, the chronically ill, and immuno-compromised persons, such as those living with HIV and AIDS, are considered to be among the highest risk groups for malaria infection in Zambia.

4.2.8 Stratification and Risk Maps

In the past, the malaria endemicity map showed relatively uniform endemicity across the country and malaria transmission, illness, and mortality was determined by existing climate, geographic, and biological features of the vectors, humans, and parasites. However, in a five-year span, ending in 2010, emerging evidence from routine information systems, national surveys—particularly the MIS—and focused studies have consistently shown declining malaria trends evident in three malaria epidemiological zones in Zambia, which are as follows:

Zone 1: Areas where malaria control has markedly reduced transmission and parasite prevalence is less than 1% (Lusaka city and environs).

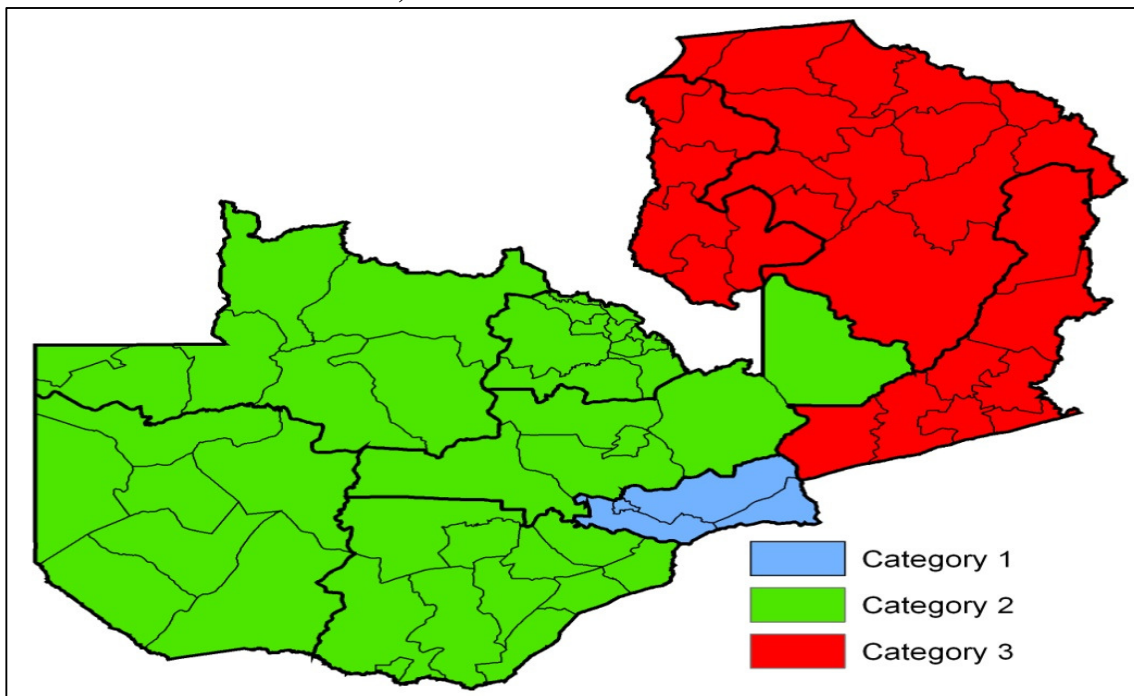


- Zone 2:** Areas where sustained malaria prevention and control has markedly reduced transmission and parasite prevalence is between 1% and 14% in young children at the peak of transmission (Central, Copperbelt, North-Western, Southern, and Western Provinces).
- Zone 3:** Areas where progress in malaria control has been attained, but not sustained; where lapses in prevention coverage have led to resurgence of infection and illness; and where parasite prevalence in young children of 15% or more at the peak of the transmission season (Eastern, Luapula, and Northern Provinces).

These zones are presented in Figure 2 and are reflective of the population-based survey estimates of malaria parasitemia among children under five years of age. Children under five represent approximately 20% of the total population. By strata, this categorization represents approximately 17% of the estimated 2010 population in Zone 1, 49% in Zone 2, and 34% in Zone 3.



Figure 2: Epidemiologic Strata for Malaria Transmission in Zambia as Determined by Child Parasitemia Prevalence, 2010



Source: Zambia Malaria Programme Review 2010

4.2.9 Malaria and Child Survival in Zambia

Malaria is known to contribute substantially to child mortality, particularly to infant mortality and mortality for one- to four-year-old children. With the recent progress in malaria intervention coverage, Zambia has seen an improvement in health indicators for children (see Table 2). For example, there has been a 29% decrease in all-cause under-five mortality, including 38% and 36% reductions in infant mortality and child (one to four years of age) mortality, respectively.

Table 2: Changes in all-cause child mortality rates 2001, 2002, and 2007, Zambia

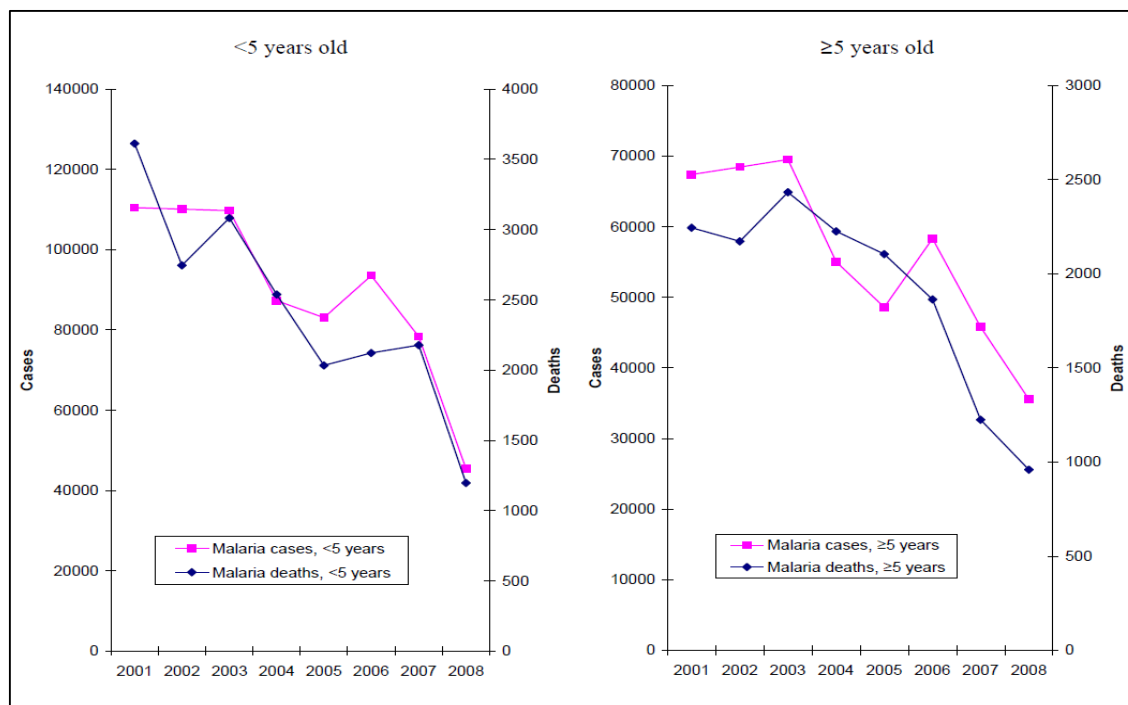
Indicator	2001/02 ZDHS	2007 ZDHS	Percent change
Infant mortality	95	70	-26%
Neonatal mortality	37	34	-8%
Post neonatal mortality	58	36	-38%
Child mortality (1-4yrs)	81	52	-36%
Under-5 mortality	168	119	-29%

Source: Zambia Demographic Health Surveys. Mortality calculated as deaths per 1,000 live births except for child mortality which is calculated as deaths per 1,000 children surviving to 12 months of age.



The Lives Saved Tool was used to estimate the impact of malaria control on under-five mortality. From 2001 to 2010, it is estimated that 33,000 deaths were averted in children less than five years of age, with most of this attributed to vector control (i.e., IRS and LLINs). Figures 3 and 4 below present the trends in malaria and non-malaria, non-anemia cases from 2001 to 2008.

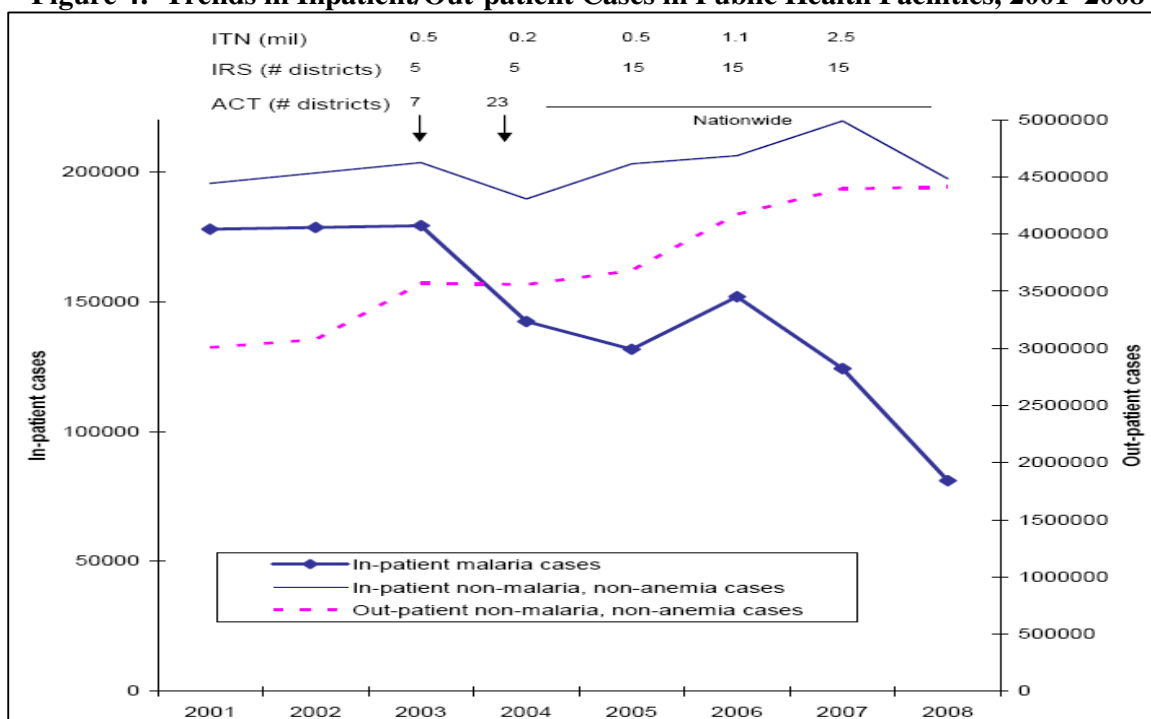
Figure 3. Trends in Reported Inpatient Malaria and Non-malaria, Non-anemia Cases, 2001–2008



Source: Zambia Malaria Programme Review 2010



Figure 4: Trends in Inpatient/Out-patient Cases in Public Health Facilities, 2001–2008



4.3 Malaria Programme Performance

In order to provide for a comprehensive and systematic analysis of malaria programme performance and proposed strategies the “Health System Building Blocks”^{*} approach was adopted as the appropriate framework for this strategic plan. This framework, considered as an appropriate framework for comprehensive analysis and understanding of a health system, is comprised of the following system building blocks:

- Health service delivery.
- Health workforce/Human Resources for Health (HRH).
- Medical products, infrastructure, and equipment.
- Health information.
- Health financing.
- Leadership and governance.

This framework was also adopted by MOH for the NHSP 2011–2015. It also presents opportunities for easier and standardized inter-country comparisons and bench-marking. Figure 5 presents the conceptual framework of this model.

^{*} To read about this approach, go to: <http://www.eldis.org/go/topics/dossiers/health-and-fragile-states/who-health-systems-building-blocks>



Figure 5: Health System Building Blocks - Conceptual Framework



Source: National Health Strategic Plan 2011–2015, Ministry of Health, Zambia

4.3.1 Health Service Delivery

4.3.1.1 Context

Malaria is a disease of high national priority in Zambia and is adequately placed within the health sector and national development agenda. Malaria is prioritized in the national health policies and strategies, and the national development plans, including the NHSP 2011–2015, SNDP, and Vision 2030.

The overall goal of the NMSP 2006–2010 was to attain a 75% reduction (of the 2005 baseline) in malaria incidence and a 20% reduction in all-cause mortality in children under five years of age by 2010. These targets were in line with the Abuja and RBM target of reducing malaria mortality for Africa's people by half by 2010. They were also in line with MDG-5 to "*halt and begin to reverse the incidence of malaria and other major diseases.*" Over the past five years, these efforts have led to major achievements, which have significantly altered the malaria epidemiological picture in the country.

It should be noted though that, in spite of the many successes of the malaria control effort, in 2009 and 2010 the country experienced a resurgence of malaria in Luapula, Northern, and Eastern provinces. This problem was mainly attributed to delays in the procurement and distribution of LLINs in 2009 and 2010, which led to the failure to replace thousands of old LLINs in these provinces. However, the resurgences served to remind the MOH of the need to sustain the gains in malaria control with effective and consistent control strategies.



4.3.1.2 Key Malaria Interventions

During the period under review, the country implemented a comprehensive package of high impact malaria prevention, care, and treatment interventions. These included the following.

A. Integrated Vector Management

Integrated Vector Management (IVM) is an intervention aimed at promoting an integrated approach to the control of malaria vectors. The two main interventions for vector control in Zambia aimed at preventing malaria transmission are the use of ITNs (specifically long-lasting ITNs, or LLINs), and the spraying of eligible targeted structures with IRS. The focus is on strengthening the integrated vector management system that includes other supplemental interventions, such as larviciding, biological control, and environmental management and manipulation.

LLIN programme: The Global definition of LLIN universal coverage is one for every two people. The national vision for the LLIN programme is to achieve universal coverage is to ensure that all sleeping spaces in all targeted households are covered by an LLIN translating into an average of three ITNs per household, which provides Programmatic distribution of ITNs began in 1998 and, by 2003, nets were provided to all health facilities and the equity malaria control programme was initiated.

The ITN policy initially targeted young children and pregnant women but has since been extended to covering sleeping spaces in all households to fully address transmission reduction. Two main distribution methods have been used for this: mass distribution campaigns and distribution of free nets to pregnant mothers through the malaria in pregnancy ITN scheme based in antenatal care (ANC) clinics. Other methods include the equity channel, which targets vulnerable groups (orphans, aged, chronically ill), the Community Malaria Booster Response, the Malaria School Health Programme, the CHAZ malaria control programme, and commercial distribution. Except for the commercial route, all the other distribution routes distribute free nets. Programmatic distribution of ITNs began in 1998 and, in 2006; a policy decision was made to distribute only LLINs recommended by the WHO Pesticide Evaluation Scheme (WHOPES), which overcame the challenge of re-treating nets every six months.

Since the commencement of the programme, household ownership of at least one ITN has increased from 13.6% in 2001 to 35% in 2005 and 64% in 2010. This increase has been attributed to the mass distribution campaigns, which were subsequently scaled up throughout the country. In 2010, over 6 million LLINs were distributed.



The significant achievements in strengthening and expanding the ITN programme notwithstanding, the programme still faces some challenges, including: declining ownership and use of LLINs in the northeastern and eastern high transmission zone, declining LLIN delivery to risk groups, absence of a routine system of ITN replacement in the interval between mass distribution campaigns, inadequate resources to ensure continuous supply of ITN and IRS commodities, and operational support required for universal coverage.

IRS programme: IRS was reintroduced in Zambia by the private mining sector in 2000 (Konkola Copper Mines reports)¹². With the successful implementation and subsequent reduction in malaria incidences in areas prioritized for IRS by Konkola Copper Mines in 2003, the MOH decided to implement the programme in the public sector, initially on a pilot basis in five urban districts (Ndola, Kitwe, Kabwe, Lusaka, and Livingstone) which are all along the line of rail.

The goal for IRS is to attain operational coverage of over 90% of the IRS targeted structures. As at 2010, IRS had been successfully implemented in 54 districts, an increase from 5 districts in 2003. A total of 54 districts were planned for IRS coverage in the 2010–2011 transmission season. The percentage of targeted homes actually sprayed remained above 85%, meeting and exceeding expectations. Compliance by families with neighbourhood spraying in most cases was over 90%. In 2010 alone, over 1.4 million homes were sprayed, protecting over 6 million Zambians. Insecticide selection is based on susceptibility of the local vectors, approval by WHOPES, in-country registration with the Environmental Council of Zambia (ECZ), duration of effectiveness, conformity with environmental requirements, and cost. IRS will complement LLINs to achieve universal coverage for vector control interventions. Households, either owning an LLIN or having been sprayed, increased from 43% in 2001 to 73% in 2010.

The emergence of insecticide resistance in several districts in 2010 added a new challenge to this very successful programme. From studies conducted from 2003 to 2004, malaria vectors were documented to be fully susceptible to the insecticides used for vector control in Zambia. However, recent focused studies have raised concerns that insecticide resistance may be appearing and this is being investigated further. Ongoing resistance monitoring indicates high levels of resistance in *Anopheles gambiae* s.l. to DDT, carbamates and pyrethroids in some districts, and this information serves as the basis of the evidence-based rotation of insecticide class to manage resistance.

The main challenges facing the IRS programme include: insecticide resistance by some vectors, limited supervisory capacity to ensure timely forecasts and implement IRS at district level, limited storage facilities for IRS commodities at all levels, challenges in selection and procurement of IRS commodities, delays in funding for implementation, inadequate logistical management and estimation of requirements, inadequate stakeholders' involvement at district level, IRS programmes commencing and finishing behind schedule, and dealing with environmental requirements and waste associated with the insecticides.



Larval control: Although larval control is part of the IVM strategy of the NMCP, it has not been widely implemented in vector control, as much attention and resources were invested in the IRS and ITN strategies. The lack of larval control is also attributed to the vastness and hard-to-reach breeding sites in the rainy season and difficulties in implementing this intervention in the rural areas. However, with the emergence of insecticide resistance in the country, larval control by environmental management and larviciding could provide alternative vector control. It is a requirement that the selection of larvicides must take into consideration the national insecticide resistance management policy.

As a result of implementation of the vector control interventions, significant reductions in malaria burden were recorded. Concurrent to the reduction in malaria parasite prevalence rates across the country, was the reduction of the anemia prevalence rate from 15.8% in 2006 to 9.8% in 2010, with the provincial distribution of cases in HMIS mirroring the malaria prevalence rate patterns. The MIS 2006-2010 reported a decline in malaria parasitemia in children under five years of age, from 22% to 17%, and a reduction in severe anemia, from 13% to 9%^{13,14}.

B. Prevention of Malaria in Pregnancy

The malaria control programme has developed and is implementing a well-defined Malaria in Pregnancy (MIP) policy, which includes the provision of free intermittent preventive treatment during pregnancy (IPTp) with at least three doses of SP during pregnancy; free ITNs; and free prompt diagnosis and treatment of clinical malaria. This malaria control package is implemented as part of routine ANC.

Current national coverage rates for pregnant women with LLINs and IPTp are among the highest in sub-Saharan Africa¹⁵. The high ANC attendance in the country and a long-standing consistent policy have resulted in high uptake of IPTp, which currently stands at 86% for the first dose (IPTp-I) and 69% for the second dose (IPTp-II). Use of ITNs among pregnant women currently stands at 46%, up from 2% in 2002. While this progress should be celebrated, further discussions with the Integrated Reproductive Health (IRH) programme are needed to identify the factors that can fill the remaining gaps to exceed targets for full IPTp coverage and ITN use. Cultural beliefs against announcing a pregnancy too early in the gestation also played a role in the failure to reach higher IPTp coverage, in addition to occasional SP stock-outs at health facilities.

C. Malaria Diagnosis and Case Management

Zambia introduced a new malaria treatment policy with first line therapy of ACTs using Coartem® in 2003, and in 2008 adopted a policy of universal laboratory diagnosis of suspected malaria infection, using microscopy and RDTs prior to treatment of suspected malaria cases. These are detailed in the Zambia National Malaria Treatment Guidelines¹⁶.



Malaria diagnosis: While the malaria case rates are declining, a high proportion of the reported cases are still based on clinical assessment and only a portion are laboratory confirmed with either microscopy or RDTs. On the other hand, 24 districts have capacity to diagnose and treat malaria at the community level (Home Management of Malaria Training report, 2008 and 2009). With improved malaria control in Zambia, universal coverage of malaria diagnosis using RDTs and quality slide microscopy has become a critical need. This is both for the purpose of directing the identification of illnesses that are due to malaria or not, so that they can be treated properly (care and treatment), as well as for identifying malaria infection, so that surveillance and response can accurately track transmission, contain it, and chart progress (surveillance and transmission containment). While diagnosis and treatment are typically linked in the language of malaria control, it is emphasized here that Zambia is now in a position where universal diagnosis is both possible and needed in order to progress in the next steps in malaria control.

Malaria case management: In 2003, due to the emergence of chloroquine-resistant malaria, the country changed its first-line treatment for uncomplicated malaria from chloroquine to ACTs (AL or Coartem[®] ¹⁶). Since then, guidelines on case management have been developed and most health workers have been trained in the new treatment protocol. However, both the access to diagnostics and coverage of ACTs for management of malaria are still too low in the country.

The 2010 MIS also demonstrated, for the first time, that children being treated for malaria were more likely to receive an artemisinin-containing drug than other drugs such as SP. However, the lack of universal diagnosis and stock-outs in ACTs have led to confusion about full progress towards achieving targets in proper and prompt management of malaria. To address this issue, the MOH, in conjunction with the World Bank, USAID, the Department for International Development (DfID), and Crown Agents, recently piloted a new system of commodity ordering and delivery for all essential drugs. This system demonstrated that placing a commodity planner in the pilot districts and shipping health centre-specific orders directly to the facility have significantly reduced drug stock-outs. With partners, the MOH is considering rolling out the new system to all districts in Zambia.

Main challenges: Significant progress has been made in increasing access to malaria treatment in Zambia. However, there are still a number of challenges to malaria case management, the greatest of which is a human resource crisis. This is compounded by the fact that the position of a microscopist does not exist in the MOH establishment of microscopists; poor health seeking behaviour, leading to late presentation and poor compliance with treatment; absence of rectal Artesunate for pre-referral treatments; scarcity of timely information on diagnosis and treatment, making programme decision-making difficult; inability to report malaria diagnosis and treatment undertaken by the Community Health Worker (CHW), separate from the health facility data. Further, the proportion of confirmed malaria cases is too low, estimated at only 13%. There is a gap in the knowledge levels and availability of malaria guidelines between the referral/district hospitals and the health centres. This has resulted in poor adherence to accurate and prompt diagnosis and treatment of malaria cases.



D. Advocacy, Communication, Education, and Social Mobilization

Advocacy and communication has created demand for malaria control interventions and utilization of services. However, advocacy and communication activities for behaviour change have not been able to reach all populations in need. The emphasis of full coverage interventions and the continued scale-up of ITNs to all household members and IRS to an increasing number of districts have increased the need to extend effective communication to all sectors of society. The launch and roll-out of the directed malaria control—based on epidemiologic characteristics and the emphasis on community engagement—is an opportunity for effectively implementing community-based advocacy and communication for behaviour change. The major challenge to this will be the lack of a clear policy on the coordination of advocacy and communication activities at provincial and district levels.

The main challenges in respect of IEC/BCC include: negative community practices such as misuse of ITNs and poor health seeking behaviour; non-existence of health promotion officers at district level, prompting the IEC programme and malaria focal point persons currently at district level to have other additional responsibilities of health promotion; limited funding to undertake continuous IEC/BCC activities in a sustainable manner by the MOH; high production cost for IEC materials (including translation into local languages), pre-testing, and airtime for radio/television programmes/advertisements; very low literacy levels in some parts of the country; limited research on IEC issues on factors that hinder use of ITNs and care-seeking behaviours; the questions in the MIS have limitations to guide effective national development of messages; inadequate community-level IEC/BCC, advocacy, and community mobilisation activities; and insufficient IEC training programmes in the country at short-term, medium, and long-term basis.

4.3.1.3 Malaria Service Delivery Structures

Malaria interventions are implemented through the national malaria control system, which is integrated into the PHC system at five levels, namely national, provincial, or sub-national, district, health facility, and community levels. These health service delivery structures are further discussed under the leadership and governance section.

4.3.2 Health Workforce/Human Resource for Health

The Zambian health sector is experiencing critical shortages of HRH, which is negatively affecting health service delivery, including malaria interventions. Three main problems have been identified, namely:

- Absolute shortages of health workers.
- Inequities in the distribution of the available health workers, which is skewed in favour of urban areas.
- Skills-mix challenges.



The shortages of HRH are largely attributed to inadequate production of health workers by health training institutions and high staff attrition rates due to the impact of HIV/AIDS and “brain drain.” The critical shortage of HRH poses a serious threat to the malaria control scale-up plans, as more trained health workers are required to achieve this goal.

Through the implementation of the Human Resource for Health Strategic Plan 2006–2010, the total number of staff in the health sector increased from 23,176 in 2005 to 29,533 in 2009, representing 57% of the approved establishment of 51,414. However, even though the numbers of health workers have increased, they are skewed in favour of the urban areas, leaving the rural areas extremely exposed. It is estimated that rural areas have 70 clinical healthcare workers per 100,000 population, compared to 159 per 100,000 in urban areas. The situation is so severe that some health facilities in rural areas are either run by unqualified staff or only with one qualified staff. The available clinical health workers are less than 50% of the approved establishment, leading to high workloads. Table 3 below presents staffing levels and staff population ratios for clinical health workers as of December 2009.

Table 3: Clinical Staff Per 1,000 Population, as of December 2009*

Staff	Number	Per 1,000 pop
Clinical officers	1,376	0.11
Medical doctors	801	0.06
Medical licentiates	34	0
Registered midwife	643	0.05
Enrolled midwife	1,731	0.14
Registered nurses	1,913	0.15
Enrolled nurses	5,210	0.42
Total	11,708	0.93

Source: Human Resource Information System (HRIS), MOH, 2010

Notes: The “Number” column is based on December 2009 Payroll Management and Establishment Control; the “Per 1,000 pop” column is based on a population of 12,525,791 from statoids.com/yzm.html.

The main challenges in respect to human resources for health for the NMCP are: inadequate HRH at various levels of health service delivery; high HIV and TB disease burdens in the country, which have overstretched available health workers with increased workload and affected prioritization and resource allocation; lack of fully dedicated malaria focal point persons at provincial and district levels; inadequately trained managerial personnel to coordinate malaria interventions, largely due to limited financial resources; inadequate training in diagnosis and case management among health workers at point of delivery to facilitate implementation of the policy which emphasizes confirmatory diagnosis for all cases of malaria prior to treatment with antimalarial medicines.

* WHO recommends a healthcare “staff-to-population ratio” of 1:5000 for Doctors and 1:700 for nurses. The current staff establishment needs to increase from 29,533 in 2009 to 49,360, in order to attain this recommendation.



4.3.3 Medical Products, Infrastructure, Equipment, and Transport

4.3.3.1 Procurement and Supplies Management

Procurement of drugs and medical supplies for the health sector, including malaria commodities, is managed centrally by the MOH Procurement and Supplies Unit. However, some procurement are handled by procurement agents, particularly the United Nations Children's Fund (UNICEF). Procurement of commodities supported by the GFATM are handled by the United Nations Development Programme, who are the interim principal recipients for the public health sector in Zambia. In 1998, Zambia developed the National Drug Policy, whose objective is to "provide all Zambians with equity of access to good, quality, safe, and efficacious medicines, which are affordable and rationally used" (Report on the Assessment of Pharmaceutical Sector in Zambia, 2006). Malaria commodity management standards are well-defined and documented in guidelines.

Procurement of malaria drugs and commodities within the public health sector is guided by specific policies and guidelines and regulated by the Zambia Public Procurements Act (ZPPA) Number 8 of 2008. All antimalarial commodities and insecticides are regulated by the Pharmacy Regulatory Authority (PRA) Act of 2004, the ECZ Act, the National Food and Drugs Laboratory, and the Zambia Bureau of Standards. MOH, NMCP, and partners have established a strong system for malaria commodities quantification, planning, procurement, stock management, and monitoring of rational use. There is in place a pharmaco-vigilance system with a designated national reference centre that collaborates with the WHO Collaborating Centre for International Drug Monitoring in Sweden.

In addition to the MOH procurement system, CHAZ and the private sector also contribute to the procurement and supply of antimalarial commodities. Although Church Health Institutions (CHIs) under the coordination of CHAZ also obtain antimalarial drugs from the MOH through Medical Stores Limited (MSL), CHAZ operates an independent procurement system and maintains stocks of drugs at the CHAZ central warehouse in Lusaka as a backup to MSL support. The private health sector—including for- and not-for-profit facilities—are responsible for their own procurements, which are mainly case management drugs.

Antimalarials, both those in the essential drug kit and those procured separately, are distributed to hospitals and health centres through a combination of "push" and "pull" strategies. The "push" system distributes kits for health centres with its own pre-defined set and quantity of essential medicines. On the other hand, on a monthly basis, MSL sends a list of the items they have in stock to all hospitals and District Health Office (DHO) for them to indicate the ones they need and quantities desired ("pull"). In the 16 districts which now have commodity planners, the usage of commodities is fed back to MSL, which customizes orders to each health facility in the district. Hospitals do not receive essential drug kits, and have to make their own requests from MSL through a "pull" system. Kits and any supplementary drugs are delivered directly to DHOs based on requests that are forwarded monthly from each DHO.



Stock-outs of commodities have been reported at all levels of the health service delivery system. This was attributed to a number of factors, including: inadequate government funding; inadequate external support, particularly in 2009 and 2010, when financial support for the Zambian health sector was suspended by the GFATM and some CPs due to suspicion of financial irregularities; and capacity challenges in the procurement and logistics management systems from national to districts, and districts to health facilities. Data from procurement planning and monitoring end-use verification shows continuous supply of ACTs. In addition, the MIS 2010 showed an increase in the percentage of febrile children taking the first line treatment (ACTs) from 13% in 2008 to 26% in 2010. The EMLIP, a pilot project on drugs distribution logistics, has the potential to significantly improve commodity availability.

4.3.3.2 Health Infrastructure

The analysis of existing health facilities by ownership, category and provincial distribution is presented in Table 4.

Table 4: Health Facilities in Zambia by type, ownership and provincial distribution, 2010

Description	Central	Copperbelt	Eastern	Luapula	Lusaka	Northern	North western	Southern	Western	Zambia
A) By level of care										
Level 3 hospitals	0	3	0	0	3	0	0	0	0	6
Level 2 hospital	2	9	2	1	0	2	2	2	1	21
Level 1 hospital	6	8	8	5	15	6	10	14	12	84
Urban health centres	32	137	8	1	182	14	18	34	10	436
Rural health centres	113	53	156	125	47	145	120	174	127	1,060
Health posts	35	25	53	10	32	49	17	30	24	275
Total	188	235	227	142	279	216	167	254	174	1,882

B) By type of ownership

Public health facilities	164	164	211	132	116	189	137	217	159	1,489
Mission health facilities	10	10	16	7	8	14	22	24	11	122
Private health facilities	14	61	0	3	155	13	8	13	4	271
Total	188	235	227	142	279	216	167	254	174	1,882

Source: Health Institutions in Zambia, Ministry of Health, 2010

The analysis shows that, as in 2010, there were a total of 1,882 health facilities in Zambia, including public (1,489), private (122), and faith-based/CHAZ facilities (122). Provincial comparisons show that Lusaka Province had the largest number, at 279 health facilities, followed by Southern at 254, and Copperbelt at 235. Luapula Province had the lowest number of health facilities in the country, at 142.



Apart from the health service facilities, availability of adequate and appropriate storage infrastructure for storage of malaria commodities and other supplies is considered critical. From 2006 to 2010, despite improved funding from the Ministry of Finance and National Planning, investments in health infrastructure were inadequate. As a result, the country is still far from meeting the policy objective of ensuring that the whole population has access to health facilities within a 5 km radius. In rural areas, 46% of households live outside a radius of 5 km from a health facility (compared to 1% in urban areas), making it difficult for many people to access the much needed health services. In 2006, the MOH conducted a Health Facilities Census (HFC) and the data from this mapping exercise was used to develop an infrastructure database and Capital Investment Plan (CIP) for infrastructure and equipment, placing priority on underserved rural areas.

In line with the CIP, the MOH has since embarked on the construction of additional health facilities and the rehabilitation of existing health facilities across the country. In this respect, a total of 42 health posts, 89 health centres, 18 district hospitals (Level 1 hospitals), and 70 staff houses were built. The MOH also commenced implementation of the Health Capital Investment Support Project, which is being piloted in three provinces and aims at addressing the management of physical capital assets and the development of standards and guidelines for maintenance of physical infrastructure.

The main challenges related to infrastructure include: the inadequacies and inequities in the distribution of health service delivery infrastructure, and the inadequate and, in some cases, poor state of storage facilities for antimalaria drugs and commodities, especially at district and facility levels³.

4.3.3.3 Health Equipment

Checklists of essential equipment and accessories have already been defined for the Health Post, Health Centre, and Level 1 referral hospital levels, development of lists for Level 2 and 3 referral hospitals is yet to be done. The equipment database was established in 2007 through the Health Facilities Census. Equipment maintenance officers are now part of the establishment at provincial level. Currently, there are shortages of some key equipment in most of the hospitals, which is hampering the provision of quality health services, particularly at Level 2 and 3 hospitals. The health sector is also faced with the challenge of ensuring appropriate management and maintenance of health equipment. Other challenges concerning health equipment include the need to develop criteria to determine human resource needs for equipment management and maintenance at hospital level, the need to develop appropriate maintenance facilities with appropriate tools and calibration equipment, and the need to develop and implement systems for equipment maintenance and management.

4.3.3.4 Transport

Currently, transport capacity is inadequate, and capacity for transport management and maintenance is limited. However, during the period under review, significant progress was made towards improving the availability of transport, and strengthening of the transport maintenance systems.



Large numbers of motor vehicles, motorbikes, and boats for districts, hospitals, and training institutions were procured and distributed. However, these have still fallen short of the country-wide needs. Transportation of commodities from the districts to service delivery facilities at lower levels presents major challenges, as the same transport is also used for various other activities.

4.3.3.5 Information, Communication, and Technology

Zambia has developed the National Information, Communication and Technology (ICT) Policy Framework, which is coordinated under the Ministry of Communication and Transport. MOH coordinates the implementation of health-related Information, Communication and Technology policy measures and innovations related to the health sector. Investments in ICT-related equipment and technologies are guided by this policy and the identified needs at different levels. Currently, investment in, and the use of, ICTs is inadequate, particularly in rural areas.

4.3.3.6 Key Issues and Challenges

Lack of national/districts teams for monitoring Adverse Drug Reactions: Currently, there is no national team for monitoring adverse drug reactions and no district team for investigation of adverse drug reactions. This is attributed to inadequate funding to support these activities. There is also no formal training programme in pharmaco-vigilance.

Infrastructure and transport: Currently, infrastructure and transport—such as storage facilities and motor vehicles—for storage and distribution of malaria commodities, are inadequate³. Transportation of commodities from the districts to lower levels of service delivery is a key challenge for the district-level implementers because the same transport has to be used for various functions. Further, sustainability of funding, given that some commodities such as ACTs are procured mostly by donor funds (GFATM, UNITAID, etc.) is a real concern.

4.3.4 Health Information, M&E, and Operations Research

Zambia has developed and implemented a comprehensive integrated health information system, providing information for evidence-based decision-making in policy, planning, implementation, and control of health services. This system comprises both routine and non-routine information systems, which have been institutionalized among the various players within the health sector, and is coordinated as part of the national monitoring M&E framework. The government, with the support of the CPs has over the years facilitated the development and strengthening of the health information system at different levels of the health system. During the period under review, MOH/NMCC and partners developed and implemented comprehensive malaria surveillance and M&E plan which was in line with the NMSP 2006–2010. The integration of malaria indicators into population-based national surveys and the HMIS, has allowed for tracking of malaria control progress over the last decade.



In 2009, the HMIS was significantly revised (it is now called the District Health Information System [DHIS]) and now includes additional relevant malaria indicators/information. This has strengthened routine data collection, dissemination, and use. Zambia has substantial data on malaria programme progress and the current epidemiologic situation.

The country also introduced and has been consistently conducting the MIS, and publishing an informative quarterly M&E newsletter. Epidemic Preparedness and Response (EPR) has also been an important element of the malaria strategy in Zambia. However, with the improvements in malaria control and the planning for stronger surveillance and response, Zambia is moving to a place where each case requires a response. Thus, the EPR work needs to join with the spectrum of surveillance and M&E processes in districts and communities.

Surveillance and M&E functions are coordinated by technical surveillance and M&E staff at the NMCP, representing the national level. However, at provincial and district levels, these functions are coordinated by the malaria focal persons that are also tasked with other public health responsibilities. Operations research activities have been undertaken by MOH staff, in-country research institutions, and academic and operational partners. The main programme challenges in operations research include the lack of a forum for dissemination and appropriate uptake of operations research findings.

It should be noted that, the significant improvements achieved in strengthening the health information systems notwithstanding, at both the national and NMCP levels a number of weaknesses still persist, including: late reporting; reporting incompleteness; shortages of qualified information officers, particularly at district level; multiplicity of vertical information systems, which are not adequately coordinated; and weak community information systems. One of the major challenges is the inadequate capacities for timely and efficient routine collection, analysis, and feedback of malaria information at point of delivery.

4.3.5 Health Care Financing

4.3.5.1 Financing Sources and Trends

The NMCP is a grant-aided national programme, funded through the MOH budget. In addition, the NMCP works closely with a number of technical, financing, and implementing partners, including: relevant line ministries and departments, the GFATM, the World Bank Malaria Booster Program, WHO, UNICEF, PMI, DfID, MACEPA, the Japan International Cooperation Agency (JICA), CHAZ, research institutions, Malaria Consortium, STEPS OVC (a consortium of nongovernmental organizations [NGOs]), private sector business institutions (the mines, manufacturing companies, banks, oil companies, agrochemical companies, etc.), and community partners and structures.

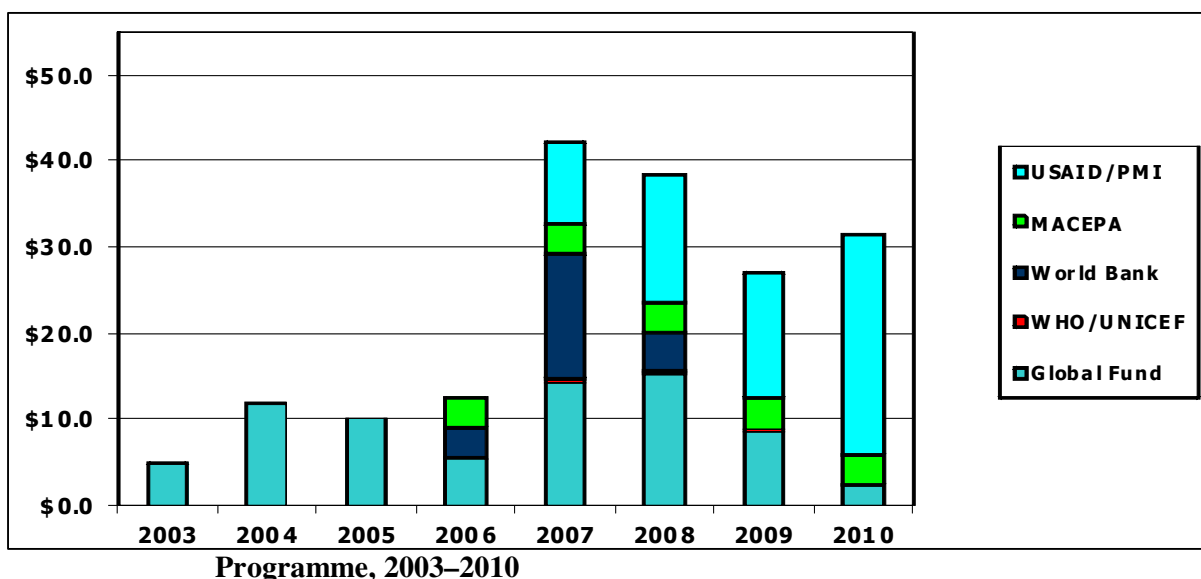
Partners' collaboration is conducted based on the NMSP, and overall coordination is provided through the health sector Sector-Wide Approach (SWAp) governance structures at MOH. About 90% of the NMCP annual plans are funded by the Government and partners. Over 60% of the NMCP strategic plan is funded by malaria partners and the balance by the Government.



The Government budget for the NMCP mainly caters to personnel costs and operational expenditure, while the budget for health commodities (antimalarial/quinine/SP, diagnostics, insecticides, equipment, and ITNs/LLINs) is covered by the partners. Zambia has successfully accessed GFATM Round 1, 4, and 7. However, given the quest for universal coverage and the fact that most of the approved GFATM grants will be exhausted by 2012, more resources will be required to attain the national malaria and MDG objectives and targets.

The country has not yet reached the Abuja target of allocating 15% of the overall national budget towards financing of the health sector. However, there was a general increasing trend of health sector budget, from Zambian Kwacha (ZMK) 1.29 trillion in 2007 to ZMK1.82 trillion in 2010 budget (average exchange rate: US\$1=ZMK4,700). Financing of the NMCP increased from ZMK2.9 billion in 2007 to ZMK4.6 billion in 2008, supporting personnel costs and infrastructure (Yellow Books for 2007–2008) but financing gaps still exist to meet the required levels of malaria commodities, drugs, and equipment. Between 2003 and 2010 approximately US\$180 million have been provided for malaria control activities by various partners. Figure 6 presents a summarized analysis of the sources and trends of this support.

Figure 6: External funding (US\$ million) received by the Zambia Malaria Control



Source: Roll Back Malaria Progress & Impact Series – Focus on Zambia¹⁷

The National Health Accounts indicate that the main source of funding for health expenditure is external support, followed by households, government public expenditure, and then other sources, including the private sector.



4.3.5.2 Financial Management and Control

Financial management and control of the funds received by the NMCP is done in accordance with the established public service financial management systems and controls and the specific financial management and reporting requirements agreed upon with the individual CPs supporting the programme. These systems include: the routine recording of financial transactions; daily, weekly, monthly, quarterly, and annual management accounts for management decision-making; semi-annual financial reports to the SAG; and specific agreed financial reports to the CPs.

Financial management and control for the NMSP is a responsibility of the Accounts Unit at the MOH, while procurement and supplies management is carried out by the MOH Procurement and Supplies Unit. Staff salaries and emoluments are paid through the MOH payroll. In order to further strengthen public financial management and reporting systems, in 2010 the government successfully implemented the long-awaited Integrated Financial Management Information System. This is a comprehensive, robust and highly integrated computer-based financial management and reporting system aimed at integrating financial management of all the government ministries and departments. The system is currently being rolled out to all government line ministries and departments and has already been implemented at MOH headquarters. NMSP is also subject to internal audits by the MOH internal audit unit and external audits by the Auditor General's office.

Currently, the financial reporting requirements of the various partners have not yet been harmonized with the MOH reporting requirements. This leads to high reporting burdens. Procurement of commodities and financing of activities supported by GFATM is done through the United Nations Development Programme, which has been appointed as interim principal recipients for the MOH. Procurement of commodities supported by other partners is either through the MOH Procurement and Supplies Unit, special arrangements by the respective financing partners, or a combination thereof.

The main challenges with regards to financing and financial management include: inadequate funding to meet universal coverage targets (i.e., to meet the procurement of antimalaria commodities and to support programme implementation) and high dependency on financial and technical support from the partners, which affects the consistency in supply of commodities and represents a threat to long term sustainability of the NMCP.

4.3.6 Leadership and Governance

The growing experience with malaria control scale-up in Zambia and elsewhere has demonstrated that strong national leadership is critical to success and that a solid and predictable resource base is absolutely necessary for effective planning and programme action. The NMCP is a national programme under the Directorate of Public Health and Research of the MOH, and is among the high priority programmes within the health sector and national policy and development agenda.



The programme is guided by comprehensive leadership and governance systems and structures aimed at ensuring efficient and effective policy, organization, coordination, and implementation of programme activities. MOH has made significant progress in strengthening leadership and governance of the NMCP. The major efforts made are discussed below.

4.3.6.1 Policies and Regulation

The last comprehensive and overarching policy for the health sector was the National Health Policies and Strategies of 1992, which is now outdated and has been overtaken by major policy changes that have been implemented. In this respect, currently there is no comprehensive and overarching National Health Policy, and the sector is being guided by the NHSP 2011–2015. However, significant progress has already been made towards the development of a new National Health Policy for the country.

Similarly, there is no consolidated and overarching national malaria policy document. The NMCP is therefore guided and regulated by the strong strategic planning frameworks, individual pieces of policies and legislation, a strong base of approved protocols, and guidelines in all the operational areas, based on international best practice and adherence to relevant international norms. Table 5 presents the key policies and legal frameworks for the NMCP:

Table 5: Health Policies and Legislation relevant to malaria control in Zambia

Policies	Legislation
• The National Decentralisation Policy, 2002, which provides for decentralization of sectors, including health. • The Basic Healthcare Package, which seeks to define minimum packages of basic health services at different levels. • The Environmental Health Policy. • The National Environmental Protection Policy. • The Medicines Policy, 1977. • The National Reproductive Health Policy, 2008. • The National Child Health Policy, 2008. • The National School Health and Nutrition Policy, 2006.	• The Mosquito Extermination Act, 1964. • The Public Health Act Cap 295. • The National Environmental Protection Act. • The National Drugs and Poisons Act. • The Pharmaceuticals Regulatory Act (PRA).

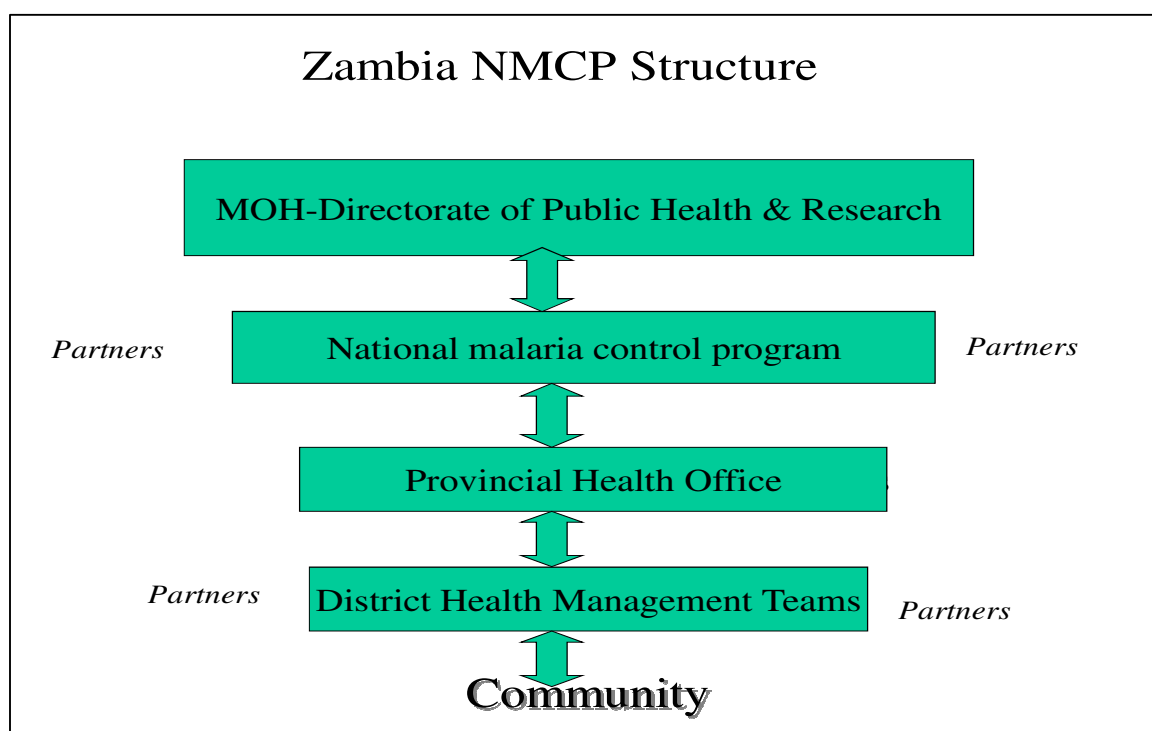
Implementation and enforcement of these instruments is facilitated by the relevant health statutory boards, particularly the National Health Professionals Board, PRA, the National Drugs and Poisons Laboratory, and other government regulatory authorities and law enforcement offices, particularly the ECZ.



4.3.6.2 Organization and Management

Decentralization of implementation of the NMSP forms the main approach to the organization and management of malaria control in Zambia. In this respect, the decentralized and popular participation approach is aimed at promoting meaningful participation and local priority by all the partners, including local communities, the private sector, CHAZ, civil society, government departments, and CPs, at different levels. Figure 7 presents the main levels in the decentralized organizational structure for malaria control management in Zambia.

Figure 7: Levels of organization and coordination of the Zambia NMCP



A. National Level

At national level, there are two structures, namely the MOH headquarters and the NMCC. The MOH is responsible for policy, legislation, planning, coordination, management, and M&E of the health sector, including the NMCP. It is also responsible for resource mobilization and technical support to the NMCP and other structures under it. In addition to the formal organizational structure and establishment, the MOH has also established the SAG, under the SWAp, which is the forum for policy dialogue and coordination of health sector partners, at national level.



The MOH has established the NMCC, a department under the Directorate of Public Health and Research, responsible for programming and implementation of the NMCP. The NMCC is responsible for providing technical leadership, guidance, coordination, and control of malaria control in the country, including the coordination of control activities of the various RBM partners. NMCC also serves as the secretariat for RBM activities and links the service delivery points with the national RBM partners. Malaria control activities are largely integrated into the PHC system and structures. In addition to the formal structures, NMCC also depends on the decentralized structures and partnerships at national, provincial, and district levels, such as the malaria task forces, TWGs, malaria focal point persons, and community health partnerships.

The National Malaria Task Force: The National Malaria Task Force is comprised of deputy ministers from all-line ministries concerned, WHO, and UNICEF. This task force is chaired by the Deputy Minister of Health and reports to the Vice-President and Cabinet through the Minister of Health. It provides a platform for high-level political commitment and monitoring of the implementation of the NMSP. The NMCC facilitates and plays the role of secretariat to the bi-annual meetings of this task force.

NMCC technical working groups: NMCC has established TWGs in the following areas: vector control, case management, IEC, M&E, and operations research. Membership to these TWGs includes MOH/NMCC and RBM partners from the civil society, public, and private sectors. The TWGs are to meet quarterly to provide guidance in the implementation of the programme, monitor progress, and assist in the development of various policy and technical guidelines. The chair of each TWG is appointed from amongst the members.

B. Provincial Level

The Provincial Health Offices (PHOs) are responsible for providing supervision, technical support oversight, and monitoring of the implementation of malaria interventions within their respective provinces. PHOs conduct quarterly performance assessments and consolidate information in the HMIS. At PHO level, coordination of malaria control activities is under the responsibility of the Provincial Public Health Unit.

C. District Level

The DHOs are responsible for planning, coordination, management, implementation, and monitoring of all health programmes in the district. At DHO level, malaria control falls under the District Public Health Unit. Health workers within the DHO have been appointed as district malaria focal point persons, often Environmental Health Officers or Public Health Nurses. These officers are not entirely dedicated to malaria control responsibilities, but also have other public health responsibilities.



District Malaria Task Forces have been established in 72 districts, except for the recently established additional districts. These task forces function as part of the DHOs, providing the necessary malaria control-related technical support within their respective districts. Members of these task forces include all government departments, relevant NGOs, private sector and other stakeholders involved in malaria control activities at district level. District Malaria Task Forces are chaired by the District Medical Officers and are responsible for planning, overseeing, and monitoring the implementation of malaria activities at the district level.

D. Facility Level

At the facility level, malaria control activities fall under the Clinical Care Specialist, who is responsible for overall coordination of all malaria control programmes. Malaria control services have been integrated into the PHC system and services. Hospital Advisory Committees and Health Centre Advisory Committees have also been established to provide formal linkages between the health delivery systems and the communities within the given districts.

E. Community Level

Community involvement in malaria control is mainly through the participation of individual members of the communities, such as CHWs, and through representation by civil society organizations. NHCs have been established at the community level, to coordinate community involvement. These committees consist of community representatives from surrounding villages (at least three villages) and are responsible for facilitating linkages between the communities and the health system at the community level. Their responsibilities include dissemination of information on public health issues, and mobilization of communities to participate in health sector planning, management, and M&E.

CHWs include malaria partners and are instrumental in providing community health support. These are community volunteers who are trained in the provision of community health/malaria education, malaria diagnosis using RDTs, and provision of malaria treatment within the communities. A CHW strategy has since been developed by MOH, which seeks to define and standardize the package of support, incentives, and training for CHWs throughout the country. The main challenges include the fact that the CHWs/malaria partners are not adequate. Further, mainly due to financial constraints, there are gaps in training. The level of support and incentives are also inadequate.

4.3.6.3 Planning

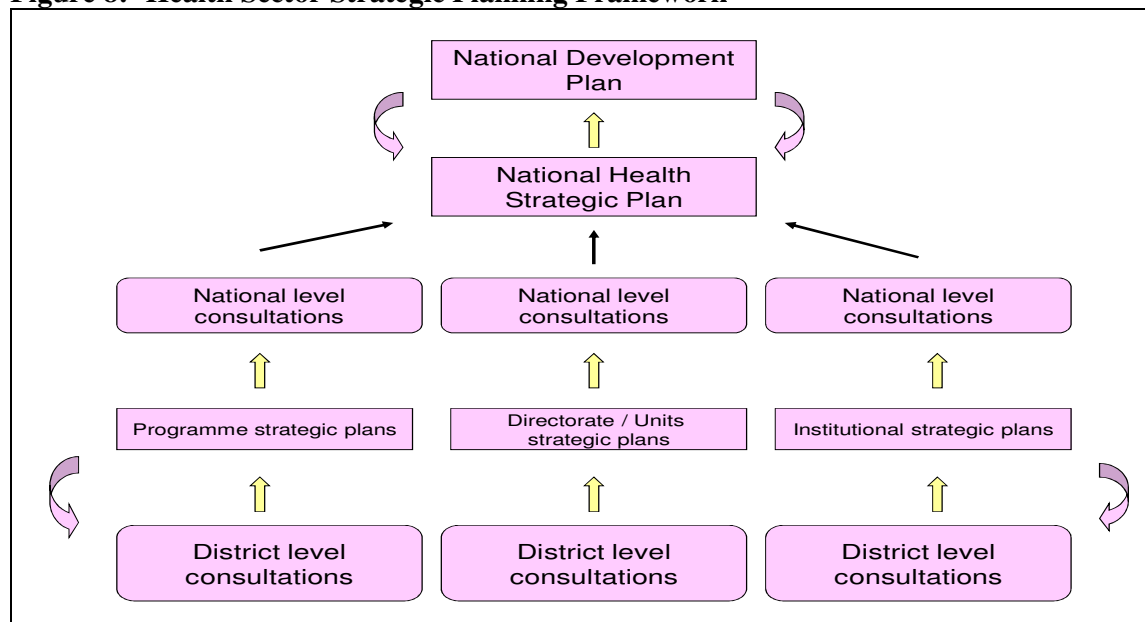
Zambia has established a comprehensive planning framework, at both national and sector levels, which allows for broad participation of, and consultations with, stakeholders at all levels. The long-term national development agenda is currently shaped and guided by the Zambia Vision 2030 Strategy, which is the country's long-term plan, aimed at transforming Zambia into a prosperous middle-income nation by 2030.



The same is operationalized through the development and implementation of successive five-year National Development Plans, which are implemented through Mid-Term Expenditure Frameworks (MTEFs), which are three-year rolling plans and annual action plans and budgets.

The health sector planning framework is aligned to, and feeds into, the national development planning framework. In this respect, the health sector planning framework includes five-year NHSPs, MTEFs, and annual action plans and budgets, at sector, programme, provincial, district, and facility levels, based on the “bottom-up” approach. Malaria is prioritized within the national and health sector plans and receives significant support at all levels of the government. The NMCP has established a comprehensive and consistent planning system, which includes five-year strategic plans, five-year M&E plans, three-year MTEFs, and annual operational plans and budgets. This planning framework is aligned to, and feeds into the health sector planning framework. It is also linked to regional and international policy and strategic frameworks relevant to malaria control, including the SADC Malaria Strategy, RBM, and the MDGs. The “bottom-up” approach served as the basis for the participatory planning process at all levels, from community, to district, to provincial, to the NMCC level. Figure 8 provides a diagrammatic presentation of the health sector planning framework.

Figure 8: Health Sector Strategic Planning Framework



Source: National Health Strategic Plan 2006–10



4.3.6.4 Partnerships

The MOH has adopted the SWAp mechanism for sector coordination whereby the CPs are requested to align their support to the national health sector priorities as specified in the NHSP. The existing coordination structures in the health sector are also in line with the SWAp, including the SAG, which is the highest forum for consultations with partners. The SAG is supported by specific committees, TWGs, and the SWAp secretariat. The NMCP has established strong partnerships with its key stakeholders at different levels, which have continued to provide financial, technical, and logistical support to the programme. Table 6 presents an analysis of the main partners groups.

Table 6: Zambia NMCP Partners

Partner/stakeholder	Nature of Partnership
Government line ministries and departments	These are government line ministries and departments involved in the implementation of some aspects of malaria control. The main ones include the local authorities and statutory regulatory institutions. Local authorities play an active role in the implementation of IRS programmes, within their areas. Regulatory institutions, such as the PRA, ECZ, and law enforcement agencies, play important roles in enforcing the relevant standards and regulations relating to malaria programme activities.
Churches Health Association of Zambia (CHAZ)	CHAZ is an important partner to the MOH. It is the second largest provider of health services in Zambia, after MOH, with more prominence in rural areas. CHAZ has an extensive network of Church Health Institutions and has established a comprehensive malaria control programme, which is aligned to the NMCP, and is supported by CPs. CHAZ is also a Principal Recipient (PR) of GFATM grants, responsible for disbursing GFATM grants to faith-based implementers of malaria, HIV/AIDS, and TB activities. The partnership between MOH and CHAZ is guided by a Memorandum of Understanding (MOU) between the two parties. Pursuant to this MOU, the CHIs have been integrated into the public health system and are supported with government health workers, operational grants, and drugs and medical supplies by the MOH.
Private sector/ Public-private partnerships (PPPs)	Even though private investment in the health sector in Zambia is still small, over the past years it has been continued to grow. Currently, there are a total of 273 private health facilities in Zambia, out of the total of 1,882, including hospitals, health centres, and health posts. Currently, there are three main routes for private sector participation in the health sector: 1) Private investment in for- or not-for-profit health services. 2) Provision of financial and technical support to malaria prevention activities. 3) Public-private partnerships (PPP). This route is relatively new in Zambia. The private sector is expected to increasingly play an important role in health service delivery, including malaria control.



Community partners/ civil society	NMCP has established strong partnerships with communities through CHWs, malaria agents, adherence partners, NHCs, community-based organizations, and other community participation structures. CHWs and malaria agents are key in providing guidance, sensitization, and assistance to the communities on basic healthcare interventions for various health problems including malaria. These are community volunteers who are trained in basic identification, prevention, and referral methods for common illnesses. Although MOH and donors have trained many CHWs, only 19% of the targeted (One CHW per 500 population are active ⁴ . In 2010, the MOH, with support from partners, developed the CHW Strategy, aimed at standardizing training and certification of CHWs, and incentives, in order to ensure equity.
Cooperating partners (CPs)	Since the launch of the RBM initiative in 1998, Zambia has been working closely with the RBM partnership in the planning, implementation, and monitoring and evaluation of the NMCP. In this respect, in-country partnerships and multi-sectoral coordination mechanisms have been developed at various levels. The main partners involved in supporting malaria control in the country include: WHO, the World Bank, UNICEF, GFATM, PMI, MACEPA, and DfID. In 2009, concerns regarding alleged financial irregularities within the health sector led to the suspension of external funding from mid-2009 to late 2010. However, following the joint development of the governance action plan, and achievement of the agreed milestones, normal relations with the CPs have since been fully restored and financial support is flowing normally.

4.3.6.5 Gender and Human Rights in Malaria Control

A national Gender Plan exists and a fully-fledged Ministry of Gender has been established, responsible for coordinating all gender issues in the country. A Gender Steering Committee has been established to mainstream gender into all sectors. Gender and human rights concerns have been integrated into the malaria programme, at planning, implementation, and M&E levels.

Pregnant women in malaria-endemic areas are known to be particularly at risk of malaria infection and its consequences of maternal anemia, placental infection, low birth weight, and increased risk of abortion, stillbirth, or early infant mortality. The malaria control package has incorporated Malaria in Pregnancy. The IEC/BCC for malaria also takes into account the contribution of women at all levels. The MIS of 2010 showed that male children under the age of five were equally likely to sleep under an LLIN as female children under the age of five.



4.3.6.6 Transparency and Accountability

The NMCP aims to ensure high standards of transparency and accountability for all the resources available and activities conducted. This is achieved through strict adherence to established public procurement and financial management systems and procedures, and through promotion of broader stakeholders' consultation and participation in planning, implementation, and M&E.

At district and community levels, the health sector has established structures for participation of stakeholders, which include village neighbourhood health committees, committees at health facilities, and district health advisory committees. The programme is also subject to financial management and reporting requirements of the partners supporting the programme. Procurements for the MNCP are managed by the MOH Procurement and Supplies Unit, in accordance with the ZPPA Act and accompanying regulations and procedures.

NMCP plans and budgets are prepared through a transparent and broadly consultative process involving all the key stakeholders, including MOH, other government line ministries and government departments, CHAZ, private sector, CSOs, and CPs. Financial management and control is conducted by the MOH Accounts Office, in accordance with the established public financial management systems. Financial reports are also discussed with partners through the established SWAp governance and coordination structures. Currently, the government is implementing a comprehensive computer-based Integrated Financial Management Information System aimed at further strengthening the public financial management and control systems. In this respect, MOH headquarters has since been hooked to the Integrated Financial Management Information System.

Internal audits are conducted by the MOH internal audit team, while external audits are conducted by the Office of the Auditor General, and in some cases, special audits are conducted for specific areas. The Office of the Auditor General's audit reports are tabled at the Public Accounts Committee of the National Assembly, as per procedure. Due to limitations in the capacities of the Office of the Auditor General, in the past, the audits were lengthy and cumbersome, making the final audit report almost irrelevant once published. However, the Office of the Auditor General's is undergoing strengthening and decentralization in order to expand coverage and improve efficiencies across the country.



4.4 Main Strengths, Weaknesses, Opportunities, and Threats

Table 7: Zambia NMCP Strengths, Weaknesses, Opportunities, and Threats

#	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
1.	HEALTH SERVICE DELIVERY			
1.1	Malaria vector control			
	• Availability of national ITN, IRS, and MIP policies and guidelines. • Established ITN distribution channels and IRS implementation structures. • Availability of ITN/IRS communication strategy and database. • Mapping of vector distribution. • Expansion of IRS/ITNs coverage.	• Weak ITN reporting systems for vector control in certain districts. • Lack of defined disposal plan for old ITNs.	• Availability of international policies and guidelines on vector control. • Technical support from WHO, RBM, and other partners. • Functional insectaries for monitoring IRS. • Strong and growing participation of the private sector and local authorities in IRS implementation.	• Low ITN utilization rates. • Abuse/misuse of ITNs. • Observed insecticide resistance. • Influx of untreated nets from neighbouring countries and through the private sector. • Climate change and its implications on vector control.
1.2	Malaria diagnosis and case management			
	• Clear policies and guidelines on malaria diagnosis and case management. • Active Case Management TWG. • Integration of malaria diagnosis and treatment into PHC system.	• Poor health worker compliance to guidelines. • Access challenges/shortages and inequitable distribution of health facilities. • Weak compliance of policy requiring diagnosis prior to treatment by public clinicians. • Human resource capacity challenges.	• Availability of international policies and guidelines. • Technical support from WHO and other partners. • Growing network of private health facilities.	• Poor health-seeking behaviours. • Weak compliance of case management guidelines by private health institutions.



1.3	Advocacy, BCC, IEC, and social mobilization			
	• Availability of the malaria communication strategy. • Strong coordination: IEC/BCC focal point person at the national level and senior health education officers at provincial level. • Surveys, including 2008 Knowledge, Attitude and Practice study to guide messages and interventions.	• High production and dissemination costs for print and audio visual IEC materials. • Limited IEC materials in local languages for use in rural communities. • Limited evidence to demonstrate impact and prioritize IEC/BCC activities.	• Partnership with public audio-visual media institutions (ZANIS, ZNBC). • Growing networks of commercial and community TV/radio stations. • Public and private print media. • Collaboration with religious, traditional, civic and community leaders, and artists. • Growing access to the internet and cell phones in rural areas.	• Inadequate funds allocated for IEC at all levels. • Negative community practices (e.g., misuse of ITNs). • Inadequate media coverage and quality controls. • Low literacy levels in some parts of the country. • Gaps between knowledge and recommended practice (e.g., ITN use).
2.	HEALTH WORKFORCE/HUMAN RESOURCES FOR HEALTH			
	• Qualified and experienced programme managers at the national level. • Malaria focal point officers appointed at provincial, district, and facility levels. • Availability of national and provincial trainers in specific malaria interventions. • Availability of personnel, trained in malaria control at all levels of service delivery.	• General shortages and inequitable distribution of health workers in the health sector. • Malaria focal point officers have other responsibilities. • High staff turnover at health facilities, which requires repeating in-service trainings. • Lack of health education officers at the district level.	• National HRH strategic plan 2011–2015 developed and under implementation. • Ongoing increases of health workers and towards equity. • Health workers' staff retention. • CHW strategy in place. • Availability of technical support from WHO, RBM, and MACEPA. • Availability of active CHW, malaria agents, and other community partners.	• Limited capacities of health training institutions to produce adequate numbers of health workers. • Brain drain.



3.	MEDICAL PRODUCTS, INFRASTRUCTURE, EQUIPMENT, AND TRANSPORT			
3.1	Procurement and supply chain management			
	• Explicit policies, regulations, and guidelines on procurement, storage, and distribution of malaria commodities. • Established institutional framework for procurement and supply function, including MOH-Programme Management Unit (PMU), MOH Tender Committee, MOH Pharmacy Unit. • EMLIP.	• Erratic supplies of malaria commodities due to inadequate and unpredictable funding. • Weaknesses in the procurement, supply, and logistics, especially for RDTs and microscopy slides. • Lack of a comprehensive post-market surveillance system.	• Established country-level policy, legal, and regulatory frameworks for public procurements (ZPPA Act No. 8 of 2008, PRA, and ECZ). • Malaria commodities prioritized within the national budgets. • Commodity support from CPs. • Quality assurance systems for pharmaceuticals.	• Inadequate resources for malaria commodities. • Over-dependency on external funding for malaria commodities versus unpredictability of such support.
3.2	Infrastructure and equipment			
	• MOH Capital Investment Plan (CIP) developed. • Ongoing construction and rehabilitation of health facilities at different levels. • Storage facilities and distribution system at central level (Medical Stores Limited). • CHAZ warehouse and distribution networks.	• Inadequate storage space and transport at all levels. • Limited communication facilities at district level (e.g., mobile video units, cell phones, etc.).	• Ongoing construction and renovation of health infrastructure by the government/MOH. • Growing private sector investment in health infrastructure.	• Inequitable distribution of health infrastructures. • Poor and challenging transport and communication networks, particularly in rural areas.



4.	HEALTH INFORMATION			
4.1	Epidemic and emergency preparedness and response (EPR)			
	- EPR tools and guidelines in place. - Availability of preparedness logistics: prepositioning drugs, vector control commodities, and human resources. - MEWS regularly updated malaria epidemic preparedness plan of action for each malaria epidemic-prone district. - Availability of operational funds for emergencies and outbreaks/plans.	- Lack of well-defined malaria epidemics and preparedness teams. - Inadequate funding for EPR logistics, leading to stock-outs. - Inadequate transport for supervision of malaria epidemics. - Lack of coordinated response across borders when malaria epidemics occur. - Lack of weekly surveillance system in high-risk districts and during high-risk months.	- Early detection. - Contributions from stakeholders from the district epidemic preparedness committees and external partners. - Support from the private sector and civil society.	- Reduction in stakeholder participation. - Lack of system for tracking weekly changes in meteorological indices such as temperature, rainfall, and wind. - Late and untimely funding and response to outbreaks and epidemics. - National Malaria Emergency fund not in place. - Settlements in swampy areas.
4.2	Surveillance, monitoring, and evaluation			
	Mapping of vector distribution, IRS/ITN coverage.	Poor completeness and timeliness of HMIS data.	Forth Malaria Indicator Survey planned in 2012.	Inadequate computer support and electrical power at local levels.
4.3	Operations Research			
	- Malaria research institutionalized. - Research agenda is locally generated to respond to local priorities. - Research findings used in guiding policy and management decision-making.	- Inadequate funding. - Limited research and development activities. - Lack of regular dissemination of research findings to stakeholders. - Limited access to published and unpublished malaria research in Zambia.	- Availability of local research expertise and collaborations.* - Partnerships with both local and international research institutions and universities. - Annual National Health Research Conferences.	Inadequate internal resources for malaria research.

* Including epidemiologists, health economists, public health experts, parasitologists, biostatisticians, entomologists, biomedical scientists, and behavioural scientists.



5.	HEALTHCARE FINANCING			
	- Malaria control budget line included in the MOH budgets. - Availability of some funding for specific interventions (e.g. vector control, commodities, RDTs, EPR, M&E, and operations research activities) from GRZ, WHO, WB, MACEPA, and PMI).	Inadequate resources for operations and malaria control commodities.	- Consistent increases in MOH/GRZ funding to NMCP. - Potential for PPPs. - Private sector/NGOs' interest. - Dedicated partners' funding to NMCP activities and commodities.*	- Inadequate funding. - Lack of harmonization and predictability of external support. - High dependency on external support. - Global economic problems.
6.	LEADERSHIP AND GOVERNANCE			
6.1	Policy and regulation			
	Strong national malaria control programme and clear malaria policies and guidelines.	Lack of a unified national malaria policy.	- Strong political will. - National policy and regulatory frameworks. - Global policies and guidelines.	Weaknesses in enforcement of established legislation.
6.2	Organization and management			
	- Dedicated NMCC and strong coordination mechanism. - A decentralized structure that is integrated into provincial, district, and community-level structures.	Weaknesses in coordination structures at provincial and district levels.	Malaria control included in MOH organization structures at all levels.	- MOH organizational structures do not adequately cover NMCP needs. - Aid predictability challenges.
6.3	Planning and development			
	Strong planning framework: 5-year NMSPs, M&E, and operational plans.	Limited resources to support implementation of plans.	Malaria prioritized in sector and national plans (Vision 2030, NDPs, NHSPs, and budgets).	



6.4	Partnerships			
	Established structures for coordinating the partnerships—, TWGs and task forces.	Partner coordination structures at provincial and district levels are weak.	- Strong partnerships with local* and international partners at all levels—national, provincial, district, and community. - Corporate social responsibility programmes. - Global support for harmonization and coordination of external support—IHP+. - Cross-border collaborations with neighbouring countries (Tanzania, Mozambique, and Zimbabwe).	The corporate governance challenges being faced by MOH, following the allegations of financial mismanagement last year, which has adversely affected donor confidence and support to the health sector.
6.5	Transparency and accountability			
	- Transparent and accountable consultative processes in planning, implementation, and M&E. - Limitation in threshold for procurements. - Established financial management systems and structures. - Internal audit systems and structures.	Shortages of qualified accountants and internal auditors.	- Established public financial and administrative systems. - Strong and semi-decentralized Auditor General's Office. - Parliamentary Committee on Public Accounts. - Additional accountability demands from CPs.	- Inadequate decentralization of Auditor General's Office. - Lengthy audit procedures. - Lack of harmonized code of accountability from CPs.

* Government line ministries and departments (local authorities, education, ECZ, police), CHAZ, private sector (private health institutions, mining companies, and other industries), CSOs, and community-based organizations.



5 STRATEGIC FOCUS

Based on the situation analysis and expectations of the government and its partners, the following will form the key components of the NMCP strategic focus from 2011 to 2015.

5.1 Vision, Mission, and Goals

Theme: To consolidate malaria control gains for higher impact.

Vision: A malaria-free Zambia.

Mission: To facilitate equity of access to quality-assured, cost-effective malaria prevention and control interventions as close to the household as possible.

Goals:

- To reduce malaria incidence by 75% of the 2010 baseline by 2015.
- To reduce malaria deaths to near zero by 2015.
- To reduce all-cause child mortality by 20% of the 2010 baseline by 2015.
- To establish and maintain five “malaria-free areas” in Zambia by 2015.

5.2 Objectives and Milestones

Table 8: Zambia NMSP 2011–2015 Objectives and Milestones

Goal	Objective	Key milestones
1	1.1 To achieve universal coverage and utilization of malaria prevention measures* by 2015.	Milestone: Achieve 100% coverage and 80% utilization for all populations at risk with locally appropriate high-impact interventions by 2013 in provinces and districts where universal coverage and utilization have not yet been achieved.
	1.2 To sustain universal coverage and utilization of prevention measures.	Milestone 1: Maintain 100% LLIN ownership and/or IRS coverage in targeted area between 2012 and 2015. Milestone 2: Maintain at least 80% LLIN use and above 85% IRS operational coverage between 2012 and 2015. Milestone 3: Maintain 100% IPTp2 coverage among pregnant women at risk of malaria between 2012 and 2015.
	1.3 Accelerate development of improved malaria surveillance systems	Milestone: 50% of districts have met the 2015 target by 2013.

* Universal coverage and utilization is defined as every person at risk sleeping under a quality LLIN or in a space protected by IRS and every pregnant woman at risk receiving at least one dose of IPTp during each of the second and third trimesters.



2	2.1 To achieve universal access to quality malaria case management in the public and private sector.	Milestone: 80% of fever cases receive a malaria diagnostic test and 100% of confirmed cases receive treatment with effective antimalarial drugs.
	2.2 To achieve universal access to community-based case management of malaria.	Milestone 1: By 2013, as part of the package for integrated community case management systems, CHWs have training and support to perform diagnostic testing and effective treatment. Milestone 2: By 2013, 80% of fever cases receive a malaria diagnostic test and 100% of confirmed cases receive treatment with effective antimalarial drugs.
	2.3 To line list all inpatient malaria cases and deaths to monitor that near zero deaths has been reached.	Milestone: By 2013, all inpatient malaria cases and deaths should be line-listed to gain insight into programme weaknesses responsible for leading to continuing malaria deaths. Inpatient malaria deaths should reach near zero in each district by 2015.
3	3.1 To establish five malaria-free zones by 2015.	Milestone 1: By 2013, malaria has been eliminated in at least two areas. Milestone 2: By 2015, have supported and documented five malaria-free areas.

5.3 Strategic Priorities

Table 9: Zambia National Malaria Control Priorities, 2011–2015

Service delivery area	Priority
Service delivery	1. To achieve universal coverage with effective interventions. 2. To reduce malaria transmission to zero within five areas, thereby leading the country towards malaria elimination. 3. To increase public awareness and knowledge on malaria prevention and control, and improve uptake and correct use of interventions. 4. To strengthen integration of malaria control services with other health sector programmes (e.g., Maternal and Child Health and others), and with non-health sectors (e.g., Education, Agriculture, Environment, Local Authorities, and Civil Society).
Health workforce	1. To appoint full-time malaria focal point persons at provincial and district levels. 2. To implement the CHW strategy aimed at improving and standardizing the incentives and support to CHWs.
Medical products, infrastructure, equipment, and transport	1. To ensure availability of adequate, quality, and cost-effective antimalarial commodities at all health service delivery points.



Health information	1. To strengthen surveillance, monitoring, and evaluation systems so that key indicators are routinely monitored. 2. To strengthen operations research to generate evidence and translate it into effective action at all levels of health care.
Healthcare financing	1. To ensure adequacy and sustainability of funding to the programme. 2. To further strengthen financial management and control and meet stakeholders' expectations.
Leadership and governance	1. To strengthen enforcement of malaria policies and regulations at all levels. 2. To further strengthen partnerships, transparency, and accountability. 3. To strengthen programme management capacities to achieve programme goals at all levels.

5.4 Key Principles

During the course of this plan, the NMCP will continue to observe and adhere to the following key health sector principles:

PHC approach: To consistently adhere to the Primary Health Care (PHC) approach to organization, management, and control of the health service delivery systems.

Equity of access: To ensure equity of access to healthcare services for all, regardless of their geographical location, gender, age, race, social, economic, cultural, or political status.

Affordability: To ensure affordability of healthcare services to all, taking into account the socio-economic status of the people.

Cost-effectiveness: To ensure efficient and cost-effective delivery of healthcare services, always ensuring "Value for Money."

Transparency and accountability: To ensure highest standards of transparency in the management of the health sector at all levels, and accountability for the actions taken, resources utilized, and to the communities served at all levels.

Decentralization: To further strengthen decentralization of health service management and delivery, in line with the National Decentralisation Policy of 2003 and any amendments thereof.

Partnerships: To continuously review and strengthen partnerships with all the main stakeholders, through stronger and effective coordination and harmonization, in line with the MOU with the partners and relevant international protocols.



Gender sensitivity: To ensure gender sensitivity and balancing in the management of the health system and delivery of health services at all levels.

Leadership: To ensure appropriate, visionary, efficient, and effective leadership in the management and control of the health sector at all levels.

6 PROPOSED STRATEGIES

6.1 Overview

This chapter seeks to respond to the identified strengths, weaknesses, opportunities, and threats, which were identified and discussed in the situation analysis, and the SWOT analysis. In this respect, the strategies are aimed at taking maximum advantage of the strengths and opportunities, addressing the weaknesses, and minimizing the impact of the threats. In order to facilitate a logical and comprehensive analysis of the proposed strategies, the “Six Health Systems Building Blocks” model was considered as an appropriate framework for this analysis.

6.2 Health Service Delivery

6.2.1 Overview

The core malaria service delivery programmes include IVM, MIP, and malaria case management. The main focus of the NMSP 2011-2015 will be on consolidating the achievements made in malaria control, and further strengthen all the key malaria control interventions, for higher impact.

One key feature of this plan is the shift from the blanket application of the key malaria prevention interventions to the application of these interventions based on evidence obtained on malaria epidemiology patterns and trends. In this respect, these interventions will be applied in specific clearly defined packages based on epidemiological trends and status for each area. The IVM interventions proposed in this plan are largely based on the evidence drawn from the Zambia MPR 2010 report, which recommended the stratification of Zambia into three malaria epidemiological zones⁵. This means that each zone will be targeted with a specific package of malaria control interventions considered most effective for the particular zone. This approach is intended to ensure efficient and effective deployment of the available resources to the programme for higher and accelerated impact.

6.2.2 Integrated Vector Management (IVM)

6.2.2.1 Overview

Vector control has a proven record of saving lives by preventing, reducing, or eliminating the transmission of vector-borne diseases. To this effect, entomological monitoring of vector



control interventions remains an important component of an evidence-based IVM approach. During the duration of this plan, efforts will be aimed at consolidating the achievements already made in the implementation of IVM, strengthening surveillance, and implementing specific packages of vector control interventions based on evidence of malaria epidemiological trends and status in each particular area.

6.2.2.2 Objective

The objective of IVM is to achieve 100% of households with access to, and 80% of people living in, malaria-risk areas using appropriate vector control interventions by 2015.

6.2.2.3 Strategies

IVM strategies will include:

1. Target and scaling up vector control interventions according to the epidemiological zones:
 - i) Low to nil transmission areas: no ITNs, and no IRS. Scale up surveillance monitoring and EPR.
 - ii) Low stable transmission areas: scale up ITNs to universal coverage and maintain through routine ITN distribution system that ensures routine replacement of torn or disused ITNs. Either no IRS or reduced scale to further reduce malaria burden.
 - iii) High persistent transmission zone: scale up ITNs to universal coverage and maintain through routine ITN distribution system. Scale up IRS to reduce malaria burden. Sustain with ITNs and focalized IRS as part of surveillance response.
2. Strengthen malaria entomology monitoring and surveillance to facilitate evidence-based IVM interventions.
3. Strengthen capacity and coordination to ensure efficient and effective delivery of IVM at central, provincial, district, facility, and community levels.
4. Ensure availability and dissemination of BCC/IEC information on IVM.

6.2.2.4 Expected Outcomes

Expected outcomes of IVM include:

1. IVM interventions implemented, targeting different areas with specific packages of interventions based on epidemiological status and trends.
2. Malaria vector bionomics and their resistance profiles established to positively influence decision-making and policy formulation.
3. IVM information flow streamlined and database established.
4. Capacity and coordination to deliver IVM strengthened at all levels.

6.2.2.5 Indicators

IVM indicators include:



1. Number of breeding sites identified in targeted areas.
2. Number of breeding sites treated in targeted areas.
3. Number of breeding sites eliminated in targeted areas.
4. Number of districts with established vector bionomics and resistance profiles.
5. Number of districts with strengthened capacity to deliver IVM.

6.2.3 Insecticide-Treated Nets (ITNs)

6.2.3.1 Overview

Distribution and promotion of appropriate use of ITNs is among the two major strategies under IVM. The national vision for the ITN programme is to achieve universal coverage, which is defined as “ensuring that all sleeping spaces in all targeted households are covered by an LLIN.” In 2006, a policy decision was made to distribute only WHOPES-recommended LLINs, which overcame the challenge of re-treating nets.

The ITN plan will focus on further scaling up of distribution of LLINs to achieve universal coverage in target areas based on epidemiological status and trends. It will also focus on promoting appropriate use of LLINs through effective BCC/IEC, strengthening human resource capacity, ensuring availability of essential antimalaria commodities, and strengthening surveillance for evidence-based policy and decision-making.

6.2.3.2 Objective

The ITN objective is to achieve universal coverage (100%) and 80% utilization of LLINs in targeted areas by 2015.

6.2.3.3 Main Strategies

In an effort to maintain current gains and increase nationwide access, all ITNs shall be distributed at no cost to the household through mass/door-to-door distributions and routine distributions. The main strategies for the ITN programme include:

1. Scale-up mass/door-to-door distribution of LLINs based on epidemiological evidence using the following steps:
 - i. Identifying areas/populations at risk to be targeted for mass distribution of LLINs based on epidemiological evidence.
 - ii. Conducting mass distributions of LLINs through door-to-door campaigns, using community structures, particularly the NHCs.
2. Strengthening and scaling up routine LLIN distribution through ANC clinics and child health clinics, targeting pregnant women and children under the age of five years.
3. Scaling up distribution of LLINs through the equity programme targeting vulnerable populations, including the aged, orphans and vulnerable children, and the chronically ill.



4. Promoting appropriate use of LLINs through implementation of the integrated communication strategy in order to increase usage and reduce misuse of LLINs among households.
5. Strengthening systems and methods of safe disposal of worn-out used LLINs.
6. Strengthening and scaling up routine monitoring and supervision of the ITN programme.

6.2.3.4 Expected Outcomes

Expected outcomes of the ITN programme include:

1. 100% coverage of sleeping spaces with LLINs in every targeted household.
2. 80% use of LLINs among household members.
3. Safe disposal methods for used and worn-out ITNs.
4. Effective monitoring and supervision of the ITNs programme.

6.2.3.5 Indicators

Indicators include:

1. Percentage of households with at least one insecticide-treated mosquito net.
2. Percentage of household members who slept under an ITN the previous night.
3. Percentage of children under five years of age who slept under an ITN the previous night.
4. Percentage of pregnant women who slept under an ITN the previous night.
5. Percentage of households with an ITN to sleeping space ratio of at least one-to-one.
6. Proportion of households with at least one LLIN and/or sprayed by IRS in the last 12 months.

6.2.4 Indoor Residual Spraying

6.2.4.1 Overview

IRS is among the major interventions being implemented under IVM in Zambia. IRS was scaled up from five districts in 2003, to 15 districts in 2006, to 54 districts by 2010, and achieved an operational coverage of 87% of targeted households¹⁸. These achievements notwithstanding, the IRS programme still has a number of challenges.

During the course of this plan, the IRS programme will focus on achieving IRS coverage of at least 85% of eligible areas. Targeting of IRS will be largely based on epidemiological evidence, which will be the basis for determining the packages of malaria control interventions. IRS will be the preferred method for reducing transmission in the following situations: reduction of seasonal peaks of transmission, control of epidemics in areas with high population density, prevention of outbreaks in epidemic prone areas, and elimination of new foci of re-infection in areas which were previously declared as malaria-free. Each target district will prioritize the use of IRS in high population density and/or high transmission areas.



6.2.4.2 Objective

The IRS programme objective is to ensure IRS coverage of at least 85% of all the targeted structures/households in low to high transmission epidemiological zones and focused application of surveillance-driven IRS in very low transmission zones by the end of 2011, and maintain this through to 2015.

6.2.4.3 Main Strategies

Targeting of IRS will be based on epidemiological evidence and the packages of interventions for each area. The main strategies include:

1. Strengthening policy and planning for IRS. This entails:
 - i. Conducting nation-wide needs assessments for IRS.
 - ii. Timely forecasting, selection, and procurement of IRS commodities.
2. Strengthening IRS programme implementation capacity. This entails:
 - i. Reviewing, updating, producing, and disseminating IRS tools (technical guidelines, IEC materials).
 - ii. Conducting IRS training of trainers and cascade trainings to build capacity at provincial and districts levels.
3. Scaling up IRS implementation by:
 - i. Strengthening IEC/BCC to increase household acceptance of IRS.
 - ii. Conducting annual IRS campaigns.
 - iii. Strengthening and sustaining compliance with health and environmental safeguards.
4. Strengthening supervision and monitoring of IRS implementation by:
 - i. Strengthening entomological surveillance for IRS.
 - ii. Conducting surveillance-driven focal IRS to contain cases in very low transmission epidemiological zones.

6.2.4.4 Expected Outcomes

Expected outcomes of the IRS programme include:

1. Increased number of households/structures sprayed by IRS.
2. Increased number of people protected from malaria vectors.
3. Reduced vector density.

6.2.4.5 Indicators

Indicators include:

1. Percentage of targeted structures/households sprayed.
2. Percentage of people targeted protected with IRS.
3. Vector density.
4. Proportion of targeted households sprayed by IRS in the last 12 months.



5. Proportion of households with at least one LLIN and/or sprayed by IRS in the last 12 months.

6.2.5 Malaria Case Management

6.2.5.1 Overview

Since 2003, Zambia has adopted a new malaria treatment policy, which introduced artemisinin-based combination therapy (Coartem®) as a first-line treatment for malaria. In 2008/2009, Zambia adopted a policy of universal laboratory diagnosis of suspected malaria infections before treatment using quality microscopy and RDTs.

These efforts have contributed to the ongoing epidemiological transition being experienced in the country, as evidenced by the decline in malaria incidence by 39% between 2006 and 2008 and a more than 60% decline in inpatient malaria cases between 2001 and 2008, in both the under-5 and 5–15 year age groups. However, there are still some major challenges. These include: limited access to both diagnostics and ACTs, limitations in the procurement and supply chain logistics system, gaps in compliance with guidelines on diagnosis by health care workers, high staff attrition, gaps to meet pre- and in-service training in case management, poor health-seeking behaviour, unpredictable funding for case management needs, and high dependency on external support.

This plan will aim at increasing access to effective diagnosis and treatment of malaria through capacity building.

6.2.5.2 Objective

To ensure that 100% of all malaria-suspected cases in all the districts receive parasitological (microscopy or RDT) analysis and 100% of parasitologically confirmed malaria cases receive prompt, effective antimalarial treatment by 2015.

6.2.5.3 Main Strategies

Main strategies include:

1. Strengthening malaria diagnosis and case management/treatment by:
 - i. Strictly enforcing the malaria diagnosis and treatment policies in both the public and private health sector.
 - ii. Providing malaria diagnosis and treatment guidelines to health facilities at all levels in both the public and private health sectors.
 - iii. Strengthening quality control/assurance capacity in malaria diagnosis and case management in the public and private sector.
 - iv. Scaling up training and skills maintenance for health workers in the public and private sectors and CHWs.
 - v. Strengthening supervision at all levels.
 - vi. Establishing a malaria reference centre for quality control, training, and research.
 - vii. Strengthening the malaria pharmaco-vigilance system.



- viii. Ensuring timely availability of adequate diagnosis/case management commodities.
- ix. Exploring the new emerging technologies in malaria diagnosis and treatment.
- 2. Scaling up prevention of malaria in pregnancy by:
 - i. Scaling up coverage of IPTp and ITNs based on epidemiological patterns.
 - ii. Strengthening coordination with reproductive health and other relevant partners.
- 3. Strengthening community case management of malaria by:
 - i. Considering renaming the “Home Management of Malaria” strategy “Community Case Management.”
 - ii. Rolling out Community Case Management to cover all the districts and communities.
 - iii. Strengthening diagnosis and treatment of malaria, with ACTs, at the community level.
 - iv. Strengthening diagnosis and treatment of pneumonia at the community level.
 - v. Scaling up training of CHWs in malaria diagnosis and treatment.

6.2.5.4 Expected Outcomes

Expected outcomes include:

- 1. All suspected malaria cases receive accurate parasitological confirmation.
- 2. All malaria cases receive prompt, effective, and appropriate treatment according to national guidelines.
- 3. 100% of pregnant women attending ANC clinics receive at least two doses of IPTp against malaria.
- 4. A Malaria Reference Centre for quality control, training, and research is established for laboratory services.
- 5. Adequate stock levels of malaria commodities maintained at all levels.

6.2.5.5 Indicators

Indicators include:

- 1. Malaria testing rate (Source: HMIS).
- 2. Malaria positivity rate (Source: HMIS).
- 3. Malaria parasite prevalence rate (Source: MIS).
- 4. Percentage of health care workers (and community health workers) correctly diagnosing and treating malaria (Source: Health Facility Surveys; Report and Requisition Form).
- 5. Proportion of malaria cases with confirmed diagnosis that receive appropriate treatment (Source: HMIS).
- 6. Percentage of health facilities with no stock-outs of artemether-lumefantrine for a period of one week (Source: HMIS).
- 7. Percentage of health facilities with no stock-out of RDTs for a week (Source: HMIS).
- 8. Percentage of children under five years of age with severe anemia (Source: MIS).
- 9. Number of pregnant women receiving three doses of IPTp (1, 2, 3). (Source: MIS and HMIS).



10. Number of confirmed malaria in pregnancy cases (Source: HMIS).

6.2.6 Information, Education and Communication/Behaviour Change Communication (IEC/BCC)

6.2.6.1 Overview

Over the past five years, the major achievements of the BCC/IEC programme included the increase in levels of knowledge and uptake of interventions on the use of LLINs and IRS. However, it has been observed that there is still a significant gap between knowledge levels and practice of recommended behaviours in LLIN usage and acceptance of IRS and IPTp, as well as early care-seeking behaviours, such as malaria diagnosis and prompt treatment. Therefore, the focus for the next five years will be on boosting community involvement, building capacity for IEC/BCC implementation at various levels, increasing financial and material resources, strengthening partnerships across various sectors, and strengthening the evidence base through monitoring and evaluation.

6.2.6.2 Objective

The objective of the BCC/IEC programme is to increase public awareness and knowledge on malaria prevention and control and to improve uptake and correct use of interventions.

6.2.6.3 Main Strategies

The main strategies of the BCC/IEC programme include:

1. Strengthening capacities for advocacy and BCC.
2. Strengthening community response by:
 - i. Empowering communities with sustainability of interventions.
 - ii. Strengthening social mobilization and advocacy to ensure necessary behavioral change.
 - iii. Employing effective communication and advocacy to keep malaria high on the national agenda and ensure the mobilization of resources.
3. Harmonizing the design and production of messages to increase demand and uptake of malaria interventions.
4. Increasing evidence-based and targeted multi-media campaigns.
5. Strengthening community mobilization.
6. Strengthening research, implementation and monitoring and evaluation of IEC/BCC activities.

6.2.6.4 Expected Outputs

The following are the expected outputs for the BCC/IEC programme:

1. Development of a malaria control communication strategy for the period 2011–2015.



2. Development of a package of advocacy materials and programmes for malaria control developed.
3. Training of malaria focal point staff in IEC/BCC planning and implementation at all levels.
4. Capacity built for media to disseminate regular information on malaria.
5. Development of mechanisms for planning, coordination, monitoring, and evaluation at all levels.
6. Establishment of community-driven initiatives for malaria control at the district level.

6.2.6.5 Indicators

Programme indicators include:

1. Levels of knowledge, attitude and practices.
2. Percentage of children under five years of age who sleep under a net.
3. Percentage of pregnant women who slept under an ITN.
4. Percentage of uptake of IPTp for pregnant women through ANC visits, 1st, 2nd and 3rd dose.
5. IEC/BCC programmes and materials produced.
6. Advocacy kits produced.
7. Increase in resources mobilised for IEC/BCC.
8. Proportion of households accepting IRS.

6.2.7 Epidemic Preparedness and Response (EPR)

6.2.7.1 Overview

In Zambia the parasite and vector species associated with malaria epidemics are widely spread across the country. Malaria epidemics commonly occur in unstable malaria areas. Malaria epidemics may also occur in emergency situations, like refugee camps, and among internally displaced populations. Ecological disturbances, such as droughts or floods, are also pre-disposing factors to malaria epidemics. A lapse in sustaining malaria prevention interventions or even a breakdown in control measures can lead to malaria resurgences. Despite the resource constraints experienced by this component of the malaria programme, the country has an EPR Plan, which is guided by the NHSP. EPR guidelines have been in existence since 2003.

6.2.7.2 Objective

The EPR objective is to ensure that all districts have the capacity and preparedness to respond to malaria epidemics by 2015.

6.2.7.3 Main Strategies

The main EPR strategies include:

1. Strengthening existing structures for EPR at all levels.



2. Developing and strengthening a malaria forecasting system in the country.
3. Strengthening malaria surveillance towards pre-elimination phase principles.

6.2.7.4 Expected Outputs

Expected outputs include:

1. Functional EPR structures at all levels.
2. Availability of EPR stocks of commodities (IRS, LLINs, and ACTs).
3. A functional malaria Early Warning System, including:
 - i. Entomological monitoring.
 - ii. Meteorological indicator monitoring (rainfall, temperature).
 - iii. Epidemiological monitoring of morbidity and mortality rates.
 - iv. Vulnerability indicators (nutritional status, HIV/AIDS).

6.2.7.5 5.5.5 Indicators

Indicators include:

1. Proportion of districts with district epidemic preparedness plans.
2. Percentage of designated district sites with epidemic preparedness stocks.
3. Number of outbreaks/epidemics reported and fully investigated.

6.3 Health Work force/Human Resources for Health (HRH)

6.3.1 Overview

The health sector in Zambia is still faced with a critical shortage of HRH at all levels, which is largely attributed to absolute shortages in the numbers of health workers, skills mix problems, and inequitable distribution of health workers across the country. Considering that the NMCP is part of the health sector, and that malaria control activities are integrated into the PHC systems and structures, the critical shortages of HRH also present significant challenges to the NMCP. In this respect, the MPR 2010 identified inadequate staffing, low competences of staff in different malaria interventions, and high turnover of skilled/trained staff, as the main human resource problems facing the NMCP.

Zambia has prioritized HRH. This commitment led to the development and implementation of the Human Resource for Health Strategic Plan 2006–2010, with significant success. A new comprehensive Human Resource for Health Strategic Plan 2011–2015 has also been developed, which will guide HRH programmes for the whole health sector, including the NMCP, for the next five years. The NMCP will also solicit technical support from WHO, RBM partners, and other partners, in order to meet the demands created by the planned scale-up and transition from malaria control to malaria-free districts.

The main focus for the next five years will be on strengthening the HRH situation for the whole health sector, at all levels, and also to address the HRH issues specific to the NMCP to support the smooth implementation of the programmes.



6.3.2 Objectives

The HRH objectives are to improve the availability of and distribution of qualified health workers in the country and to significantly increase the annual outputs of the health training institutions to mitigate the critical shortages of qualified health workers.

6.3.3 Main Strategies

6.3.3.1 Sector/National Level HRH Strategies

The following sector/national level HRH strategies are in line with the NHSP 2011–2015:

1. Strengthen HRH planning.
2. Strengthen and scale up training and staff development.
3. Scale up staff recruitment and improve distribution of HRH.
4. Strengthen motivation and retention of existing HRH.
5. Strengthen human resource management in order to improve the efficiency and effectiveness in utilization of the available staff.
6. Strengthen HRH information systems to support evidence-based decision-making.

6.3.3.2 NMCP Programme Level HRH Strategies

NMCP programme-level HRH strategies include:

1. Advocating for fully dedicated malaria focal persons/officers at provincial and district levels to strengthen programme coordination and implementation at these levels.
2. Scaling up training of health workers in key malaria interventions at all levels.
3. Scaling up training and capacity building of CHWs and malaria partners in community malaria interventions to improve their performance.
4. Strengthening technical cooperation and collaborations with partners, particularly WHO, RBM partners, MACEPA, and others.
5. Advocating for implementation of the Health Sector CHW Strategy in order to motivate, retain, and increase CHWs and malaria partners.

6.3.4 Expected Outputs

The expected outputs include:

1. Improved HRH planning and forecasting.
2. Increase in the numbers of trained HRH, and improved skills-mix.
3. Reductions in the shortage of HRH and improved equity in the distribution of HRH.
4. Improved utilization and performance of the available HRH.
5. Improved quality and timelines of HRH information/reporting for evidence-based decision-making.
6. Fully dedicated malaria focal persons/officers appointed at provincial and district levels.
7. Improved availability and performance of the CHWs and malaria partners.



6.3.5 Key Indicators

Key indicators include:

1. The National Human Resource for Health Strategic Plan 2011–2015 developed and operationalized.
2. Number of meetings held by the MOH HRH-TWG in a year.
3. Number/percentage increase in the outputs of health training institutions.
4. Number (and percentage) of HRH against the authorized staff establishments.
5. Timeliness and completeness of quarterly HRIS reports.
6. Staffing structure for full-time malaria focal persons approved.
7. Number of CHWs/malaria partners trained in malaria community interventions.
8. CHW strategy implemented.

6.4 Medical Products, Infrastructure, Equipment, and Transport

6.4.1 Overview

Availability of appropriate medical products, infrastructure, and transport is a critical factor towards ensuring efficient and effective delivery of health services. A number of achievements and challenges in respect of these areas have been identified in the situation analysis. The focus for the next five years will be on ensuring adequate and timely availability of all malaria control commodities at all levels, improving the availability and distribution of health infrastructure, and improving the availability and maintenance of transport, including motor vehicles, motor cycles, water vessels, and bicycles. Focus will also be directed at improving access to modern technology and ICTs.

6.4.2 Malaria Control Commodities and Consumables

Procurement of malaria commodities is managed through the MOH Procurement and Supplies Unit and through the United Nations Development Programme, which is currently the principal recipient of GFATM support for the health sector. Distribution is done through the established MSL Logistics Management System. The main challenges identified include inadequate resources from both the government and partners, over-dependency on external support, lengthy and cumbersome public procurement management procedures, and distribution challenges due to geographical, infrastructure, and logistics challenges.

6.4.2.1 Objectives

Ensuring availability of quality, efficacious, safe, and affordable malaria commodities and consumables at all levels of service delivery through efficient and effective procurement and logistics management is the objective of the MOH Procurement and Supplies Unit and the United Nations Development Programme.



6.4.2.2 Main Strategies

The main strategies include:

1. Strengthening the planning and forecasting for malaria control commodities. Developing and implementing comprehensive annual commodities projections and procurement plans for malaria control commodities and consumables.
2. Strengthening systems for procurement and supply of malaria control commodities and consumables. Improving linkages and coordination among NMCC, MOH, and MSL. Strengthening the Malaria Commodities TWG.
3. Strengthening malaria commodities distribution at all levels. Advocate for the MOH to roll-out the pilot project on drugs distribution logistics known as EMLIP, which was successfully piloted in selected districts.
4. Improving storage for malaria control commodities and consumables at all levels. Strengthening linkages and coordination with the MSL and advocate for the MOH to implement recommendations of the storage capacity assessment done in 2009/2010.
5. Strengthening collaborations with partners involved in procurement and distribution of malaria commodities, particularly CHAZ and the Society for Family Health.
6. Promoting private sector participation, including PPPs.
7. Strengthening internal systems to ensure compliance with local and international regulatory frameworks for procurement, storage, usage and disposal of malaria commodities and consumables.
8. Strengthening pharmaco-vigilance.

6.4.2.3 Expected Output

The expected outputs include:

1. The development of comprehensive annual malaria commodity plans and forecasts.
2. Improved coordination of procurements and distribution of malaria commodities.
3. Total compliance with established local and international regulations on procurement, storage, usage, and disposal of malaria commodities.
4. A strong pharmaco-vigilance system.

6.4.2.4 Key Indicators

Key indicators include:

1. Number of LLINs procured (distributed).
2. Number of households covered by IRS.
3. Number of Commodities TWG meetings held.
4. Number of queries from ZPPA, PRA, ECZ, and other regulatory organs in respect to procurement, storage, usage, or disposal of malaria commodities.
5. Proportion of health facilities with essential medicine stock-outs each month.



6.4.3 Infrastructure and Equipment

6.4.3.1 Overview

At the national level, the NMCP falls under the Directorate of Public Health and Research of the MOH. However, a separate unit, the NMCC, has been established for national coordination of malaria control. Malaria activities at provincial, district, and facility levels are integrated into the PHC systems, and are delivered through the established health facilities. In view of the foregoing, infrastructure and equipment for malaria control are in two categories, namely, general infrastructure and equipment for PHC, and infrastructure and equipment specific to malaria control. Challenges in this area include inadequate and inequitable distribution of health infrastructure (including health facilities and storage facilities) and equipment, poor state of repairs and maintenance, and inadequate investments in ICTs.

6.4.3.2 Objective

With regards to infrastructure and equipment, the objective is to ensure availability and equitable distribution of essential infrastructure in order to facilitate equity of access to essential health services.

6.4.3.3 Main Strategies

The main strategies include:

1. Advocating for scheduled and consistent reviews, updating and implementation of the CIP by the MOH.
2. Strengthening the entomological laboratory at NMCC.
3. Establishing a central level Laboratory Quality Reference Centre with focus on training and research (molecular biology, entomology, and parasitology).
4. Promoting private sector participation, including PPPs, in establishing malaria control infrastructure and provision of equipment.
5. Scaling up the use of relevant modern technologies and ICTs. Develop and implement an appropriate plan for ICT development.
6. Advocating for strengthening of maintenance and rehabilitation of infrastructure and equipment at all levels.

6.4.3.4 Expected Outputs

The expected outputs include:

1. Malaria-related essential infrastructure and equipment included in the MOH CIP.
2. The malaria entomology laboratory at NMCC strengthened with appropriate equipment.
3. A central level Laboratory Quality Reference Centre established.
4. Increased private sector participation, including PPPs.
5. An ICT Scale-up Plan developed.

6.4.4 Transport and Logistics



6.4.4.1 Overview

Transport is critical for transportation of malaria commodities, implementation, supervision, outreach and community mobilization activities, M&E, and programme coordination and management. Two challenges have been identified in this area, namely the shortages of transport, and maintenance challenges. The focus will be directed towards strengthening the transport and logistics situation in order to provide efficient and effective support to the programme.

6.4.4.2 Objective

The objective is to improve on the availability and condition of transport and communication in order to facilitate efficient and effective implementation of malaria control activities at all levels.

6.4.4.3 Main Strategies

The main strategies include:

1. Advocating for optimum allocation of transport to the NMCP from the MOH.
2. Ensuring equitable distribution of available transport and communication equipment.
3. Strengthening capacity for management and maintenance of transport and communication equipment.

6.4.4.4 Expected Outputs

The expected outputs include:

1. Improved availability of essential transport and communication equipment.
2. Improved management and maintenance of transport and communication equipment.

6.5 Health Information

6.5.1 Surveillance, Monitoring and Evaluation (SM&E)

6.5.1.1 Overview

The NMCP and partners have developed a comprehensive SM&E plan, which is in line with national malaria goals, targets, and milestones.

Integration of malaria indicators into population-based national surveys and the HMIS has allowed for tracking of disease control progress over the last decade. Between 2009 and 2010, the HMIS was revised and upgraded into the new DHIS. This has strengthened routine data collection, use, and dissemination.



During the course of this plan, MOH/NMCP will focus on further strengthening both routine- and survey-based information systems. Specific focus will also be placed on the strengthening of community information systems.

6.5.1.2 Objective

The SM&E objective is to strengthen surveillance, monitoring, and evaluation systems in order to ensure timely availability of quality, consistent, and relevant data on malaria control performance to guide policy and decision-making during the course of this strategic plan.

6.5.1.3 Main Strategies

The main strategies include:

1. Strengthening capacities for malaria surveillance, monitoring, and evaluation and providing feedback to the NMCP, provinces, districts, and partners for policy, programming, management, and accountability.
2. Strengthening provincial/district data management systems to collect, process, analyze, and manage malaria transmission and disease data.
3. Strengthening coordination in surveillance, monitoring, and evaluation.
4. Supporting efforts towards stronger integration and harmonization of information management systems within the health sector.
5. Strengthening collaboration with RBM partners on matters relating to surveillance, monitoring and evaluation.

6.5.1.4 Expected Outputs

The expected outputs include:

1. Improved malaria data quality and linkages with diagnostic services and malaria surveillance.
2. Improved malaria stratification maps relevant for local level decision-making.
3. Timely information (reports) dissemination and feedback to national, provincial, district, and community levels.

6.5.1.5 Indicators

Indicators include:

1. Percentage of districts reporting on time (within 45 days of the end of the month).
2. Percentage of health facilities reporting on time (within 45 days of the end of month).
3. Percentage of months the NMCP receives updates to the DHIS dataset from the HMIS Programme.

6.5.2 Operations Research



6.5.2.1 Situation Analysis

The RBM Global Strategic Plan 2011–2015 has prioritized the expansion of investment in research to obtain the evidence base needed to guide effective and appropriate national policies and practices. In accordance with this plan, the NMCP conducts operations research that is relevant to its national objectives and priorities. From 2006 to 2010, various research activities were conducted and disseminated.

This included research in the following areas: drug efficacy; compliance; cost effectiveness; impact and evaluation; and Knowledge, Attitude and Practice studies among others. This was in line with ensuring that the best approaches are explored and used to refine the implementation process and that best practices are adhered to, therefore maximizing desired health outcomes. However, the research agenda has not been comprehensively implemented due to inadequate funding.

6.5.2.2 Objective

The objective is to strengthen operations research and to generate evidence to support informed decision-making on policy and implementation of the malaria programme.

6.5.2.3 Main Strategies

The main strategies include:

1. Developing a malaria-specific operations research agenda for Zambia.
2. Strengthening collaboration with research institutions and individual researchers.
3. Improving capacity in malaria research at all levels.
4. Strengthening research and development programmes.
5. Modernizing compilation, analysis, storage, and retrieval of malaria research data.
6. Strengthening systems for dissemination of research findings in order to ensure timely dissemination of research findings to stakeholders.

6.5.2.4 Expected Outcomes

Expected outcomes include:

1. Development of a malaria research agenda.
2. Strengthening of national-level coordination for malaria research.
3. Strengthening of malaria research capacity.
4. Establishment of a Malaria Research Resource Centre Database.
5. Enhancement of dissemination of research findings through existing channels.
6. Strengthening of usage of research findings/evidence in policy formulation and programming.

6.5.2.5 Indicators

Indicators include:



1. Percentage of planned operational research that is actually conducted.
2. Number of malaria research activities archived.
3. Percentage of research findings disseminated by publication and by in-country meetings.

6.6 Health Financing

6.6.1 Overview

The NMCP is a grant-aided national programme under the MOH. The programme is funded through the MOH budget, with operational grants, grants for commodities, and capital expenditure grants. The programme is also financially supported by various RBM partners and other stakeholders who have continued to support the procurement of malaria control commodities, implementation of IVM activities, IEC/BCC, and programme management.

The main challenges affecting financing of the malaria control programme include: inadequate funding from both the government and external sources, remaining significant financing gaps, over-dependence of the programme on external support, and weak external support due to inadequate harmonization.

The focus of this strategic plan will be directed at mobilizing adequate financial resources, ensuring predictability and sustainability of funding in order to ensure successful implementation of the proposed strategies, and attaining the stated goals and objectives. This will be achieved through strengthening planning and budgeting, harnessing the existing sources of support, advocating for additional support, and strengthening accountability.

6.6.2 Objectives

The health financing objective is to mobilize adequate financial resources through sustainable means, to ensure efficient and cost-effective utilization of such resources while observing high standards of accountability, and to facilitate the provision of equitable quality malaria control services based on epidemiological evidence.

6.6.3 Main Strategies

The main strategies include:

1. Strengthening financial planning and gap analysis by:
 - i) Annually reviewing and updating the costing of the strategies and gap analysis so as to ensure focused financing of malaria control activities.
 - ii) Improving MTEF and annual planning and budgeting.
 - iii) Ensuring broad participation of partners in costing and gap analysis.
2. Resource Mobilization by way of:
 - i) Advocating for increased funding from Government of the Republic of Zambia (GRZ)/MOH to the NMCP to exceed 50% of the total financing needs, annually.



- ii) Advocating for timely disbursements of approved funding by MOH.
 - iii) Advocating for increases in external funding through further strengthening of partnerships with CPs and civil society, maintaining high standards of transparency and accountability, and preparing quality proposals for financial and technical support from partners.
 - iv) Strengthening inter-sectoral collaboration at all levels in order to maximize funding synergies.
 - v) Advocating and facilitating increased private sector participation through direct investments and PPPs in consultation with MOH and the Ministry of Finance and National Planning.
3. Strengthening financial accountability by:
- i) Ensuring strict and consistent compliance with established financial and administrative management systems and procedures.
 - ii) Strengthening financial management systems and capacities.
 - iii) Ensuring strict compliance with the financial management and reporting requirements of the partners supporting the NMCP.
 - iv) Strengthening coordination with the MOH finance and procurement units.
 - v) Strengthening internal auditing and ensure unqualified audits by the Auditor General's office and the CPs.

6.6.4 Expected Outcomes

The expected outcomes include:

- 1. Improved planning and forecasting of resource needs.
- 2. Increased availability of resources towards meeting financing needs.
- 3. Increased accountability for available funds.
- 4. Reduced over-dependency on external support.

6.6.5 Key Indicators

Key indicators include:

- 1. MTEF and annual operational plans and budgets.
- 2. Annual MOH-approved budget for NMCP (as in the Yellow Book), as a percentage of total financing needs.
- 3. External funding from partners, as a percentage of total financing needs.
- 4. Number of audits conducted.
- 5. Number of audit queries.

6.7 Leadership and Governance

6.7.1 Overview

The NMCP is a national programme under the Directorate of Public Health and Research of the MOH, and is among the high priority programmes within the health sector and national



policy and development agenda. The programme is guided by comprehensive leadership and governance systems and structures aimed at ensuring efficient and effective policy, organization, coordination, and implementation of programme activities.

This plan will focus on strengthening the policy, regulatory, organization and management, partnerships, transparency, and accountability frameworks so as to improve programme management and coordination.

6.7.2 Objective

The objective of the plan is to significantly strengthen the leadership and governance frameworks in order to improve organization, coordination, partnerships, transparency, and accountability for efficient and effective management of the NMCP.

6.7.3 Main Strategies

The main strategies include:

1. Strengthening policy and regulatory framework for the NMCP by:
 - i. Reviewing and updating the policies and guidelines taking into account national, regional, and global policy perspectives.
 - ii. Disseminating and monitoring implementation of the policies and guidelines.
2. Strengthening organization and management of the NMCP.
3. Strengthening planning and coordination.
4. Strengthening and broadening partnerships at all levels by:
 - i. Strengthening partnerships at all levels (community, district, provincial, and national).
 - ii. Supporting private sector participation through direct investments and PPPs.
 - iii. Designating one officer at NMCP to coordinate grants/partnerships.
 - iv. Empowering and effectively supporting communities.
 - v. Strengthening inter-border malaria control collaborations/partnerships.
 - vi. Strengthening coordination and broadening consultations with partners.
5. Strengthening transparency and accountability within the NMCP by:
 - i. Strengthening and broadening participation and consultations with partners.
 - ii. Developing and implementing a budget tracking system.
 - iii. Strengthening monitoring and evaluation.

6.7.4 Expected Outcomes

Expected outcomes include:

1. Updated policies and guidelines.
2. Improved organization and management of the NMCP.
3. Improved planning and coordination.
4. Stronger and better coordinated partnerships at all levels.
5. Enhanced transparency and accountability for the resources and actions made.



6.7.5 Indicators

Indicators include:

1. Number of policies and guidelines reviewed, updated, printed, and disseminated annually.
2. Number of quarterly coordinating meetings at different levels.
3. Resource mobilization and advocacy plan developed.
4. Central Malaria Reference Centre established.

7 IMPLEMENTATION FRAMEWORK

7.1 Overview

This strategic plan will be implemented within the established policy and regulatory, institutional, planning and financing, and M&E frameworks. Deliberate efforts will be made to periodically review and strengthen these frameworks in order to ensure smooth, efficient, and effective implementation of this plan.

7.2 Policy and Regulatory Framework

Since the repeal, in 2005, of the National Health Services Act of 1995, the health sector has been operating without a comprehensive and overarching National Health Policy and legislation. However, the sector is guided by a strong and consistent strategic planning framework and pieces of policies, guidelines, and legislation targeting specific aspects of health. Currently, the MOH is in the process of developing a new overarching national health policy and act that will provide a comprehensive policy and legal framework for the health sector in Zambia.

Similarly, there is no comprehensive and overarching national malaria policy document. The malaria programme is largely guided by the strategic plans and individual pieces of policies, guidelines, and legislation for specific aspects of malaria control and international standards and regulations. A summary of the key health policies and legislation that are relevant to malaria control is provided in Table 5.

These pieces of policy and legislation apply to various aspects of the NMCP but are not exhaustive. They are also complimented with sets of guidelines and regulations developed for specific areas of malaria control. The NMCP shall ensure strict and consistent compliance with all the relevant policies, regulations, and guidelines. It will also, in collaboration with the MOH, periodically review the needs and gaps in respect of policies and legislation and advocate for appropriate amendments.



7.3 Institutional Framework

The plan will be implemented within the existing programme and health sector institutional frameworks. The MOH will take the overall responsibility for directing policy and implementation of the plan, which also forms part of the NHSP2011–2015. However, the MOH has delegated the responsibilities of management and coordination of the malaria programme to NMCC, which will take responsibility for day-to-day implementation of the plan. Below is a brief description of the institutional framework through which this plan will be implemented.

7.3.1 Ministry of Health Structures

7.3.1.1 National Level

Ministry of Health: The MOH will be responsible for policy, legislation, planning, coordination, management, and M&E of the health sector, including the NMCP. It will also be responsible for resource mobilization and technical support to the NMCP and other structures under it. In addition to the formal organizational structure and establishment, MOH has also established the Sector Advisory Group (SAG), which is the forum for policy dialogue and coordination with health sector partners, at the national level.

National Malaria Control Centre: The MOH has established the NMCC, which is a department under the Directorate of Public Health and Research responsible for programming and implementation of the NMCP. The NMCC has the technical responsibility of providing technical guidance, leadership, coordination, and control of malaria control in the country, including the coordination of the various partners at different levels. NMCC also serves as the secretariat for RBM activities and links the service delivery points with the national RBM partners. NMCC also depends on the decentralized coordination structures and partnerships at national, provincial, and district levels, such as the malaria task forces, TWGs, malaria focal point persons, and community health partnerships.

The national malaria task force: This task force is chaired by the Deputy Minister of Health and reports to the Vice-President and the cabinet through the Minister of Health. Membership includes deputy ministers from all line ministries, WHO, and UNICEF. It is expected to provide a platform for higher-level political commitment and monitoring of the implementation of the NMSP. The NMCC facilitates and plays the role of Secretariat to the bi-annual meetings of this task force. However, this task force is currently inactive and has not met for several years. The NMCP, through the MOH, will advocate for revitalization of this task force.

NMCC technical working groups: The NMCC has established TWGs in the following areas: vector control, case management, IEC, M&E, and operations research. Membership to these TWGs includes MOH/NMCC and RBM partners from the civil society, public, and private sectors. The TWGs meet quarterly to provide guidance in the implementation of the programme, monitor progress, and assist in the development of various policy and technical guidelines. The chair of each TWG is appointed from among the members.



7.3.1.2 Provincial Level

PHOs will be responsible for providing technical support, oversight, and monitoring of the implementation of malaria interventions. Coordination of malaria control activities is under the responsibility of the Provincial Public Health Unit of the PHO. PHOs conduct quarterly performance assessments and consolidate information on the HMIS.

7.3.1.3 District Level

DHOs will be responsible for planning, coordination, implementation, and monitoring of all health programmes in the district. The malaria control aspect falls under the District Public Health Unit. Health workers within the DHO have been appointed as district malaria focal point persons. The district focal point persons are often environmental health officers or public health nurses and have other responsibilities apart from malaria responsibilities.

District malaria task forces have also been established in 72 districts, which function as part of the DHOs providing the necessary malaria control-related technical support. Members of the task force include all government departments, relevant NGOs, the private sector, and other stakeholders involved in malaria activities at the district level. District malaria task forces are chaired by the district medical officers and are responsible for planning, overseeing, and monitoring the implementation of malaria activities at the district level. However, with the ongoing establishment of additional new districts, NMCP will ensure that district malaria task forces are established in all the new districts.

7.3.1.4 Health Facility Level

Health posts, health centres and hospitals will be responsible for the delivery of malaria control interventions at facility level as part of the comprehensive PHC package of services and in communities. Hospital advisory committees, health centre advisory committees, and NHCs have also been established to provide formal linkages between the health service delivery systems and the populations within the given district.

7.3.1.5 Community Level

NHCs have been established at the community level. They consist of community representatives from surrounding villages (at least three villages) and are responsible for facilitating linkages between the communities and the health system at the community level. Their responsibilities include dissemination of information on public health issues and mobilization of communities to participate in health sector planning, management, and M&E.

Community health partners, including CHWs and malaria agents, have also been appointed and are key in providing guidance, sensitization, and assistance to community members on basic healthcare interventions as well as providing community level health care services, including malaria diagnosis and treatment. These community health partners are volunteers who are trained in basic identification, prevention, and referral methods for common illnesses. In addition, community project committees, with assistance from CHWs, malaria agents, and traditional birth attendants, are responsible for the implementation of demand-



driven malaria prevention and control activities. However, various health sector reviews have observed that the community health partners are not receiving adequate support to motivate them in their work. In this respect, a study on community health partners was conducted in early 2010 and the report is pending.

7.3.1.6 Health Training Institutions and Statutory Boards

Statutory Boards: There are two types of Statutory Boards under the MOH structures: regulatory and service statutory boards. The role of the regulatory statutory boards are to ensure that the relevant laws and regulations are developed and enforced in order to ensure high standards of safety, ethics, and professionalism in the health sector. On the other hand, the role of the service statutory boards will be to provide their respective services in support to the core health services.

Health Training Institutions: These institutions will be responsible for the production of appropriately qualified health workers for implementation of the plan.

7.3.2 Key Malaria Partners

All the key malaria partners will play their respective roles in the implementation of this plan. NMCP will ensure efficient and effective coordination of the partnerships at all levels to ensure coordinated implementation of the plan and benefit from synergies. The following are considered key partners:

- **Government line ministries and departments:** Some government ministries and departments are closely linked to the NMCP. These include: the MOH, under which the NMCP falls; the Ministry of Finance and National Planning, responsible for financing the malaria programme; local authorities, responsible for implementation of some public health programmes, including IRS and larviciding; the ECZ, regulating the use and disposal of malaria commodities and chemicals; and the PRA, responsible for regulating the production, importation, utilization, and disposal of pharmaceuticals.
- **The faith-based health sector/CHAZ:** The CHAZ group is the largest partner to the MOH and is currently the second largest provider of health services, after the MOH. CHAZ also has an established malaria programme; supported by CPs. CHAZ will align its malaria programme to this strategic plan and will play an important role in its implementation.
- **Private sector:** Private health facilities include for- and not-for-profit facilities owned by private business entities and CSOs. These include health facilities at different levels and some institutions directly involved in the delivery of malaria control services. Currently, key private sector partners include private hospitals, clinics, and chemists; Society for Family Health; Konkola Copper Mines Plc; Lumwana Copper Mines; Zambia Sugar Company Plc; and Chilanga Cement Plc. These partnerships will be consolidated and expanded. PPPs will also be promoted.



- **Civil society:** The civil society, both local and international, involved in supporting malaria control activities will play an important role in the implementation of this plan, particularly in health promotion, training and capacity building, and advocacy.
- **The communities:** Much of the progress made in improving the health status of individuals depends on the existence of healthy environments and lifestyles. The NMCP, in collaboration with the MOH, will work towards the strengthening of community participation structures, transparency and accountability, and IEC/BCC in the management of malaria control services within the communities.
- **Cooperating Partners:** The CPs are expected to play an important role in providing financial and technical support to the programme. Government/MOH will work towards strengthening partnerships with the CPs, and harmonisation of their support efforts, for higher impact. This will be structured and agreed upon in the MOU, which will be signed between the MOH, CPs, and CSOs.

7.4 Planning and Capacity Building

The NMCP 2011–15 will be implemented through the development and implementation of MTEF and Annual Action Plans and Budgets, through a “bottom-up” planning process. NMCC will advocate for increased funding to the NMCP. The Government has already issued a policy statement that it will consistently increase funding to the health sector and attain the Abuja Declaration target of 15% of the national budget before 2015. Capacity building plans will be developed and implemented at all levels. This will be done in consultation with all the partners.

7.5 Financing Arrangements

A detailed costing of this strategic plan has been conducted and financing gaps have been identified. The total cost of implementing this strategy is estimated at US\$291,668,539, while the total financing gap is estimated at US\$184,021,465. The summarized analysis is provided at Annex 3.

The NMCP is committed to ensure that all funding required for implementation of this strategy is mobilized in good time. The main sources of funding will be the Government, through the MOH budgets, and the CPs, some of whom have already made commitments to support the programme. Other sources of support will be the private sector, particularly the mining companies, Zambia Sugar Plc, and Chilanga Cement Plc, who have continued to significantly support the IRS programmes in their respective areas.



7.6 Monitoring and Evaluation

Monitoring and evaluation of the plan will be conducted through the existing M&E systems, procedures, and mechanisms. The NMCC M&E unit will coordinate all M&E activities. NMCP M&E system will be linked and integrated to the MOH M&E system.

7.6.1 Monitoring

The HMIS, NMCC-Quarterly Statistical Bulletins, the Financial and Administrative Management System, and other routine systems will be the major tools for data collection. The SM&E-TWG will take responsibility for coordinating M&E. It will also plan and lead the Joint Annual Reviews every year, together with appropriate involvement and support of the CP, other Government ministries, and other key stakeholders.

7.6.2 Evaluation

Evaluation of the implementation of this plan will be incorporated into the evaluation of the NHSP 2011–2015. In this respect, there will be two evaluations during the duration of each NHSP/NMCP. The mid-term review will be conducted after the first 2 and a half years of implementation, while the final review will be at the end of the duration. Stakeholders will jointly agree on the timing, terms of reference, and composition of these two review missions. Where appropriate, the mid-term review and the final evaluation will be conducted.

7.7 Analysis of Risks and Proposed Mitigation

Implementation of this strategic plan will be subject to several risks which will require timely and appropriate mitigation in order to avoid derailing the implementation of the plan. Table 10 presents a detailed analysis of the possible risks and proposed mitigation.

Table 10: Zambia NMSP 2011–2015: Analysis of Risks and Proposed Mitigations

Risk	Mitigation
Indoor residual spraying The most important risk to the programme is the worsening of insecticide resistance. Currently there is evidence of complete DDT and pyrethroid resistance as well as emerging carbamate resistance. Insecticide resistance may render classes of insecticides ineffective and neutralize the benefits of IRS.	Continue to do surveillance for insecticide resistance and respond accordingly.
Resistance also threatens the success of the programme by requiring rotation to more expensive insecticides. In Zambia, costs for insecticides alone have increased three-fold. This extra funding for IRS has become a cost of doing business.	This response will require the rotation of insecticide in spite of the increased cost. We will need to either devote more funds to insecticides or seek new donor support for IRS.
After spraying in many districts for eight years or more, some families may tire of the annual IRS activity which requires them to move furniture, food, and household effects and allow spray operators into their homes.	BCC operations need to work to help decrease homeowner fatigue.



Long-lasting insecticide-treated nets The ITN program is at risk for a decrease in its effectiveness because of insecticide resistance. The only insecticides used in nets are pyrethroids to which mosquitoes have developed resistance in several districts in Zambia. Based on several studies, this resistance may render the nets ineffective.	In spite of pyrethroid resistance, ITNs need to be used because of their physical barrier protection and repellancy. The manufacturers are conducting studies on the efficacy and safety of other classes of insecticides. Rotating insecticides on ITNs may be a future solution. Rotating IRS insecticides may also improve ITN effectiveness.
Another threat to the ITN program is decreased net durability. One recent unpublished study showed that nets 27–44 months old had a mean of 27 holes per net with a total hole area of 60 cm. This implies that nets do not last as long as the 36 months manufacturers suggest they will last. This fact may require that nets be replaced at 12–24 months, increasing the cost of the ITN programme by 1/3 to 2/3 depending on actual net durability.	The Zambia programme needs ongoing operations research to guide the timing of ITN replacement. It is likely that nets will need to be replaced every 1–2 years and that donor support will need to be identified for this extra cost.
The use of ITNs for non-public health purposes needs to be monitored as it will decrease the number of nets protecting Zambians.	Education about the importance of sleeping under ITNs every night coupled with police enforcement may help decrease the misuse of nets.
The failure of many net owners to sleep under their net is another area of risk to the ITN programme.	Education about the importance of sleeping under ITNs every night coupled with police enforcement may help decrease the misuse of nets.
Case management Provider behaviour is the most important risk to the case management programme. Despite a national policy of lab-testing prior to treatment for malaria, many patients are treated with SP or AL based on clinical symptoms only or after having a negative laboratory test which is not felt to be accurate by the clinician.	In 2011 the NMCC provided training in the new case management guidelines to health care providers in all Provinces. This training needs to be repeated to assure that the majority of clinical care providers have heard the message that lab testing should be done before a diagnosis of malaria is made and that the lab test results can be trusted.
Inappropriate use of AL or SP will increase antimalarial pressure on the parasite and the risk of resistance.	Appropriate use of AL and SP is stressed in the 2011 case management courses put on to introduce health care provider staff to the new case management guidelines.
Delays in the manufacturing of AL also threaten case management by increasing the risk of stock outs of this first line treatment for malaria in Zambia.	The NMCC has granted permission for generic manufacturers of quality AL to have their products used in Zambia to mitigate the delays by other manufacturers. Likewise, careful quarterly quantification of malaria commodities will decrease the risk of procurement delays causing stock outs.
The emergence of resistance to SP has been an issue in Africa for many years. More recently, concern about waning effectiveness of SP in the prevention of malaria in pregnancy has been noted in several studies on the impact of SP in IPTp.	The issue of SP resistance must be dealt with by the dissemination of timely efficacy and effectiveness data as well as research into new IPTp options. The use of ITNs and IRS must continue to be stressed for all pregnant women.
Operations research Operations research is threatened by the lack of adequate funding and the paucity of sophisticated laboratory capacity in Zambia.	Efforts will be made to increase funding for Operations research. NMCC will work with partners to enhance the molecular diagnostic capacity in Zambia including, DNA sequencing facilities.
Surveillance, monitoring, and evaluation The collection of data via the HMIS is threatened by the current database which does not have capacity to manage the increasing number of reported cases and database complexity of the new HMIS implemented in 2009.	The MOH will be encouraged to transition the HMIS system to a new platform that will allow web-based access and will support the large and complex HMIS database.



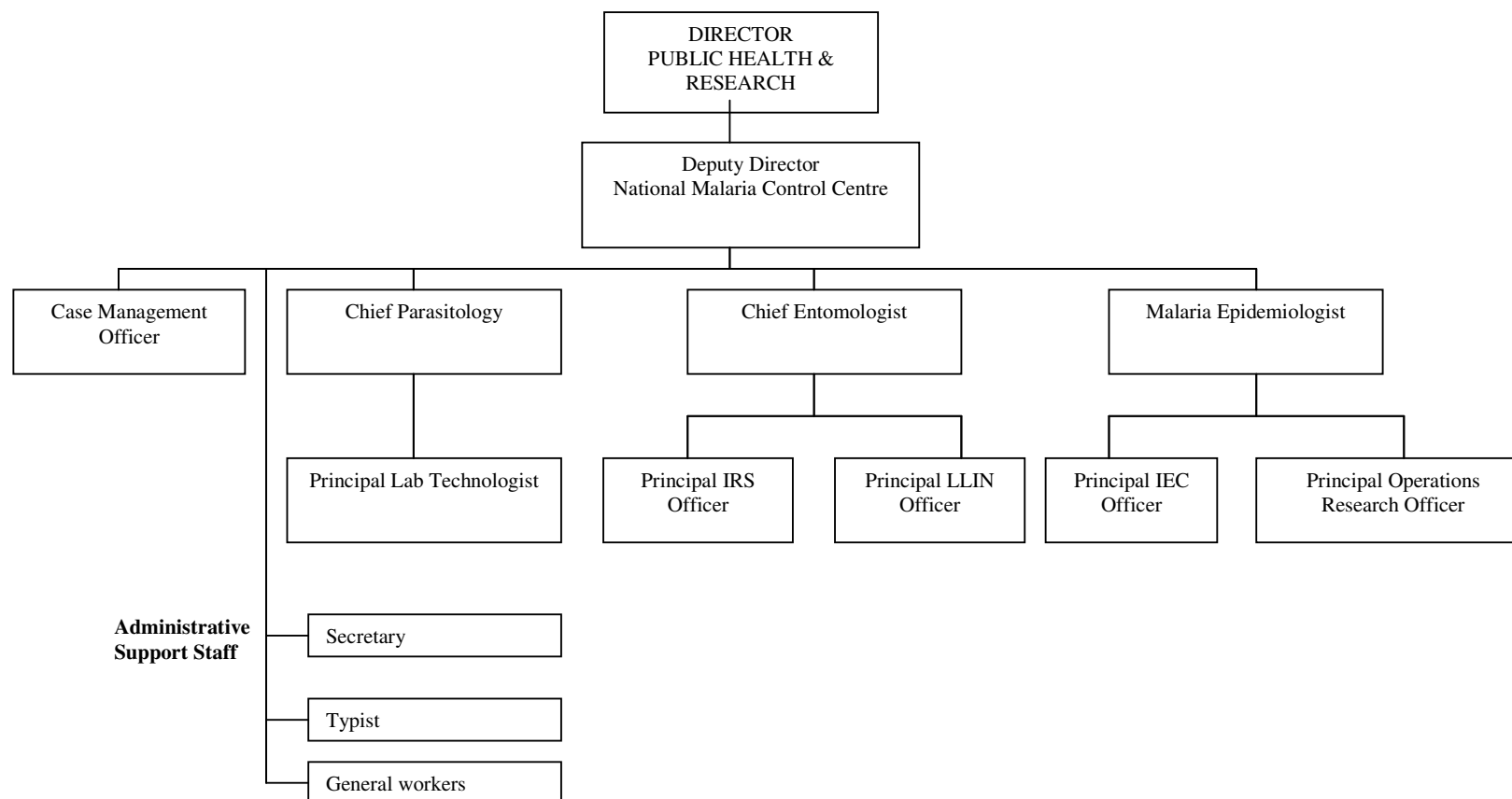
The HMIS system is also threatened by delays in reporting at all levels including data sharing with the NMCP on a regular basis. HMIS data is typically available six months or more after the occurrence of the event being recorded.	The HMIS will also be encouraged to provide data to MOH programmes in a timely manner but not less than every 90 days.
The lack of funding for epidemic response is also a threat to this programme. As malaria rates continue to drop in Zambia, the risk of epidemics in non-immune populations will increase.	Funding to support planning and response to malaria outbreaks will be sought from the GRZ and donors.
Finally, there is a lack of timely and person-centered surveillance data in low prevalence areas that will allow the NMCP to document malaria free zones by 2015.	The NMCC will continue to support the roll out of name-based and weekly SMS-based reporting of malaria cases in low prevalence areas as the programme moves towards elimination in five districts.
Programme management funding The management of this complex and progressive malaria control effort is threatened by inadequate MOH funding. Staff levels at the NMCP have decreased in recent years during the reorganization of the Ministry of Health.	NMCC will make efforts to increase GRZ funding for the staff needed at the NMCC to support the program over the next five years.
Also, some donor-funded, but NMCP embedded, staff are required to transition to MOH payrolls. If this does not happen there will be further loss of qualified staff to carry on the activities of this plan.	NMCC will make efforts to increase GRZ funding for the staff needed at the NMCC to support the programme over the next five years.
Reliance on external donor funding puts this plan at risk of not fulfilling its malaria control efforts should donor funding fail to meet expectations. There is also concern that international economic conditions and donor fatigue may cause a decrease in funding. It is also possible that if malaria rates continue to decrease in Zambia donors will lose interest.	The malaria cooperating partners need to continue to pressure the GRZ to increase health funding to the 15% of overall GRZ budget as agreed upon by all signatories to the Abuja Declaration. This same group in addition the Republican President and other senior GRZ leaders should encourage other donors to continue to invest in malaria control in Zambia.
Regulatory issues Regulatory risks include the failure of AL to be made non-prescription by the PRA. This could threaten the use of AL in communities by CHWs.	NMCC needs to introduce legislation or an executive order allowing CHWs to legally prescribe AL in their constituencies.
Procurement issues The plan is put at risk by frequent delays in procurement by implementing partners. This causes unexpected stock-outs of LLINs, AL, RDTs, and SP.	All key partners need to participate in quantification exercises in which the NMCC projects stock levels and potential stock-outs. The GRZ needs to identify funding for emergency procurements to avoid reliance on reprogramming of donor funds and last minute emergency procurements.
Human resources The human resource crisis in Zambia must be considered a risk factor in implementing this plan. If the GRZ fails to meet its Human Resource for Health Strategic Plan goals then there will be less staff to manage clinical care including CHWs which play a key role in the plan. If clinical providers are in short supply, case management will suffer. If less CHWs are trained or recruited than planned the community component of this plan will be at risk.	NMCC needs to encourage the MOH and Parliament to continue incentives for health care workers at all levels. The plan to train and pay CHWs (to be called Community Health Assistants) must be funded and carried out by the GRZ to assure sufficient community-level support for malaria treatment and control in Zambia.
Churches Health Association of Zambia (CHAZ) Challenges with insufficient funding and lack of staff also impact the 30–50% of clinical care provided by CHAZ.	Support the increase in GRZ for health and efforts to alleviate the human resource crisis by training and retaining staff.





8 ANNEXES

Annex 1: NMCC Organizational Structure





Annex 2: Monitoring and evaluation framework

Annex 2:1 Log frame - National Malaria Strategic Plan 2011-15

Item	Indicators	Baseline	Targets					Data Source	Method	Frequency
		Year 0 2010	Yr1 2011	Yr2 2012	Yr 3 2013	Yr 4 2014	Yr5 2015			
Goals	Impact Indicators									
To reduce malaria incidence by 75% of the 2010 baseline by 2015. To reduce malaria deaths to near zero of the 2010 baseline by 2015	Malaria incidence (confirmed and unconfirmed) per 1000	330			227		145	Health facility	HMIS	yearly
	In-patient malaria deaths (all ages) per 1000 persons per year	37			30		15	Health facility	HMIS	yearly
	% of children ages 0-59 months with malaria parasites	16			-		5	Household	MIS	Every 2 years
	% of children ages 0-59 months with severe anemia (Hb < 8 g/dl)	9			-		4	Household	MIS	Every 2 years



Item	Indicators	Baseline	Targets					Data Source	Method	Frequency
		Year 0 2010	Yr1 2011	Yr2 2012	Yr 3 2013	Yr 4 2014	Yr5 2015			
Objectives	Outcome Indicators (Prevention)									
Objective 1: To achieve universal coverage and utilization of malaria prevention measures by 2015.	% households (HHs) with at least one ITN (ITN coverage=1 net for 2 people)	64			-		100	Household	MIS	Every two years
	% of HH members who slept under ITN the previous night	42			-		80	Household	MIS	Every two years
	% pregnant women who slept under an ITN previous night	46			-		80	Household	MIS	Every two years
	% of children ages 0-59 months who slept under an ITN previous night	50			-		80	Household	MIS	Every two years
	% of pregnant women who receive two doses of intermittent preventive treatment during pregnancy (IPTp2)	70			-		80	Household	MIS	Every two years
	% HH with at least one ITN or recent IRS	73			-		90	Household	MIS	Every two years
	Proportion of population protected by IRS in target districts	Xxx						NMCC IRS reports	IRS	Yearly



		Baseline	Targets							
Item	Indicators	Year 0 2010	Yr1 2011	Yr2 2012	Yr 3 2013	Yr 4 2014	Yr5 2015	Data Source	Method	Frequency
Objectives	Outcome Indicators (Case management)									
Objective 2 To achieve universal access to quality malaria case management in the public and private sector.	Proportion of out-patient suspected malaria cases that undergo laboratory diagnosis	40			50		100	HFs	HMIS	Monthly
Objective 3 To establish five malaria-free zones by 2015.	Number of malaria-free zones established by 2015.	0			2		5	Districts	Surveillance	Annually
Objective 4 To build capacity and preparedness to respond to malaria epidemics by 2015.	Proportion of facilities reporting no stock-outs of first line antimalarial medicines within the past three months	80			100		100	HMIS	DHIS	Quarterly- monthly
Objective 5 To increase public awareness and knowledge on malaria prevention and control and to improve uptake and correct use of interventions.	Percentage of women ages 15-49 who recognize fever as a symptom of malaria	75			-		90	Household	MIS	Every two years



Item	Indicators	Baseline	Targets					Data Source	Method	Frequency
		Year 0 2010	Yr1 2011	Yr2 2012	Yr 3 2013	Yr 4 2014	Yr5 2015			
Objectives	Output Indicators									
Objective 6: To achieve universal coverage of malaria prevention measures by 2015.	Number of LLINs distributed to beneficiaries	Gap analysis			Gap analysis		Gap analysis	NMCC ITNs reports	Surveillance	Yearly
Objective 7: To increase public awareness and knowledge on malaria prevention and control and to improve uptake and correct use of interventions.	% of pregnant women who reported mosquito bites as a cause of malaria	85					90	Household	MIS	Every two years
Objective 8: To build capacity in preparedness to respond to malaria epidemics by 2015.	% target districts with district epidemic preparedness plans.	98			100		100	Districts		Annually
Objective 9: To build capacities in surveillance monitoring and evaluation for timely quality data reporting	Proportion of targeted districts conducting data audits	0			50		80	Districts	Supervisory visits	Quarterly
Objective 10 To develop multi sectoral partnerships for effective program coordination, management and monitoring of program activities	Proportion of GOZ budget (USD) allocated to health	10			11		15	GRZ Budget		Annually



Annex 2:1 National Malaria Performance Monitoring Indicators and definitions

Indicator	Definition	Source	Frequency	Level of measurement
<i>Impact</i>				
Under five, all-cause child mortality	The probability of dying before the fifth birthday, expressed per 1,000 live births.	Representative, household surveys with sufficient sample size (DHS).	Every ~5 years	National
Malaria incidence rate	<i>Current definition:</i> Numerator: reported cases of malaria (<5 years, ≥5 years). Denominator: population, expressed per 1,000.	Routinely reported through HMIS and rapid reporting system.	Monthly, weekly	National, provincial, district, facility
	<i>Desired definition:</i> Numerator: reported cases of malaria (<5 years, ≥5 years) with a parasitologically confirmed diagnosis using either microscopy or RDTs. Denominator: population, expressed per 1,000.	Routinely reported through HMIS and rapid reporting system.	Monthly, weekly	National, provincial, district, facility
Malaria positivity rate	<i>Desired definition:</i> Numerator: reported cases of malaria (<5 years, ≥5 years) with a positive parasitologically confirmed diagnosis using either microscopy or RDTs. Denominator: number of suspected malaria cases tested using either microscopy or RDTs (by age group, especially children under 5). Expressed as a percentage.	Routinely reported through HMIS and rapid reporting system.	Monthly, weekly	National, provincial, district, facility
Malaria parasite prevalence	Numerator: number of children under five years with malaria parasites, tested either through microscopy or RDTs. Denominator: total number of children under five years surveyed within malaria-endemic areas	Representative, household surveys (DHS, MIS).	Biennial	National, provincial
Severe anemia prevalence	Numerator: number of children aged 6–30 months with	Representative, household	Biennial	National, provincial

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	among children	severe anemia (hemoglobin <8) Denominator: total number of children under five years surveyed within malaria-endemic areas.	surveys (DHS, MIS).		
Outcomes					
Case management	Malaria case fatality rate	<i>Current definition:</i> Numerator: deaths attributed to malaria from a clinical malaria diagnosis. Denominator: inpatient malaria cases with clinical diagnosis Rate expressed per 1,000 district population.	Routinely reported through HMIS.	Monthly	National, provincial, district, facility
		<i>Desired definition:</i> Numerator: deaths attributed to inpatient malaria cases with a confirmed diagnosis using either microscopy or RDTs (by age group, especially children under 5). Denominator: inpatient malaria cases with a confirmed diagnosis using either microscopy or RDTs (by age group, especially children under 5). Rate expressed per 1,000 district population.	Routinely reported through HMIS.	Monthly	National, provincial, district, facility
	Malaria cases with confirmed diagnosis (%)	Numerator: number of clinical malaria cases with a positive confirmed diagnosis using either microscopy or RDTs. Denominator: total number of malaria attendance with clinical diagnosis.	Routinely reported through HMIS and rapid reporting system.	Monthly, weekly	National, provincial, district, facility
	Malaria testing rate (%)	Numerator: number of suspected malaria cases tested for malaria. Denominator: number of suspected malaria cases.	Routinely reported through HMIS and rapid reporting system.	Monthly, weekly	
	Health care providers correctly diagnosing and treating malaria (%)	Numerator: number of health care providers (and community health workers) correctly diagnosing and treating malaria according to national policy. Denominator: total number of health care providers (and community health workers) surveyed.	Representative facility surveys; report and requisition form.	Biennial	National, provincial
	Health facilities with no stock-outs of Coartem® for more than a week (%)	Numerator: number of health facilities with no stock outs of Coartem® for more than one week. Denominator: total number of health facilities.	Routinely reported through HMIS, performance assessment, Health Facility Survey, and rapid reporting system.	Monthly, weekly	National, provincial, district, facility
	Febrile children who received antimalarial treatment according to national policy within 24 hours (%)	Numerator: number of children under 5 years old with confirmed malaria in the previous 2 weeks who received antimalarial treatment according to national policy within 24 hours of confirmation. Denominator: total number of children under five years with confirmed malaria surveyed within malaria-endemic areas	Representative, household surveys (DHS, MIS)	Biennial	National, provincial



	IPTp for pregnant women through ANC visits (%)	<i>Routinely reported through facilities:</i> Numerator: number of antenatal clinic attendances given 1st, 2nd, and 3rd dose SP. Denominator: total number of first antenatal clinic attendances. Expressed as percentage for each 1st, 2nd, and 3rd dose IPT received separately.	Routinely reported through HMIS.	Monthly	National, provincial, district, facility
		<i>Household survey sample:</i> Numerator: number of women at risk for malaria who took an antimalarial drug to prevent malaria during their last pregnancy that led to a live birth within the last 5 years. Denominator: total number of women surveyed at risk for malaria who delivered a live baby within the last 5 years.	Representative, household surveys (DHS, MIS).	Biennial	National, provincial
IRS	Households sprayed within the previous 12 months (%)	Numerator: number of households surveyed reported to have been sprayed within the previous 12 months. Denominator: total number of households surveyed within malaria-endemic areas,	Representative, household surveys (DHS, MIS).	Biennial	National, provincial
	Targeted structures sprayed for IRS (%)	Numerator: number of eligible structures sprayed. Denominator: number of eligible structures targeted for IRS. This indicator represents operational coverage for IRS efforts at districts and national level.	NMCP reports,	Annual	National, IRS districts



ANNEX 3:0 COSTING AND GAP ANALYSIS

Annex 3.1: Programmatic and Financial Gap Analysis - Malaria Commodities

#	Descriptions	2011	2012	2013	2014	2015
A.	LLINs: financing needs and gaps					
1	Quantities					
	- LLINs for routine distributions	3,086,725	3,175,504	3,267,130	3,361,704	3,459,332
	- LLINs for mass campaigns	-	-	-	5,653,082	-
	Total LLINs needed	3,086,725	3,175,504	3,267,130	8,881,401	3,459,332
	Less: LLINs available/financed by GRZ and partners	4,216,779	4,742,948	660,833	640,000	640,000
	Surplus/(Gap)	1,130,054	1,567,444	(2,606,297)	(8,241,401)	(2,819,332)
2	Financing (US\$)					
	- LLINs for routine distributions	18,520,352	19,053,023	19,602,780	20,170,226	20,755,991
	- LLINs for mass campaigns	-	-	-	33,918,494	-
	Total LLINs needed	18,520,352	19,053,023	19,602,780	54,088,720	20,755,991
	Less: LLINs available/financed by GRZ and partners	25,300,676	28,457,690	3,965,000	3,840,000	3,840,000
	Surplus/(gap)	6,780,324	9,404,667	(15,637,780)	(50,248,720)	(16,915,991)
	Estimated price per unit	6.00	6.00	6.00	6.00	6.00



B.	ACTs: financing needs and gaps					
1	Quantities					
	Total ACTs needed (after adjusting for private sector)	4,123,616	3,938,888	3,514,524	3,339,191	3,422,403
	Commitments from GRZ and partners	4,976,109	3,636,364	3,636,364	3,636,364	3,636,364
	Surplus/(gap)	852,493	(302,524)	121,839	297,172	213,961
2	Financing (US\$)					
	Total ACTs needed	4,535,978	4,332,777	3,865,977	3,673,111	3,764,643
	Commitments from GRZ and partners	5,473,720	4,000,000	4,000,000	4,000,000	4,000,000
	Surplus/(gap)	937,742	(332,777)	134,023	326,889	235,357
	Estimated price per unit	1.1	1.1	1.1	1.1	1.1
C.	RDTs: financing needs and gaps					
1	Quantities					
	Total RDTs needed	2,000,290	1,833,225	2,650,156	3,390,315	3,703,072
	Commitments from GRZ and partners	4,916,600	6,666,667	6,666,667	6,666,667	6,666,667
	Surplus/(gap)	2,916,310	4,833,442	4,016,511	3,276,351	2,963,595
2	Financing (US\$)					
	Total RDTs needed	1,500,218	1,374,919	1,987,617	2,542,736	2,777,304
	Commitments from GRZ and partners	3,687,450	5,000,000	5,000,000	5,000,000	5,000,000
	Surplus/(gap)	2,187,233	3,625,081	3,012,383	2,457,264	2,222,696
	Estimated price per unit	0.75	0.75	0.75	0.75	0.75



#	Descriptions	2011	2012	2013	2014	2015
D.	IRS commodities					
1	Quantities					
	Population to be covered by IRS	5,098,104	5,264,677	5,437,484	5,616,782	5,802,842
	Commitments from GRZ and partners	5,340,000	4,476,000	3,435,000	3,492,000	2,982,000
	Surplus/(gap)	241,896	(788,677)	(2,002,484)	(2,124,782)	(2,820,842)
2	Financing (US\$)					
	Population to be covered by IRS	8,496,840	8,774,462	9,062,473	9,361,304	9,671,403
	Commitments from GRZ and partners	8,900,000	7,460,000	5,725,000	5,820,000	4,970,000
	Surplus/(gap)	403,160	(1,314,462)	(3,337,473)	(3,541,304)	(4,701,403)
	Estimated price per unit	1.67	1.67	1.67	1.67	1.67



Annex 3.2: Summarized Costing and Financial Gap Analysis

S/N	Strategies	Timeline (FY Jan – Dec)					TOTAL
		2011	2012	2013	2014	2015	
1	FINANCING NEEDS						
	1.1 Integrated vector control	2,951,649	3,293,800	2,467,180	3,967,400	4,515,141	17,195,170
	1.2 Indoor residual spraying (IRS)	12,406,840	13,184,462	13,587,473	13,936,304	14,141,403	67,256,483
	1.3 Insecticide-treated nets (ITNs)	18,585,352	19,118,023	19,667,780	54,153,720	20,820,991	132,345,866
	1.4 Malaria case management (diagnosis and treatment)	7,685,444	11,748,016	12,208,883	8,603,680	8,810,656	49,056,678
	1.5 Epidemic preparedness and response (EPR)	1,080,000	1,000,000	770,000	720,000	770,000	4,340,000
	1.6 Surveillance, monitoring and evaluation (SM&E)	965,800	1,505,000	990,000	1,510,000	760,000	5,730,800
	1.7 Operational research (OR)	1,352,000	1,440,700	1,611,270	1,767,997	2,001,497	8,173,464
	1.8 Information, education, and communication; behaviour change communication (IEC/BCC)	973,945	1,038,339	1,154,372	1,271,391	1,382,031	5,820,078
	1.9 Programme management (PM)	350,000	355,000	340,000	355,000	350,000	1,750,000
	TOTAL NEEDS	46,351,030	52,683,340	52,796,958	86,285,492	53,551,718	291,668,539
2	FINANCING SOURCES/COMMITMENTS						
	2.1 Local/MOH	297,648	428,697	471,567	518,724	570,596	2,287,231
	2.2 External support/cooperating partners	43,825,733	29,299,110	13,765,000	9,660,000	8,810,000	105,359,843
	TOTAL SOURCES	44,123,381	29,727,807	14,236,567	10,178,724	9,380,596	107,647,074
3	FINANCING SURPLUS/(GAP)	(2,227,650)	(22,955,533)	(38,560,391)	(76,106,769)	(44,171,123)	(184,021,465)



Annex 4: Zambia: Health Facilities by Type, Size, and Ownership, 2010

Description	Central	Copperbelt	Eastern	Luapula	Lusaka	Northern	North western	Southern	Western	Zambia
A) By level of care										
Level 3 hospitals	0	3	0	0	3	0	0	0	0	6
Level 2 hospitals	2	9	2	1	0	2	2	2	1	21
Level 1 hospitals	6	8	8	5	15	6	10	14	12	84
Urban health centres	32	137	8	1	182	14	18	34	10	436
Rural health centres	113	53	156	125	47	145	120	174	127	1,060
Health posts	35	25	53	10	32	49	17	30	24	275
Total	188	235	227	142	279	216	167	254	174	1,882

B) By type of ownership

Public health facilities	164	164	211	132	116	189	137	217	159	1,489
Mission health facilities	10	10	16	7	8	14	22	24	11	122
Private health facilities	14	61	0	3	155	13	8	13	4	271
Total	188	235	227	142	279	216	167	254	174	1,882

Source: Health Institutions in Zambia, Ministry of Health, 2010

1. Core Health Facilities

Core health service delivery facilities fall into five categories, namely: Health Posts (HPs) and Health Centres (HCs) at community level; Level 1 hospitals at district level; Level 2 general hospitals at provincial level; and Level 3 tertiary hospitals at national level. The referral system also follows the same hierarchy.

2. Health Training Institutions

Several training institutions for health professionals have been established. These institutions are responsible for production of health workers in various health disciplines through pre-service and in-service training programmes. These facilities include the University of Zambia School of Medicine, under the Ministry of Education; Evelyn Hone College, under the Ministry of Technical Education and Vocational Training; the Chainama Hills College of Health Sciences, and various nursing and midwifery schools, bio-medical training schools, and other paramedical training institutions at different levels under the MOH; mission health training schools, under CHAZ; and emergent private health training institutions at different levels.



3. Health Statutory Boards

Health statutory boards have also been established to provide the necessary technical and regulatory support to the core health service delivery facilities. These are sub-divided into service delivery and regulatory boards. Service delivery statutory boards are responsible for providing specialized support services to core health service delivery facilities. Regulatory statutory boards are responsible for enforcing specific government policies, legislation, and regulations related to health. These include the Zambia Medical Professionals Council, the General Nursing Council, the Pharmaceutical Regulatory Authority, the Radiation Protection Board, and the Occupational Health Services Board. However, these are not included in the table of health facilities.



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