Republic of Zambia
Ministry of Health

NATIONAL BIOMEDICAL LABORATORY STRATEGIC PLAN
2018 - 2022

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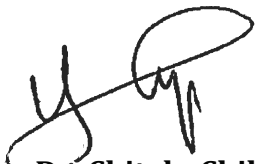
FOREWORD

The Ministry of Health (MOH) in collaboration with partners has developed its five-year National Laboratory Strategic Plan (NLSP) 2018-2022 to address the current needs for provision of quality laboratory services in Zambia. This is a follow up to the 2012 -2016 NLSP that was developed and implemented earlier. The development of the National Health Laboratory Strategic Plan is a key step in achieving the MOH vision of "a nation of healthy and productive people". The NLSP will guide the implementation of laboratory activities in line with the Ministry of Health vision and contribute to achieving Universal Health Coverage (UHC) for the population.

Laboratories are often the first sites for the confirmation of disease outbreaks and also serve as a major source for health information. They produce critical and relevant information for patient care and treatment, epidemiology and surveillance. Strong laboratory services are therefore essential to health as well as to the national well-being and maintenance of health and economic development. In the process of developing this plan, adequate analysis on the past, current and future needs of the health services have been identified and taken into account.

The MOH is committed to the successful implementation of this NLSP in line with the National Health Strategic Plan (NHSP) and utilising the available resources rationally based on the set performance standards for monitoring and evaluation.



Hon. Dr. Chitalu Chilufya (MP.)

Minister of Health

AKNOWLEDGEMENTS

The Ministry of Health would like to acknowledge all individuals and cooperating partners that contributed to the development and finalization of the 2018 – 2022 Zambia National Laboratory Strategic Plan. This is a product of dedicated efforts and contributions of Ministry of Health officers, Laboratory cooperating partners, Government and Non-Government Organizations, training institutions and individuals.

Special thanks to the Centers for Disease Control and Prevention (CDC) and its implementing partner, the Association of Public Health Laboratories (APHL), for the financial and technical support rendered.

I am optimistic that other stakeholders will align their plans to this NLSP to support the provision of quality laboratory services.

Dr. Jabbin Mulwanda
Permanent Secretary – Health Services

Executive Summary

In many resource-limited countries, the appreciation of the critical role of the Clinical and Public Health laboratories in health care delivery has not been translated into policy and resource allocation, leading to poor laboratory services. The Maputo declaration, calls on National Governments to support laboratory systems as a priority, including the development of national laboratory policy that to guide the implementation of national laboratory strategic plans.

Zambia has defined the minimum basic health care package specific to all levels of care, which also defines the type of laboratory services to be offered at each level. The needs were addressed in the five-year National Laboratory Strategic Plan of 2012 to 2016, of which there have been evident successes achieved during its implementation. It is thus necessary to develop the second phase strategic plan in order to build on the achievements of the first strategic plan and also to address the increasing complexity and challenges of delivering laboratory services and to provide guidance on laboratory resource mobilization.

The strategic plan provides a roadmap and gives confidence to Cooperating Partners (CPs) and implementers on their alignment to national aspirations. It assists in identifying areas of possible duplication and gaps thus allowing for redirection of resources and intervention and pave the way to an improved laboratory services.

During the development of the 2018-2022 strategic plan, there has been modification of the strategic objectives to meet the current needs for laboratory service delivery in Zambia and an addition of the M&E chapter with standardised M&E tools and indicators. MOH has established a robust management structure and networks at all levels that is supported by a functional Laboratory Information System and well-trained laboratory workforce from the exiting training institutions. However, there are no clearly defined positions for laboratory managers at Provincial and District levels coupled with lack of a dedicated nationally coordinated Quality Assurance Unit, which affects provision of Quality laboratory services. Lack of a dedicated National Public Health laboratory (NPHL) in Zambia is affecting the provision of quality public health services and also adds pressure on clinical laboratories to perform public health laboratory services on top of their clinical laboratory work. The successful implementation of this NLSP will need commitment from both the government and the cooperating partners while heavy donor dependence could be a major threat during implementation of this strategic plan.

The 2018-2022 NLSP will ensure provision and access to quality clinical and public health laboratory services to all Zambians in line with the laboratory vision.

During its implementation, the laboratory organizational structure will be revised to allow establishment of an effective institutional, legal, regulatory and management framework that supports the implementation of laboratory services through ensuring availability of human and financial resources, implementation of laboratory quality management systems, well maintained appropriate laboratory infrastructure, equipment alongside timely availability of quality reagents/supplies and availability of data for progress monitoring, policy direction guidance and continuous quality improvement.

List of Acronyms

AIDS - Acquired Immunodeficiency Syndrome
APHL - Association of Public Health Laboratories
AU - African Union
BHCP - Basic Health Care Package
BMSZ - Biomedical Society of Zambia
BSC - Biosafety Cabinets
CDC - Centers for Disease Control and Prevention
CDL - Chest Diseases Laboratory
CP - Care Partners
CPD - Continuous Professional Development
CPs - Cooperating Partners
CSO - Central Statistical Office
DCCDS- Directorate of Clinical Care and Diagnostic Services
DHD - District Health Director
EID - Early Infant Diagnosis
eLIS - electronic Laboratory Information System
eLMIS - Electronic Logistics Management Information System
EQA - External Quality Assessment
FAO - Food and Agriculture Organization
GHI - Global Health Initiative
GRZ - Government of the Republic of Zambia
HC - Health Centre
HIV - Human Immunodeficiency Virus
IAPHI - International Association of Public Health Institutes
IHR - International Health Regulations
IQC - Internal Quality Control
LIMS - Laboratory Information Management System
LIS - Laboratory Information System
LSU - Laboratory Services Unit
MA - Ministry of Agriculture
M&E - Monitoring and Evaluation
MFL - Ministry of Fisheries and Livestock
MOD - Ministry of Defence
MOH - Ministry of Health

MOHE - Ministry of Higher Education
MWSEP - Ministry of Water Development, Sanitation and Enviromental Protection
NHSP - National Health Strategic Plan
NMCC - National Malaria Control Centre
NPHI - National Public Health Institute
NPHL - National Public Health Laboratory
NLSP - National Laboratory Strategic Plan
LSU - Laboratory Services Unit
OIE - World Organization for Animal Health
PHD - Provincial Health Director
POC - Point of Care
QA - Quality Assurance
QMS - Quality Management Systems
RTQII - Rapid Test Quality Improvement Initiative
SLIPTA- Stepwise Laboratory Quality Improvement Process Towards Accreditation
SLMTA- Strengthening Laboratory Management Towards Accreditation
SOP - Standard Operating Procedures
SP - Strategic Plan
SPI-RT- Stepwise Process for Improving the Quality of HIV Rapid Testing
SWOT - Strengths Weaknesses Opportunities Threats
TB - Tuberculosis
TWG - Technical Working Group
UHC - Universal Health Zambia
UPS - Uninterrupted Power Supply
UTH - University Teaching Hospital
VL - Viral Load
WHO - World Health Organization
ZNPHI - Zambia National Public Health Institute

Chapter 1
Introduction and Background information

Introduction

In recent times, many African countries have continued to appreciate the critical role that Clinical and Public Health laboratories play in supporting diagnosis and patient management, disease surveillance and outbreak investigation. Consequently, there is an increasing demand for reliable and quality assured laboratory services to effectively guide policy decision-making and quality health care services provision. However, Clinical and Public Health laboratories in Sub-Saharan Africa, including Zambia, have not grown in tandem to adequately meet this demand. Despite this, it is worth noting that there are efforts being made to address the existing challenges.

In many resource-limited countries, the appreciation of the critical role of the Clinical and Public Health laboratories in health care delivery has not been translated into policy and resource allocation. The lack of representation of laboratory professionals at policy and decision-making levels has led to poor planning and scant investment in Clinical and Public Health laboratories resulting in crumbling laboratory infrastructure and insufficient service delivery.

The inadequate attention to laboratory services in general has led to weak leadership at all levels of the tiered laboratory system. There are inadequate numbers of qualified personnel and weak quality management systems. Consequently, laboratory results are often not trusted by clinicians utilizing diagnostic services. Without quality assured laboratory services to support clinical care, a lot of resources are wasted on incorrect and ineffective treatments and patient outcomes are often poor. The good news is that in the last few years many countries are realizing that quality assured laboratory services are important for effective delivery of health services. There is now increased emphasis in strengthening laboratory systems including leadership and management structures.

The Maputo declaration (2008) on Strengthening of Laboratory Systems calls on National Governments to support laboratory systems as a priority, by developing a national laboratory policy within the national health development plan that will guide the implementation of a national strategic laboratory plan. In view of this, the World Health Organization (WHO) and the Global Health Initiative (GHI) have requested the government to take leadership and commitment to strengthen health systems including laboratory services and support, development of national laboratory policies within the national health development plan that will

guide the implementation of a national integrated laboratory strategic plan, that addresses quality diagnosis services, monitoring and surveillance of diseases of public health importance at all levels of the tiered laboratory system.

The revised International Health Regulations (IHR 2005) require countries "to develop, strengthen and maintain capacities of laboratories to detect, assess, notify, and report events". Zambia like all the other member countries of WHO/AFRO is required to implement this resolution. In addition to the above resolution Zambia has also endorsed several resolutions requiring the strengthening of laboratory services. These resolutions include;

- Resolution AFR/RC58/R2: Strengthening public health laboratories in the WHO African region: Yaoundé, Cameroon September 2008
- Resolution AFR/RC59/WP/3: Policy orientations on the establishment of centres of excellence for disease surveillance, public health laboratories, Food and medicines regulation Kigali, Rwanda September 2009
- Resolution AFR/RC59/R2 Drug Resistance related to AIDS, Tuberculosis and Malaria: Issues, Challenges and the Way Forward Kigali, Rwanda September 2009.

In addition to its own policies, the present efforts are also part of the Ministry of Health's response in implementing WHO resolutions to which Zambia is a signatory. This will also ensure that deliberate efforts are made to strengthen the national laboratory networking system to address both the clinical care needs and as well as the public health requirements.

Background

Zambia has a significant endemic disease burden with HIV/AIDS, TB and malaria contributing to the majority of the morbidity and mortality. The effectiveness of clinical care is improved by adequate access to quality laboratory testing. Treatment and prevention of the majority of the significant illnesses can be improved by the laboratory confirmation of the provisional diagnosis, laboratory monitoring of the patient after the diagnosis has been made and surveillance to monitor trends in morbidity and mortality. Without appropriate, high quality laboratory support to patients and laboratory based surveillance for public health, significant illnesses cannot be managed optimally.

Laboratory services in resource limited settings carry a double burden to address both clinical medicine and public health needs. In Zambia, laboratories are resource constrained and often have to make compromises to meet mostly the clinical needs and do not adequately serve the public health functions. Consequently, this affects the effectiveness of the fight against the burden

of human diseases including HIV/AIDS, TB and malaria. Lifesaving drugs are enabling people living with HIV/AIDS to have longer productive lives and require increased laboratory monitoring of patients over many years. Further, the introduction of drugs requires laboratory monitoring for drug resistance as well as adverse reactions to the treatment.

Laboratory services are necessary to assure efficacy and safety of treatments such as promoted by the WHO collaborating Centre for International Drug Monitoring. It is evident that diagnosing and treating the highly prevalent communicable diseases like HIV/AIDS, TB and malaria and non communicable diseases like diabetes requires significant laboratory support. Integrated laboratory support for all diseases should be accessible country wide and accessible as close to the family as possible. To this effect Zambia established the Zambia National Public Health Institute (ZNPHI) in 2016 to oversee the provision of integrated clinical, public health and laboratory needs.

The country has defined the minimum basic health care package specific to all levels of care. This package also defines the type of laboratory services to be offered at each level. It is important that the laboratory plans for these services as part of its contribution to delivering the health care package. In order to provide the health services outlined in the Basic Health Care Package, appropriate laboratory staff, Laboratory tests, equipment and their supplies need to be available at all levels of care. These aspects were addressed in the National Laboratory Policy that was developed in 1997 and the five-year National Laboratory Strategic Plan of 2012 to 2016. During the implementation of 2012 to 2016 Strategic Plan, there has been an increment in the total number of laboratory staff from 417 in 2010 to 1,462 in 2016. Despite this achievement, there is still a need for more trained laboratory staff to address current laboratory needs, given the increasing burden of non-communicable and communicable diseases.

Justification

This is the second phase of the fully integrated National Laboratory Strategic Plan for Zambia. It has become necessary to develop the second phase strategic plan in order to build on the achievements of the first phase strategic plan and also to address the increasing complexity and challenges of delivering laboratory services involving many stakeholders. It is imperative that there is synergy in the implementation of activities by the different partners to avoid duplication and inequities while contributing to national priorities and targets.

The current trend towards performance measurement and evaluation require that we have indicators and targets that are measurable. The strategic plan will provide the guidance for

performance monitoring and ensuring contribution towards national targets. It will also provide the basis for budgeting for laboratory services and resource mobilization by the government.

The strategic plan provides a roadmap and gives confidence to development partners and implementers that their involvement is aligned to national aspirations. It assists in identifying areas of duplication and gaps thus allowing for redirection of resources and intervention. Ultimately, the national laboratory strategic plan shall pave the way to an improved laboratory service.

CHAPTER 2

Situation Analysis

Laboratory services fall under the Directorate of Clinical Care and Diagnostic Services (DCCDS) of MOH, headed by the National Coordinator Pathology and Laboratory Services who is assisted by two Chief Biomedical Scientists. The heads of the provincial and district hospital laboratories also act as the administrative heads of the respective regions. They have no budget of their own but occasionally accompany the provincial or district teams, headed by the Provincial Health Director (PHD) or District Health Director (DHD) respectively, for supervisory visits.

The country has a four-tier laboratory system starting at the lowest Health Centre level (HC), District level (H1), Provincial level (H2) and the highest tertiary level (H3). While the majority of hospitals have laboratories attached to them, this is not true for health centres as only a small number have laboratories. Some health posts, health centres and clinical settings in hospitals have established point of care testing provided by non-laboratory professionals using simple rapid technology.

Table 1: Distribution of public Health laboratories by level in Zambia, 2017

	HC	**H1**	**H2**	**H3**	**Total**
Province					
Central	24	8	2	0	34
Copperbelt	55	6	7	4	72
Eastern	18	9	1	1	29
Luapula	17	7	2	0	26
Lusaka	38	13	2	4	57
Muchinga	14	4	2	0	20
Northern	16	6	3	0	25
North Western	11	11	2	0	24
Southern	23	8	6	1	38
Western	22	10	2	0	34
Total	**238**	**82**	**29**	**10**	**359**

Table 2: Distribution of Laboratory professionals in Zambia, 2017

Biomedical scientist	Biomedical technologist	Biomedical technician	Lab attendants	Others	Total
233	1031	164	0	0	1428

Recent developments

1. **Assessment of Objectives and Strategies of 2012 to 2016 Strategic plan**

As assessment of the relevance and adequacy of the previous strategic plan objectives revealed that, the objectives are extremely important to Zambia and are in line with the national priorities in the health sector. However, the objectives were modified to meet the current needs for laboratory service delivery in Zambia

2. **Monitoring and Evaluation (M & E) Framework**

It was noted that the current SP lacks an elaborate M&E system to track deliverables from the implementation process. The M&E chapter is added to the phase two Strategic plan with standardized M&E tools and indicators.

3. **Overall Performance of 2012 -2016 Strategic plan**

Quality Management Systems (QMS)

During the implementation of the 2012-2016 NLSP, MOH scored some positive successes, which have implications to the target population that is served by the National Laboratory Services Unit. Quality assurance has been emphasized as mandatory in all the health laboratories in the Country and laboratory staff have been trained, mentored and assisted to observe quality. Quality Officers at both, the provincial and tertiary levels have been designated and trained to ensure quality compliance in laboratory operations. These internationally introduced quality measures within the national laboratory services have gradually cultivated the culture of ongoing quality improvement within MOH. During the implementation of the SP, the National Laboratory Services Unit intensively embarked on an accreditation process for health laboratories throughout the country using the Strengthening Laboratory Management Towards Accreditation (SLMTA)/Stepwise Laboratory Quality Improvement Process Towards Accreditation (SLIPTA) strategy.

Human resource

Deliberate efforts have been taken to improve the number and quality of human resources available for service provision within the health laboratory system. This is in line with laid down strategies in the 2012-2016 strategic plan, particularly strategic objective 3.1 (To address the required skilled human resource in adequate quantities to provide quality laboratory services). This is epitomized by the deliberate increase in the recruitment of the laboratory workforce in the period under discussion. Additionally, teaching institutions have expanded the training offered to include Masters and PhDs in Laboratory based sciences designed for uptake in the Zambian health force.

Infrastructure and equipment

During the implementation of the 2012-2016 SP, the National Lab Services Unit through support from various partners conducted massive renovations/constructions of infrastructure from tertiary, provincial, right down to district and health centre laboratories. The level of automation in the laboratory equipment has increased dramatically. Challenges remain are the maintenance of equipment and infrastructure.

Due to the challenge of power outage and rationing during dry spells which affected the operations of the laboratories, MOH and its partners implemented the energy project to provide alternative back-up power supply (Uninterrupted Power Supply – UPS and solar power supply) to 13 laboratories.

Laboratory Information System (LIS)

During the implementation of the SP, the Laboratory Services Unit (NLSU) was challenged by the existence of laboratory information system that was not standardized. This implied inconsistency in terms of reporting information from laboratory personnel for diagnostic purposes, recording information, sharing of information and handling of equipment management records. Currently, there is some level of standardization of laboratory information system including the introduction of the electronic LIS at different levels of laboratory services such as DISA Lab.

4. Implementation of SLMTA and SLIPTA

The MOH in collaboration with CDC, WHO, and ASLM, has initiated a step-wise laboratory accreditation program using SLIPTA approach in 9 of 10. Provinces. SLMTA is an alternative training approach in laboratory management and quality management systems with the goal

to produce and acknowledge measurable improvement and prepare laboratories for accreditation based on the international clinical laboratory standards. The SLIPTA assessment checklist, aims to assess progress towards quality improvement at baseline, during supervision, and for monitoring and evaluation.

In Zambia, SLMTA began in 2010, and by the end of 2016; there have been 3 laboratory cohorts with a total of 67 participants undergoing the training from a total of 18 laboratories enrolled in the SLMTA program. The aim is to ensure that all existing SMLTA cohort laboratories achieve a minimum of Star 3 by 2021. A total 12 Auditors, 12 mentors have been trained and offered services to the facilities. Two laboratories underwent WHO SLIPTA assessments, and were both awarded 2 stars.

2. Strengthening of Rapid Testing Quality Improvement Initiative (RTQII)

MOH in collaboration with partners implemented the RTQII program to address known gaps in the HIV testing QA cycle. RTQII is a stepwise improvement and certification process for HIV testers and testing sites and uses the Stepwise process for improving the quality of HIV rapid testing (SPI-RT) checklist to monitor and measure progress. RTQII was implemented in four province namely Lusaka, Eastern, Southern and Western Provinces in 2015 and 2016. The Ministry of Health through the Zambia National Quality Assurance Program coordinated the implementation of the RTQII activities. The MOH TRQII program was later transformed into the Continuous Quality Improvement (CQI) initiative to continue with the implementation of activities based on the lessons learnt.

Environmental Scan (SWOT Analysis)

Strengths

- The Ministry of Health has established an organizational and laboratory management structure up to district level with three senior management positions at national level. The laboratory participates in policy formulation and planning at national level.
- There is a national laboratory network covering the entire country that delivers laboratory services at all levels. This network is supported by an existing referral system thus ensuring access and equity.
- Laboratory data capturing tools such as registers and reporting forms are available in all laboratories, including the electronic Laboratory information system in a number of facilities.
- The country has a well-trained workforce, with training institutions graduating several

students with Diploma, Bachelor, Masters degree and minimal PhD qualifications annually. Continuous Professional Development (CPD) programmes are available either in-house or organized by various Ministry of Health programmes and partners.

- The essential list of laboratory equipment and supplies is in place for each level of care, supported by a functioning commodity logistics management system that includes the electronic Logistics Management Information System (eLMIS). The national procurement system allows for evaluation of equipment, supplies and suppliers before procurement and delivery. To ensure that quality of laboratory services is maintained and the introduction of new technologies and tests are in line with MOH's quality objectives, guidelines have been devised for equipment evaluation prior to use in the public sector.
- The country has equipment standardisation guidelines. Basic equipment is available in most laboratories with most of the major equipment (analysers) under reagent procurement cost markup based maintenance plan with the vendors.
- Specifications for laboratory construction exist allowing for purpose built laboratories in future.
- There is existence of laboratory QMS in tertiary, provincial and some lower level laboratories coupled with trained mentors and auditors.
- The laboratory technical working group (TWG) is in place with representation from MOH and all partners supporting laboratory services in the country.
- Laboratory services are supported by a continuous donor presence covering both human resource and funding for laboratory services provision.

Weaknesses

- There are weak management and coordination structures and capabilities at all levels of the health system, which are more pronounced at the provincial and district levels.
    - The laboratory Services unit is not adequately staffed to effectively monitor and supervise services as well as coordinate the different partners supporting the laboratory.
    - At the provincial and district levels there are no clearly defined positions for laboratory managers.
- Some of the developed guidelines have not been adequately disseminated resulting in little awareness among staff and limited implementation.
- Non-existence of a dedicated nationally coordinated Quality Assurance (QA) unit to

manage and coordinate the QA system.

- Incomplete distribution of Standard Operating Procedures (SOPs), safety manuals and QA guidelines.
- Inadequate and irregular availability of laboratory reagents and supplies at both central and facility levels, exacerbated by challenges with the distribution from the Central level Medical stores and inadequate storage space in the laboratories.
- Inadequate government financing or resource allocation towards laboratory services.
- Inadequate availability of laboratory personnel and biomedical engineers who have been trained on QMS implementation to provide quality laboratory services and equipment maintenance.
- Lack of a dedicated National Public Health laboratory (NPHL) in country
- Lack of a well-coordinated and robust laboratory inventory system to manage laboratory equipment, reagents and other supplies.

Opportunities

- There is government commitment and support to strengthen laboratories.
    - The on-going health sector restructuring provides an opportunity to reorganize the laboratory services and strengthen its management and coordination capabilities.
- The requirement for evidence based medicine has increased interest in laboratory services among programmes within MOH and cooperating partners, many of whom are now factoring laboratories in their plans and budgets. Thus, there is an increased flow of funding from MOH and cooperating partners into the laboratory and more stakeholders areinterested in supporting and implementing laboratory activities.
- The recently introduced WHO Stepwise approach towards accreditation of laboratories has provided opportunity for more laboratories to focus on quality and accreditation.
- The existence of the professional body and the regulatory body to regulate biomedical profession and practice.

Threats

- National and international economic constraints with competing priorities may lead to decreased budgetary support to laboratory services.
    - Many of the programmes that are heavily dependent on donor support and which have substantial laboratory components may be severely affected.
- Staff attrition, in the absence of planned staff development and retention will rob the laboratory of much needed experience and skills.

CHAPTER 3

Strategic Directions

This strategic plan is driven by the following strategic imperatives;

- To provide a framework for the effective participation of the laboratory in health sector planning and budgeting and contribution to the health sector targets
- To mobilize sufficient financial resources to support the national laboratory strategic plan
- To achieve operational capacity and quality of laboratory testing services at each level of care that supports the Basic Health Care package (BHC) and Universal Health Coverage (UHC)
- To strengthen human resource to support quality clinical, public health and research laboratory services
- To provide quality, accurate, timely and reliable laboratory testing in support of clinical, public health and research programs
- To provide continuous and adequate supplies, well-maintained equipment, an effective specimen referral system and efficient laboratory management system to support laboratory testing and facilitate decision making at all levels.
- To improve laboratory infrastructure in order to contribute to quality service provision
- To improve laboratory biosafety and biosecurity in order to contribute to quality service provision
- To strengthen a National Public health laboratory network at provincial and district levels
- To promote research and development in laboratory sciences in order to improve patient management, laboratory performance and disease control
- To increase availability of relevant accurate, timely, and accessible laboratory data to support evidence based planning and decision making

Vision, Mission and Core Values

Vision:

To have a functional and sustainable laboratory service for all Zambians

Mission:

To provide Zambians with high quality, accurate, timely, cost effective and appropriate laboratory services as close to the family as possible.

Core Values:

1. **Equity:** Laboratory resources and services are distributed equitably throughout the country.
2. **Accessibility:** Services are affordable and within reach of all
3. **Relevance:** Laboratory services are apt for the purpose and address the needs of the community
4. **Partnership:** Promote teamwork and team spirit among all laboratory personnel, and networking and collaboration with stakeholders
5. **Confidentiality:** Promote professionalism and ethical practice among all staff and their relationships with patients
6. **Timeliness:** Ensure laboratory results reach the patient on time and contribute to appropriate patient management.
7. **Customer focus:** Always bear in mind who the laboratory is serving. The customer may be the community, patient, clinician, individual or public good.

Core Functions:

Clinical Diagnosis: Provide clinicians with accurate and timely laboratory results for patient management and treatment monitoring.

Disease Prevention and Control: Provide support to disease prevention and control programmes including outbreak investigation and response units through quick detection and identification of disease causing agents

Surveillance: Collect, analyse and report laboratory data to facilitate public health intervention and support disease prevention programmes of the Ministry of Health.

Reference and Specialised Testing: Through the National Public Health Laboratory undertake diagnosis of unusual pathogens, verify results from lower laboratories, oversee quality assurance and test epidemiologically significant specimens of public health importance.

Quality Systems Management: Develop and coordinate all elements of the laboratory quality system.

Laboratory Management and Coordination: Provide management leadership and coordination.

National Public Health Laboratory

Zambia does not have a dedicated public health laboratory system to coordinate and manage public health laboratory functions. Currently, public health functions are partially performed by the clinical laboratory system. The existing laboratory network provides testing predominantly for clinical management of patients and some specialized testing for clinical specimens at Provincial (level 2) and tertiary (level 3) hospital laboratories.

Although testing for diseases of public health importance is carried out in clinical laboratories, this is done as part of routine patient diagnosis rather than investigation of disease outbreaks. During disease outbreaks, clinical laboratories carryout investigations and confirmation of such outbreaks. However, the testing for public health done under the clinical laboratory system does not allow for integrated collection, collation, analysis and reporting of data for public health decision-making and policy direction.

The Ministry of Health is working on strengthening the current network of clinical laboratories performing public health functions and establish a dedicated Public Health Laboratory System and Network through the Zambia National Public Health Institute (ZNPHI) in line with the resolution of the 24th Ordinary Session of the Africa Union Assembly of Heads of State and Government held in Addis Ababa, Ethiopia in January 2015 (AU/Dec.554.XXIV Africa Union).

CHAPTER 4

Objectives and Strategic Priorities

Strategic Priorities

Systems	**Inputs**	**Outputs**
Organization, Legal and Policy	Laboratory Organization and management Coordination	Effective institutional, legal, regulatory and management framework that supports the implementation of laboratory services
Finance	Government Budget allocation Donors support	Sufficient financial resources to support the national laboratory strategic plan
Laboratory Services	Laboratory Test package and Specimen Referral System	Operational capacity and quality of laboratory testing service at each level of care that supports the Basic Health Care (BHC) package and Universal Health Coverage (UHC)
Human Resources	Train, Recruit, Deploy and Retain Skilled workers at all levels	Strengthened human resources to support quality clinical, public health and research laboratory services
Quality Management Systems	LIMS IQC/ EQA	Quality, accurate, timely and reliable laboratory testing in support of clinical, public health and research programs
Laboratory Support	Strengthened Equipment, Supplies and Reagents procurement	Continuous and adequate supplies, functional, well maintained equipment, and an effective specimen referral system and efficient laboratory management system to support laboratory testing and facilitate decision making at all levels
Infrastructure	Laboratory infrastructure and design	Improved laboratory infrastructure in order to contribute to quality service provision
Biosafety and Biosecurity	Policy and procedures Training and retention	Improved laboratory biosafety and biosecurity in order to contribute to quality service provision
Public Health	Structure and	A National Public Health Laboratory and

Laboratory Systems	development	strengthened laboratory network at provincial and district levels to carry out public health laboratory functions in support of national health priorities
Research and Development	Funding, Training and Retention	Promoted research and development in Laboratory sciences
Monitoring and Evaluation	System development	Increased availability of relevant accurate, timely, and accessible laboratory data to support evidence based planning and decision making

The National Laboratory Strategic Plan (NLSP) will give priority to providing access to quality laboratory services to all Zambians in line with the laboratory vision. Efforts must be expended to ensure accessibility and expansion of laboratory services as currently only 16% of health facilities in Zambia provide laboratory services according to the Basic Health Care Package. Emphasis will be placed on **strengthening laboratory Capacity** to support care and treatment programs and addressing the public health concerns by ensuring availability of adequate and appropriate infrastructure, equipment, qualified staff and supplies to manage the laboratories.

The Laboratory Services Unit will work to improve the quality of testing through the implementation of quality management systems. As a priority, a QA unit will be formed at Chainama to oversee all quality related activities countrywide. This unit will work closely with the University Teaching Hospital (UTH), Chest Diseases laboratory (CDL) and the National Malaria Elimination Centre (NMEC) to ensure the implementation of Laboratory Quality Management System at all levels.

Organization, Legal and Policy

While clear laboratory administrative and management structures are in place at national level, the provinces and districts still have unclear structures. There are no designated laboratory managers at the lower levels. Coordination systems are very weak resulting in unequal distribution of services and duplication in some cases. There is no central mechanism for coordination of the activities and inputs of the different partners and actors. The laboratory organizational structure will be revised, positions established and filled, leadership and management skills enhanced and proper coordination structures established.

The existing National Laboratory Policy will be reviewed and approved followed by the development of the legal and regulatory framework to govern the operations of the laboratory service .

Objective: To have an effective institutional, legal, regulatory and management framework that supports the implementation of laboratory services.

Finance

Currently the laboratory services are financed through the existing government system and donor support. Adequate budgetary support for the provision of quality laboratory services at all levels will be provided to support existing and new programs. The financing will be through government budget allocation and mobilisation of funds from outside the government budget.

Objective: To mobilise sufficient financial resources to support the national laboratory strategic plan.

Laboratory Services

Laboratory services are available in all hospitals and a number of health centres. MOH also provides point of care testing to the rest of the health centres and some health posts with the aim of ensuring accessible laboratory services to support the Universal health care package. Shortage of staff, frequent breakdown of equipment and reagent stock outs have resulted in interruption or suboptimal delivery of services. The specimen referral system is weak and not adequately supported. This SP will seek to expand service delivery by addressing the identified gaps and strengthening the specimen referral system.

Objective: To achieve Operational capacity and quality of laboratory testing service at each level of care that supports the Basic Health Care (BHC) package and Universal Health Coverage (UHC)

Human Resources

A well-trained and motivated professional staff is critical to delivery of quality laboratory services. Presently, the majority of the laboratories have the full complement of needed staff. Although output from the training institutions is adequate to significantly contribute to address the needs, the graduates from the institutions are not being recruited timely. This plan seeks to establish mechanisms for skills development and strategies for retention of staff.

Objective: To strengthen human resources to support quality clinical, public health and research laboratory services.

Quality Management Systems

Quality laboratory results are critical to effective patient management and informed decision making. This requires coordination to ensure that quality testing is attained. There have been previous efforts to develop a quality laboratory policy. However, there has been no follow up to finalise the policy and establish a national QA system. A National QA Programme will be developed and implemented and laboratories will be enrolled in the WHO Stepwise accreditation scheme.

Objective: Provide quality, accurate, timely and reliable laboratory testing in support of clinical, public health and research programs.

Laboratory Support

The country has standardized equipment guidelines, which are not followed during implementation. Most equipment is not routinely serviced leading to equipment downtime. The supply chain management system for laboratory commodities is weak leading to occasional inappropriate procurement and frequent stock out of essential supplies. Laboratory data management is weak in almost all laboratories and the specimen referral system is also not functioning well. This plan will endeavor to address the gaps identified.

Objective: To have continuous and adequate supplies, functional, well-maintained equipment, an effective specimen referral system and efficient laboratory management system to support laboratory testing and facilitate decision making at all levels.

Infrastructure

Laboratory infrastructure in most higher level hospitals; i.e. tertiary level, provincial level and some level 1 (district hospitals) were built for the laboratory purpose and conform to some standard infrastructure requirements. However, the infrastructure housing most of the laboratories were not initially intended for that purpose hence do not meet the standard requirements. Standardised building plans for laboratories have not been finalised nor disseminated for stakeholders to use when building new laboratories. The identified gaps will be addressed to ensure existence of standardized laboratory infrastructure.

Objective: To improve laboratory infrastructure in order to contribute to quality service provision.

Biosafety and Biosecurity

The laboratory is a hazardous work environment because it handles infectious materials and also some of the chemicals used in the laboratory processes are harmful to humans, infrastructure and the environment. Laboratory biosafety and biosecurity measures are important to ensure safety of personnel and the environment. MOH has ensured the availability of safety manuals and stressed the need to have designated trained Safety Officers in all laboratories, although not all laboratories have designated trained Safety Officers. Higher-level laboratories (L3 and L2) and some level 1 and health center laboratories have biosafety cabinets (BSCs) available but most of them are not regularly serviced. This SP will ensure that safety manuals are available and trained Safety Officers appointed in all the laboratories to oversee laboratory safety and will also ensure that qualified personnel service the BSCs regularly.

Objective: To improve laboratory biosafety and biosecurity in order to contribute to quality service provision.

Public Health Laboratory Systems

Zambia does not have a dedicated public health laboratory system to coordinate and manage public health laboratory functions. Currently, public health functions are partially performed by the clinical laboratory system. MOH will strengthen the current network of clinical laboratories performing public health functions and establish a dedicated Public Health Laboratory System and Network through the Zambia National Public Health Institute to ensure that it complies with the International Health Regulations.

Objective: A National Public Health Laboratory and strengthened laboratory network at provincial and district levels to carry out public health laboratory functions in support of national health priorities.

Research and Development

There has been little support towards a structured research agenda under laboratory service to support laboratory research and most of the research work carried out is clinical driven. There has been limited funding to support operational research which are key to support evidence based policy decisions. This SP will address the existing gaps to support research and development priorities in the laboratory sector

Objective: To promote research and development in Laboratory sciences in order to improve patient management, laboratory performance and disease control.

Monitoring and Evaluation

The current M&E system lacks standardized tools and indicators to track laboratory service performance. MOH will establish an effective M&E system for laboratory services during the implementation of this SP.

Objective: To increase availability of relevant accurate, timely, and accessible laboratory data to support evidence based planning and decision making.

CHAPTER 5

Monitoring and Evaluation

Monitoring and evaluation are important activities in tracking organizational performance. Whereas monitoring focuses on constant organizational surveillance to ensure that planned activities are implemented, evaluation periodically records organizational outcomes and impacts. To achieve this, an organization needs to develop an elaborate monitoring and evaluation system immediately after developing organizational strategic plan. The M&E framework document normally contains sets of anticipated organizational results from the implementation of the strategic plan, a critical mass of indicators, monitoring plans for each indicator and M&E data collection tools. Results and indicators are normally categorized at three main levels namely outputs, outcomes and impacts.

Monitoring tools

1. Data collection and collation forms
2. Laboratory Registers
3. Laboratory request and results forms
4. Technical worksheets and charts
5. Monthly and quarterly reporting forms

Reports

Monthly

All laboratories at different levels will generate weekly summaries of work done and undertake monthly monitoring of outputs.

Quarterly

Quarterly reports will be submitted to relevant management at district, regional and national levels for results monitoring, performance evaluation and support supervision.

Evaluation

A mid-term and end-term evaluation will be undertaken. The mid-term evaluation will assess progress towards achievement of outcomes and revise the strategies if necessary. The findings and recommendations of the end-term evaluation will inform the development of the next plan.

Annex 1

Strategic Plan Logical Framework 2018 - 2022

1.0 Organisation, Legal and Policy
Objective: To have an effective institutional, legal, regulatory and management framework that supports the implementation of laboratory services.

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
1.1 Finalise and approve the national laboratory policy	1.1.1 To have an effective legal framework to guide laboratory services	Establish legal operating framework for all laboratories	MOH and Partners	GRZ and Partners	X	X	X	X	
1.2 Develop a legal and regulatory framework to govern the operations of laboratory services	1.2.1 Enact and operationalise a national regulatory body for laboratory services	Regulatory body established to establish national laboratory standards	BMSZ, MOH and Partners	GRZ and Partners	X	X	X	X	X
	1.2.2 Establish compliance program for laboratory services (both public and private)	Laboratory services compliant with national standards	BMSZ, MOH and Partners	GRZ and Partners	X	X	X	X	X
1.3 Reorganise the administrative and technical management structures of the laboratory services	1.3.1 Revision of organization structure to enhance leadership of laboratory services at all levels.	Revised organisation structure	MOH and Partners	GRZ and Partners	X	X	X	X	X
	1.3.2 Ensure that the revised structure provides support to quality laboratory services	Structure revised, expanded and filled	MOH and Partners	GRZ and Partners	X	X	X	X	X

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
1.4 Strengthen internal and external laboratory coordination and collaboration in order to harmonize service provision in the health sector	1.4.1 Develop and establish laboratory services Technical Working Group (TWGs) at provincial level with representation from district levels	TWGs functional	MOH and Partners	GRZ and Partners	X	X			
1.5 Improve management of laboratory services to increase institutional effectiveness	1.5.1 Strengthening of leadership at the national level and supervisory management skills at all levels	Strong laboratory management capacity throughout all levels of the lab system	MOH and Partners	GRZ and Partners	X	X	X	X	X
2.0 <u>Finance</u> Objective: To mobilise sufficient financial resources to support the national laboratory strategic plan.									
2.1 Develop adequate budgetary support for the provision of quality laboratory services at all levels.	2.1.1 Obtain sufficient laboratory budget to eliminate existing gaps and support the Universal Health Coverage	Adequate resources mobilised	MOH and Partners	GRZ and Partners	X	X	X	X	X
	2.1.2 To mobilise additional funding for new programs	Funding secured	MOH and Partners	GRZ and Partners		X	X	X	X

3.0 Laboratory Services
Objective: To achieve Operational capacity and quality of laboratory testing service at each level of care that supports the Basic Health Care (BHC) package and Universal Health Coverage (UHC)

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
3.1 Strengthen the laboratory operational capacity at all levels of care to support the national Basic Health Care Package (BHCP) and Universal Health Coverage (UHC)	3.1.1 To plan for the provision of laboratory services by mapping the current scheme and geographical coverage in the country	Mapped catchment areas for the provision of Services cover entire country	MoH & Partners	GRZ and Partners	x	x	x		
	3.1.2 To develop and implement guidelines for the minimum testing package for all laboratory tiers	Test menus developed for all laboratory tiers for the BHCP	Director-Clinical Care and Diagnostics Services - MoH	GRZ and Partners	x	x			
	3.1.3 To develop and implement a plan for new test profiles for all laboratories to meet the minimum testing package	Implementation of testing according to test menus across laboratories to support BHCP	MoH & Partners	GRZ and Partners	x	x			
	3.1.4 To increase the laboratory capacity to detect, prevent and control Communicable emerging, re-emerging pathogens and antimicrobial resistance (AMR)	Improved quality, reliable and timely laboratory diagnostic capacity	MoH & Partners	GRZ and Partners	x	x	x	x	x

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
3.2 Operationalise and strengthen a laboratory networking system for specimen referral to support the UHC	3.2.1 To develop national guidelines for specimen referral within the network	National specimen referral guidelines developed	MoH & Partners	GRZ and Partners	x	x			
	3.2.2 To establish a safe integrated specimen collection, handling and transportation system based on IHR and local regulations	Safe specimen courier systems established	MoH & Partners	GRZ and Partners	x	x	x	x	x
	3.2.3 To develop contractual agreements with high quality international collaborating centers for referral of specimens	Collaborating agreements established	MoH & Partners	GRZ and Partners		x	x		
	3.2.4 Strengthen the capacity of the specialized laboratories to support clinical care beyond the BHCP	Specialized laboratories offering the mandated range of services	MoH & Partners	GRZ and Partners		X	X	X	X
3.3 Decentralise specific laboratory services to support national health initiative	3.3.1 To develop guidelines for evaluation of point of care (POC) tests	Quality and reliable point of care tests provided	MoH & Partners	GRZ and Partners	x	x			
	3.3.2 To strengthen the system components of EID & VL testing in line with the 90-90-90 strategy	Increase quality EID & VL testing		GRZ and Partners	x	x	x	x	x

4.0 Human Resources
Objective: To strengthen human resources to support quality clinical, public health and research laboratory services

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
4.1 Provide and retain appropriately trained personnel in adequate quantities to staff the laboratories at all levels of care	4.1.1 Strengthen the Pre-service training to increase the number of graduates with skills needed for laboratory employment.	A pool of applicants for laboratory positions that have the appropriate qualifications	MOH, MOHE, Universities, MSTEVT, BMSZ	GRZ and Partners	X	X	X	X	X
	4.1.2 To update human resources staffing plan to meet the needs of laboratory services	Number of new positions proposed	MOH and Partners	GRZ and Partners	X	X	X		
	4.1.3 To expand the career structure for laboratory personnel in order to retain qualified personnel	Career structure reviewed and new positions created and appropriately ranked	MOH and Partners	GRZ and Partners	X	X	X	X	
	4.1.4 To develop and implement in-service training to improve knowledge and skills as well as retain staff	Training plan operationalised	MOH and Partners	GRZ and Partners	X	X	X	X	X

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
	4.1.5 To Institutionalize a performance evaluation and management package for laboratory services	Department annual work plans, individual work plans, annual staff appraisals	MOH	GRZ and Partners	X	X	X	X	X
4.2 Promote a healthy work force in order to provide continuous laboaratory services	4.2.1 Develop and implement occupational Health systems for staff in order to retain a healthy workforce	A functional occupational health program that supports a healthy workforce	MOH and Partners	GRZ and Partners	X	X	X	X	X

5.0 Quality Management Systems **Objective: Provide quality, accurate, timely and reliable laboratory testing in support of clinical, public health and research programs.**									
					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
5.1. Establish and operationalise MOH laboratory Quality Assurance Coordinating unit	5.1.1 Creation of a coordinating unit in the MOH Structure and laboratory QA managers at all levels	Functional national QA system	MoH and Partners	MoH and Partners	X	X			
	5.1.2 Establish a certification program for laboratories	All Functioning laboratories are certified	MoH and Partners	MoH and Partners		X	X	X	X
	5.1.3 Mobilise resources to support priorities of the national QA programme.	National QA laboratory network operational	MoH and Partners	MoH and Partners	X	X	X	X	X
5.2 Build and implement an effective quality management system across all levels of care	5.2.1 Establish and operationalise National Quality Assurance Laboratory network	National QA laboratory network operational	MoH and Partners	MoH and Partners	X	X	X	X	X
	5.2.2 Establish positions of laboratory quality, officers and biosafety officers	Positions for laboratory quality and biosafety officers established	MoH and Partners	MoH and Partners	X	X	X	X	X
	5.2.3 Develop and maintain appropriate policies and guidelines for quality management system	Policy and guidelines established and implemented	MoH and Partners	MoH anc Partners	X	X	X	X	X

				TIMELINE					
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
	5.2.4 Develop a quality assurance information management system	QA information management system developed	MoH and Partners	MoH and Partners		X	X	X	X
	5.2.5 Develop and implement the mentorship and supportive supervision programme.	Mentorship and supportive supervision programme developed	MoH and Partners	MoH and Partners	X	X	X	X	X
5.3 Build capacity and promote accreditation of laboratories	5.3.1 Scale up of quality management system training	Implementation plan for quality improvement developed	MoH and Partners	MoH and Partners	X	X	X	X	X
	5.3.2 Develop a training scale up implementation plan for quality improvement programs (such as SLMTA) across all levels	Implementation plan for quality improvement developed	MoH and Partners	MoH and Partners	X	X	X	X	X
	5.3.3 Implement quality improvement training and mentorship program for laboratories targeted for accreditation	Mentorship and quality improvement training implemented	MoH and Partners	MoH and Partners		X	X	X	X
5.4 Strengthen, standardise and scale up the National QA program	5.4.1 Improve and standardise EQA program across all levels	EQA programme improved and standardised	MoH and Partners	MoH and Partners	X	X	X	X	X
	5.4.2 Improve and standardise IQC practices across all levels.	IQC practic improved and standardis	MoH and Partners	MoH and Partners		X	X	X	X

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
	5.4.3 Scale up participation and scope of QA schemes	QA schemes participation and scope scaled up	MoH and Partners	MoH and Partners	X	X	X	X	X
5.5. Strengthen the quality of point of care testing (POCT)	5.5.1 Develop and implement a certification program for point of care test sites	Improved quality in Point of care testing	MoH and Partners	MoH and Partners	X	X	X	X	X
	5.5.2 Strengthen and expand EQA testing for point of care testing	EQA for all point of care tests implemented	MoH and Partners	MoH and Partners	X	X	X	X	

6.0 Laboratory Support

Objective: To have continuous and adequate supplies, functional, well maintained equipment , an effective referral system and efficient laboratory management system to support laboratory testing and facilitate decision making at all levels

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
6.1 Strengthen the procurement of laboratory equipment and supplies	6.1.1 Establish standards for equipment selection, acquisition and placement according to all laboratories needs to support services	A standardised procurement process for laboratory equipment/ devices	MOH and partners	GRZ and Partners		X	X	X	X
	6.1.2 Implement a mechanism for evaluating equipment/ devices.	All new equipment will meet specified selection standards.	MOH and partners	GRZ and Partners		X	X	X	X
	6.1.3 Establish validation and certification standards and processes for laboratory equipment	Laboratory equipment validated and certified	MOH and partners	GRZ and Partners		X	X	X	X
6.2 Strengthen equipment management program.	6.2.1 An equipment maintenance program developed and implemented.	Equipment is properly maintained and functional	MOH and partners	GRZ and Partners		X	X	X	X
	6.2.2 To ensure current service contracts are procured where appropriate.	Equipment is properly maintained and functional	MOH and partners	GRZ and Partners		X	X		
	6.2.3 To capacitate the equipment maintenance unit with bio-engineering skills	MOH unit will provide and promote timely maintenance and repair for lab equipment throughout all levels	MOH and partners	GRZ and Partners		X	X		

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
	6.2.4 To capacitate end-user on equipment maintenance knowledge	Performance of equipment sustained	MOH and partners	GRZ and Partners		X	X	X	X
6.3 Strengthen Commodity management system.	6.3.1 Roll out electronic commodity management system to all laboratory levels	real-time report submission for commodity supplies	MOH and partners	GRZ and Partners		X			
	6.3.2 Establish a monitoring mechanism of the supply chain for laboratory commodities at all levels	reduction in commodity loss and wastage	MOH and partners	GRZ and Partners		X	X	X	X
	6.3.3 Implement mechanism to improve warehousing , distribution and storage lab logistics and supplies	Improved commodity management	MOH and partners	GRZ and Partners		X	X	X	X
	6.3.4 Ensure that a post-market surveillance system is in place for equipment and commodities	Monitoring of safety of laboratory equipment/ devices and supplies in use	MOH and partners	GRZ and Partners		X	X	X	
	6.3.5 System of safe disposal of obsolete equipment developed	Obsolete equipment safely disposed	MOH and partners	GRZ and Partners		X	X		

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
6.4 Establish a coordinated specimen referral program for both clinical and public health	6.4.1 Develop and implement a referral system that is available at all levels of care including public health	Enhanced patients care and public health interventions	MOH and partners	GRZ and Partners		X	X	X	
6.5 Develop and implement a laboratory information system(LIMS)	6.5.1 Standardised paper based national laboratory information system implemented	Improved quality of data for patient caredecision making	MOH and Partners	GRZ and Partners		x	x	x	
	6.5.2 Standardised electronic national laboratory information system implemented	Improved quality data availability in near-real-time for decision making	MOH and Partners	GRZ and Partners		x	x	x	x

7.0 Infrastructure **Objective: To improve laboratory infrastructure in order to contributo to quality service provision**									
					TIMELINE				
Strategies	**Sub - Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
7.1 Strengthen the laboratory infrastructure improvement program	7.1.1 Lab infrastructure standards for design are utilized in planning construction and renovation for all levels established	Standards for laboratories used in to construct and renovate laboratories	MOH and Partner	GRZ and Partners		x	x	x	
	7.2.2 A program is implemented to evaluate and remediate lab infrastructure on a regular schedule	Laboratories are periodically evaluated and remediated to meet standards	MOH and Partner	GRZ and Partners		x	x	x	
8.0 Biosafety and Biosecurity **Objective: To improve laboratory biosafety and biosecurity in order to contribute to quality service provision.**									
8.1 Strengthen implementation of Biosafety/Bios security standards	8.1.1 Ensure that Biosafety/Bios security standards are implemented and adhered to	Standardised biosafety practices.	MOH and Partner	GRZ and Partners		x	x	x	
	8.1.2 To ensure placement of biosafety equipment at all levels	Biosafety equipment placed throughout all laboratories	MOH and partners	GRZ and Partners		x	x	x	x
	8.1.3 To ensure Biosafety Trainings are strengthened	Increased safety awareness at all levels.	MOH and Partner	GRZ and Partners		x	x	x	

9.0 Public Health Laboratory Systems

Objective: A National Public Health Laboratory and strengthened laboratory network at provincial and district levels to carry out public health laboratory functions in support of national health priorities.

					TIMELINE				
Strategies	**Sub - Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
9.1 Establish functional National Public Health Laboratory network	9.1.1 Build and operationalise a National Public Health laboratory in Lusaka district	Operational National PHL established	MoH, CDC, WHO, Africa CDC, China CDC		x	x	x	x	x
	9.1.2 Establish Hub regional public health reference laboratories	Regional reference PH Hubs established	MoH, CDC, WHO, World Bank					x	x
	9.1.3 Establish the national public health laboratory network	Functional public health services at all levels	MoH,MFL, UNZA, MA, MWSEP		x	x	x	x	x
	9.1.4 Establish a national and international multisectoral collaboration system	Efficient public health system	MoH, MFL, UNZA, MA, MWSEP,DMMU, APHL, IAPHA,CDC,WHO, OIE,FAO		x	x	x	x	x
9.2 Strengthen existing laboratory systems for public health functions	9.2.1 Map laboratory and public health assets in the country	Capacities and gaps identified	MoH, CDC		x	x			
	9.2.2 Establish a system for response to outbreaks and other public health emergencies	Outbreaks and other public health emergencies effectively managed	MoH, CDC			x	x	x	x
	9.2.3 Institutionalise implementation on of QMS in laboratories network	Network laboratories enrolled in EQA programs	MoH			x	x	x	x

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
	9.2.4 Implement modern advanced diagnostic assays for public health threats	Increased diagnostic capacity	MoH				x	x	x
	9.2.5 Build laboratory capacity in integrated disease surveillance and research (IDSR) and International Health Regulations (IHR)	IDSR and IHR implemente	MoH, MFL, UNZA, MA, MWSEP, MoD		x	x	x	X	X
	9.2.6 Establish a safe and rapid public health courier system for supplies and specimen referral	Safe and rapid PH courier system established	MoH, CDC			x	x	x	X
9.3 Establish a national public health biosafety and biosecurity program	9.3.1 Establish and operationalise a biobank	Dangerous pathogen held and secured	MoH, MFL, UNZA, MA, MWSEP, MoD				x	x	x
	9.3.2 Operationalise a public health risk management program	Training and outreach conducted	MoH, MFL, UNZA, MA, MWSEP, MoD				x	x	x
	9.3.3 Develop and implement protocols for Public Health Emergency Operation Centre (PHEOC) simulation and incidence response	Effective PH preparedne and response	MoH, MFL, UNZA, MA, MWSEP, MoD			x	x	x	x

					TIMELINE				
Strategies	**Sub-Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
	9.3.4 Establish a system for identifying and reporting of priority diseases and dangerous pathogens	System for identification, reporting and data management of priority diseases and dangerous pathogens established	MoH, MFL, UNZA, MA, MWSEP, MoD			x	x	x	x
9.4 Develop and Coordinate the implementation of a multisectoral national action plan for antimicrobial resistance	9.4.1 Establish national baseline data on AMR	Situation analysis conducted	MoH, MFL, UNZA, MA, MWSEP, CDC, WHO, FAO, CSO		X				
	9.4.2 Develop and implement AMR national action plan	Reduce the growing threat of AMR	MoH, MFL, UNZA, MA, MWSEP,CDC, WHO, FAO, CSO		X	X	X	X	X
(AMR)	9.4.3 Scale up the number of sentinel site for Global Laboratory Antimicrobial Surveillance System (GLASS)	Increased number of GLASS sentinel sites	MoH, MFL, UNZA, MA, MWSEP, CDC, WHO, FAO, CSO		X	X	X	X	X
9.5 Facilitate access to training and education	9.5.1 Provide training opportunities to improve scientific and technical skills within the public health laboratory network	Skilled public health workforce to effectively respond to PH event	MoH, MFL, UNZA, MA, MWSEP, APHL, IAPHI,CDC,WHO, OIE,FAO			X	X	X	X
	9.5.2 Partnering with academia, clinical and other PH agencies to provide hands-on learning opportunities	Effective PH preparedness and response	MoH, MFL, UNZA, MA, MWSEP, APHL, IAPHI,CDC,WHO, OIE,FAO			X	X	X	X

10.0 Research and Development **Objective: To promote research and development in Laboratory sciences inorder to improve patient management,laboratory performance and disease control.**									
					TIMELINE				
Strategies	**Sub Objectives**	**Output**	**Responsible**	**Funding**	**18**	**19**	**20**	**21**	**22**
10.1 Develop and implement a National research agenda for laboratory services	10.1.1 Develop and adopt priorities for laboratory research program.	Data available to support decision making in patient management, laboratory operations and disease control.	MOH and Partners	GRZ and Partners		x	x	x	
	10.1.2 Increase laboratory participation in research activities	Research conducted and published to support national research agenda	MOH and Partners	GRZ and Partners		X	X	X	X
11.0 Monitoring and Evaluation **Objective-To increase availability of relevant accurate, timely, and accessible laboratory data to support evidence based planning and decision making.**									
11.1 Establish an effective M & E system for laboratory services	11.1.1 Develop and maintain appropriate tools and guidelines for M & E management system for laboratory services	Tools and guidelines for M&E developed	MOH and Partners		X	X	X		
	11.1.2 Increase the scope and coverage of laboratory services indicators in the HMIS/DHIS2	Increased number of laboratory indicators incoperated in HMIS/DHIS2	MOH and Partners			X	x		
	11.1.3 Strengthen the evaluation process of the implementation of the laboratory strategic plan.	Active ongoing evaluation of the laboratory strategic plan taking place	MOH and Partners		X	X	X	X	X

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