Republic of Zambia

Ministry of Health

e-Health Strategy 2014-2016

DECEMBER, 2013

TABLE OF CONTENTS

FOREWORD

The Government of the Republic of Zambia aims to deliver the highest quality of healthcare services to its citizenship. To this effect, it has, among other interventions, embraced the use of Information and Communication Technology (ICT) in its service delivery channels. Information and Communication Technologies have, over the past few years, significantly impacted many aspects of society and has the potential to impact positively on the delivery of health care services. The development of the national e-health strategy comes at a critical moment when the ability of ICTs to support and transform health care has been widely recognised. In Zambia, e-health plays a central role in facilitating the harmonisation of the previously fragmented and disjointed systems and approaches in implementation and maintenance of Health initiatives. The purpose of the strategy is to use ICTs to leverage service delivery by creating a conducive environment for successful implementation of e-Health systems.

It is anticipated that once this e-Health strategy is implemented, it would enhance sustainability of ICT integration and would be factored in the implementation of health initiatives thereby reducing external dependency in ICTs. In addition, it would also assist in utilising the available staff prudently through the use of ICTs.

At the national level, the importance of ICT in national development was demonstrated by the launch of the National ICT Policy in 2007 and the inclusion of ICT as a priority sector in the Fifth National Development Plan 2006 - 2010. An opportunity has now arisen for the country to implement the e-health strategy and therefore all stakeholders are called upon to rise to the challenge. The need for the government to develop its e-health strategy that guide the health sector and regulate the use of its ICT resources could not be over emphasised. The e-health strategy therefore will give well defined guidelines in the manner in which all issues relating to ICT will be managed.

It is my considered view that, with appropriate levels of commitment and support from the Government, health workers, Cooperating Partners (CPs) and other key stakeholders, the strategy would significantly improve the management of the public health sector and lead to improvement of the health status of Zambians that will significantly contribute to national development. I therefore, urge all stakeholders involved in the implementation of the e-health strategy to fully educate themselves to this important document. The Ministry is fully committed to ensuring the successful implementation of the strategy.

Hon. Dr. Joseph Kasonde, MP

MINISTER OF HEALTH

ACKNOWLEDGEMENT

The e-Health strategy has been developed through an interactive, participative and consultative process involving significant contributions and support from various individuals and institutions. I therefore wish to extend my sincere appreciation to all those that contributed to the process of developing it.

On behalf of the Ministry of Health, I also wish to acknowledge the financial and technical support rendered to us by our Cooperating Partners in supporting this process. Without the direction and valuable support of our Cooperating Partners and other line ministries, we would not have managed to successfully complete this document.

Finally, I wish to thank all members of staff of the Ministry of Health for their participation, contributions and support to the process of formulating this e-health strategy.

Dr. Peter Mwaba
Permanent Secretary
MINISTRY OF HEALTH

ACRONYMS

CDC	Centre for Disease Control & Prevention
CHAZ	Churches Health Association of Zambia
CIDRZ	Centre for Infectious Disease Research in Zambia
CPs	Cooperating Partners
DHIS	District Health Information System
DMO	District Medical Office
EID	Early Infant Diagnosis
GIS	Geographic Information System
GNC	General Nursing Council
GRZ	Government of the Republic of Zambia
HIV/ AIDS	Human Immune Virus/ Acquired Immune Disease Syndrome
HMIS	Health Management Information System
HPCZ	Health Professionals Council of Zambia
HR	Human Resource
HRH	Human Resources for Health
HRIS	Human Resources Information System
ICT	Information and Communications Technology
IEC	Information Education and Communication
JSI	John Snow Inc – USAID| Deliver Project
LAN	Local Area Network
LIS	Laboratory Information System
LMIS	Logistics Management Information System
M & E	Monitoring & Evaluation
MCDMCH	Ministry of Community Development Mother and Child Health
MESVT	Ministry of Education Science Vocational Training and Early Childhood
MoF	Ministry of Finance
MoH	Ministry of Health
MSL	Medical Stores Limited
MTWSC	Ministry of Transport, Works, Supply and Communications
NAC	National Aids Council
NCDs	Non-Communicable Diseases
NHRA	National Health and Research Authority
PCR	Polymerised Chain Reaction
PMO	Provincial Medical Office
STI	Sexually Transmitted Infection
TB	Tuberculosis
VCT	Voluntary Counselling and Testing
VoIP	Voice Over Internet Protocol
WAN	Wide Area Network
WHO	World Health Organisation
ZDHS	Zambia Demographic Health Survey
ZMA	Zambia Medical Association
ZPCT	Zambia Prevention and Care Treatment
ZUNO	Zambia Union of Nurses

1.0 BACKGROUND

The Government of the Republic of Zambia (GRZ) is committed to delivering better and more practical measures that will ensure the uniform growth of Information and Communications Technology (ICT) in all sectors. Government Ministries are expected to take the lead thereby enabling stakeholders and the public to benefit from quick accessibility of accurate data and information.

In March 2007, the National ICT Policy was launched by the then President of the Republic of Zambia, Dr. Levy Patrick Mwanawasa. The National ICT Policy provides the guiding principles around which sector ICT policies should be developed. It therefore became necessary for each sector of the Public Service to formulate its own ICT Policy as a conduit for implementing the National ICT policy. The Ministry of Health (MOH) has included a chapter on ICT in the MOH National Policy that was launched in September 2012. Other Government documents that have been consulted in developing the e-Health Strategy include: the Vision 2030; The Fifth National Development Plan (2006-2010) as well as The Sixth National Development Plan (2011-2015); the National Health Strategic Plan (2006 - 2010) as well as the National Health Strategic Plan (20011 - 2016) and the Ministry of Health Institutional Strategic Plan 2005 – 2009.

The Ministry of Health has a number of ICT operational guidelines for different information systems. However, in some areas of ICT application, there have been no guidelines. Against this background, it was found to be expedient that all the available ICT guideline documents be harmonised and developed in line with the strategic focus areas in the e-Health Strategy.

2.0 INTRODUCTION

The e-Health strategy is a product of research and consultations. The effective and efficient use of ICTs will not only translate into better and efficient service delivery but will also improve planning and accountability in the health sector. The e-Health strategy provides the Ministry with clear guidelines that will drive growth and transformation through the effective use of ICT. The strategy will give broad operational guidelines to the various e-Health stakeholders working with the ministries responsible for health. It will identify focus areas such as Information Systems, ICT Infrastructure, Human Resource Development and Administrative functions. Furthermore, the strategy has been designed to provide all ICT users in the ministries responsible for health with new opportunities for learning, developing

skills, and accessing important information and services. The strategy also leverages potential to contribute to efficiency among programme managers in the health sector. In order to harness and provide adequate protection to the ICT resources, various components of the strategy ensure that ICTs are well developed, maintained and utilised.

3.0 PROBLEM STATEMENT

The vision of the MOH is "A nation of healthy and productive people". However, the Zambian health system is facing challenges to attain its vision and cope with the high disease burden against the backdrop of shortage of health care professionals, inadequacies in drugs and medical supplies, funding, equipment and infrastructure including ICTs.

Even though there has been substantial investment into ICTs in the health sector; it has been characterised by among others the following key challenges:

a) Fragmented and disjointed information systems that do not communicate with each other;

b) No e-Health strategy in the health sector

c) Sustainability of ICT projects is not factored in the implementation and results in donor dependency and donor driven platforms;

d) Limited human resource capacity in ICT; and

e) Insufficiently developed or under-utilised ICT infrastructure.

With the current ICT advancement and growing influence, there is need to adopt and use such systems in a conducive environment for successful implementation of e-Health systems.

4.0 SITUATIONAL ANALYSIS

Zambia like many other countries has a tiered health care structure that facilitates a referral system with complicated cases moving from primary, to secondary then tertiary level. The private sector and faith based run units complement government efforts. Zambia has also not been spared from challenges with respect to healthcare workers. The current establishment is inadequate at all levels of the health care delivery system compounded by inequitable distribution of the few available health workers. Hence, health seeking patients have included consultations with traditional healers as an alternative. This is especially true in hard-to-reach places and rural areas where even the presence of an e-Health Strategy will not be relevant.

Zambia has a high burden of disease, which is mainly characterised by communicable diseases, particularly, malaria, HIV and AIDS, STIs, TB, high maternal, neonatal and child morbidities and mortalities. Non-communicable diseases (NCDs) are also on the rise, including mental health, diabetes, cardio-vascular diseases and cancers.

According to the 2007 Zambia Demographic and Health Survey (ZDHS 2007), Maternal Mortality Ratio (MMR) reduced, from 729 deaths per 100,000 live births in 2002, to 591 per 100000 live births in 2007; Under-Five Mortality Rate (U5MR) reduced from 168 per 1000 live births in 2002, to 119 per 1000 live births in 2007; Infant Mortality Rate (IMR) from 95 to 70 per 1000 live births ; and Neonatal Mortality Rate (NMR) reduced from 37 to 34 per 1000 live births, over the same period. Despite the absence of an e-Health Strategy the figures in the ZDHS are not very gloomy.

The malaria and TB programme performance reviews conducted in 2010, and other reporting health systems, also reported major improvements in the prevention and control of malaria and TB. Malaria incidence per 1000 population dropped from 412 in 2006, to 246 in 2009. TB treatment success rate improved from 79 percent in 2005 to 86 percent in 2008.

However, despite these achievements, the sector continues to face major challenges, which include: high disease burden, inadequate and inequitable distribution of medical staff, weak logistics management in the supply of drugs and medical supplies, inadequate and inequitable distribution of health infrastructure; obsolete equipment and depleted transport; challenges related to health information systems; inadequate financing; and identified weaknesses in the health systems governance.

Zambia has long identified the critical shortage of health workers as a major obstacle to the attainment of the national health priorities. The availability of adequate numbers of appropriately qualified and experienced health workers in the right skills-mix is a major determinant of health service performance. The two main problems concerning the human resource situation are the critical shortage of health workers, leading to abnormal staff to patient ratios, and the inequitable distribution of the available health workers, leading to imbalances. The Table below presents the human resource staffing levels for the years 2005 to 2010.

Table 1: Number of staff posted per category in public sector by 2005 and September 2010, and the approved establishment for 2010

Health Staff	No. Of Staff 2005	No. of Staff 2010	Increase of Staff	Estab. 2010	Gap to Estab.	Gap to Estab. (%)
Clinical Officer	1,161	1,535	374	4,000	2,465	62
Dentistry	56	257	201	633	376	59
Doctors	646	911	265	2,300	1,389	60
Nutrition	65	139	74	200	61	31
Laboratory Services	417	939	222	1,560	921	59
Pharmacy	108	371	263	347	- 24	- 7
Physiotherapy	86	239	153	300	61	20
Radiography	142	259	117	233	- 26	- 11
Midwives	2,273	2,671	398	5,600	2,929	52
Nurses	6,096	7,669	1,573	16,732	9,063	54
Environmental health	803	1,203	400	1,640	437	27
Other Health Worker	320	363	43	5,818	5,452	94
Total clinical staff	**12,173**	**16,256**	**4,083**	**39,360**	**23,104**	**59**
Administration	11,003	14,457	3,454	12,054	- 2,403	- 20
Overall total	**23,176**	**30,713**	**7,537**	**51,414**	**20,701**	**40**

Source: National **Human Resources for Health Strategic Plan** 2011 – 2015.

The MOH has realised that some of the challenges being experienced in health care service delivery could be mitigated through the use of ICTs. However ICTs have had their own share of challenges arising from among others lack of integrated information systems, inadequate numbers of ICT technical staff, lack of appropriate skill-sets to maintain the existing ICT infrastructure. Furthermore, there has been a challenge in the procurement of ICT equipment. This has not been done through a coordinated procurement plan of using standard ICT equipment specifications in line with government procurement policy and guidelines. Lastly, the current supply chain management system is inadequate to support the demands of healthcare service delivery. Some of the e-Health Systems the sector has implemented include:

1) A **Telemedicine system** and infrastructure has been deployed at the University Teaching Hospital (UTH) through the Pan-African e-Network support programme. Three (3) components are currently functional: tele-consultation, e-learning and tele-radiology. The system is linked to twelve (12) Indian teaching hospitals and five (5) African countries, namely, Nigeria, DRC Congo, Mauritius, Egypt and Senegal.

2) The **SmartCare** Electronic Health Record system (EHR) has been developed and deployed by the MOH Zambia, in collaboration with the Center for Disease Control

and Prevention (CDC) and many other implementing partners. SmartCare is a fully integrated electronic health record system to provide continuity of care and a clinical management information system at the facility and district level. It is a key component in implementing the 'one National M&E system' as agreed in the Paris Declaration. Currently, SmartCare is deployed in close to 700 facilities in all the districts of Zambia. Partners are supporting deployment in government and private facilities.

3) The **Health Management Information System** (**HMIS)** was introduced in Zambia in 1996 and its name has since changed from HMIS to DHIS. DHIS currently captures data on disease morbidity and mortality, maternal and child health services, service delivery (staff workload, health facilities utilization, availability of essential drugs etc.), surveillance and financial services. Environmental health and administrative data are also captured on an adhoc basis. DHIS data collection is conducted at the health facility level using a paper based system and is aggregated and computerised from district to national level. .

4) **Programme Mwana** is an innovative m-health initiative implemented by the MOH with support from United Nations International Children Emergency Fund (UNICEF) and its collaborating partners, the Zambia Centre for Applied Health Research and Development (ZCHARD), a Boston University affiliate; the Zambia Prevention, Care and Treatment Partnership (ZPCT); and the Clinton Health Access Initiative (CHAI). The m-Health system is formerly called Short Message System technology system. This system uses mobile technology to improve and address Early Infant Diagnosis (EID) of HIV, post-natal follow-up and care by way of sending infant HIV test results from the three Polymerised Chain Reaction (PCR) laboratories to the health facilities.

5) **Human Resources Information System (HRIS)** is an initiative that was developed in-house by the ICT unit and the Directorate of Human Resource and Administration (HRA). The system modules handle most of the Human Resource (HR) functions, such as keeping employee history, staff debts, promotions, disciplinary cases, leave calculation among others. The system is currently being piloted at MOH Headquarters, UTH, Luapula PMO, Kabwe General Hospital, Monze Mission Hospital and School of Nursing and Kitwe Central Hospital.

SWOT ANALYSIS OF THE HEALTH SECTOR

Strengths	Weakness
1) Some Nursing and Paramedical training institutions already have computer laboratory as an aid to teaching and practicing computer skills. Introduction of HMIS course in the curriculum for pre service training institutions creates an e-Health ready environment 2) The MOH National Health Policy recognizes e-Health as a national priority 3) Technological advancement in application of ICT in health such as in the use of Geographical Information Systems and m-health	1) Absence of a national e-Health Strategy to guide implementation of e-Health initiatives 2) Inadequate referral health institutions capable of carrying out complex medical procedures 3) Under-utilisation and lack of integration of modern medical equipment and adequate skill to manage them. 4) Insufficient Human Resource for Health compounded by high staff attrition and shortage of ICT staff to support and maintain infrastructure. 5) Limited exchange and the sharing of information among health stakeholders 6) Low awareness of e-Health
Opportunities	**Threats**
1) Growth of the telecommunications infrastructure capacity makes e-Health applications more viable and, as a result this will increase the number of networked transactions to produce an explosive growth in telecommunications usage and an increasing rate of change of healthcare processes. 2) High penetration of mobile devices 3) There is an enabling environment for e-health through government legislation - National ICT Policy,2006, ICT Act,2009, and ECT Act 2009 a National e-Government Strategy is in place **4)** Cooperating partners good-will to support the e-Health strategy - Enabling environment for partnership	1) Delays in project implementation due to government bureaucracy on approval and procurements. 2) Over dependence on donor funding for local initiatives 3) Data security and communication threats through cybercrimes 4) Unreliable power supply resulting in systems outages 5) Lack of expertise in project management in the public service. 6) There are points of strain between patients and some physicians who feel a loss of control over their patients' care. Security concerns-the perception of a lack of security will inhibit the use of the Internet for personal clinical information in the future.

5.0 STRATEGIC FOCUS

5.1 Vision

A quality innovative e-Health system that will effectively contribute to a nation of healthy and productive people

5.2 Mission

To promote effective and efficient use of ICTs in order to support equitable access to cost effective, quality health services, as close to the family as possible.

5.3 Guiding Principles

The following principles shall guide the e-health strategy

a. **Primary Health Care (PHC) approach**

To consistently adhere to the PHC approach to organization, management and control of the health service delivery systems, in line with the relevant World Health Assembly (WHA) declarations, as endorsed by the WHO African region at the Ouagadougou Declaration of 2008.

b. **Equity of access**

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

c. **Affordability**

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

d. **Cost-effectiveness**

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

e. **Transparency and accountability**

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

f. Decentralisation

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

g. Partnerships

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

h. Gender sensitivity

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

i. Leadership

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

6.0 STRATEGIC PRIORITIES

In October 2012, a broad range of stakeholders from government, private sector and cooperating partners held the first meeting in Lusaka. A follow up meeting was held in Livingstone in May 2013 to prioritize the strategic areas of intervention and devised an implementation framework for the strategy. The technical team identified the following strategic priorities:

a. Information systems
b. Telemedicine
c. m-Health
d. e-Learning
e. Capacity building
f. Health promotions
g. Monitoring and Evaluation

The e-Health strategy addresses the above key focus areas. This will entail redesigning Health Information Systems and the development and implementation of new innovative solutions to aid improvement of health service delivery. The strategy will support the development of standards and procedures for leveraging existing technology and development, customisation and implementation of systems such as electronic health records, supply chain management, education management systems, mobile applications, data transmission systems and human resource systems.
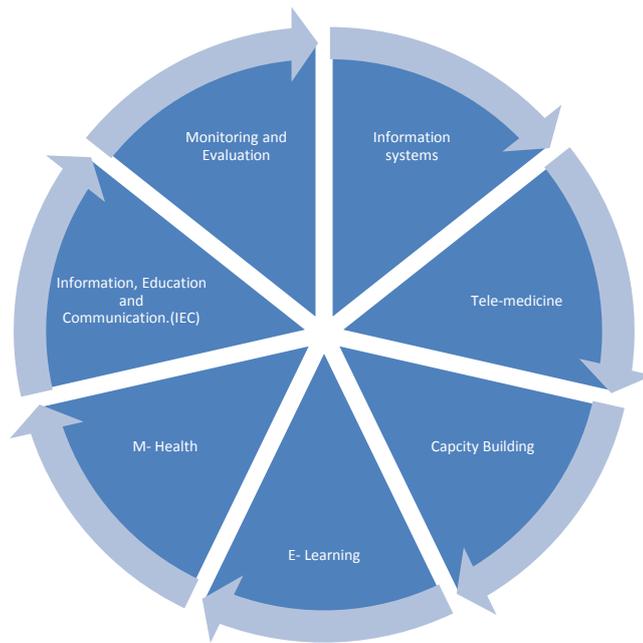
Figure 1: Focus areas for the E-Health Strategy

The inherent interdependence of health services calls for recognition of overlapping outputs for intervention in these areas of focus and the need for mechanisms for maintaining cohesion in their management.

6.1 Information Systems

Information System is a combination of people, hardware, software, communication devices, network and data resources that process data and information for a specific purpose. The operation theory is similar to any other system, which needs input from users. The captured data will then be processed using devices such as computers, and output produced will be sent to users or other systems via a network. Feedback will then be obtained.

Objective 1

To improve availability of relevant, accurate, timely and accessible health care data to support patient care and management, planning, coordination, and monitoring and evaluation of health care services

Key Strategies

a) Strengthen Health Information Systems such as HMIS and SmartCare

b) Strengthen research in the development of e-health

c) Formulate standards and guidelines for design of e-health applications

d) Strengthen harmonisation to enhance interoperability of different health management information systems among programmes

Objective 2

To improve community, district, provincial and national level demand for health data for planning purposes.

Key Strategy

a) Build capacity in district, provincial and national health personnel in the collection and use of health data for planning purposes.

Objective 3

To improve availability and access to essential health commodities, services and for clients and service providers.

Key Strategies

a) Strengthen Logistics Management Systems for health commodities

b) Provide reliable and timely data for forecasting and quantification of national health commodity requirements

Objective 4

To enhance the efficient delivery and management of health facility support services and resources through e-health solutions.

Key Strategies

a)   Maintain an up to date catalogue of health system requirements.

b)   Promote interactive end user and service provider engagement.

Objective 5

To strengthen Geographic Information Systems (GISs) and maintain comprehensive databases for efficient analysis of health information

Key Strategies

a) Maintain an updated health facility mapping database

b) To integrate GIS functions in existing and new information systems

6.2 Telemedicine

There is need to embrace and promote telemedicine as an intervention where the geographical divide between the patient and the health specialist is bridged through the use of appropriate technologies.

Objective

To deliver expert skills in healthcare to all with the help of information and communications technologies

Key Strategies

a. Promote the use of telemedicine in the health sector by developing a comprehensive framework, guidelines and operational model on the use of telemedicine.

b. Setup and implement link to health facilities using networks and provide telemedicine services

6.3 m-Health

Mobile technology offers great potential to revolutionize healthcare delivery in Zambia. Stemming from the rapid rise of mobile phone penetration in the country, m-Health has in the recent years emerged as an application for many nations[1]. In Zambia, a country with a subscriber base of 10.5 million [2] and 70 percent coverage, the field, largely emerges as a

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[1] National Health Strategic Plan 2011-2015
[2] ZICTA ICT Sector Report 2012

means of providing greater access to larger segments of a population, as well as improving the capacity of health systems in the provision of quality healthcare[3].

Objective 1

To increase access to quality healthcare and health-related information through the use of mobile technologies

Key Strategies

a) Ensure the availability of an m-Health technical working group, framework, guidelines, procedures and protocols
b) Expand the scope of m-Health applications and support health service delivery by creating linkages to Electronic Health Records Systems
c) Ensure the timely availability of health information for quality patient care and decision making
d) Lobby and advocate for m-Health by creating awareness through conducting sensitization meetings and dissemination of results from successful m-Health implementations both locally and internationally

6.4 E-Learning

Electronic learning, also known as e-Learning, is an educational approach that is increasing in demand with the advent of technological advancement. E-learning is a useful tool in resource constrained environments to deliver education. E-learning includes the use of multimedia learning, technology-enhanced learning, computer-based learning, Internet-based training, online education and virtual education among others. The National ICT Policy supports the use of ICTs in education, research and development. The e-Health strategy provides opportunities and a platform for e-learning for the citizens as well as building capacities of Human Resource for Health (HRH).

Objective 1

To expand access to training institutions for all citizens at all levels through e-learning

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[3] www.unicef.org

Key Strategies

      a. Develop e-learning standards and guidelines

      b. Provide incentives to e-learning initiatives and projects

      c. Promote the use of e-learning as an authentic mode of learning

Objective 2

To enhance innovative and effective Learner support services

Key Strategies

      a. Facilitate easy tracking, feedback and support for learners

      b. Enhance ICT skills of e-learning instructors and learners

      c. Enforce effective records management practices at institutional level

      d. Provide learner support services

      e. Establish and encourage research and development using e-learning

Objective 3

To provide skills-based training through demand-driven courses by e-learning

Key Strategies

a. Enhance competencies in national priority skills areas
b. Provide responsive e-learning curriculum to support the flexible delivery of health services to the various learners at all levels

6.5 Capacity Building

The Ministry of Health recognizes the need for e-Health capacity improvement for achievement of its strategic objective because Integration of e-Health programmes and trainings is inevitable.

Objective

To strengthen human resources capacity and create an environment in which e-health can effectively contribute to quality and health care service delivery.

Key Strategies

a. Strengthening and building the capacity of health information workers at all levels in order to improve the efficiency, quality and timeliness and availability of data.
b. Strengthen data capturing capacity of data capturing systems.
c. Strengthen and build capacity in the development and use of information systems.

d. Build capacity of e-learning providers in material development and learner support.
e.   Mainstream ICT skills training in all health training curricula.
f. Institutionalise e-Health capacity building in the health sector.

6.6 Health Promotions

Health promotion has been defined by the World Health Organization's (WHO) 2005 Bangkok Charter for Health Promotion in a Globalized World as "the process of enabling people to increase control over their health and its determinants, and thereby improve their health". The primary means of health promotion occur through developing health public policy that addresses the prerequisites of health such as income, housing, food security, employment, and quality working conditions.

Objective

To provide efficient and effective IEC to empower communities with appropriate knowledge to develop and practice healthy lifestyles and stimulate access to appropriate health services.

Key Strategies

a. Support health communication research in health promotion programmes and services to generate evidence-based e-Health information and learning.
b. Ensure e-health information is effectively managed and updated.
c. To create a platform to effectively support publication of health documentations and publications.
d. Lobby and advocate for e-Health promotion policies to inform and increase awareness among decision-makers and senior officials.

6.7 Monitoring and evaluation

It is essential to monitor and evaluate performance of the e-Health strategy on a half yearly basis.

Objective

To ensure that the objectives of the strategy are adhered to, as well as to provide input for future planning

Key Strategies

a. Enforcement of compliance with the legal and regulatory regime.
b. Maintenance of quality standards in service provision.
c. Improved surveillance – based on agreed service delivery indicators.
d. Effective management of project and budget execution.

7.0 IMPLEMENTATION FRAMEWORK

The envisaged timelines for the implementation of the focus areas have been tabulated within a 3 year time frame and are shown in the logical framework given as Annex B

8.0 POLICY AND REGULATORY FRAMEWORK

The strategy will mainly be guided by and will comply with the MOH National Health Policy, National Health Service Act, the National Decentralization Policy and the National Health Strategic Plan 2011-2015 in order to facilitate improved service delivery and other relevant policies. Various government institutions and stakeholders will be involved in monitoring and providing clear guidelines through the term of this strategic document.

8.1 Legal References

The areas to be addressed via legislation and other legal mechanisms in order to foster smooth transition to e-health include compliance with:

a. The Constitution and Laws of Zambia

b. The Penal Code

c. ZICTA, Information Communication Technologies ICT Act No.15 of 2009

d. ZICTA, Statutory Instrument on the Registration of Electronic Communication Apparatus   No. 65 of 2011

e. National ICT Policy, Zambia

f. The regulatory documents for bodies such as the Health Professional Council, Zambia Institute of Chartered Accountants and the Computer Society of Zambia

g. National Health Research Act. No 2 of 2013

8.2. Institutional and coordination framework

The strategy will be implemented through the existing health sector institutional structures and coordinating framework. MOH will take the overall responsibility for coordinating and ensuring successful implementation and attainment of the objectives of this plan. However, several other players will be involved in its implementation. These include other line ministries and government departments, Churches Health Association of Zambia (CHAZ), private sector, traditional and alternative medicines sector, civil society and communities; and the Cooperating Partners.

To ensure efficient and effective coordination of the partnerships with all the players, the e-Health initiatives will leverage on MOH's plan to strengthen the SWAp and inter-sector collaboration and coordination mechanisms at all levels. Emphasis will be placed on strengthening the leadership and governance systems and structures, so as to ensure the highest levels of participation, transparency and accountability at all levels.

9. 0 MONITORING AND EVALUATION

The logic model presents a monitoring and evaluation mechanism that enhances the effectiveness of the e-Health strategy by establishing clear metrics to measure the performance of the e-Health initiatives in delivering services to its stakeholders.

The logic model presented describes the actions expected to lead to the desired effects of the e-Health strategy by being a reference point for all stakeholders as well as identify the potential obstacles to the program operation.

The logic model will be used as a basis for evaluation, which will answer any question at any level of the monitoring and evaluation pipeline, that is, inputs, activities, outputs or outcomes.

9.1 e-Health Logic Model

Objective:

To provide the people of Zambia with equitable access to quality, cost effective and affordable health services through an innovative ICT system.

Situation:

The development and implementation of an appropriate ICT framework has become an integral part of health care services delivery. The demand for high quality health information, rising costs of healthcare provision and demand for quality healthcare services which are affordable at the time of need, coupled with inadequate skilled human resources have all necessitated the need for e-Health in order to achieve equitable access to quality health services.

e-Health is critical to improving health service delivery as it cuts across barriers which are a result of inadequate personnel, geographical as well as physical inaccessibility to health facilities. It provides for essential infrastructure for information exchange between participants in health care system and drivers for improved health outcomes.

E-Health Logic Model

Inputs	Activities	Outputs	Outcomes – Impact		
			Short term(2014	*Medium term(2015)*	*Long term(2016)*
1.Resources • Funding • Staff **2. Stakeholders** • National • Provincial • District Levels					
Office of the Auditor General	Undertake audits and value for money evaluations	Budgetary and expenditure control Audit rep*o*rt		Improved Sector capacity in resource management	Sector resources Managed according to guidelines.
Health Sector Advisory Group	Ensuring monitoring and evaluation findings are fed into sector planning and budgeting	Well planned and budgeted activities for the sector	Well defined and funded activities	Adequate budget available for all planned activities	Strengthened sector with a well-defined portfolio
Ministry of Health and Ministry of Community Development, Mother and Child Health	Coordinate and implement monitoring and evaluation processes	An efficient M&E system that provides feedback for informed decision making.	An M&E system used at every level of data collection	Effective data use for the management of programs	Well-coordinated activities providing evidence based results for programs

Central Statistics Office	Develop an integrated Intelligent Data warehouse for health data from all existing, diverse data sources into a Central repository	Intelligent Data warehouse	Standardized indicator definitions in data warehouse	Central repository of all health related data developed	Approved and authentic data source for all health indicators
University of Zambia	Build capacity of academic and government institutions to analyze, interpret and utilize data for program planning to improve health outcomes	Increased number of courses and modules offered by UNZA	Capacity of academic and government institutions to analyze, interpret and utilize data built.		Capacity of local Zambian professionals to analyze, and use data compiled
National AIDS Council	Support increased use of web- and computer based data systems	Web based data entry interface		Uniform data entry interface developed	Standardized data entry interface for the uploading of national health data
3. Planning •Evaluation •Program Sustainability					

Assumptions	Contextual Factors
1. Fulfilment of financial support to the program. 2. Continued goodwill and commitment from all stakeholders 3. External funds and well-placed change agents can facilitate institutional change.	1. Competing public health priorities

The focus of the e-Health strategy will be on standardizing tools and methodologies, and improving coordination of Monitoring and Evaluation systems at national, provincial and district levels. The Directorate of Policy and Planning will ensure that the Logic model is adhered to by the various implementing institutions, including reporting requirements. Monitoring and Evaluation operational manuals will be developed according to the Government wide Monitoring and Evaluation System.

Notably, Parliament, the Auditor General's Office and District Councils have been incorporated into the M&E Institutional Framework, as key institutions to provide oversight, on effective national and sub-national Monitoring and Evaluation Systems. Leveraging these institutions for adoption, guidance and implementation of the M&E framework will be essential

9.2 Monitoring Processes, Systems and Tools

The e-Health strategy monitoring and evaluation will be undertaken through the following processes and systems:

    a) Budget execution monitoring;

    b) Project spot monitoring;

    c) Analysis of administrative data or Management Information Systems;

    d) Benefits measurement

    e) Impact assessments

    f) Surveys; and

    g) Research and development.

The plans will be monitored through Quarterly Progress Reports, Annual Progress Reports, Mid-Term Review Reports and the Final Evaluation Report. To effectively monitor and evaluate the implementation of sector programmes, the output matrix and key performance indicator tables will be used (See Annex).

Annexes

A. KEY PERFORMANCE INDICATORS

	FOCUS AREA	INDICATORS
1.	**Information Systems**	• Number of facilities with capabilities to connect to services at central level • Percentage of Integration of health systems into a common platform by 2018 • Number of information systems with Business Continuity Planning in place by 2015 • Number of Information Technology audits conducted by 2018 • Number of facilities using electronic health records • Number of electronic patients records
2	**Telemedicine**	• Usage of Telemedicine • Percentage availability of telemedicine facility when required (downtime) in reporting period • Percentage coverage of referral hospitals with telemedicine facilities by 2018 • Percentage of hand to reach populations covered by telemedicine
3.	**m-Health**	• Number of facilities using m-Health technologies annually • Number of initiatives using m-Health technology annually
4.	**e-Learning**	• Number of staff trained using e-Learning method • Number of facilities equipped to offer e-Learning
5.	**Capacity Building**	• Number of professionals trained in use of specific technologies per annum • Number of certified trainers in health information systems per annum • Number of ICT research conducted and published in a year • Number of ICT trainings conducted per annum
6.	**Health Promotions**	• Number of available ICT partnerships to disseminate health information • Number of people reached in facilities with ICTs by type • Number of IEC materials available for use • Number of IEC materials published using ICT

B. LOGICAL FRAMEWORK

STRATEGIC OBJECTIVE PLANNED INTERVENTIONS	TIME FRAMES (YEAR 20xx)			RESPONSIBLE INSTITUTIONS	OUTPUTS AND PLANNED RESULTS
	14	15	16		
1. Information Systems					
1.1	**Objective:** To improve availability of relevant, accurate, timely and accessible health care data to support the planning, coordination, and monitoring and evaluation of health care services				
1.1.1 Develop guidelines for design of e-Health applications.	X	X	X	MOH; MCDMCH	Guidelines developed
1.1.2 Strengthen harmonisation to enhance interoperability of different health management information systems among programmes.	X	X	X	MOH; MCDMCH	Standardised data formats for use with the data warehouse; Standard specifications for design and development of e-Health systems
1.1.3 Strengthen Health Information Systems (such as HMIS, DHIS, SmartCare) Develop guidelines for design of e-Health applications.	X			MOH; MCDMCH	HMIS and SmartCare integrated
1.1.4 Strengthen health research using e-Health technologies.	X	X		MOH; NAC; CSO NHRA	Increased utilisation of e-Health data
1.2	**Objective:** Improve availability and access to essential health commodities for clients and service providers.				
1.2.1 Strengthen Logistics Management Systems for health commodities	X	X	X	MOH; CP, MSL	Electronic Logistics Management Information System redesigned

1.2.2	Provide reliable and timely data for forecasting and quantification of national health commodity requirements	X	X	X	MOH; MSL; MCDMCH; CPs	Improved data access for planning
1.3	**Objective:** Enhance the efficient delivery and management of health facility support services and resources through e-health solutions.					
1.3.1	Maintain an updated catalogue of e-health system requirements.	X	X	X	MOH; MCDMCH; CPs	e-Health systems catalogue developed and up to date
1.4	**Objective:** Strengthen GISs and maintain comprehensive databases for efficient analysis of health information					
1.4.1	Maintain an updated health Facility Mapping database	X	X	X	MOH; MCDMCH	Health facility mapping database updated
1.4.2	Integrate GIS functions in existing and new information Systems	X	X	X	MOH; MOF	All new systems integrated with GIS functionality
2. Telemedicine						
2.1	**Objective:** To deliver expert skills in health care to all at a distance with the help of ICT					
2.1.1	Enhance provision of telemedicine services by improving the infrastructure and formation of a technical working group.	X	X		MOH; MCDMCH	Two additional facilities providing telemedicine Technical working group in place

2.1.2	Promote the use of telemedicine in the health sector by developing a comprehensive framework, and operational model and guidelines on the use of telemedicine.	X			MOH; MCDMCH	Framework, operational model and guidelines produced
3. M-Health						
3.1	**Objective:** To increase access to quality healthcare and health-related information through the use of mobile technologies					
3.1.1	Promoting the use of m-Health by development of a framework, guidelines, procedures and protocols.	X	X		MOH; MCDMCH	Framework, guidelines, procedures and protocols developed
3.1.2	Expand the scope of m-Health applications and support health service delivery by creating linkages to Electronic Health Records Systems and associated systems	X	X	X	MOH; MCDMCH	Expansion to MC , ART adherence; EID scaled up to all facilities that conduct the service
4. E-Learning						
4.1	**Objective:** To Expand access to training institutions for all citizens at all levels through e-learning					
4.1.1	Develop e-learning standards and guidelines	x	X		MOH; MOE	e-Learning standards and guidelines developed
4.1.2	Provide incentives to e-learning initiatives and projects	X	X	X	MOH; MOE	Incentive package developed
4.1.3	Promote the use of e-learning as an authentic mode of learning	x	X	X	MOH; MOE	Number of institutions offering e-Learning facilities;
4.2	**Objective:** To Enhance innovative and effective Learner support services					
4.2.1	Facilitate easy tracking , feedback and support for	X	X	X	MOH; MOE	Human Resource Information

	learners					Systems implemented
4.2.2	Establish and/or encourage research and development using e-learning	X	X	X	MOH; MOE; learning institutions and statutory bodies	4 Research and Development programmes carried out

5. Capacity Building

5.1	**Objective:** To strengthen Human Resources capacity in e-Health service delivery					
5.1.1	Undertake a comprehensive change management	X	X		MOH; MCDMCH; CPs	Change Management plan developed
5.1.2	Develop a Human resource Development programme for e-Health	X	X		MOH; MCDMCH; MOE	Increased number of human resource skilled in e-Health
5.2	**Objective:** Improve management and effective training of staff					
5.2.1	Enhance the management, deployment and tracking of Health workers.	X	X	X	MOH; MCDMCH	Human Resource Development Information System implemented

6. Information, Education and Communication (IEC)

6.1	**Objective:** To provide efficient and effective IEC to empower communities with appropriate knowledge to develop and practice healthy lifestyles and stimulate access to appropriate health services.					
6.1.1	Support health communication research in health promotion programmes and services to generate evidence-based e-Health information and learning	X	X	X	MOH; MCDMCH	Six communication research programmes carried out

6.1.2	Ensure e-Health information is effectively managed and updated	X	X	X	MOH; MCDMCH	IEC repository implemented
6.1.3	To create a platform to effectively support publication of health documentation/publications and facilitate dissemination of e-health information	X	X	X	MOH; MCDMCH	Ministry website updated
6.1.4	Increase awareness of e-Health solutions among decision makers in the health sector.	X	X	X	MOH; MCDMCH	Commemorations and campaigns conducted
6.1.5	Lobby and advocate for e-Health promotion policies to inform and increase awareness among decision-makers and senior officials	X	X	X	MOH; MCDMCH	Meetings and press briefs held
7	**Monitoring and Evaluation**					
7.1	**Objective:** To measure the performance of the e-Health initiatives in delivering services to its stakeholders					
7.1.1	Develop M&E Plan	X			MOH; MCDMCH	M&E Plan developed
7.1.2	Develop M&E Tools	X			MOH; MCDMCH	M&E Tools developed
	Monitor and Evaluate e-Health strategy	X	X	X	MOH; MCDMCH	e-Health Strategy Evaluated

C. BUDGET FOR IMPLEMENTATION OF E-HEALTH STRATEGY

PROGRAMMES	2014 Cost in KR'			2015 Cost in KR'			2016 Cost in KR'		
	GRZ	Donor Support	TOTAL	GRZ	Donor Support	TOTAL	GRZ	Donor Support	TOTAL
Information Systems	200,000	10,000,000	10,200,000	300,000	12,000,000	12,300,000	400,000	13,000,000	13,400,000
Telemedicine	150,000	2,000,000	2,500,000	500,000	5,000,000	5,500,000	600,000	10,000,000	10,600,000
m-Health	100,000	2,000,000	2,100,000	300,000	3,000,000	3,300,000	500,000	4,000,000	4,500,000
e-Learning	500,000	1,000,000	1,200,000	500,000	1,500,000	2,000,000	700,000	2,000,000	2,700,000
Capacity Building	100,000	500,000	600,000	300,000	1,000,000	1,300,000	300,000	1,500,000	1,800,000
Health Promotion	150,000	200,000	700,000	400,000	500,000	900,000	500,000	1,000,000	1,500,000
TOTAL	1,200,000	15,700,000	17,300,000	2,300,000	23,000,000	25,300,000	3,000,000	31,500,000	34,500,000

D. LIST OF PARTICIPANTS TO THE E-HEALTH STRATEGY

1. Dr Christopher Simoonga - MoH: Director Policy & Planning
2. Mr Paul Mumba - MoH: Deputy Director Policy
3. Mr. Chipalo Kaliki - MoH: Deputy Director Monitoring and Evaluation
4. Mr. Chikuta Jonathan Mbewe – MOH: Deputy Director Pharmacy Services
5. Mr Henry Kansembe – Health Systems Specialist
6. Mr Noel M. Masese - MoH: Head-ICT
7. Mr Evans Malikana - MoH: Chief Policy Analyst
8. Mrs. Monica Mbewe Gardner - MoH: Chief Policy Analyst
9. Mr Davy Nsama – Chief Biomedical Scientist
10. Mr. Patrick Banda-MOH: Chief Planner-Planning and Budgeting
11. Mr Rutendo Chitembure – Principal ICT Officer Software
12. Mr Andrew Kashoka - MoH: Principal ICT Officer Mrs. Noami Banda - MoH: Principal Policy Analyst
13. Mr Innocent Chiboma - MoH: Senior ICT Officer – Electronic Medical Records
14. Mrs Sheila Mumbi - MoH: Senior ICT Officer – Electronic Medical Records
15. Ms. Virginia Simushi – MoH: Acting Senior ICT Officer
16. Mr Richard Tumeo - MoH: Senior ICT Officer
17. Mr Moses Mutabwa - MoH: ICT Officer
18. Mr Josephat Kunda - MoH: Senior Health Information Officer – Southern Province
19. Dr Alex Malambo - MoH: Livingstone General Hospital
20. Dr Jane Muntanga - MoH: Livingstone General Hospital
21. Mr Caleb Milambo - MoH: Provincial ICT Officer – Southern Province
22. Mr. Dipo Mbewe – MOH: Provincial ICT Officer – Lusaka Province
23. Mr Milner Makuni - MTWSC: Assistant Director-Communications
24. Mr Beaton Sibulowa - MTWSC: Principal ICT Officer
25. Mrs Lillian Mphuka - MCDMCH: Health Promotion Officer
26. Dr. Charles Ndakala - MoE: Systems Development Manager
27. Dr Bwalya Chiteba - CDC: ICT Specialist
28. Mrs Lungowe Mwapela - CDC: M&E Specialist
29. Mr Vesper H Chisumpa - UNZA: Head of Population Studies
30. Mr Chris Opit - JSI/DELIVER Project: Senior IT Advisor
31. Mr. Kelly Simpamba - Computer Society of Zambia: Vice President
32. Mr. Bernard B Chungu – Bio Medical Society of Zambia: Secretary General
33. Mr. Liseli Sitali – ZUNO: General Secretary
34. Mr. Universe Mulenga – GNC: Registrar
35. Dr. George Chipulu – Kabwe General Hospital: Medical Superintendent
36. Mr Zanga Sikazwe – SmartCare Data Analyst - MOH/GF
37. Mr. Chisanga Louis Siwale –: SmartCare Data Analyst - MOH/GF
38. Mr. Charles Nkunta – NAC: MIS Manager
39. Dr. Wyson T. Munga – RDAZ : President
40. Mr. Vincent Makumba – Evelyn Hone College: IT Administrator
41. Dr. Joyce Banda – ZMA: Secretary General
42. Ms. Saphira Mutambo – MOH: Senior Internal Auditor
43. Mr. Andrew Jere – MOH: ICT Intern

E. GLOSSARY OF TERMS

Ministry of Health
All the departments, statutory boards and institutions in this MoH e-health strategy will be referred to as MoH

Health Management Information Systems
HMIS is an aggregate routine information system used for planning, monitoring and evaluation and decision making at all levels of the health sector. Health information management (HMIS) is the practice of maintenance and care of health records by traditional (paper-based) and electronic means in hospitals, physician's office clinics, health departments, health insurance companies, and other facilities that provide health care or maintenance of health records. With the widespread computerization of health records and other information sources, including hospital administration functions and health human resources information, health informatics and health information technology are being increasingly utilized in information management practices in the health care sector. HMIS is now called District Health Information System (DHIS).

SmartCare
SmartCare is an electronic health record system developed in Zambia. It is an initiated nationally scalable Electronic Health Record System designed specifically for low resource, disconnected settings. SmartCare has the objective of improving the quality of health care and health by providing support to deliver "Continuity of Care" where existing paper systems are failing to preserve a longitudinal data view, and where clinics may often have no telecommunications.

Information and Communications Technology
A generic term used to express the convergence of telecommunications, information, broadcasting and communications such as computers and the internet, fixed and mobile telephone, high frequency radio, radio and television and related applications such as email, voicemail and Voice over Internet Protocol (VoIP).

ICT Infrastructure
A generic term to mean computer hardware and peripheral devices, communication equipment including networks

E-Health
E-Health is 'the combined use of electronic communication and information technology in the health sector'. In the MoH's practical use of e-Health, it means the use of ICTs to improve access to quality healthcare as close to the family as possible through the deployment and exploitation of ICTs and other modern technologies

Health Promotion

Health Promotion is a combination of activities aimed at empowering communities and individuals to take control of the social determinants of health thereby achieving improved health through multiple strategies and activities that include advocating for conducive and supportive environments including policies; empowering communities with information, education & communication and ease of access to facilities; mobilizing communities to participate in health issues through commemorations and campaigns and reorienting health services cognisance of social factors impinging on health.

Information Systems

These are systems used in the health sector which involve the receipt of data and transforming it into information, examples are Health Management Information Systems, SmartCare, Supply Chain Manager and Integrated Financial Management Information Systems.

Telemedicine

The use of modern audio and video telecommunication, computers and telemetry to deliver health services to remote patients and to facilitate information exchange between primary care physicians and specialists at some distance from each other.

Tele-health

The off-set provision of a wide array of health related activities, such as professional continuing education, professional mentoring, community health education, public health activities, research and health services administration, as well as consultative and diagnostic health care.