Health Information System

NATIONAL STRATEGY FOR ZIMBABWE

MINISTRY OF HEALTH AND CHILD WELFARE

2009-2014

Contents

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Acronyms

AHFoZ	Association of Health Funders of Zimbabwe
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ARV	Antiretroviral
BEmONC	Basic Emergency Obstetric and Neonatal Care
CDC	Centre for Disease Control
CH	Child Health
CPCPZ	College of Primary Health Care Physicians
CSO	Central Statistics Office
DfID	Department for International Development
DHE	District Health Executive
DHIS	District Health Information System
DHO	District Health Officer
DHIO	District Health Information Officer
DHMT	District Health Management Team
DOTS	Direct Observed Treatment Short Course
DMO	District Medical Officer
DS	Disease Surveillance
EDC	Epidemiology and Disease Control
E-Health	Electronic Health
EU	European Union
FNC	Food and Nutrition Council
GFATM	Global Fund Against AIDs, TB and Malaria
GIS	Geographic Information Systems
GOZ	Government of Zimbabwe
HPA	Health Professions Authority
HIO	Health Information Officer
HIS	Health Information System
HIV	Human Immuno-deficiency Virus
HMN	Health Metrics Network
HR	Human Resources
ICD-10	International Classification of Diseases 10th Revision
ICT	Information Communication Technology
IDSR	Integrated Disease Surveillance and Response
IMCI	Integrated Management of Childhood Illnesses
IPT	Intermittent Preventative Treatment
IRS	In-door Residual Spray
IT	Information Technology
ITN	Insecticide Treated Net
MC	Management Committee
MDR	Multi-Drug Resistance
MOHCW	Ministry of Health and Child Welfare
M&E	Monitoring and Evaluation
MTCT	Mother to Child Transmission
NAC	National AIDS Council
NGO	Non-Governmental Organization
NHA	National Health Accounts
NHIO	National Health Information Office
NHIS	National Health Information and Surveillance
NHISMC	National Health Information System Management Committee

NHISTC	National Health Information System Technical Committee
OPD	Outpatient Department
PD	Principal Director
PHAZ	Private Hospitals Association of Zimbabwe
PHC	Primary Health Care
PHE	Provincial Health Executive
PHIO	Provincial Health Information Officer
PMD	Provincial Medical Director
PMO	Provincial Medical Officer
PMTCT	Prevention of Mother to Child Transmission
PS	Permanent Secretary
RHC	Rural Health Centre
SADC	Southern African Development Community
SOP	Standard Operating Procedures
STI	Sexually Transmitted Infection
TA	Technical Assistance
TB	Tuberculosis
TC	Technical Committee
TOT	Training of Trainer
TT	Tetanus Toxoid
TWG	Technical Working Group
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VCT	Voluntary Counseling and Testing
WDSS	Weekly Disease Surveillance System
WHO	World Health Organization
ZACH	Zimbabwe Association of Church-related Hospitals
ZALGA	Zimbabwe Association of Local Government Authorities
ZiMA	Zimbabwe Medical Association

Foreword

Zimbabwe was among the first countries in the region to respond to emerging calls for increased availability of data for improved planning and effective implementation, monitoring and evaluation of health programmes. The Ministry of Health and Child Welfare designed and piloted a national health information and surveillance (NHIS) system in 1985, followed by a nationwide roll out in 1988. The Zimbabwe NHIS system received a SADC trophy for being the best surveillance system in the region in 2004. Since then, the system has not been spared the challenges affecting the health delivery system resulting in the national health information unit struggling to ensure timely production of complete and reliable information for improved targeting of health services.

Information does not only need to be available, but it should be the right information, in the right place and in the right time. The development of this strategic document went a long way in bringing together all stakeholders in order to harness efforts to strengthen the country's health information system. This was achieved through increased coordination and integration of health information from all programs and health system interventions. The continued collaboration will contribute to reduced duplication in collection of data and creation of a central repository for data to facilitate easy retrieval, analysis, dissemination and utilization.

This Health Information Strategy is a product of collaborative efforts by a multi-sectoral group comprising of practitioners from the Ministry of Health and Child Welfare, College of Health Sciences (University of Zimbabwe), bilateral organizations, UN development partners, non-governmental organizations and private hospitals association. The team consulted widely, and it is hoped that this document will address all information needs across the various health related sectors and consumers for the next five years.

In addition to being a policy initiative, the document presents a key business strategy for the health sector, as improved health information management is an integral part of achieving better health outcomes for all Zimbabweans.

Let us all recognize that this strategic document can only be a useful tool when it is effectively implemented for the benefit of optimum health care of our nation.

Hon Dr H. Madzorera
Minister of Health and Child Welfare

Preface

The National Health Information Strategy will inform the Ministry of Health and Child Welfare's strategic direction from 2009 through to 2014. This comes at a time when the need for timely and accurate data for action is critical for bringing about efficiency and effectiveness in the delivery of health services in Zimbabwe. The increase in the number and frequency of public health events including those of international significance calls for revision of the old ways of doing things and requires that we embrace new technologies and collect and analyze data for action at point of collection, efficiently forward information to the next levels for rapid decision making and deployment of support and response activities.

The growing need for health related information by policy makers, program managers, donors, non-governmental organizations, the public at large and other stakeholders demands a unified well defined system of data collection and reporting from the health facility to national level that will suit all the users of the data. The selection and consensus on the indicators to be used during the course of the strategic period by public health, NGOs and the private sector health partners is applauded as it will allow the Ministry to accurately determine the status of the population's health and provide a firm basis for forward planning of health interventions.

In addition the changing disease trends require strategic changes in health reporting including the incorporation of technological advancements in data processing. I am particularly happy that the National Health Information Strategy has brought together key players in information and communications technology, GIS mapping, transport and communications. An integrated approach has been achieved, bringing together the routine, weekly data, human resources, logistics, laboratories, administration, and transport management information systems which will all be accessed in one central repository of data.

Information is power and I hope you put it to best use to transform our health delivery system and ensure that we effectively benchmark with the rest of the world in measuring our progress towards achieving the universally and regionally agreed targets, including the millennium development goals, the continental and indeed our own national targets.

I urge all of you to familiarize yourselves with the changes in health reporting as enshrined in this National Health Information Strategy.

Brigadier General (Dr) G Gwinji
Permanent Secretary
Ministry of Health and Child Welfare

1 Introduction

Zimbabwe's health service delivery is established at four levels: primary, secondary, tertiary and quarternary. The Primary Health Care (PHC) is the main vehicle through which health care programmes are implemented in the country. The main components of the PHC include maternal and child health services; health education; nutrition education and food production; expanded programme on immunization; communicable diseases control; water and sanitation; essential drugs programme; and the provision of basic and essential preventive and curative services.

The majority of health services in Zimbabwe are provided by the public sector (Ministries of Health and Child Welfare and Local Government, and to a lesser extent through Ministries of Education, Defence, Home Affairs and Prison services), both in rural and urban areas. Public sector health services are complemented by the private sector, which includes both private for profit (e.g. industrial clinics, private hospitals, maternity homes and general practitioners) and not-for-profit private sector (e.g. mission clinics and hospitals and Non-Governmental Organizations) health facilities.

At the service delivery level, health services in Zimbabwe are integrated. Every health facility provides a full range of health services, both curative and preventive. For example, all health facilities offer maternal and child health services, including family planning.

A robust health information system should support the delivery of health care by providing information that is required for measuring the performance of service delivery at each health facility in the country. Reliable data is required on types of health services provided, coverage of health services, categories of people benefiting from those services, incidence and prevalence of diseases, disease outbreaks, and availability of human, financial and material resources to support the delivery of health services. The data should be accurate, timely and complete in order to guide health managers and staff to effectively plan, implement, monitor and evaluate health services being provided.

The foregoing forms the basis for the urgent need for the development of a health information strategy that provides the overall framework for the establishment of a flexible, comprehensive and integrated data collection, storage, processing, analysis, reporting, dissemination and utilization system.

1.1 Situation analysis

In response to emerging calls for increased availability of data for planning, implementation and monitoring of health programmes, the Ministry of Health and Child Welfare designed and piloted a national health information and surveillance (NHIS) system in 1985. The NHIS system was rolled out nationwide in 1988 followed by a joint evaluation of the system conducted in 1999 by MOHCW and WHO. Some challenges in data collection, analysis, reporting and uniformity were identified and recommendations for improving the system were made. Despite these challenges, the NHIS was awarded a SADC trophy for being the best surveillance system in the region in 2004[1].

In line with continued efforts to strengthen the health information system, posts for Health Information Officers (HIO) were created at provincial, district and mission hospital levels. This was supported by the introduction of Health Information training course at the Harare Poly Technical College. Data collection tools continued to be updated in line with new information needs. In 2005, a study was commissioned by MOHCW and UNICEF to assess factors affecting the functioning of

[1] Ministry of Health and Child Welfare (Working Consultative Document): Developing a National Health Strategy 2008 – 2013.

the National Health Information System (NHIS)[2]. The assessment revealed various challenges around the collection, processing, analysis, dissemination and utilization of health information. These include among other things inadequate human, financial and material resources.

The study came up with several recommendations aimed at revitalising the NHIS. Despite efforts by the ministry to implement some of the recommendations, the majority of the identified NHIS challenges remain unaddressed.

[2] Ministry of Health and Child Welfare (2005): NHIS System – An Assessment and Recommendation Report.

Figure 1: Findings of the assessment of the HIS:

	Weaknesses (-)	**Strengths (+)**
Internal	▪ Lack of central repository or data warehouse for integrating HIS data sources. ▪ Frequent shortages of paper and forms for the recording and reporting systems at facility level. ▪ Lack of a well-defined national core indicator and datasets. ▪ Inadequate ICT infrastructure. ▪ Unclear accountability and responsibility. ▪ Inadequate analysis and use of information. ▪ Inadequate focus on performance indicators and targets. ▪ Poor support systems. ▪ Inadequately designed software. ▪ Lack of access to communication facilities. ▪ Poor selection of sentinel surveillance sites. ▪ Lack of data authentication system. ▪ Inappropriate reporting channels. ▪ Inadequate human resources for HIS ▪ Private health practitioner and facility not reporting to the HIS.	▪ There is a functional M&E Unit that coordinates HIS activities. ▪ There is growing demand for health-related information from senior programme managers, policy makers, donors, NGOs and other key players in the health sector, and the public at large. ▪ Reporting of information is done frequently and on time from most units. ▪ There is a well-defined system of data collection and reporting from the facility up to the national level. ▪ Information from the surveys conducted by CSO and other partners is regularly used. ▪ Weekly disease surveillance system in place ▪ Integrated Disease Surveillance and Response (IDSR) system in place. ▪ Vital registration system in place.

Figure2: Current threats and opportunities

	Threats (-)	**Opportunities (+)**
External	▪ Powerful donor-driven vertical programs have their own reporting requirements and systems, which retard integration of data through the routine district health information system ▪ Some donors and lenders tend to avoid collaborating with the government-managed HIS Strategy Development effort. ▪ Inadequate communication infrastructure ▪ High staff attrition due to poor remuneration and working conditions ▪ Changing disease patterns requiring paradigm shift in how we manage health information	▪ Efforts are currently underway to improve integration of vertical programme, administrative and management information. ▪ Zimbabwe has been one of the 65 recipients of HMN support. ▪ Five million US dollars is available from GFATM round 8 for strengthening of M&E and HMIS. ▪ Other donors are ready to collaborate to fill the gaps. ▪ Existence of well defined catchment areas and administrative boundaries

The strengths and opportunities outlined above far outweigh the weaknesses and threats. Thus the envisaged integrated health information system should be anchored on existing strengths with full utilization of all available opportunities to address internal weaknesses and external threats to the existing system. In order to fully operationalise the recommendations from the NHIS assessment, required is a strategic framework that provides the overall guidance for the strengthening of the national health information system. All stakeholders with a common vision for a strengthened national health information system will be brought together with clearly defined roles.

1.2 Rationale for the HIS strategy

In order to get better health outcomes and to make informed decisions about targeting services, we need quality information. A robust, integrated health information system is required to ensure that appropriate information is available at the right time and place and in the right format. The information system should have the capacity to collect, store, manage, process, analyze, report and disseminate reliable data on key health indicators on a regular and timely basis. Reliable health information is critical for measuring the performance of the health service delivery system and for monitoring of progress in the achievement of sub-national, national and international health goals. Evidence-based decision making and choices by both service providers and consumers is only possible where a functional health information system exists:

- ***Consumers*** need information to make informed choices about available health options. With appropriate information, consumers will receive care that is targeted to their health needs and provided in a coordinated way as their care providers are better informed and able to communicate easily.
- ***Care providers*** need to make informed decisions at the point of care. This will be possible because relevant patient information will be more accessible and they will have access to evidence-based knowledge on which to base their interventions.
- ***Health institutions*** must be informed about what constitutes good practice. They will be able to configure services to achieve the best outcomes for their communities since they will be better informed about their health status.
- ***Donors*** must have information about the health status of the population, what services should be provided, and how effectively services are delivering desired outcomes. This will enable them to target services more selectively, as well as being able to analyze population health data.
- ***Policy makers and researchers*** must develop knowledge of epidemiological trends and identify interventions that will have the highest impact on improving health outcomes of all community members.

This strategy seeks to identify information needs for the health sector, make information available, ensure that available information is reliable and accessible, foster utilization of information for policy making, programme planning, implementation, patient management, monitoring and evaluation. To prevent duplication or conflicting solutions being implemented across the health sector, a national health information strategy will ensure that local-level health information decision making remains coordinated.

The health information strategy shall make sub-sector information systems communicate with each other. These include information systems for the various MOHCW units dealing with AIDS and TB, maternal health, family planning, child health, nutrition, malaria, mental health, disability and rehabilitation, laboratory, pharmacy, radiology, human resources, transport and communication, medical equipment, and finance and administration among others.

1.3 Principles of a good HIS

A good health information system provides the *information necessary to provide and manage good health services,* while it strengthens the organizational system that provides these services in line with the principle of Primary Health Care (PHC)[3]. This implies that information is collected at different levels and used for action. At each level it serves specifics goals, broadly categorized as follows:

- At the patient level (clinical level): This information is necessary for optimal patient management, i.e. for individual clinical care of both curative disease episodes as well as preventive services. Information can be covering short periods as well as long. This level of health information is often not considered in the

[3] [3] See WHO Annual report 2008

development of Health Information policy but is left to health workers and managers who are in the best position to implement good clinical care. - At the Health Facility level, where it serves operational objectives: this information is gathered to optimize Clinic and Hospital management as well as operational issues of public health management. The objectives are related to good management of the institution and of the management of the services as offered to the community under an institution's responsibility (epidemiological, public health considerations). Insights gained through information gathered at this level allow health workers to make operational choices.

- At administrative (District and Provincial) level health information serves a strategic objective: availability of good health information allows for prompt decisions to be made. Where it concerns epidemiology and disease control, it may partially overlap and include elements of the operational level. Because of the bigger scale and supervisory responsibilities of the provincial level, the resulting actions are more of a strategic nature: distribution of resources over larger areas (one district versus another), wider scope of institutions (support for govt. clinics or council/mission clinics), choices of alternative resource allocations, etc.. Examples are: residual house spraying versus bed net distribution or, location of a new clinic versus extension of outreach services. These choices involve calculation (or, more often estimations) of cost-effectiveness.

- At National (and International), health information should also contribute to policy choices and action which are of a more all encompassing nature than the previous levels. Apart from strictly public health concerns policy will be shaped by additional inputs from policy makers and often rises above the technical cost-benefit levels of public health interventions.

The strategic level as well as the policy level, largely make use of aggregated data gathered from the levels below plus inputs from special surveys, scientific research and international best practice and policy experiences.

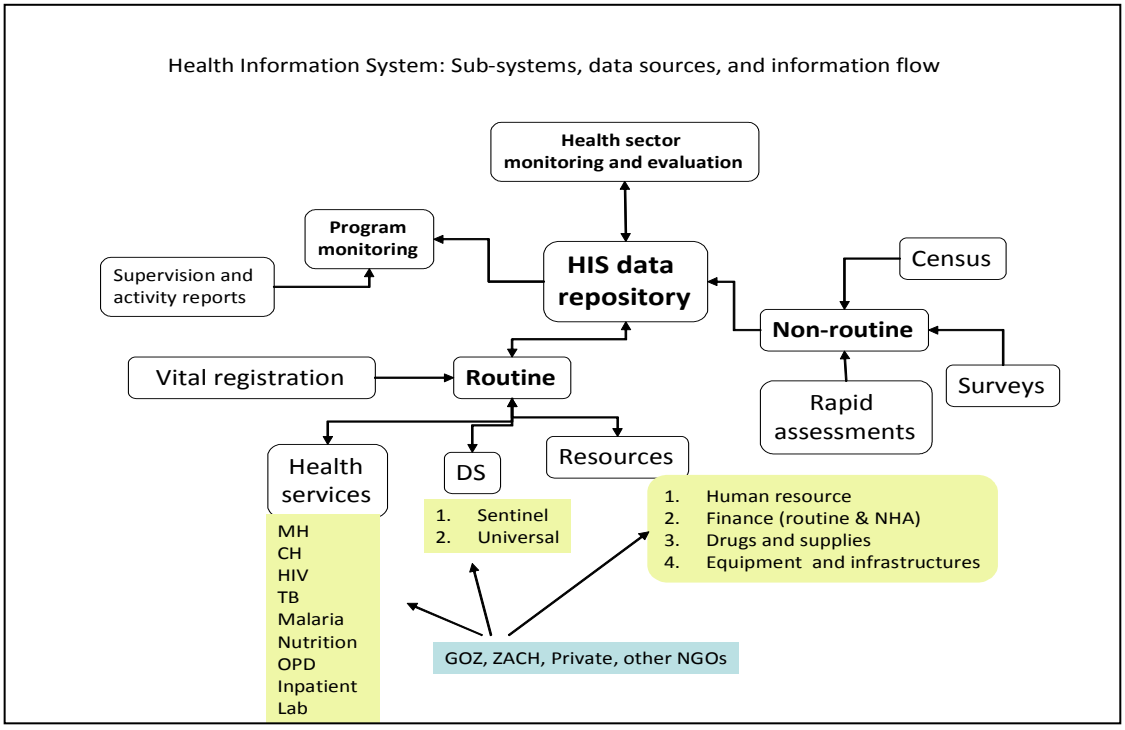
It is important to make the above distinctions. If efforts are required by those that have to contribute to data gathering to higher strategic levels without clear benefit to their own operational (let alone clinical) level, these contributions may not be made willingly or reliably, but rather seen as an excessive burden not impacting on the quality of their own efforts.

As a consequence to the above principles and in order to strengthen the existing health information system, the objectives shall be based on the following principles:

- improving the monitoring of coverage of essential health services to the entire population with emphasis on reaching the currently underserved population groups;
- enhancing the monitoring of service performance, both to individual clients about the services they are receiving, as well as to the public at large about the preventive services they should be receiving and the extent to which this is being achieved;
- pursuing the purpose of enhancing data quality and use at the level at which the data is first generated in the service, in order to increase confidence in the completeness and reliability of the data at higher levels in the health system;
- increasing the access to health data and information by policy and decision-makers through improvement in data storage, retrieval, analysis and presentation;
- supporting the decentralization of service management and action at the district level, changes to data capture and flow procedures will ensure that the district health office has all service data assembled and available in one location, including that from basic health services and primary health care, as well as from special disease and target group programs;
- the data resulting from population census and social-demographic surveys will have been disaggregated and disseminated to the district level for their use in monitoring service coverage and performance;
- meeting international standards of data and statistics quality;
- improved monitoring of Millennium Development Goals and indicators as a priority;

- adequate preparation for training and capacity-building such as development of new systems, procedures and formats and tested before staff training and capacity-building is designed and conducted; and,
- the processes of learning-by-doing which is often more effective and efficient, and less disruptive to the services;
- broader participation and consensus; and,
- single data repository (warehouse) at district, province and national levels.

Figure 2: HIS Conceptual Framework



The diagram above summarizes the flow of information from different sources to HIS data repository and from repository to information users. To fulfill the information requirements of program specific monitoring, the data from HIS repository will be complemented by supervision and program implementation reports.

1.4 Objectives of the HIS strategy

In line with the principles of a good HIS , the overall goal of this strategy is to optimise the performance of health services at all levels through the strengthening of the health information system. This will enhance the provision of necessary and sufficient information needed by consumers, health workers, managers and policy makers to plan, implement, monitor and evaluate the delivery of health servicesin Zimbabwe More specifically, the strategy aims to:

1. provide the overall guidance and framework for the establishment of a comprehensive, flexible and integrated national health information system capable of making available information required by the health sector.
2. outline the step-by-step process towards the strengthening of the national health information system with clear division of roles among all stakeholders.

3. define the minimum standards for an integrated health information system that is capable of producing reliable, relevant, up-to-date, adequate, non-conflicting, timely and reasonably complete information required for decision making at all levels of the health care delivery system.

1.4.1 Health Information System Strategies, Activities and Processes

In order to achieve the above objectives, the following strategies, activities and processes outlined in the table below have been proposed and shall be fully implemented.

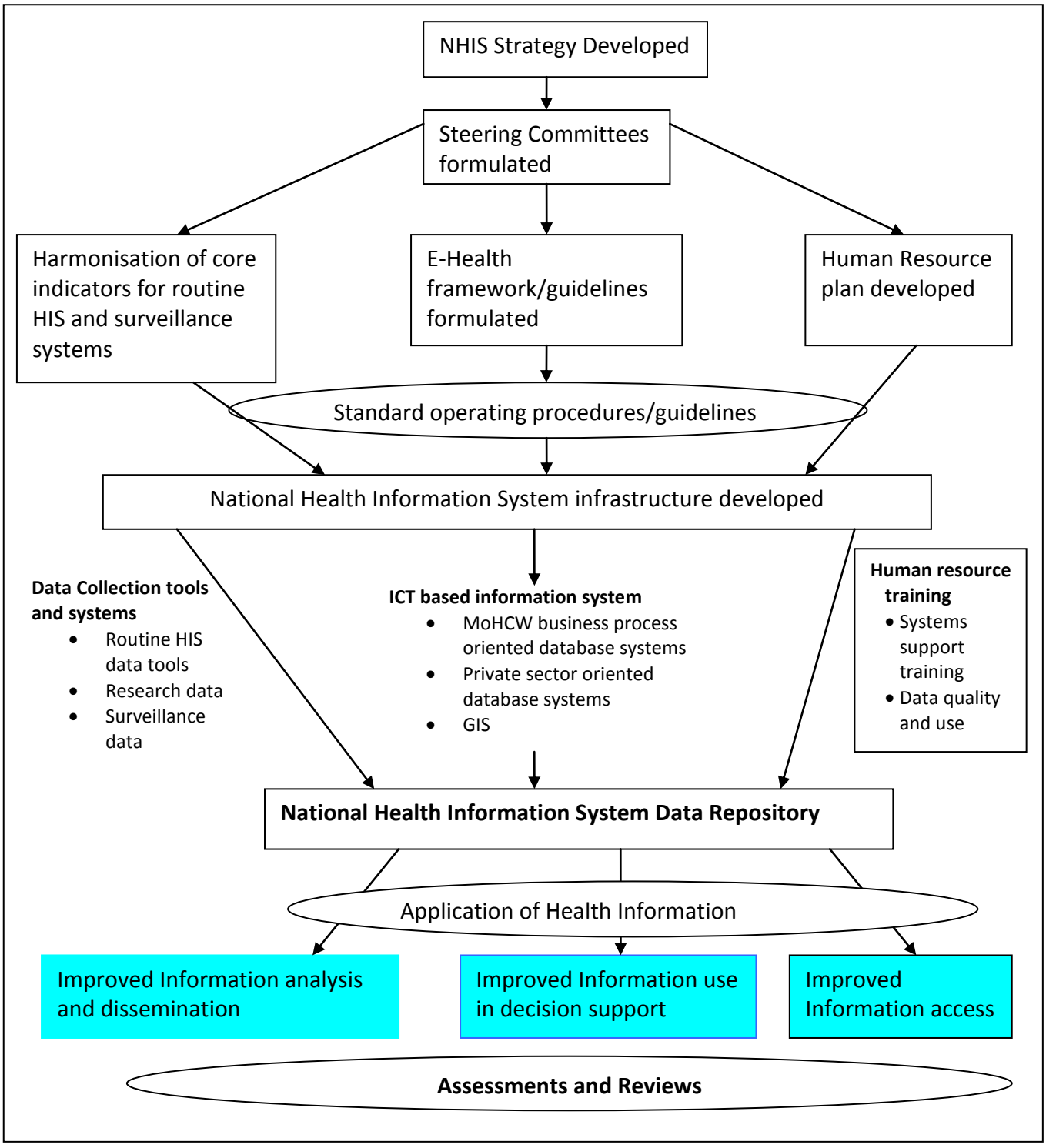
Figure 3: HIS LOGICAL FRAMEWORK

Specific Objective	Strategies	Activities
To harmonise the functions of the Health Information and Surveillance Systems.	Establishment of a broad-based HIS stakeholders forum	▪ Form a Management Committee (MC) to steer the HIS development / strengthening process; ▪ Form a Technical Committee (TC) to provide technical assistance in the implementation of the HIS. ▪
	Selection of core and common health indicators	▪ Select core and essential health indicators from all relevant public and private health sectors.
	Development of the Health Information Strategy	▪ Write the HIS strategy through multi-sectoral participation.
	Operationalisation of the Health Information strategy	▪ Form technical working groups (TWG) for each task or series of tasks.
	Develop e-health framework and guidelines	▪ Form a TWG to develop e-health framework to guide MOHCW and partners in the use of ICT in the health sector based on national ICT policy and guidelines. ▪ Advocate and promote the integration of ICT in the business process of the health delivery system.
	Establishment of a central health information repository	▪ Create a central health information warehouse ▪ Coordinate the collection, transmission and storage of health related data
	Development of standard operating procedures (SOP) for data management encompassing both public and private health sectors	▪ Write SOP with regard to data collection, storage, analysis, reporting, dissemination and utilisation.
To strengthen Health Information and Surveillance systems	Adaptation/development of ICT based tools for supporting the business processes of the Ministry of Health and Child Welfare	▪ Information architecture: o Identify the business processes of the MOHCW ▪ Adapt/develop ICT tools to support the business processes of MOHCW
	Improvement of data collection tools	▪ Revise the data collection tools in line with indicators and corresponding datasets; ▪
	Capacity building in health information management and utilization encompassing both	▪ Carry out a training needs assessment ▪ Implement recommendations from the needs assessment;

Specific Objective	Strategies	Activities
	public and private health sectors	
	Strengthen disease surveillance system in both the public and private health sectors	▪ Put in place surveillance mechanisms and tools that will ensure efficient data collection and transmission
	Strengthen health information system operations research strategy	▪ Implement operations research and disseminate the findings.
Improvement of use of information in decision-making	Promotion of health information utilisation at all levels	▪ Package appropriate health information for end users at different levels.
		▪ Enhance the skills in data analysis presentation and usage.
Improvement of access to information that is ready to use	Improved information access and dissemination	▪ Produce regular health reports in different formats.
		▪ MOHCW will establish a national network, and a website, for health information and disease surveillance.
Human Resource capacity strengthening	Strengthen HR base in line with HIS strategy	▪ Assess staffing and training needs and develop plan
		▪ Develop a medium to long term staffing plan.
Improve monitoring and evaluation of HIS	Regular performance assessment of the HIS	▪ Conduct HIS assessment in every 2 year using HMN framework and standard procedures; ▪ Update HIS strategy and develop rolling 5 year implementation plan for strengthening system of information management and use.

The figure below is a schematic overview of strengthening the health information system to its fullest potential in the entire country.

Figure 4: Schematic Overview for Strengthening HIS



The diagram above summarises the key features of this National Health Information Strategy as defined in the objectives above. The summary points include:

- Formulation of core indicators for the routing HIS and surveillance data. This includes data sources from private sector, research institutions, non-governmental organisations and public sector.
- E-Health framework and guidelines that inform the Ministry of Health and Child Welfare on the appropriate ICT tools required to improve on its business processes.
- Human Resource development plan that supports the entire Health Information System Infrastructure.

These three form the basis of formulating the National Health Information System Infrastructure which includes: data collection tools and systems, underlying ICT tools for databases and information management, and the human resource capacity that is required. Guiding each of these frameworks are Standard Operating Procedures (SOP) that feed into the National Health Information System infrastructure.

2.0 Institutional set up of the Health Information Strategy

The Health Information Strategy provides a context to support the evolving National Health Strategy (2010 – 2015) to use information in innovative ways in order to get better health outcomes. It builds on the existing National Health Information and Surveillance (NHIS) system. This strategy aims to strengthen the existing health information system by bringing together stakeholders in a manner that minimizes duplication of efforts and development of parallel information systems at was piloted in 1985 and scaled up nationwide in 1988 and is still being used as standard in 2009.

The NHIS system supported various health strategies and policy documents aimed at achieving better health outcomes for the people of Zimbabwe. These include the National Health Strategy: "Working for Quality and Equity in Health" (1997-2007), and various policy documents including "Planning for Equity in Health" and the "Health For All Action Plan - 1986". The Birth and Death Registration Act as well as the Public Health Act have also provided strong legal base for building a strong health information and disease surveillance system in the country.

The 2005 assessment of the NHIS system reported that the infrastructure required for the proper functioning of the NHIS is in place, from health facility level to the MOHCW head office level. The NHIS is fully embedded in the organizational structure of the MOHCW at all levels.

2.1 National HIS Management Committee

A broad-based coordination mechanism, called the **National HIS Management Committee**, will be established with links to relevant institutions as a crucial first step in designing the HIS. It will be the overall coordinating body with responsibility of ensuring that the existing HIS is revitalized and strengthened. The Management committee should convene regularly, mobilize technical advice, and provide guidance and oversight to the overall strengthening of the HIS nationwide. The National HIS Management Committee will have the following tasks and responsibilities:

1. review and recommend for endorsement the HIS strategy,
2. meet quarterly, as and when required, to provide strategic direction toward establishment of a fully functional, comprehensive integrated health information system,
3. review and approve the work of **National HIS Technical Committee**
4. review and recommend for endorsement core set of health and management indicators and corresponding data sets to construct each indicator,
5. mobilize funding and material resources required for implementing the HIS strategy,
6. advocate for adequate availability of qualified professionals for information management, research, monitoring and evaluation
7. approve the terms of reference for consultants and the outputs they produce,,
8. review and recommend for endorsement of an HIS research strategy,

9. review the performance of information systems periodically, and,
10. promote the utilization of information in planning, monitoring, periodic reviews, and evaluation

The composition of the Management Committee shall be as follows:

- Principal Directors: Planning , Preventive and Curative Divisions of MOHCW
  With advisory roles for:
- Representative of WHO, UNICEF, UNFPA
- Representatives of bilateral organizations (USAID, CDC, EU, DfID)
- Representative from CSO, PHAZ, CPCPZ, ZACH, ZALGA, College of Health Science NAC.

One of the Principal Directors in the MOHCW will chair the meeting, while a Deputy Director responsible for Health Information portfolio, supported by (a) Technical Advisor(s) provides the secretariat.

2.2 National HIS Technical Committee

A **National HIS Technical Committee** will be established to oversee the implementation of the HIS strategy. The Technical Committee shall meet monthly and provide technical support to the HIS strategy development, implementation, monitoring and evaluation. More specific tasks of the Technical Committee shall include the following:

1. Establishing technical subcommittees on different aspects of the NHIS
2. Formulating the terms of reference for consultants and Technical Assistance
3. Reviewing and approving the work of technical sub-committees and consultants
4. Identifying and defining core health sector indicators
5. Reviewing data collection tools and software in line with the National Health Information System requirements
6. Validating data collected for core health sector indicators
7. Put in mechanisms in place to monitor storage, processing, analysis, reporting, dissemination and utilization of collected data
8. Reviewing the utilization of information in planning, implementing, monitoring and evaluating health programmes at all levels
9. Advising on training programmes for health information staff to ensure availability of adequate skills for the implementation of the health information strategy
10. Monitoring the production of quality and timely health profiles and any other health reports
11. Coordinate the overall implementation and review of the health information strategy
12. Establishing and monitoring an integrated system for sentinel disease surveillance
13. Developing and reviewing of proposals for improving health information systems
14. Develop a vision and strategic approach to E-health
15. Exploring how the NHIS can be integrated with other health information systems.

The National HIS Technical Committee shall be composed of personnel with technical expertise in the public and private health sector data collection, processing, analysis, reporting, dissemination and utilization from the MOHCW, CSO, ZNFPC, NAC, ZACH, College of Health Sciences, WHO, UNICEF, CDC, PHAZ, AHFoZ, Red Cross, CPCPZ, ZiMA, City Health and UNFPA, FNC, NGOs, Uniformed Forces and other key stakeholders. This committee will be chaired by a representative from the MOHCW's Health Information Unit.

2.3 Health Information Department

The Health Information Department (HID) have the mandate to carry out activities outlined in the National Health Information Strategy. The department is responsible for the collection, storage, processing, analysis, reporting, utilization and dissemination of health information at all levels from the primary source of data to Head Office. At the district level, provincial and national level, DMO, PMD and PD, respectively, will be responsible for the supervision of the HID. Technical support will be provided by the NHISTC.

3.0 Data collection, compilation and storage

Accurate raw data is the cornerstone of an effective health information system. A good data collection system shall be constituted by a clear definition of core health indicators, appropriate data collection tools and guidelines, and adequately trained and motivated health information personnel.

Data is collected at health facilities from all levels of the health delivery system: primary, secondary, tertiary and quaternary in both public and private sector. Data is collected and summarized through various data collection tools: vouchers, registers, stock cards and a series of tally sheets. Each tool is used to collect specific information. Equal attention should be given to both outpatient and in-patient data as this will be used in the development of better guidelines and referral protocols to improve the health outcomes for consumers. Linking outpatient data to inpatient data is a key first step in broadening our perspective from a traditional event based perspective to the continuum of care spanning an entire illness episode and medical records spanning the medical history of patients.

The following sources will provide the much needed health information:

- Routine service delivery statistics collected from all health facilities in the country (public and private).
- Routine data from selected sentinel surveillance sites across the country.
- Vital registration of births and deaths
- Periodic household, demographic and health surveys.
- Operational research and rapid assessments.
- Data from management reports and reviews (financial, human resources, commodities, logistics, administration, facility and transport).

As outlined above, health data shall be collected from both primary and secondary sources. At the health facilities, health workers will record all statistics in line with the list of core health indicators using various data collection forms. Data will be aggregated further into monthly summaries for onward transmission to the next level. Using appropriate HIS software, data will be entered into the computer, processed and stored at the district level and at health facilities with computers. Data will be compiled manually and stored on duplicate hard copies at facilities without computers. In each case, back-up copies shall be made to minimize the risk of accidental loss of information.

3.1 Data quality and standards

Information can only be useful for decision making, planning, implementation, monitoring and evaluation of health interventions if it meets certain defined criteria. Data shall be accurate, complete, timely and readily available to consumers, care givers, health managers, planners and policy makers.

Standards are critical to enable information to be shared effectively and efficiently between all users and consumers of health services. Standards are required in the process of information gathering, storage, processing, communication/transmission, dissemination, infrastructure development, security and upholding of privacy, confidentiality and other ethical considerations for the national health information system and its sub-systems. The development of standards related to use of ICT will be guided by the e-Health framework.

Guidelines for the collection and verification of data exist but they will be reviewed and updated in line with new developments in the field.

The Health Information System Technical Committee shall define the minimum set of national indicators and data sets necessary to support the implementation of the National Health Strategy. A set of 99 core health indicators has been adopted and the Technical Committee will periodically review and update this list. All health facilities shall use the same list and definitions of core health indicators for standardization and comparison purposes. The Management Committee shall approve and commission additional health data collection activities to avoid duplication of efforts and ensure added value.

Privacy and security are cornerstone principles of the use and collection of personal health information that should be protected in the laws of the country. The code of professional practice for all health practitioners in the country is regulated by the Health Professions Act Chapter 27:19 of 2000. This is important because most health information is collected in the context of confidence and trust relationship between care provider and consumer; and health information may be required long after it has ceased to be needed for the original episode of care and treatment.

The head of the health facility shall be responsible for the accuracy, completeness and timeliness of data at the collection point before onward transmission to the next level. At the district level, the District Health Information Officer shall do the quality checks before the data is submitted to the District Medical Officer for utilization and onward transmission to the province. At the provincial level, the Provincial Health Information Officer shall check on the quality of data before data is submitted to the Provincial Medical Director for utilization and onward transmission to Head Office.

3.2 Information and Communication Technology

To improve on the management of information collection, storage, and dissemination, the Ministry of Health and Child Welfare must harness on modern Information and Communication Technologies (ICT). In order to fully exploit on ICT tools, it is important to have guidelines that define the business process of the Ministry of Health and Child and Welfare and recommend the appropriate technologies within those processes. These guidelines are referred to as an Electronic Health (e-Health) framework/guidelines.

Appropriate information technology (IT) including both hardware and software components is necessary for all information management processes from collection through processing, analysis, reporting, dissemination to utilization. According to the 2005 NHIS assessment, the information system infrastructure such as computers and accessories is in place at central, PMD, provincial and district hospitals. Despite poor utilization of IT in processing, transmitting and dissemination of information, all PMD and district offices were provided with Pentium IV computers with pre-installed health net sponsored free email address.

Given the dynamic nature of health care management, the HIS software shall be designed/adapted to be extremely flexible to address the changing needs at the field level over time. An open source, user friendly, flexible and scalable HIS software will be used. The HIS software with attributes that enable easy customization and modification to suit field conditions through participatory effort between health care and software professionals will be appropriate. The software shall also allow data to be transmitted to other users, both horizontally at primary health care or district levels or vertically up the hierarchy. In addition to its function of gathering, transmitting and storing information, the software shall be designed to analyze data, making it very appropriate for promoting the culture of information utilization. It shall further support functions of data validation, aggregation, sharing, feedback, display and use of health data at and between every level of the health system.

Mechanisms shall also be put in place to ensure that all PMD, district information offices, public and private health facilities have information transmission facilities through internet connections or other ICT based methods. Data backup and security systems shall be put in place to prevent against loss of information due to theft and damage to computers and preservation of privacy and confidentiality.

3.3 Human resources for the NHIS

Quality of health data and information produced from a HIS is a function of several factors that include good definition of indicators, good data collection tools, good software and most importantly, adequately trained health information personnel. The human resource factor is critical to any successful HIS as all other factors depend on the capacity of personnel to develop, review, adapt, implement, monitor and evaluate. At each level of health information management, adequate and qualified health information personnel shall be available.

The job descriptions of health information officers shall be reviewed and upgraded in line with their responsibility and experience. Clerks that are responsible for coding and compiling data at health facilities should be adequately trained and should have a good appreciation of health concepts. The same applies to health information officers with a statistical but not a health background. Coding, validation, analysis, reporting and dissemination of health data and information require some level of understanding of epidemiology.

Like any other professional in the health sector, health information personnel need to be adequately motivated. Motivation will promote the commitment required for producing data and information of high quality for the health delivery system to produce better outcomes. This shall come from satisfaction with remuneration that is commensurate with qualification, experience and responsibility. Like all other health professionals, there shall be a clear career path for health information personnel. Health information personnel shall be given equal opportunity for professional development sponsored by the MOHCW. Another potential source of motivation can be the introduction of a reward system for best performers measured, for example, by accuracy, completeness and timeliness of data among districts and provinces in a year.

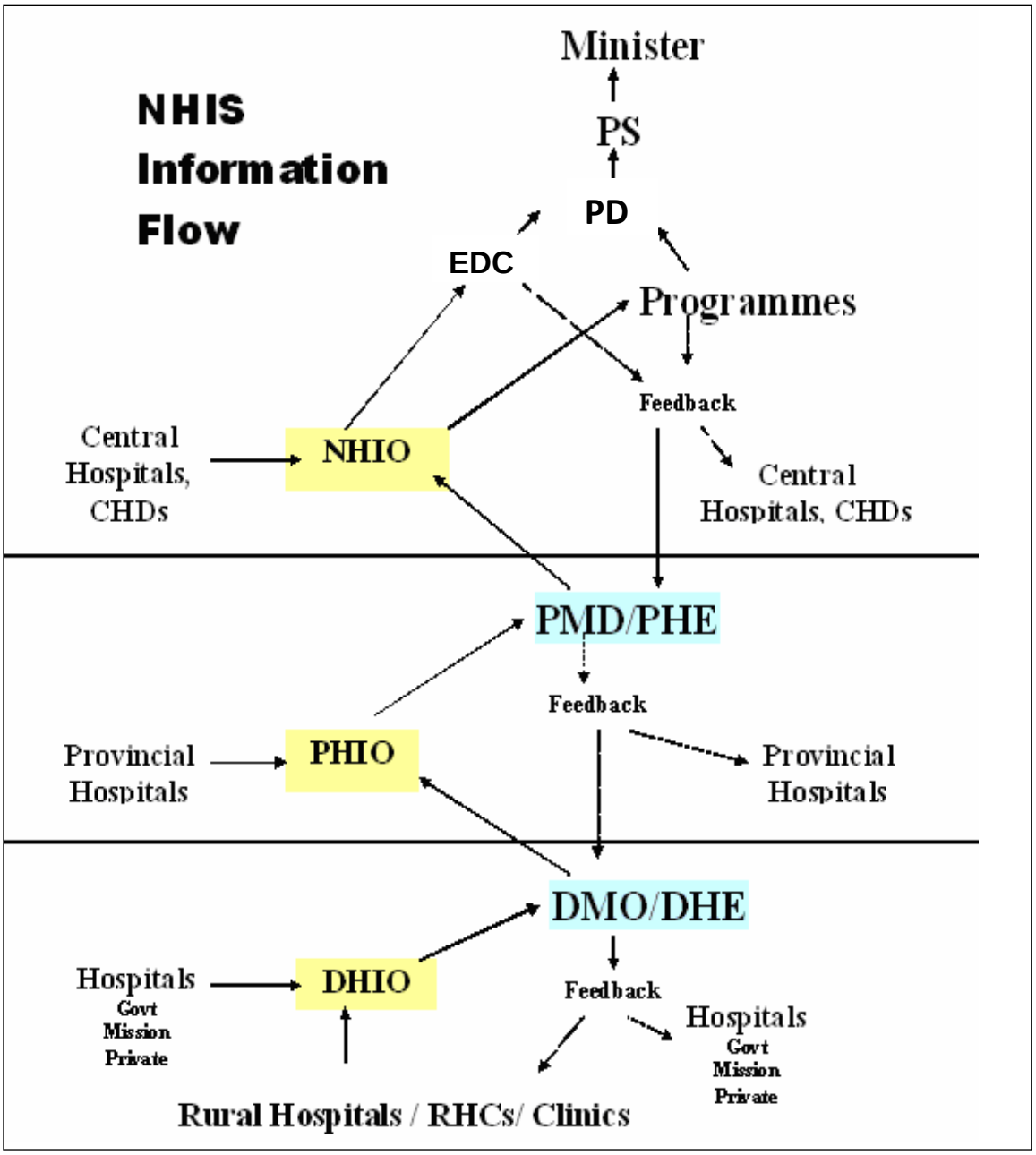
A human resource structure for the health information department from the health facility to the headquarters shall be developed outlining the number of staff required at each level, including their qualifications and experience, and career path. This will help to define minimum staff requirements for the optimal functioning of the health information system.

4.0 Information transmission

Once collected at the health facility, information will have to be interpreted and analysed at each level before it is transmitted to the next level (District to Provinceto Head Office) until it reaches the MOHCW ‘s National Health Information Unit with feedback loops at each stage. Data is entered into computers at the district and hospital level and electronically transmitted to the PMD which transmits it further to head office. Monitoring and supervisory visits by district and provincial managers shall be used as opportunities to collect completed data collection forms as well as for providing feedback on data collection to health facilities.

As information is transmitted from the collection points upwards, levels above shall be responsible for providing feedback to those below in order to ensure that corrective measures are put in place timely. The flow of information, vertically and horizontally, shall follow the diagrammatic presentation below. Data shall also come from other sources such as the vital registration system, censuses, surveys, assessments and researches into the health information system through the district, provincial and national levels.

Figure 5: HIS Information Flow



5.0 Utilization of health information

Information plays a critical role in the delivery of health services, the operational management, strategy development and policy formulation. Information is used for planning, funding and providing health care services. However the current challenge is to change the focus of the information systems to encourage analysis and use of information at data collection points: health facilities at all levels of the health delivery system. Sharing information appropriately across different care delivery settings is important for ensuring safe and high-quality care for consumers. .

Information is required to determine insights into specific populations and diseases and this allows for better decision making at the point of care, and for more focused funding and planning, and policy development. Such information would also enable preventative activities and therefore need to be able to conduct root-cause

analysis. Therefore, all health facilities collecting data shall conduct preliminary trend analyses that will enable them to quickly identify disease outbreaks, stock outs and service delivery gaps and institute corrective measures.

Data should be made accessible to all care providers within the same health facility for the purposes of improving service delivery. Where necessary, the Management Committee must classify data according to their sensitivity for the purposes of accessibility by care providers.

Information is shared and disseminated to consumers so that they are well informed to make the right choices about their lifestyles. By providing better health care and disease information, and encouraging greater self-management of care, healthier lifestyles are promoted. By considering the importance of information to the consumer, health service providers, managers, policy makers and funders, we can become smarter in our response to the challenges of health care.

A protocol for the release of data at different levels shall be developed or revised to outline the necessary steps information consumers and researchers should follow in order to access the health database. The PS will approve the level of access to certain data sets. Those intending to use health information for research and academic purposes shall have written permission from the PS.

6.0 Dissemination of health information

The National Health Information Technical Committee shall decide on the best modalities for disseminating health information for use by all stakeholders. At each data collection point, data will be processed and analysed to produce information that will be presented in different formats for use at that particular level.

Within the health facility, information can also be shared among health care providers in different departments dealing with the same client. This requires networks and connections that support the movement of information from different levels of the health care system. These range from low (physical mailing of results) to sophisticated networks (electronic transfer of information). Information flow options will largely depend on affordability, location of the health facilities as well as existence of functional tcommunication systems.

Health information shall be disseminated during quarterly District Health Management Team and Provincial Management Team meetings. The respective Health Information Officers at these levels shall produce quarterly reports (Benchmark reports) on core health indicators as well as on implementation achievements and constraints for presentation to district and provincial health management teams. Each quarterly report shall include information for the preceding quarters for that year for the purposes of comparison and trend analysis. For easy communication and interpretation of trends and variations, data shall be presented through graphs and tables where appropriate.

The MOHCW shall produce Annual Health Profiles from the summaries electronically compiled by districts and provinces. The annual health profiles shall contain details on core health indicators by districts and provinces showing trends over 3-5 years. The annual health profiles shall be reviewed and updated to only produce information that can be used for better targeting and monitoring of health interventions in order to produce better outcomes.

The MOHCW shall revitalize the website, life line magazine and the weekly rapid disease notification system to ensure wide dissemination of health information. The HID shall regularly supply health information to update the website.

7.0 Monitoring and Evaluation of the implementation of the HIS strategy

A set of core health sector indicators for monitoring health programmes was identified and endorsed by the national health information stakeholders. This constitutes a list of 99 health sector indicators as outlined in Annex A. The implementation of the HIS strategy will be measured by the capability of the HIS to supply adequate data to address all 99 core health sector indicators.

Monitoring and evaluation will provide a framework for tracking progress and taking stock of progress and challenges in the implementation of the HIS strategy. The NHIS Technical Committee will be responsible for ensuring that an M & E plan with clear activities is developed. More specifically, the following key M & E activities will be carried out to ensure that the operationalisation of the strategy is on course.

- Health information personnel at the facility, district, provincial and head office levels will produce monthly progress reports to share successes and challenges experienced during HIS strategy implementation. These reports will form part of the management committee and technical committee's items for discussion during their regular meetings. Feedback will be provided on the reports as a way of improving data collection, quality control, timeliness and completeness.

- Regular review meetings will be the starting point for ensuring implementation of HIS activities as prioritized by the strategic framework. The NHISMC will conduct such meetings on quarterly basis while the NHISTC will meet on monthly basis, or more frequently, as demanded by the situation. During these meetings, the respective health information units will submit regular reports to provide updates on implementation progress and challenges met.

- The revised National Health Profile will be produced annually. This report will present health information summaries on selected indicators.

- Quarterly monitoring and supervision visits shall be conducted to selected data collection and storage sites (health facilities, district and provincial information offices) with a standard checklist to assess compliance of each with minimum standards set regarding a good health information system. Visits shall be well planned in-advance. During the visits, interviews will be conducted with all stakeholders to look into the various health information processes including data collection, quality control, processing, analysis, presentation, dissemination and utilization. To ensure success of these visits, the national, provincial and district health information offices shall have access to MOHCW vehicles and fuel for all planned visits.

- A rapid assessment will be carried out six months following the piloting of the HIS software to look into its effectiveness in addressing the information requirements for planning, implementation and monitoring of interventions. The findings of and recommendations from the assessment will be used to inform the process of scaling up the HIS software countrywide.

- Annual reviews will be conducted following the countrywide roll out of the HIS software. The review will be used to assess implementation successes and failures of the HIS strategy in order to make the necessary improvements.

- An evaluation will be conducted three years following the roll out to take stock of achievements and challenges in the implementation of the HIS strategy with a view to make sure the HIS is capable of producing all the information required for monitoring nationally and internationally agreed health goals.

8.0 Funding for the HIS Strategy implementation

Investments in information systems must not be haphazard. Implementing the HIS activities will require concerted effort and substantial financial, human and material resource investments. The MOHCW, through the NHISTC, shall lead in mobilizing resources from both local and external donors and partners with a keen interest in health information system strengthening. Initially, the MOHCW should show commitment to HIS strengthening through reasonable budget allocation for the Health Information Unit and for information sub-sectors located within the various health departments such as malaria, nutrition, STI and HIV/AIDS, maternal and child health, family planning, human resources, pharmacy and laboratory. The various UN agencies with keen interest in health information system strengthening such as UNICEF, WHO and UNFPA shall complement MOHCW's efforts by allocating resources as well as mobilizing additional resources from donors. The strategy shall be used as a resource mobilization tool to ensure that adequate resources are available for its implementation. This will be done through costing of the HIS action plan, identification of resource gaps and development of a resource mobilization plan.

References:

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Annexure A: *HIS Implementation Steps of Action*
Annexure B: *List of core health sector indicators, data elements and sources*

Annexure A: HIS Implementation Steps of Action

Harmonize the functions of HIS.

Establish broad-based HIS stakeholders forum

Form a steering committee (SC) to steer the HIS development / strengthening process;
Identify core HIS members from each stakeholder organization;

Endorse core and common indicators

(have a meeting of the SC for following)
Examine each proposed indicator using objective selection criteria:
Select core and essential health indicators by process of elimination;
Approve definition of numerator and denominator dataset that are required for calculating selected indicators;
Approve a list of notifiable diseases, lay reporting all health facilities;

Endorse HIS Strategy

(have a meeting of the SC for following)
Review the proposed strategy, make necessary modification and endorse

Implement the HIS strategy

Form technical working groups (TWG) for each task or series of tasks. Assign core members to different TWG on the basis of the expertise of the member;
SC meets fortnightly reviews progress on HIS strengthening process;
SC assigns its members to different TWG to facilitate and oversee the work of TWG;
Relocate the HIS unit to Planning Department in MOHCW headquarters;
Hire a long-term HIS TA to facilitate the design and implementation process

Use DHIS database software for management of routine health service and disease statistics

Identify and hire a consultant;
Adapt DHIS database to accommodate essential dataset to calculate the indicators;
Pilot the database software in one province and all districts within the province for 3 months;
Refine the database software and update users manual,
Install the adapted DHIS in HIS unit in ministry headquarters, all PMO and DH Offices;
Train two DHIS users from each DHO, PMO and IT and HIS unit of MOHCW;

Revise data collection instruments

Collect all tools that are currently being used for data collection, tabulation, and reporting of HIS data inclusive of all vertical programs, disease surveillance, human resource, finance, drugs and supplies, physical assets and so on;
Organize series of workshops of different TWG and revise the tools in light of indicators and corresponding datasets;
Develop guidelines for use of these tools;
Briefly test all the tools in two facilities by two groups and make necessary adjustment;
Finalize tools and guidelines.

Develop standard operating procedures (SOP)

Identify specific target group for which a standard operating procedures needs defining;

Organize a TWG for each target group and develop SOP with regard to data collection, analysis, reporting, dissemination and using information in planning and management of health programs;

Supply data collection instruments and SOPs

Estimated quantity of each product required for at least 2 years;

Develop bid documents;

Advertise for competitive bidding;

Select the best and award contract;

Deliver the printed materials to all health faculties according to their requirements;

Conduct training needs assessment health service providers, data managers, and program managers

(Organize working session of TWG for following)

Develop training needs assessment questionnaire;

Test the tools in a small scale;

Select sample of facilities for need assessment;

Form team for conducting the assessment;

Carryout the assessment;

Analyze the assessment data;

Prepare report with clear identification of specific training needs of each cadre of health and support personnel;

Conduct training of trainers (TOT)

Identify 50 trainers from different vertical programs, partner NGOs, MOHCW departments, PMOs, DHOs who can be trained as trainer who in turn train all health and support personnel in the districts of assigned province;

Develop trainers guide;

Conduct TOT;

Deploy 5 trainers to each province;

Develop training plan for each province by the respective trainers team;

Conduct training of health and support personnel at health facilities (clinic, HC, Hospital), district

Assemble required training materials;

Identify a training venue within each district;

Conduct training first for district health team followed by health facility staff;

(district health team members must be used in training of health facility staff)

Evaluate the performance of each trainee;

Develop/ strengthen all other sub-systems of HIS

Conduct health facility survey to update human resource, health infrastructure and physical asset.

Update, adapt health facility survey tools that capture HR, PA, and infrastructure data;

Collect all tools that have been used to collect health facility data on physical assets, human resource, equipments and durable supplies;

Organize a workshop of TWG and revise tools to capture the required details;

Test the tools in small scale by two different groups;

Finalize the tools and develop how to use guidelines;
Plan the survey;
Identify people to conduct the survey;
Train surveyor;
Conduct the survey;
Analyze the data;

Disseminate geographic health information in maps (GIS)

Identify and train 3 person for data entry separately on human resource, infrastructures, equipment and durable supplies;
Complete data entry;
Update GIS database and produce maps on important theme with relevant indicators;
Disseminate poster size printed maps on five themes which are most important to respective policy and programme planners and managers;
Disseminate all thematic maps through HIS portal;
Provide district specific thematic maps, both electronic and hardcopy, to respective PMO and DH Office;

Inventory ongoing efforts on strengthening human resource, financial and logistic management information sub-systems

Form three separate TWGs for human resource, finance and logistics;
Adapt the HMN assessment tools for the above three sub-systems and conduct assessment together with respective department;
Develop detailed plan for strengthening each sub-system as a inter-linked part of the broader HIS;
Oversee the implementation.

Estimate annual target population for each health facility catchment area

Define primary catchemnt area for each health facility (this can be done during health facility survey and further validated during the training of health workers from respective facility);
Identify/define the target population group for different services;
Organize a meeting with CSO and agree on formula and working procedure;
Calculate target population for primary catchment area of all health facilities;
Update estimate of population every year

Update National Health Account in every 2 year

Form TWG with right membership;
Review the methodology and agree on scope of work including table of content of the report;
Conduct study and analyze the data;
Disseminate findings to relevant stakeholders through workshops;
Disseminate the NHA report to wider stakeholders though HIS portal

Strengthen disease surveillance system

Form a TWG and review performance of disease surveillance system;
Assess the current performance identifying the areas to be strengthened;
Devise rectifying measures and implement them;
Identify 10 better equipped hospitals balancing the provincial representation in order to introduce ICD-10;
Train clinical and statistical persons on use of ICD-10 in all inpatient departments;

Identify one fifth of

Analyze sentinel data from both sources, generalize them for the national and disseminate to relevant stakeholders for their use in planning and management of health programs.

Develop health system and operations research strategy

Form a TWG involving researchers from university, research institutions, CSO, NGOs and donor organization;

Identify the area of health system research and operation research and prioritize with justifications;

Estimate the cost and identify focal person or institute for each research;

Assign the research work to identified focal point and allocate resources;

Oversee the implementation of research and disseminate the findings.

Develop source specific and interface software for repository and HIS Portal

Identify software and hardware requirements

Develop TOR;

Hire a consultant;

Consultant carry outs need assessment exercises;

Consultant recommends hardware and software requirements based on the latest available technology that is appropriate to Zimbabwe's context;

SC endorses the hardware and software specifications.

Develop and implements software

Purchases off-the-self software if so recommended;

Consultant develops custom software as required for managing sources specific databases, interface software for HIS repository, and web-based HIS portal;

Tests each software/database; and,

Implement databases/software to achieve the fullest functionality of HIS;

(The entire IT team members must be involved in the whole process for assurance of local capacity for maintenance of the software)

Improve use of information for decision-making

Develop and support networks of public health practitioners.

Organize training in health planning, epidemiology, and related disciplines;

Conduct meeting /short workshop for selected public health practitioners, to further develop and promote the analysis, interpretation, and use of public health data;

Improve the skills of HIS staff in data presentation.

Organize workshops to provide skills to HIS data compilers, statisticians, and data managers, to consistently present data to users in formats which are easily understood and interpreted.

Improve the skills of data users.

Short workshops will be conducted for key data users within MOHCW to demonstrate the interpretation and use of national data.

Update GIS database and presentation

Annually update the GIS database and disseminate up-to-date thematic maps for understanding of sub-national variation in health status, problems and services;

Ensure thematic maps are provided to planners and managers and understood the message carried by them.

Improve access to information that is ready to use

Produce regular health reports.

MOHCW will review and revise routine monthly, quarterly, or annual reports to ensure that the priority information they represent is accurately and concisely presented

Access information electronically.

The Software consultant together with IT and HIS department personnel will develop electronic data standards and technical guidelines on the management, transfer (including communications standards) and access to data, and on data security;

MOHCW will establish a national network, and a website, for health information and disease surveillance;

Electronic management of health information systems will be further promoted through provision of hardware and software, and local training.

Strengthen HR capacity

Prepare an HIS organizational chart.

Prepare or update an organizational chart providing as much information as practicable about the staff skills and responsibilities.

Assess staffing and training needs.

Develop a medium-term training plan, identifying in-country and overseas training needs;

HIS staff will be trained in-country (local costs) or overseas (fellowships), as needed, in epidemiological surveillance, health statistics, medical records, ICD-10, and computer networking and systems administration;

Review update and implement HIO training curriculum.

Assess the performance of HIS

Conduct supervisory visits.

National HIS staff will visit peripheral data collection sites to audit data quality and compliance with national guidelines.

Assess data use by management and other users.

National HIS staff will develop a simple instrument to assess appropriate data use and flow of information at all levels;

Senior HIS staff will review the efficiency of data collection and flow, and the use of data, at various levels in the health system.

Review the performance of overall HIS

Conduct HIS assessment in every 2 year using HMN framework and standard procedures;
Review the assessment results;
Update HIS strategy and develop rolling 5 year implementation plan for strengthening system of information management and use.

Annexure B: List of health sector indicators, data elements and sources

ID	Full Name of Indicators	Program component	Result Hierarchy	Objective/ Performance Dimension	Frequency by level				Numerator		Denominator	
					Facility	District	Province	National	Data name	Data source	Data name	Data source
1	Life expectancy at birth	Health Status	Impact	Effectiveness				5 Y	The total # of years that a given birth cohort can be expected to live if these mortality rates continue to apply	Census DHS	The # of children in the cohort	Census
2	Neonatal mortality rate	Health Status	Impact	Effectiveness				5 Y	# deaths of infants under 28 days of age	Census DHS	Total live births	Census
3	Infant mortality rate	Health Status	Impact	Effectiveness				5 Y	# deaths to children under 1	Estimate from Census	Total live births	Census
4	Under-five mortality rate	Health Status	Impact	Effectiveness				5 Y	# deaths to under 5 children	Census DHS	Total # of live births	Census
5	Maternal mortality ratio	Health Status	Impact	Effectiveness				5 Y	# maternal deaths in a given year due to pregnancy related causes during pregnancy or within 42 days of childbirth	Census DHS	Total # of live births	Census
6	Crude death rate	Health Status	Impact	Effectiveness				5 Y	Total # deaths	Census DHS, VR	Total population	Census
7	Percentage of positions filled by category of doctor, dentist, nurses, midwives, pharmacist, environmental technician,	Human resource	Output	Access				A	# professionals of each category at work	HF census	# establishment of each category of professionals position	HF census

ID	Full Name of Indicators	Program component	Result Hierarchy	Objective/ Performance Dimension	Frequency by level				Numerator		Denominator	
					Facility	District	Province	National	Data name	Data source	Data name	Data source
	administrators, and others											
8	Annual output of health professionals training by category doctor, dentist, nurses, midwives, pharmacist, environmental technician, administrators, and others as percentage of vacant positions in public and NGO sector	Human resource	Output	Sustainability				A	Annual output of health professional training by category: physician, dentist, nurses and midwives, pharmacist, pathologist, administrators, and others	Training Institutions' report	# vacant positions of professionals by category of physician, dentist, nurses and midwives, pharmacist, pathologist, administrators, and others in public and NGO sector	HF census
9	Annual attrition of health professionals by category doctor, dentist, nurses, midwives, pharmacist, environmental technician, administrators, and others as percentage of their total number at work in public and NGO sector	Human resource	Output	Sustainability				A	Total # professionals by category physician, dentist, nurses and midwives, pharmacist, pathologist, administrators, and others left public and NGO services over the year	HF census	Maximum # professionals by category of physician, dentist, nurses and midwives, pharmacist, pathologist, administrators, and others at work at a point in time in the in public and NGO sector	HF census

ID	Full Name of Indicators	Program component	Result Hierarchy	Objective/ Performance Dimension	Frequency by level				Numerator		Denominator	
					Facility	District	Province	National	Data name	Data source	Data name	Data source
10	Health professionals to the population ratio by category doctor, dentist, nurses, midwives, pharmacist, environmental technician, administrators, and others	Human resource	Outcome	AccessQuality			A	A	Total population	HF census	# health professionals by category of doctors, dentist, nurses, midwives, pharmacist at work in any sector in the country	HF census
11	Village health worker to rural population ratio	Human resource			A	A	A	A	# village health workers	Census	Total catchment population	HF census
12	Number of accredited traditional healers	Human resource			A	A	A	A	# accredited traditional healers	HF census		
13	Health expenditure per capita	Finance	Input	Equity		2 Y	2 Y	2 Y	Sum of the public and private expenditure in health	NHA	Estimated mid-year population	Census
14	Percentage of Government budget allocated to health sector	Finance	Input	Sustainability		A	A	A	GOZ budget allocated to health sector	MOF/ MOHCW	Total government budget to all sectors including health	MOF annual budget
15	Annual private expenditure on health as a percentage of total expenditure on health	Finance	Input	Sustainability			2 Y	2 Y	Revenue generated through delivery of health services from private sector in a year	NHA	Total amount spent in health sector inclusive of public and private in the same year	NHA
16	External resources on health as a percentage of total expenditure on health	Finance	Input	Sustainability		M	M	2 Y	External resources spent on health	NHA	Total expenditure in health	NHA
17	Percentage of annual allocation utilized	Finance	Output	Efficiency		A	A	A	Amount spent in a year as planned	MOHCW	Total allocation for the year	MOHCW

ID	Full Name of Indicators	Program component	Result Hierarchy	Objective/ Performance Dimension	Frequency by level				Numerator		Denominator	
					Facility	District	Province	National	Data name	Data source	Data name	Data source
18	Percentage of private health facilities inspected by HPA	Multiple	Output	Quality		Q	Q	Q	Private health facilities inspected by HPA	RR	Total # private health facilities	HF census
19	Consumption of drugs and consumable supplies as percentage of national standard	Supply	Input	Access	M	Q	Q	Q	Total drugs and supplies consumed by key category	RR LMIS	Estimate of required consumption by category	RR Stock Cards
20	Percentage of VEN drug availability	Supply	Output	Access	M	M	M	M	# VEN drugs in stocks	RR (T-5)	# VEN drugs on standard list	HF census
21	Pentavalent 3 coverage	Child Health	Output	Quality	M	M	M	M	# children under one who received pentavalent 3	RR	Estimated # under 1 population	T5
22	Percentage of children under 5 with pneumonia who received antibiotics treatment	Child Health	Output	Access	M	M	M	M	# of children under 5 with pneumonia who received antibiotics treatment	Survey	Expected # of children under 5 with pneumonia	Survey
23	Percentage of children under 5 with diarrhea receiving oral rehydration	Child Health	Output	Quality	M	M	M	M	# of children under 5 with diarrhea receiving oral rehydration	Survey	Expected # of children under 5 with diarrhea	Survey
24	Percentage of children 6-59 months old receiving vit A every 6 months	Child Health	Output	Quality	6 m	6 m	6 m	6 m	# of children 6-59 months old receiving vit A every 6 months	RR	Estimated # of children 6-59 months old	T5
25	Percentage of LBW	Nutrition / Mat. Health	Outcome	Effectiveness	M	M	M	M	# babies born less than 2500 gm	RR	Total # weighed live births	RR T5
26	Prevalence of underweight children under 5	Nutrition	Outcome	Effectiveness	M	M	M	M	# children under 5 underweight	RR	# children under 5 weighed	RR T5

ID	Full Name of Indicators	Program component	Result Hierarchy	Objective/ Performance Dimension	Frequency by level				Numerator		Denominator	
					Facility	District	Province	National	Data name	Data source	Data name	Data source
27	Proportion of non-pregnant women of 15-49 years with BMI les than 18.5	Nutrition	Outcome	Effectiveness				5 Y	# non-pregnant women of 15-49 years with BMI les than 18.5	DHS	Total # non-pregnant women of 15-49 years measured	DHS
28	Percentage of pregnant women receiving adequate Iron and folic acid tablets	Nutrition	Output	Access	M	M	M	M	# pregnant women who received adequate Iron tablets (180)	RR	Total # institutional deliveries	RR
29	Percentage of children under 5 years with wasting	Nutrition						5 Y	# children under 5 years with weight for height < -2 Z score	DHS	# children under 5 years measured for weight for height	DHS
30	Perentage of children under 5 with stunting	Nutrition						5 Y	# children under 5 years with height for age < -2 Z score	DHS	# children under 5 years measured for weight for age	DHS
31	Percentage of households accessing iodized salt	Nutrition						5 Y	# households using iodized salt	DHS	# households surveyed	DHS
32	Percentage of pregnant women receiving adequate TT dosage	TT	Output	Quality	M	M	M	M	Total # pregnant women receiving adequate TT doses in a given period	RR	Total # expected pregnant women in the same period	Census estimate
33	Percentage of pregnant women receiving at least 4 antenatal care visits	Maternal health	Output	Quality	M	M	M	M	# of pregnant women who received at least 4 antenatal care visits	RR	Expected # of pregnant women	Census estimate
34	Percentage of deliveries conducted at health facilities by skilled health personnel	Maternal health	Output	Quality	M	M	M	M	# of deliveries conducted at health facilities by skilled health personnel	RR	Expected # of deliveries	Census estimate

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35	Percentage of women receiving Emergency obstetric care	Maternal health	Outcome	Effectiveness	M	M	M	M	# women with direct obstetric complications treated in BEmONC/EmONC facilities	RR	# expected complications (15% of expected pregnancies)	Censuses timate
35a	Caesarean Section Rate				M	M	M	M	# Caesarean Sections done	RR	# all births	HS3-5
36	Percentage of postpartum women who received 1 vit A capsule within 6 weeks of delivery	Maternal health	Output	Access	M	N	M	M	# of postpartum women who received 1 vit A capsule within 6 weeks of delivery	RR	Expected # of postpartum women	Census estimate
37	Obstetric Case Fatality Rate	Maternal health	Outcome	Quality	M	M	M	M	# obstetric deaths in the facility	RR	# emergency obstetric complications cases admitted in the facility	RR
38	Gender based violence	Maternal health						5y	# violence cases	DHS	Total population of 15-49 years surveyed	DHS
39	Peri-natal mortality rate	Maternal health						5 Y	Sum of fetal deaths after 28 weeks of gestation and 7 days of delivery	DHS	Total number live and still births	DHS
40	Percentage of women 15-49 using modern contraceptive methods	Family Planning	Outcome	Effectiveness	M	M	M 5 Y	M 5 Y	Total # users using modern family planning methods at a point of time	RR DHS	Total woman of child bearing age in the catchment population (mid year)	Census estimate
41	Couple years of protection	Family Planning	Output	Access	M	M	M	M	Sum of couple years protected from all methods distributed in a given period of time	RR LMIS		

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					Facility	District	Province	National	Data name	Data source	Data name	Data source
42	Total fertility rate	Family Planning	Impact	Effectiveness				5 Y	Total # children that would be born to a group of women if all lived to the end of their childbearing years and bore children according to a given set of age-specific fertility rates	Census DHS	# women in group	Census DHS
43	Per capita free condoms distributed to sexually active individuals	HIV/AIDS	Output	Access	M	M	M	M	# free condoms distributed to sexually active individual	RR	Estimated # sexually active individual	Census estimate
44	Percentage of people who were tested and received the results by sex and age	HIV/AIDS	Output	Efficiency	M	M	M	M	# people who received result by sex and age	RR	Estimated population	Census estimate
45	HIV Prevalence among 15-24 year old pregnant women	HIV/AIDS	Impact	Effectiveness	M	M	M	M	# HIV positive tests year among pregnant women aged 15-24	RR	# pregnant women aged 15-24	RR
46	HIV Prevalence in general population	HIV/AIDS	Impact	Effectiveness				5 Y	# of HIV cases (new+ old)	RR DHS	15-49 aged population surveyed	Survey
47	Percentage of HIV infected pregnant women receiving a complete course of ARV prophylaxis to reduce the risk of MTCT	HIV/AIDS	Output	Access	M	M	M	M	# HIV infected pregnant women received a complete course of ARV prophylaxis to reduce the risk of MTCT	RR	# HIV infected pregnant women	RR
48	Percentage of People with advanced HIV infection receiving antiretroviral (ARV)	HIV/AIDS	Output	Access	M	M	M	M	Cumulative # of people with advanced HIV infection receiving antiretroviral (ARV) combination therapy	RR	# of People with advanced HIV infection	RR

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					Facility	District	Province	National	Data name	Data source	Data name	Data source
	combination therapy											
49	TB detection rate of smear positive pulmonary per 100,000 population	TB	Output	Access	M	M	M	M	# TB cases detected	RR	Estimated mid-year population	Census estimate
50	Treatment success rate among smear positive TB cases (on DOTS)	TB	Outcome	Effectiveness	A	A	A	A	# new sputum positive cases who are proved smear negative and completed treatment	RR	Total number new sputum positive TB patients in the same cohort	RR
51	Prevalence of MDR among new and retreatment	TB			A	A	A	A	# cases who are resistant to isoniazid and refampicin	Lab register	Total # cases tested	Lab register
52	HIV Prevalence among TB patients	TB			A	A	A	A	# HIV positive TB cases	RR	Total # TB cases	RR
52a	Number of Home Based Care visits per patient per month	CHBC		Access	M	M	M	M	# visits made per month	RR	Total # patients registered for CHBC	Home based Care Registers
53	Cumulative percentage of insecticide-treated nets (ITNs) distributed to population at risk	Malaria	Output	Access	M	M	M	M	Cumulative # of insecticide-treated nets (ITNs) distributed to population at risk	RR LMIS	Total population at risk	Census estimate
54	Percentage of population at risk sleeping under ITNs	Malaria	Outcome	Effectiveness			5 Y	5 Y	# of people sleeping under ITNs	DHS /Surveys RR	Total population at risk	Census estimate

ID	Full Name of Indicators	Program component	Result Hierarchy	Objective/ Performance Dimension	Frequency by level				Numerator		Denominator	
					Facility	District	Province	National	Data name	Data source	Data name	Data source
55	Percentage of pregnant women and Under 5s sleeping under ITNs	Malaria	Outcome	Effectiveness			5 Y	5 Y	# of pregnant women / under 5s sleeping under ITNs	DHS RR	Total pregnant / under 5s	Census estimate
56	Percentage of pregnant women (attending ANC) receiving Intermittent preventive treatment (IPT)	Malaria	Output	Access	M	M	M	M	# of pregnant women (attending ANC) received Intermittent preventive treatment (IPT) (3 doses)	RR	# of pregnant women attended ANC	RR
57	Percentage of rooms in targeted malaria endemic areas covered by Indoor Resid. Spraying (IRS)	Malaria	Output	Access		S	S	S	# of rooms in targeted malaria endemic areas covered by IRS	RR	# of rooms in malaria endemic areas to be covered by IRS	RR
58	Percentage of children under five treated for malaria (including clinical malaria) in children under five	Malaria	Output	Access	M	M	M	M	# children under five treated for malaria	RR	Total # children under five	Census estimate
59	Percentage of five and above population treated for malaria (including clinical malaria)	Malaria	Output	Access	M	M	M	M	# people aged five years and above treated for malaria	RR	Total # estimated five year and above aged population	Census estimate
60	Malaria annual incidence rate	Malaria						5 Y	Total # new cases in a 12 months period	Research	Total population surveyed	Research
60a	Malaria Case Fatality rate	Malaria	Outcome	Effectiveness	Q	Q	Q	Q	# confirmed malaria deaths	RR (IMMIS T-5)	Total # confirmed cases in same quarter	RR

ID	Full Name of Indicators	Program component	Result Hierarchy	Objective/ Performance Dimension	Frequency by level				Numerator		Denominator	
					Facility	District	Province	National	Data name	Data source	Data name	Data source
61	Annual incidence of morbidity due to infectious diseases	Infectious disease	Outcome	Effectiveness	A	A	A	A	# of new cases reported to health facilities with infectious diseases in a given period	RR	Mid-year population	Census estimate
62	Annual morbidity due to non-communicable disease	Non-communicable diseases	Outcome	Effectiveness	A	A	A	A	# new cases reported to health facilities with non-communicable diseases in a given period	RR	Mid-year population	Censuses timate
63	Annual mortality due to infectious diseases	Infectious disease	Outcome	Effectiveness	A	A	A	A	# deaths from infectious diseases in a given period of time	RR	Mid-year population	Census estimate
64	Annual mortality due to non-communicable diseases	Non-communicable diseases	Outcome	Effectiveness	A	A	A	A	# deaths from non-communicable diseases in a given period of time	RR	Mid-year population	Census estimate
65	STI cases treated as percentage of total population	STI	Output	Access	M	M	M	M	# cases treated for STI	RR	Estimated number population	Census estimate
66	Percentage of WDSS sites performing according to the national standards	Sentinel surveillance	Outcome	Effectiveness	A	A	A	A	# WDSS sites performing according to the national standards	HF census RR	Total # WDSS sites	HF census
67	Percentage of Health facilities providing the following services: DOTS, VCT, ARV, PMTCT, BEmONC, CEmONC, IMCI, therapeutic feeding (by category)	Multiple	Input	Access	A	A	A	A	Percentage of Health facilities of providing the following services: DOTS, VCT, ARV, PMTCT, BEmONC, IMCI, CEmONC therapeutic feeding (by category)	HF census	# Health facilities	HF census

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					Facility	District	Province	National	Data name	Data source	Data name	Data source
68	Percentage of health facilities up to physical standard	Multiple	Output	Quality	A	A	A	A	# health facilities (clinic, health center, different level of hospitals) meeting their physical standard	HF census	# health facilities assessed for their physical standard	HF census
69	Percentage of health facilities up to equipment standard	Multiple	Output	Quality	A	A	A	A	# health facilities meeting medical equipment standard as set for particular type of facility	HF census	# health facilities assessed for their equipment standard	HF census
70	Percentage of health facilities with functioning means of communication (radio, phone etc)	Communi cation	Input	Access	A	A	A	A	# health facilities with functioning communication system	HF census	total health facilities	HF census
71	Ambulance to population ratio	Transport	Input	Access	A	A	A	A	Total population in the catchment	HF census	Total # functional ambulance	HF census
72	Ratio of transport for supervision and supply to health facilities	Transport	Input	Quality	A	A	A	A	# health facilities in the catchment	HF census	Total # functional transport	HF census
73	Percentage of clients satisfied with services	Multiple	Output	Quality	A	A	A	A	# clients categorized as fully satisfied with the services they received	RRA/ exit interview	# clients conducted exit interview using comprehensive client satisfaction survey checklist	RRA/ exit interview
74	Percentage of districts having own 5 year health plan	Planning	Output	Accountabilit y	A	A	A	A	# districts having 5 year plan	plan document	Total # districts	Office Record
75	Percentage of health facilities supervised by DHE members using integrated	Planning	Output	Quality	M	M	M	M	# of health facilities supervised by DHMT members using integrated supervision checklist	RR	# of health facilities	Office Record

ID	Full Name of Indicators	Program component	Result Hierarchy	Objective/ Performance Dimension	Frequency by level				Numerator		Denominator	
					Facility	District	Province	National	Data name	Data source	Data name	Data source
	supervision checklist											
76	Percentage health facilities having functional health committee	Planning			A	A	A	A	# health facilities having functional health committee	HF census	# health facilities	HF census
77	Bed occupancy rate	Utilization	Output	Efficiency	M	M	M	M	Total inpatient days	RR	Bed capacity days	RR
78	Average length of stay	Utilization	Output	Efficiency	M	M	M	M	Total inpatient days	RR	# of discharges and deaths	RR
79	OPD utilization Rate	Utilization	Output	Access	M	M	M	M	Total # OPD visits (new+ old)	RR	Estimated total Catchment population	Census estimate
80	Prevalence of current tobacco use in adolescents	Mental Health	Outcome	Effectiveness			5 Y	5 Y	# smokers	DHS Census	Total adolescents surveyed	DHS Census
81	Percentage of population drinking excess alcohol	Mental Health	Outcome	Effectiveness			5 Y	5 Y	# people drinking excess alcohol	DHS Census	Estimated adult population	DHS Census
82	Reported incidence of depression	Mental Health			M	M	M	M	# new depression cases seen at health facility	RR	Population at risk	Census estimate
83	Reported incidence of substance abuse	Mental Health			M	M	M	M	# new substance abuse cases seen at health facility	RR	Population at risk	Censuses timate
84	Percentage of samples of water, food and effluent meeting standards	Quality control				M	M	M	# samples of water, food and effluent analyzed meeting standards	Record book	# samples of water, food and effluent analyzed	Record book
85	Percentage of essential national health research	Research						A	Total # essential national health research conducted	Research report	Total # essential national health research planned	Research plan

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					Facility	District	Province	National	Data name	Data source	Data name	Data source
	conducted											
86	Percentage of disabled cases rehabilitated	Rehabilitation						A	# disabled cases attending rehab services	HF census	Total estimated disabled persons (10% of pop.)	HF census
87	Reported Incidence of injuries and accidents	Rehabilitation			M	M	M	M	# new cases brought to the health facility	RR	Total population	Census estimate T5
88	Percentage of households with access to improved sanitation	Env. Health	Output	Access		5 Y	5 Y	5 Y	# house holds having improved sanitation at a point in time	DHS Census	Total households	DHS Census
89	Percentage of households with access to adequate amounts of clean and safe water	Env. Health	Output	Effectiveness		5 Y	5 Y	5 Y	# households having access to safe water sources	DHS Census	Total households	DHS Census
90	Coverage of vital registration for deaths	Vital registration	Outcome	Effectiveness		M	M	M	# of deaths registered with cause of death	VR	# of estimated deaths	CSO
91	Percentage of patients receiving imaging tests	Imaging	Output	Access	M	M	M	M	# patient have had imaging tests (x-ray, ultrasound, CT-Scan etc)	RR	# new OPD attendants	RR Radiology Registers
92	Percentage of patients provided with routine lab-test services (blood, urine, stool etc)	Lab	Output	Access	M	M	M	M	# patient have had routine lab tests (blood, urine, stool etc)	RR	# new OPD attendants	RR Laboratory Registers
93	Cholera reported cases per 100,000	EDC	Outcome	Effectiveness	M	M	M	M	# reported cholera cases	RR	Estimated # total population	Line list

ID	Full Name of Indicators	Program component	Result Hierarchy	Objective/ Performance Dimension	Frequency by level				Numerator		Denominator	
					Facility	District	Province	National	Data name	Data source	Data name	Data source
	population											
94	Cholera case fatality rate	EDC	Impact	Effectiveness	M	M	M	M	# reported cholera deaths	RR	# reported cholera cases	RR
95	Percentage of outbreaks detected and responded to within 48 hours	EDC	Output	Effectiveness	M	M	M	M	# outbreaks that were actually detected within 48 hours and responded to immediately	RR	# outbreaks	RR Outbreak Report register
96	Top five causes of OPD visits by sex and age	EDC	Outcome	Effectiveness	M	M	M	M	# OPD attendants by cause (top five in rank)	RR	Total OPD attendants	RR T5
96a	ARI Incidence rate in under 5s	Child Health	Epidemi-ology		M	M	M	M	# of all ARI cases among <5's	RR T-5	# children under 5 yrs of age	Census
97	Top five causes of admission with disaggregation of sex and under five, over five	EDC	Outcome	Effectiveness	M	M	M	M	# admission by cause (top five in rank)	RR	Total OPD attendants	RR IMMIS
98	Inpatient death rate by cause: gender and under five, over five disaggregated	EDC	Impact	Effectiveness	M	M	M	M	# deaths at discharge by cause	RR	# of admissions	RR IMMIS
99	Reporting coverage of health information system returns	HIS	Output	Accountabilit y	M	M	M	M	# reports received	RR	Expected # of reports	Office Record