Participative review: Health Information Strategy 2009-2014

Final report of the review team

ABSTRACT

The Zimbabwe health information strategy 2009-2014 was reviewed by MoHCC and stakeholders in April 2015. This document outlines the methodology used, major findings and conclusions and makes key recommendations for the future The team found that the Health Information system has made enormous strides in the past 7 years, with a good HMIS data "pipeline" developed and the basic infrastructure for implementing HIS in place at all levels. Most facilities collect routine and surveillance data on time and districts enter it onto the national data warehouse. Results compare favourably to neighbouring countries. Key challenges for the next 5 years are to create a culture of information at all levels that aligns HIS investments to build the demand for quality data and improve its supply. Sustainable systems are needed to ensure that local managers effectively use data for improved client care, facility management and system management. This will need clear policies with practical implementation plans, decentralised management of the Health Information system, as well as development of staff skills to improve data use and strengthen Information and Communication Technology.

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Acknowledgements

MoH to expand and include correct people, names please

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3 Teams

PMDs, DMOs, DHIOs

Abbreviations

AIDS	Acquired Immune Deficiency Syndrome	NAC	National AIDS Council
ANC	Antenatal Care	NGO	Non-Governmental Organization
ARV	Antiretroviral	**NHA**	National Health Accounts
CDC	Centre for Disease Control	**NHIS**	National Health Information and Surveillance
		NHISMC	NHIS Management Committee
CHW	Community Health Worker	**NHISTC**	NHIS Technical Committee
CRVS	Civil Registration and Vital statistics	**NHISU**	National Health Information Surveillance Unit
DHE	District Health Executive	**OPD**	Outpatient Department
DHIS	District Health Information System	**PD**	Principal Director
DHO	District Health Officer	**PHC**	Primary Health Care
DHIO	District Health Information Officer	**PHE**	Provincial Health Executive
DHMT	District Health Management Team	**PHIO**	Provincial Health Information Officer
DMO	District Medical Officer	**PMD**	Provincial Medical Director
DS	Disease Surveillance	**PMTCT**	Prevention of Mother to Child Transmission
EDC	Epidemiology and Disease Control	**PS**	Permanent Secretary
EID	Epidemic Infectious Diseases	**RHC**	Rural Health Centre
EmONC	Emergency Obstetric and Neonatal Care	**RTI**	Research Triangle Institute
EPMS	Electronic Patient medical System	**SOP**	Standard Operating Procedures
GFATM	Global Fund Against AIDs, TB, Malaria	**STI**	Sexually Transmitted Infection
GIS	Geographic Information Systems	**TA**	Technical Assistance
GOZ	Government of Zimbabwe	**TB**	Tuberculosis
HIO	Health Information Officer	**TC**	Technical Committee
HIS	Health Information System	**TOT**	Training of Trainers
HIV	Human Immune deficiency Virus	**TT**	Tetanus Toxoid
HMN	Health Metrics Network	**TWG**	Technical Working Group
HRH	Human Resources for Health	UiO	University of Oslo
ICD-10	International Classification Diseases 10th revision	**UN**	United Nations
ICT	Information & Communication Technology	**UNAIDS**	United Nations Agency for AIDS
IDSR	Integrated Disease Surveillance & Response	**UNFPA**	United Nations Population Fund
IMMIS	Inpatient Mortality and Morbidity information system	**UNICEF**	United Nations Children's Fund
IMCI	Integrated Management of Childhood Illnesses	**USAID**	United States Agency for International Development
IPT	Intermittent Preventative Treatment	**VCT**	Voluntary Counselling and Testing
IRS	In-door Residual Spray	**WDSS**	Weekly Disease Surveillance System
IT	Information Technology	**WHO**	World Health Organization
MOHCC	Ministry of Health and Child Care	**ZACH**	Zimbabwe Association of Church Hospitals
M&E	Monitoring and Evaluation	**ZiMA**	Zimbabwe Medical Association
MTCT	Mother to Child Transmission	**ZIMSTAT**	Zimbabwe Statistics Office

Foreword

MoH to provide please

Executive Summary

The Health Information system (HIS) has made enormous strides in the past 7 years, with a good HMIS data "pipeline" developed and the basic infrastructure for implementing HIS in place. Most facilities and districts collect and enter data on time and results compare favourably to neighbouring countries. The potential is there for Zimbabwe to be a best practice site, though this will need improvements in governance, data dissemination and use, the implementation and monitoring process and strengthening of management.

The Health Information strategy 2009-2014 is basically sound and the original objectives and principles should be maintained. However, new approaches are needed to create sustainable cultures of data use at all levels of the health system. This will require aligning all stakeholders within the national HIS to integrate investments in strengthening data sources and empowering health workers and managers to use the digital revolution to scale up health interventions.

The country has successfully adapted the free open source District Health Information System (DHIS2) as the platform for reporting health information and needs to build this platform for health accountability, creating an enabling environment that promotes analysis and use of information and strengthens the various sources of information that support the HIS platform. This enabling environment should build demand for, and strengthen the supply of quality data to show achievement of national health goals

Actions needed to achieve this goal include strengthening health facility data and community health information systems, integrating disease surveillance and improving health system data sources. MoHCC needs to work with other ministries to strengthen civil registration and vital statistics and to ensure regular census projections and an integrated program of household surveys.

The key challenges for the next 5 years are to improve demand and supply of quality data, stimulate use of data locally for improved client care, facility management and system management, and to effectively disseminate analysed information. This will need clear policies with practical implementation plans, improved management of the health information system, development of skills to improve data use and strengthen Information and Communication Technology.

At facility level, catchment areas and administrative boundaries are well defined and populations are known. There is a well-defined system of routine data collection and upward reporting that is mostly on time. The major data systems are in place, with routine data, Integrated Disease Surveillance and Response (IDSR) and Inpatient Mortality and Morbidity Information systems (IMMIS) in place to strengthen client care. The Results based financing (RBF) program is greatly improving data accuracy and facility management with decentralized funding based on quality data.

Facility registers are a major burden to facility staff. Data collection needs to be simplified, streamlined and redesigned to support patient care and reduce workload, with electronic health records to replace paper registers where feasible. Most data collected is not used, with only 5.5% of the data collected needed for calculating the National Indicators

Health centre committees are functioning at most facilities, a great opportunity to share information with communities and their leadership. This community information system needs to be strengthened, along with other missing systems for health accounts, logistics, and hospitals.

District level HIS structures are basically functional though they could be made more effective by increasing HMIS skills and responsibilities of HIOs and program managers. The District Health Information system (DHIS2) software is widely used for data collection, though not much used for quality assurance, analysis, interpretation and dissemination. Health Management Information System (HMIS) training has been done for District health Management Team (DHMT) members and supervision is prioritised within limited resources. Training needs to be followed through with supervision that prioritises local use of information for client care, facility management and system strengthening.

Provinces are generally weak in HIS and are not providing adequate support to the districts and HIS management from a technical, organisational or behavioural point of view. The Provincial Health department is crucial for the supervision and technical support of the districts and needs to be strengthened. The Provincial health Executive (PHE) needs to be strengthened in HIS management skills and supported to create a "culture of information", stimulate demand for quality data and improve its supply.

The National Health Information Department (HID) has increased in number and skills and has recently taken a more active role in HMIS activities. There is a defined national core indicator and data set, though this needs to be revised and the data collection tools and warehouse modified accordingly. A central data warehouse for integrating HIS data sources has been set up, though infrastructure needs to be strengthened and security and access policies developed. The setup of the DHIS2 needs to be simplified and security of the national server improved.

Policies and planning are weak, with no approved HIS implementation plan, no E-health or ICT policy, no M&E plan and no HMIS security policy. Funding for the HIS is largely by donors and is not part of an overall HIS plan, tending to be ad hoc and focusing on individual donor requirements The various governance and stewardship committees (management, technical, technical working groups) have been set up and meet, though not regularly. The organisational framework should be strengthened, with operational plans and standard operating procedures (SOPs) for HIS related activities to clarify processes, procedures, roles and responsibilities.

The Human Resources shortage applies to both number and skills of HMIS staff at all levels. Health Information Officers (HIOs) feel demotivated by the lack of a clear career path and training opportunities, do not have updated job descriptions and are not members of the Health Executive teams. There is no provision for HIOs at clinic level

A training needs assessment and training plan has not been done as proposed in the plan. 563 staff received DHIS2 training for 2 weeks in 2013, but most trainees lack basic DHIS2 skills as the application of this training is limited, most trainees do not use DHIS2 and have lost the skills they were taught. Health facility staff have had virtually no training in paper data capture or DHIS2. There are no standard operating procedures for HMIS to guide training, supervision or ongoing support. Supervision does not address DHIS data and feedback to lower levels is weak

Data quality is generally poor and there is little demand for data. There are no decentralised data quality assurance processes and DHIS2 data quality assurance tools are not systematically used. Results Based

Financing (RBF) has started to substantially improve data quality and transform rural facilities service delivery and facility management. However many clinics still lose a great deal of money through poor quality data.

Causes of the poor quality include cumbersome registers, low level of HMIS skills, non-existence of SoPs, lack of supervision and feedback and limited use of the data. These need to be systematically investigated and the causes minimized.

Information use remains a major challenge with minimal information products, data not linked to annual action plans or their monitoring, facility reports and their analysis weak. Accountability for producing results and achieving targets is minimal, as is "horizontal" flow of analysed information to program managers, other ministries and local government.

Information use needs to be actively dealt with in the next strategic plan by increasing staff skills, ensuring collaboration of program managers and health executive teams at all levels and developing SOPs that promote practical ways to use data for client care, facility management and systems strengthening. The use of DHIS2 for analysing, presenting and disseminating information needs to be strengthened, with customised dashboards for program managers and users of information at all levels.

Computer and Internet availability has increased dramatically during the period of the strategy, with most level 2 and 3 facilities having adequate numbers of computers and internet connectivity. However, few level 1 facilities have computers in spite of having computer literate staff, reasonable internet and electricity. This is a great missed opportunity

DHIS2 is widely available but is used as a data capture tool rather than as a data quality assurance, analysis and dissemination tool. Managers at district and province levels do not have access to, or use DHIS2. Many features of DHIS2 such as visualizer, dashboards and messenger are not used and most training in DHIS2 is not applied. Managers need to be trained in DHIS2 application, with standardized dashboards developed and disseminated.

The setup of the DHIS2 is currently not conducive to producing quality data, with only 5.5% (216 of 3890) collected elements needed for the calculation of the national indicators and 75% of data elements with a value of Zero. The application must be made more user-friendly, with annual updating of population data, improved data entry forms, streamlined data elements and categories and elimination of unused data. The national data warehouse server needs to be securely housed and security and access policies developed. All parallel and overlapping systems, such as for HIV/AIDS, need to be fully integrated.

Data flow from level 1 facilities to district is nearly all on paper and often does not follow national data flow policy, going to the community nurse instead of the DHIO. Data flow guidelines should encourage facilities to enter their own data on DHIS2 and, where this is not possible, decentralise data entry to the nearest computerized facility, rather than only at district.

Access to data is limited, there are no policies or SoPs to guide access to data and it is complicated to get permission to access DHIS2. The messenger and interpretation functions of DHIS2 are not widely used. Data is disseminated through consolidated reports but these are usually hand written, of poor quality and with limited analysis. Computerised data is not shared with program managers, so it is not analysed, interpreted or compared to planned targets. There is no systematic dissemination of analysed information between levels, with other ministries, local government or the community.

Integration is limited both functionally and technically, with most programs maintaining their vertical reporting, monitoring and evaluation (M&E) systems. Program managers are not involved with assuring HMIS data quality or in analysis of data. HMIS is not integrated organizationally into health service management, planning or monitoring and HIOs are not part of the executive teams at any level. Technical integration with DHIS2 is limited to Frontline SMS. Other computerized systems such as EPMS, IMMIS, Natpharm, Human resources, logistics etc. are not integrated with DHIS2.

Recommendations are made as follows around HIS Management, Human resources and ICT

HIS Management

1. The Health Information strategy 2009-2014 is basically sound and the original objectives and principles should be maintained in any new strategy. An overall integrated architecture is needed, in which aggregated data and indicators are reported to the DHIS2 and a number of new systems such as community, hospital, logistics /drugs and financial HIS will need to be developed.
2. Management and monitoring of the HIS implementation process must be strengthened with a national M&E plan, SOPs to clarify processes, procedures, roles and responsibilities and annual costed HIS action plans developed to enable integrated funding and regularly monitoring at all levels
3. The indicator and data set should be revised to suit local needs and the post 2015 agenda. Data collection tools and the data warehouse must be aligned to these new indicators, with only data linked to these indicators being collected. Flexible templates should be developed for reporting, M&E and feedback that enable comparison of performance and trends over time
4. Programs must use the national data warehouse, systematically dismantle their vertical reporting systems and ensure that all computerized programs are inter-operable with DHIS2

Human resources

5. Human resources need sustained investment, based on a training needs assessment and a costed training plan. HMIS training needs specially trained training teams applying action oriented training methods to develop practical skills. Classroom training should be backed up by practical SoPs and revised job descriptions and supported by on-site supervision, support and mentorship programs.
6. Data quality improvement should be a team responsibility of DHE and PHE, rather than just HIOs, with integrated on-site data verification, analysis and interpretation of HIS data.
7. Information use should be linked to capacity development of decentralised teams through institutionalised data use workshops and strengthened collaboration with program managers.
8. Program managers should be held responsible for data quality, analysis, interpretation and dissemination of analysed information. RBF data about quality should be made more widely available to managers and facility staff to avoid missed opportunities for resources for facilities.
9. Supervision guidelines should focus on HMIS use by supervisors before, during and after supervision, with support for analysing and interpreting graphs
10. HIOs need skills to be upgraded and made members of the PHE and DHE, with revised job descriptions linked to SOPs, a clearly defined career path and long term training opportunities

ICT

11. Policies and plans are needed for EHealth and ICT, DHIS2 server security and hosting and facility ICT.
12. DHIS2 database setup needs urgent attention to reduce the number of data elements collected, simplify data entry forms, establish routines for including district facility population data annually, and ensure that data quality assurance tools are used systematically. The national server hosting and networking need to be upgraded to international standards

13. Computerisation of facility data should be a priority, rolling out DHIS2, electronic health records and tracker. Paper reports should be entered at the nearest computer, rather than only at the district.
14. Information products need to be strengthened with a defined set of graphs and GIS maps for all levels.DHIS2 should provide data for annual action plans, quarterly and annual reports and monitoring of planned activities, including implementation of HIS
15. Data access procedures for DHIS must be simplified so that all managers can have DHIS2 dashboards tailored to their needs and use messenger and interpretation functions for information dissemination

1 INTRODUCTION

The HIS Strategic plan, drawn up in 2009 has come to an end in 2014 and needs to be evaluated. MoHCC developed a terms of reference (ToR) and contracted the University of Oslo (UiO) to lead the review process, using participatory approaches.

Needs to be expanded ……Background to this review:

Structure of this report:

This report is structured as closely as possible to the HIS 2009-2014, to ensure continuity.

- **Section 1** is the introduction, looking at the background to this assessment, the 2005 assessment and the HIS 2009-2014
- **Section 2** describes the methodology and limitations of the review.
- **Section 3** describes the results, with a subsection (3.1) on the different levels, then the sections described in the HIS: Institutional setup, Data collection, compilation and storage, Information transmission, Use of information, dissemination of information, M&E of the plan and funding. Two sub-sections, 3.9 Information and communication Technology (ICT) and 3.10 Human resources have been "promoted" as they are felt to be key issues
- **Section 4** describes conclusions of this and detailed recommendations,
- **Annexes** include the Terms of Reference (ToR), detailed itineraries and list of persons met, Facility scorecard and the questionnaire.

The 2005 Review

The 2005 review revealed that while the HMIS design was good and the basic structures were in place, data was neither timely nor complete and there was duplication of data in registers. Data was not analysed or used and there was no feedback, follow up or sharing of data. There were real problems with the design of the database, with poor data transmission due to poor internet connectivity

Recommendations in 2005 included a need for development of a health passport, improved disease surveillance system, a strategic plan and development of a National indicator and data set. The National Health Information strategy (NHIS) was written in 2009 in order to address the findings of the 2005 assessment.

The National Health Information Strategy 2009-2014

The National Health Information strategy (NHIS) 2009-2014 is the focus of this review and is basically a sound document, with a good situation analysis, clear principles and it provides a sound rationale for the existence of a strong HIS. The conceptual and implementation frameworks are comprehensive and the objectives are clear, being translated into a logical framework with concrete strategies and practical activities to be carried out to achieve the objectives.

The document outlines the institutional setup of the NHIS, with clear tasks and responsibilities for the national steering and technical committees. Data collection, compilation and storage, information transmission and data flow are documented, as are use and dissemination of health information and monitoring of the NHIS and funding of its implementation.

Annexes include a draft HIS strengthening implementation plan and a list of 99 health sector indicators, with frequency of collection, numerator and denominator and their sources all defined.

Table 1 shows the key Strengths, weaknesses, Opportunities and constraints identified in the NHIS 2009-2014.

2008 Weaknesses (-)	2008 Strengths (+)
▪ 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 facilities are 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.
2008 Threats (-)	**2008 Opportunities (+)**
▪ 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 is recipient of HMN support. ▪ 5 million US dollars available from GFATM for strengthening of M&E and HMIS. ▪ Other donors ready to collaborate to fill the gaps. ▪ Existence of well-defined catchment areas and administrative boundaries

Table 1 Summary Findings of the 2008 assessment of the HIS:

2 METHODOLOGY

The review was conducted in accordance with the Terms of reference developed by the MoHCC (See Annex 1). It was decided to adopt a participative process involving MoHCC, development partners and UiO, focusing on the achievements of the NHI Strategy 2009-2014 with a view to developing the next strategy that would be aligned to the overall NHS strategic plan.

- **A <u>stakeholder meeting</u>** was held on 9th April 2015 with?? 35 people attending. The approach and methodology were approved, the questionnaire was administered to all, reviewed and accepted for use.
- **<u>Field visits</u>** were conducted by 3 teams of 3 people (see annex 2) spent from 13 to 25 April 2015 in Matabeleland, Mashonaland East, Mashonaland West and Midlands provinces and interviewed health staff at provincial, district and facility level, administering a questionnaire (see Annex 4) that looked at
  1. Context and resources: human resources, finances, Health Information infrastructure and computerization.
  2. Process: Data management, plans and indicators and data sources
  3. Results: Analysis and use of information, dissemination of information, information for action and Advocacy
  4. The Tool for Assessing Level of Information use (TALI – seen Annex 4) was used to score facilities and districts (See annex 3)
- **<u>A feedback meeting</u>** to stakeholders was held on 28th April 2015 attended by 25 people at which each team presented its findings, overall conclusions and recommendations were reviewed and accepted and a broad process for revising the HIS Strategy was approved.

Limitations

The review visited only 5 of the 9 provinces, and only a small selection of districts and facilities in each province. However, there was remarkable consistency in findings between the three teams. Where differences were identified, they are highlighted in the report.

Detailed data quality audits were not conducted, although the RBF process is institutionalizing a robust data audit process.

Not all key stakeholders were interviewed due to non-availability and shortage of time.

3 RESULTS

The Health information strategy is basically sound and, given the difficult circumstances, the HIS has made enormous strides in the past 7 years, with a good design and the basic infrastructure for implementing HIS is in place at all levels and the results compare favourably to neighbouring countries. The HIS strengths identified in 2008 have been used to implement the HIS strategy and the HIS has largely dealt with the major weaknesses identified in 2008.

Using the TALI tool (See annex XX) .most facilities, district and provinces are at level 1, in that data is collected and entered onto the system on time. The challenge is to move to level 2 where information is assessed for quality, analysed, used and disseminated effectively.

While potential is there for Zimbabwe to be a best practice site, some important adjustments to the implementation process and strengthening of information management are required.

ACHIEVEMENTS SINCE 2008

Table 1 summarises the 2008 SWOT analysis contained in the NHIS. Many of the problems identified then have been addressed in the intervening 7 years, but some still remain (highlighted in yellow). While

the MoHCC and partners have built on the strengths to get the basic infrastructure in place, many of the threats persist. The 2015 SWOT analysis is shown in the conclusions.

Building on identified strengths

The identified strengths are still there and have been effectively used to implement the HIS strategy

1. The Health Information department coordinates HIS activities at all levels, has improved its skills in DHIS2 and is looking for ways to increase demand for health-related information.
2. Catchment areas and administrative boundaries are well defined and their populations are locally known, (though they are not on DHIS2)
3. There is a well-defined system of data collection and reporting from the facility to the national level with data reporting done regular and on time from most units.
4. Weekly disease surveillance and Integrated Disease Surveillance and Response (IDSR) systems are in place and functioning well
5. Vital registration system is in place, though could still be improved
6. Efforts to improve integration of vertical programme administrative and management information are under way.
7. Zimbabwe has received support from HMN, GFATM and other donors for strengthening HMIS.

Resolution of weaknesses and threats since 2008

The HIS has dealt with many of the major weaknesses and threats identified in 2008.

1. A central data warehouse for integrating HIS data sources has been set up
2. Strengthened ICT infrastructure has improved communication.
3. The DHIS2 software is well designed and available at all districts and most admitting hospitals
4. Shortages of forms for recording and reporting at facilities have been virtually eliminated
5. There is a national core indicator and datasets, though it is too big and needs to be revised.
6. Reporting channels are clear and some private health facilities are reporting to the HIS.
7. Support systems and supervision have improved, though could be made more effective
8. Donor-driven programs have largely integrated their reporting requirements with the routine health information system (with the exception of HIV) and are increasingly collaborating with the HIS Strategy, using government registers and reporting forms and supporting data quality assurance efforts.

Weaknesses that are still evident:

1. Accountability and responsibility remains unclear, with no HMIS related job descriptions or SoPs
2. Analysis and use of information remains inadequate, with limited focus on performance indicators and targets.
3. Data quality assurance and authentication remain poor, though RBF is starting to deal with this.
4. Inadequate human resources for HIS remains a problem and there is still high staff attrition due to poor remuneration and working conditions
5. Inadequate communication infrastructure
6. Changing disease patterns requiring paradigm shift in how we manage health information

3.1 RESULTS BY LEVEL

Facility level

Catchment areas and administrative boundaries are well defined and populations are locally known, even though the population data are not on DHIS2. There is a well-defined system of data collection and reporting from the facility to the national level with data reporting done regular and on time from most units. Shortages of forms for recording and reporting at facility level have been virtually eliminated. Reporting channels are clear with missions and many private health facilities reporting to the HIS.
The major data systems are in place:

- Routine data reporting is producing regular, largely timely data though quality is uncertain.
- Weekly disease surveillance and Integrated Disease Surveillance and Response (IDSR) systems are functioning well, apart from problems with some telephones and shortage of airtime.
- Inpatient Mortality and Morbidity (IMMIS) has been instituted but is not functioning fully yet. It needs to be integrated with DHIS2.
- Vital registration system is in place, though could be improved.

Efforts to improve integration of vertical programme administrative and management information (TB, HIV, malaria) are still under way.
Health centre committees are functioning at most facilities and this is a great opportunity to share information with communities and their leadership. This community HIS needs to be further strengthened.
Registers and data collection tools are widely available and only government approved registers are used (though there are some handmade registers in use for special local purposes such as referrals etc.)
Infrastructure for ICT and DHIS2 is in place at higher levels, (but not at rural level 1 facilities) and the basic reporting systems for paper, Frontline SMS for IDSR, IMMIS and EPMS for HIV are in place.

Information use remains a major challenge. While most facilities have immunization and malaria related graphs and maps displayed and write basic summary reports, there is weak demand for quality data, minimal use of information by managers for program monitoring or for feedback. The one major use of information is for results based financing, though 50% or more of potential financing is not distributed due to poor data quality.

Health centre committees including representatives from communities and villages are functioning at most facilities, a great opportunity to share information with communities and their leadership. Data from the facility are in many cases said to be presented and used in committee meetings and in other meetings with the community, but not in a systematic way. Templates for presenting facility and community level data and routines for disseminating and using this data need to be put in place. This community focused part of the information system, including data collection by CHWs, and feedback to them needs to be strengthened.

Facility scorecard

Summary scorecards of findings for some facilities in Midlands and Matabeleland South are shown in annex 3 with facilities graded Green = good, Orange = acceptable Red = problematic.

As can be seen, facility staff are largely in place and have basic skills in data collection and reporting, with adequate office space, though this has been stretched by the recent addition of EPMS data entry

clerks. Facility in-charges, HIS staff and EPMS clerks have received basic training. However, other facility staff and program managers have not received training.

No documented training plan was available for facility staff, so it was not clear whether capacity building goals had been achieved.

District level

District level HIS structures are functional, with collaboration between the DHIO and the community nurse around data quality assurance when data is submitted. This collaboration needs to be strengthened, with training for all DHMT members in DHIS2 quality control, analysis, interpretation and use of information. The DHIO should be part of the DHE

Currently, data reported from the facilities to the district are sent first to the Community nurse for quality control, which may last for up to one week, before being handed over to the DHIO for data entry. We strongly recommend to change this routine and to start with capturing the data and using the DHIS2 to control quality of data. This change of data flow policy will require close collaboration between the DHIO and the Community nurse and training of the Community nurse. Training of the Community nurse in the DHIS2 needs to be fast tracked, as more facilities will capture their data directly in the DHIS2, meaning that data quality control at district level will need to be done electronically.

Support systems and supervision have improved, though could be made more effective by increasing use of information during supervision and improving data accuracy for the RBF program.

There is virtually no demand for data outside of the normal reporting framework, and no feedback from provincial or national levels is received at district level, other than the Weekly Epidemiological report.

Province

Given the key role of the district and the need to effectively support them, provinces need to be strengthened in HIS management. Provinces are generally weak in HMIS and not providing adequate technical support to the districts and management from a technical, organisational or behavioural point of view. The PHIO is crucial for the supervision and technical support of the districts and need to be strengthened. The Provincial health Executive (PHE) needs to be strengthened in HIS management skills and supported to create a "culture of information" and create a demand for use of quality data.

This improvement should be

- Technical, in terms of analysis and interpretation as well as providing training.
- Organisational to manage implementation of the HIS strategy through creating an enabling environment, ensuring implementation of SoPs and providing feedback to districts and other ministries
- Behavioural in terms of increased demand for data and supportive supervision of districts.

Provincial ICT Officer have recently been appointed to provide IT support to district and site level. The ICT Officer should facilitate a factional helpdesk through Messenger and Telephone communication.

National

The Health Information department coordinates HIS activities at all levels and, with ongoing support from RTI is looking to increase demand for health-related information. There is a well-defined national core indicator and datasets though these need to be revised.

A central data warehouse for integrating HIS data sources has been set up, though the infrastructure needs to be strengthened and security and access policies developed.
Zimbabwe has received support from HMN, CDC, GFATM and other donors for strengthening HMIS. Donor-driven vertical programs have started to integrate their reporting requirements with the routine health information system and are collaborating with the government HIS Strategy implementation effort.

The HIS management team has taken increasing ownership of the HIS and has developed the draft HIS action plan, though this has not been finalized or widely distributed. This important work needs to be completed.

The organisational framework should be clarified with SOPs developed for all HIS related activities to clarify processes, procedures, roles and responsibilities.

The provincial and national training structures at polytechnics that were in place till 2008 need to be re-established and adapted to meet current needs and current health managers training being implemented by dept. of community medicine (funded by CDC) into a full course. A Career path for Information Officers needs to be defined and developed.

3.2 INSTITUTIONAL SETUP and GOVERNANCE

At national level, National HIS management committee, National HIS Technical committee, and numerous Technical working groups have been set up, though meetings are not as regular as planned. Strengthening these governance mechanisms requires adequate institutional and human resource capacities. Investments are required in MoHCC, Zimbabwe Statistical Offices (ZimStats), national public health and academic institutions to strengthen governance.

There is no supportive legal and administrative framework to enable data sharing in accordance with agreed standards for confidentiality and data security.

There is a need to develop a legal and administrative framework to govern eHealth, ICT, security, Monitoring and Evaluation.

Monitoring and evaluation units have been set up in various programs, but there is no common M&E plan or coordination unit. This has resulted in multiple parallel M&E systems with resulting fragmentation and duplication of M&E efforts.

EHealth strategies have been started but are not finalized. There is no national data architecture covering the use of ICT to enable the public health and health care delivery system to benefit from the digital revolution. EHealth interventions are needed to empower front-line worker and citizens in a person-centred health care system, to maximise performance monitoring and accountability at all levels. ICT systems need to be integrated to bring synergy across multiple health information systems.

Accountability for health requires credible statistics at a number of levels. However there are no regular independent analyses and reviews to strengthen accountability and galvanize remedial actions. This requires transparent, inclusive mechanisms that can discuss the findings and identify remedial actions. Engagement of civil society is weak in most areas such as monitoring the HIV response and ensuring accountability for resources.

3.3 DATA COLLECTION, COMPILATION. STORAGE

Data Collection

Facility based data sources are used to various degrees

1. Patient records are widely used to produce weekly, monthly reports
2. Service records are used to report service delivery
3. Resource records are less strong, with Human resource, logistics, equipment and supplies having parallel systems largely not available through the DHIS data warehouse.

Population based sources include

1. Facility level population data is well known for all facilities and regularly used for EPI and RBF projections. However there are problems with proportions of populations for different services.
2. A census done in 2012 and updated t 2013, but further projections are not available and not included on DHIS2. This needs to be rectified.
3. Vital registration is reasonably good and most major hospitals have CRVS officers
4. Population surveys (ANC surveys, MIMS/MICS etc.)are being done, but they are mainly ad hoc as there is not a coordinated survey plan made by ZimStats

There is need to come up with an integrated plan for surveys that is coordinated by an overall ZimStats plan.

Data Collection Tools

The system of facility data collection is strong and reports are regular (<90%) and largely timely (80%).

In 2012[1] there was a 95% availability of T5 (OPD) forms but a 20% availability of T1 forms for notifiable diseases, while HS3-5 (workload) and T9 (quarterly inpatient) forms were available 85% and 70% respectively. Registers were widely available with only minor stockouts (29% admission and 20% postnatal registers). This situation appears to be improved in 2015, particularly for IDSR where the frontline SMS system has replaced the T1 forms and has greatly improved reporting of infectious diseases.

An HIV+ pregnant woman with her exposed child requires 13 different registers during each visit to the facility.

Government data collection tools (registers, reports and tally sheets) are available at every site with very few stockouts reported. The sites, District Office and Provincial level are using only government approved data collection tools. However there are no guidelines and SOPs on how to use them and training on use of the tools is generally inadequate.

There is a high facility reporting rate and reports are mostly on time. However data passes through the district Community Nursing Department for verification first before reaching the DHIO, causing systemic delays.

[1] NHIFA 2012 p 122

The mortality and morbidity information system (IMMIS) is used in most inpatient facilities, but data is not linked to DHIS and in spite of training of DHIOs, the data is out of date, not easily accessible, not analysed and hardly used.

Registers

All sites visited complained that "registers are too many" with most of them duplicating patient identification data. All staff wanted ONE register that would record all data collected. While this is probably not possible, it would probably be possible to reduce to 4 to 5 paper registers, which would in time be replaced by electronic registers using DHIS tracker and other electronic health registers.

While most data is entered once only, much HIV clinical data is duplicated, as well as patient identification data (Name, age, address, gender, etc.) has to be re-written for each register. However, in spite of extensive pushing, no concrete ideas were presented to revise the registers, though it was stressed that this should be a participative process involving facility staff. This process should happen after the revision of the indicators, when elimination of unused data elements will be much easier.

A positive and potentially useful suggestion was to print out stickers with essential patient identification data that could be placed in the register so that nurses do not need to write these details out by hand

Electronic Health records

A functional set of electronic patient records would considerably reduce staff workload.

- The EPMS is in use at clinics and hospitals with high volume OI&ART patients. It is currently only for ART, though there are plans to expand its scope. The ePMS was recently introduced and some sites are still to capture all ART patient records. The ePMS comes with a large number of new staff who have had basic training and are supporting other aspects of the HMIS.
- Frontline SMS is widely used to report weekly IDSR data and this leads to good reporting rate and wide availability of this data. The system works well, apart from where phones have broken down or there is shortage of airtime. WhatsApp is used where this system breaks down.
- The Frontline SMS is used widely for Infectious disease weekly reporting and
- Harare city is currently testing a system based on AfyaPro, a Tanzanian system, supported by CordAid.
- The DHIS2 tracker system is used for Malaria pre-elimination in Matabeleland, but not on laptops, as there are connectivity problems. Discussions were held about the need for a "native offline capacity" to enable facilities without internet to use tracker.

The DHIS2 database

The current DHIS2 database is poorly set up, with too many datasets, poor use of data element category combinations, many "indicators" that are not indicators at all and many data elements that are collected without being used for real indicators. To be specific, in the current database there are

- 818 data elements for 99 indicators
- 59 (or 67) datasets.
- 3890 raw data element.cat combo collectables as these data elements are further disaggregated

In the current DHIS2

- ***5.5% of data collected are needed to calculate national indicators***
- ***75% of data values are Zeroes***

- 859 indicators of which only 109 have a denominator that is not a number. The remaining 750 "indicators" are not real indicators at all, but rather just calculated data elements.
- 5.5% (216 of the 3890 collected elements) are being used in the calculation of the 99 "official" indicators
- 75-80% of the recorded data values are Zeroes, showing that most data elements are unusable

Datasets should be divided into dataset sections, rather than breaking a single form into multiple datasets. This will make the data capture easier and more user-friendly. This database needs to be thoroughly revised after the new indicators have been approved.

Data quality and standards

Data quality is generally poor and health workers and managers do not trust the data produced, meaning it is not used, setting up a "vicious cycle" of non-use that leads to poor quality and less use.

There are conflicting opinions from limited analysis.

- Data verification[2] indicates 85% of all data elements sampled and verified within 10% variance.
- Many RBF facilities lose 50% or more of their potential earnings due to poor data quality (>5% variance).
- A review of validation rules in one district showed over 400 validation rule errors in 18 months

DHIS2 quality control tools, including min and max settings and validation rules are not used at any level, in spite of training. While there are many validation rules, it appears as if they are not consistently utilized. An assessment in one district showed over 400 violations for one district in an 18 month period (See annex??)

Data quality is adversely affected by a number of major issues

1. The profusion of registers that are time consuming, poorly laid out and confusing
2. The lack of Standard operating procedures and guidelines to fill them in (apart from front page of HIV registers)
3. Frequent changes in the tools as programs change data elements.

Data quality is not monitored except in RBF facilities, and then it is external quality checks rather than internal MoHCC processes. There is an urgent need to introduce locally driven data quality assurance processes and institutionalize data

Population data

Facility population data is available and well known at all facilities, broken down into target population by age cohorts. This is most commendable.

The Census was done in 2012 and was updated in DHIS2 till 2013, since when it was inexplicably stopped, meaning that population based indicators can no longer be calculated in DHIS2. This is a major problem that needs to be rectified urgently.

[2] RTI

Indicators and data sets

There is a set of 99 indicators in the Strategic Plan developed in 2008 and these are still the official set. They are hardly monitored and should be revised urgently and aligned to the post 2015 agenda and the DHIS2 database aligned to the new set

Data compilation

Data reports from facilities to districts are complete, consistent and largely timeously submitted, with the Head of facility taking active responsibility over data issues. This is mainly done through weekly and monthly meetings.

All facilities produce annual reports and many produce quarterly reports. However as most facilities do not have computers, these are largely hand written and do not contain graphs. Even districts and larger facility reports do not use DHIS2 to make reports and tend to extract data to excel to make graphs.

Data storage

The MOHCC resolved last year to invest in improving the physical and organizational infrastructure around hosting of national database and internet facing services. The scale of the task of upgrading physical infrastructure within the Kaguvi building is proving to be costly and time consuming. During the course of the evaluation, the DHIS2 server was moved once to the HIV unit in the neighbouring building opposite Kaguvi and later to the Labs within Harare Hospital.

Though we did not do a site visit to Harare Hospital we have reason to believe that the small data centre there is well run and it will prove to be a sensible choice for a temporary home whilst the infrastructure project in Kaguvi continues.

Due to disruption caused by the move we were not able to access and evaluate the server logs, but the generally high reporting rates indicate that, despite the difficult conditions, the availability of the web based system has been adequate for data entry.

Two outstanding areas of concern that should be addressed are:

1. We did not see a security management/ backup plan around the current system arrangement. It is important that, particularly while the current arrangement is temporary and not ideal, the risks of data loss are documented and managed rather than waiting until the situation in Kaguvi stabilizes. In particular, there needs to be a clear, documented and automated backup schedule which includes periodic off-site storage. One of the Oslo team started this process with MOHCC in January, but work was disrupted due to the move to Harare Hospital.
2. Related to the above, it was not absolutely clear who is in control of the machine at the system administrator level. The MOHCC at this stage needs to appoint a system administrator who can be mentored to gradually take more control.

3.4 INFORMATION TRANSMISSION

Data flow

Paper based transmission of data is generally good, with facilities making great efforts to get the data to the district on time by bus or other public transport. Most facilities send to the district community

nursing department, where the data is “checked for quality” and EPI data is extracted for analysis on Excel before being sent to the DHIO for entry onto DHIS2.

Discussion with nursing managers revealed that they “do not trust the computerized data”, have not been trained in use of DHIS2, and realised that the current flow caused delay. They were happy to try data flow straight to the DHIO if they were given training in DHIS2 quality assurance and data visualisation. In Chegutu district, all facilities report together on the same day giving opportunity for discussion, analysis and presentation of data.

Frontline SMS is widely used, and generally working well though problems with the phones and lack of airtime often disrupt transmission. Many facilities use WhatsApp to send IDSR data when Frontline fails.

Dissemination / Access

Data collected is not regularly disseminated and shared with those who use the information or those outside MoHCC who have a right to know how the system is functioning. Data sharing is facilitated by the existence of the data warehouse, a central repository of current and past data from diverse sources, and web access for the public. However there are no common data standards to facilitate integration and analysis, weak skills in data interpretation, presentation, and delivery and local media are not supported to interpret indicators, report on health information or make it understandable to the public.

Data dissemination is extremely limited and most provincial and district managers do not have DHIS2 user names or access to the information products. There are no SoPs to guide access to data and it is complicated to get permission to accessDHIS2.

- The messenger and interpretation functions of DHIS2 are not used except by Crown Agents and CordAid
- There is no systematic sharing of data or analysed information with other ministries, local government or the community.
- Development partners have had difficulties to access DHIS2 to view data in the past, though this has improved recently
- Dissemination of data after computerization is limited, with none of the DHIS2 tools for this purpose being widely used.

Integration

Integration is limited, with most programs maintaining their vertical reporting systems. Most importantly, at provincial and district levels, the HMIS is not integrated and program managers are not involved with assuring data quality or doing analysis of data.

Technical integration, too is limited with EPMS, IMMIS, TB, Natpharm all having computer systems that are not integrated with DHIS. IMMIS data is entered electronically and again entered manually on the T9 form, making double work and with potential for human error.

Feedback

HMIS feedback is extremely limited and usually consists of correcting errors. No site received written DHIS2 feedback comparing performance with similar sites, or trends over time. An exception in Gweru City which had a compiled quarterly report comparing performance of selected indicators among its sites.

Numerous meetings are held between nursing staff and district, and between districts and provinces that could potentially provide feedback, but these are mainly clinical and administrative discussions and do not focus on feedback, data analysis or use.

There are no data use fora at which districts present their own data for peer review and discussion. Existing meetings such as PHT and MODO where each level presents its own data are a great opportunity to promote "discussions about data" between peers, with technical support from higher levels.

Advocacy

While some advocacy with local government was carried out with local government and councillors, none really used data for this advocacy, apart from Mandava clinic where rising STI figures were shown to local commercial sex workers to encourage condom use.

3.5 INFORMATION USE

Information use is a worldwide problem, and Zimbabwe is no exception to this rule.

Data is minimally used at any level and there are no SOPs for use of data locally or in planning, budgeting, monitoring and evaluation. There is minimal demand for quality data from higher levels, with most program managers not understanding even the basics of indicators, or their monitoring. Managers are not accessing the DHIS2 and customized dashboards are not developed or used by managers.

There are generalised problem of poor use of DHIS2 and dashboards by managers:

- Customised dashboards are not developed by the district and province HIO; (no data push)
- Managers generally don't have access to DHIS2 and when they have, they are poorly trained – and not been shown what is possible (no pull).

This situation needs to be addressed by addressing both the data push and demand side:

1) Train and strengthen the team at province and district levels. Currently they are not able to produce customized dashboards and other information products in the DHIS2. The HIOs need to be enabled to 'push' information products to managers.

We do not trust the quality of data that is collected so we do not use it for managing our programs

2) Program managers need to be trained in using the DHIS2 pivot tables, data visualiser and dashboards and they need to be supported on-site repeatedly in order to be able to master the various analytical tools. Managers need to be enabled to demand information products.

Planning is done without systematic use of data and there is minimal linkage between monitoring of plans and data collection. RBF is starting to use data for facility planning, but this activity is just starting and needs to be considerably strengthened.

Facility based use of DHIS2 has a great potential for boosting data use, while at district level, functional integration of the Community nurse department with the DHIO has the potential of boosting the use of DHIS2 for data analysis and dissemination using graphs and maps

Examples of data use

There were a number of facilities and districts that were using information effectively, proving that it is possible to use information, usually driven by one dedicated individual:

1. Mandava Health Centre in Zvishavane. The nurse in charge (previously a HIO) was using data extensively for M&E, advocacy with the community and holding his staff accountable for performance.
2. Bulilma District. The DHIO developed a weekly 4 page printed disease surveillance bulletin including a table of data reported (or not!) by facility by data element. This is an excellent example of data dissemination and feedback that can be used by other districts.
3. Tshelanyemba Mission Hospital. While data is not used systematically, there are many cases of good informal use of data. The DHIO and DHIA 'admitted' that they did not provide data analysis and reports in any systematic way. However, when asked more directly about what they did with the information, it appeared that they, for example, presented disease surveillance data to a meeting every Monday. Two weeks back 5 malaria cases where reported, they broke up this data by village in a hand drawn map and presented at the meeting. All 5 cases were from the same village and this data resulted in a case investigation team from the province going to the site, and took action. This illustrates that there are good examples of use of data, but that data not systematically.
4. United Bulawayo Hospitals is very committed to the use of information and has a devoted information team. They had advanced monthly report with goals, objectives and expected and achieved outputs. They had also developed a strategic plan for 2015-2019 emphasizing using information and strengthening of the information systems. Currently, the internet was poor, but they were planning to lay fibre cables to the different departments.
5. In Bulawayo all health facilities had been provided with laptops and were eagerly waiting for internet. We saw an example of facility data captured into Excel for data analysis and to develop reports. Facility health information responsibles are eagerly awaiting DHIS2, which had been demonstrated, but training (and Internet) were still needed.
6. Matobo district. Data reported from the facilities was first collated, evaluated and analysed using Excel (!), before the paper forms went to the DHIO for data capture. Discussing this practice, all agreed that data should be captured in the DHIS2 for quality control and analysis. It was a sub-optimal practice to first enter data in the Excel before DHIS2. If they wanted the data in Excel, they could export it from the DHIS2. Instead of 'sitting on the data' for one week before it was captured in the DHIS2, the Community Nurse should rather be trained in using the DHIS2 for their data analysis in collaboration with the DHIO. Such collaboration will also raise the status of the DHIO, who is merely a data capturer in the current arrangement.

Graphs are widely used to display EPI coverage, but few other programs encourage this use. Most facilities have maps – coverage, spot and micro maps. This finding correlates with the 2012 NIHFA which found >90% use of graphs for EPI and spot maps and >50% for malaria, deliveries and facility attendance.

Results Based Financing (RBF)

This is a major positive development for rural facilities and, where it works, has transformed the way they function, both from a service delivery and a HMIS point of view. A set of key performance

indicators (mainly MCH related) has been selected and these are monitored quarterly by internal and external validators, with money distributed based on activities performed. This money is used for improving MCH services, upgrading infrastructure (fencing, roofing, painting, plastering etc.), buying equipment and paying salaries of guards.

Half the potential RBF funding is returned because of poor data quality

The HMIS reporting has improved greatly (according to staff interviewed) as a result of this initiative, as there is a monthly and quarterly data quality review by both the community Nurse and the comparing registers and reports that calculates deviance and encourages accuracy if the reported data is 5% more or less than the reviewed data. The process is the only serious effort at data use encountered in the provinces and includes review of performance of data for the past 4 quarters, development of strategies to improve these and planning for targets to be achieved.

The two organisations implementing the RBF (CordAid and Crown agents) have produced 29 standard reports, including invoicing reports, in DHIS. These are however not shared with the provincial or district offices, so there is a degree of unclearness about exactly what the processes are for payment or how reporting can be further improved.

The RBF shows clearly the problems with using the registers for continuity of care. Many facilities lose up to 70% of their potential revenue for inaccuracy caused by registers and data compilation!

For example *ANC 4th visit means that staff have to find the client on all visits which may be in a number of different registers, with services provided (IPT, TT, PMTCT, RPR test etc.) in a number of different registers.*

3.6 M&E OF THE IMPLEMENTATION OF HIS

The NHIS Strategy is not known at lower levels and no real effort is made to monitor its implementation at any level. The 99 indicators identified in 2008 have not been revised

Reports are produced annually by most facilities (quarterly by some) but these are all programmatic reports and do not deal with HMIS issues.

- The national Health profile was produced till 2013 but stopped due to lack of population data
- HMIS monitoring and supervision visits and annual reviews have apparently been conducted but no reports were seen.
- NHISU Annual planning and review meetings have been held annually since being introduced 3 years ago

No HMIS progress reports were seen at any level, no (quarterly) review meetings were held by HIS staff and no regular feedback was provided on HMIS implementation at any level. Similarly, the proposed mid-term evaluation was not conducted.

3.7 M&E of ACTION PLAN IMPLEMENTATION

The action plan was drawn up but was not finalized or widely distributed. The annual work plan was not costed in a collaborative manner, so development partners tend to implement ad hoc activities according to their needs, rather than being able to coordinate inputs according to a national plan.

3.8 FUNDING FOR THE HIS

Zimbabwe has received support from HMN, CDC/RTI, GFATM and other donors for strengthening HMIS. No details of funding for DHIS were obtained for the mission.

FACTS about this funding requested from GF and RTI

DHIS is largely funded by Global Fund who has paid for installation of internet in hospitals, district & provincial offices as well as provision of laptops for DHIS and cell phones for Frontline SMS, including monthly service payment for internet and airtime and training of staff.

RTI and HTF provided laptops, while RTI supplemented some of the DHIS & Frontline SMS training costs

366 laptops have been provided (GF = 187,HTF = 130 RTI=49) and

1275 Cell phones (GF 2011 = 1200, 2014 = 450 2015 = 675)

Numbers of Staff Trained:

- DHIS-2 = 563 trained (HIS staff, PHEs, DHEs, Directors & D. Directors, M & E Officers
- Frontline SMS & EID = 2,111 nurses trained

3.9 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

ICT has improved considerably in recent years, with computers becoming increasingly common, internet access and smartphones expanding, staff skills in using ICT rapidly improving and general awareness levels high, particularly amongst younger staff members.

ICT Officers have recently been appointed at Provincial level to provide IT support to district and site level. The ICT Officer should have adequate skills to be able to facilitate a functional helpdesk through Messenger and Telephone communication.

Computer availability

Computers are widely available at all District Offices and Admitting Hospitals, but not at many rural level 1 clinics.

Donors of the ICT equipment have not put any restrictions on use and installation of other essential software. However some busy facilities do not have IT equipment. Some clinics that have received computers (e.g. Mtapa, Mukoba, Kana mission) do not use them while others (Lundi rural hospital) that had EPMS computers allocated, have not received them.

Many level 1 facilities have computer literate staff who have personal computers but no official computers. These facilities should be prioritised when new computers are distributed.

DHIS2

The DHIS2 software has been introduced in all Provincial and District Offices and most admitting hospitals. DHIS2 is not used by any rural level 1 facilities to enter data. There are many facilities with computers and computer literate staff but no DHIS access. The EPMS computers do not have internet access or antivirus on them, meaning that they cannot be used to enter DHIS data.

The DHIS2 software is grossly underused, with most provinces and districts merely using the data collection functions. There is minimal use of data quality, analysis and dissemination functions with very few dashboards developed at any level of the system. One exception was the IO for Matabeleland province. Ideally all Programme Managers at District and Provincial level should have DHIS2 dashboards on their laptops, tailored to their specific needs. This was not seen at any sites.

Training in DHIS has occurred for 563 staff, but has been poorly followed through and has largely not been applied. Most non-HIS staff (facility managers and DHMT members) who have been trained do not use the DHIS2, for a variety of reasons (poor internet, no computers, limited demand for data etc.) Even the HIS staff who have had training use the DHIS only as a data collection tool and most have lost the capacity to use the other features.

Internet

Internet connectivity is improving rapidly and is widely available, though the bandwidth is limited and use of dongles is expensive. Internet access is often cited as a problem, but all sites visited were able to use WhatsApp to send IDSR data. Often small local innovations are possible to greatly improve internet access problems. (E.g. cable to run internet to near DHMT members or the DHIO) In some districts there is potential for connectivity through faster optic fibre cables.

The Frontline SMS facility is generally working well though there are problems with some batches of phones and airtime shortage is experienced at many facilities. Some sites are using RBF funds to procure airtime.

3.10 Human resources

Human resources (HR) are generally in short supply in Zimbabwe and this shortage affects the HMIS.

In 2012[3] there was a 33% vacancy rate of 33% for Information officers and 18% vacancy for their assistants. Very few staff (688) had been trained on HMIS

HIS Staffing

A positive recent development is the employment of Data Capture Clerks, who are currently focusing on EPMS. They are a resource which can in future be redistributed and used for DHIS2, reporting and analysing data for the facilities using DHIS.

Efforts are in place to induct and orient new HIOs in DHIS at provincial level, but a comprehensive and ongoing training programme should be instituted.

The career path for Health Information Personnel is not satisfactory and is a huge demotivating factor.

- Job descriptions were not seen at any level, though they apparently exist at national level.
-
- There are no long term high level capacity building programme (Certificates and Diplomas) in place for Health Information Officers to improve their skills.

[3] National Integrated Health facility assessment MoH 2012 p 121

- Most of the Health Information Assistants are working as non-substantive HIOs without any prospects occupying the HIO position.
- DHIOs are not formally part of the DHMT or DE, though they are often consulted for HIS
- The academic background of the staff in post limits the capacity for training in technical issues.
- At level 1 facilities there is no provision for HIOs. Nurses are doubling as information officers and do not have adequate training in handling data.

DHIS 2 Capacity Development

Training in DHIS2 has happened at DHMT and admitting hospitals (mainly in 2013) but overall application of imparted skills in DHIS is limited, particularly on data quality assurance, analysis of indicators and use of dashboards.

Capacity building activities for HMIS are limited with only ePMS staff having received training in the past year.

- HIOs do not have necessary skills to use DHIS, apart from data entry.
- There are no HMIS training programs for program managers (DHMT or PHE) to understand DHIS
- Facility staff have had no training in data collection, analysis or use

When we go to training and workshops, fancy dashboards are demonstrated, but when we come home they are not there!

There are regular nurse meetings of facility in-charges, but little attention is paid to information use, and no efforts made at promoting district level data use workshops

Supervision by community nurses and vertical programs is reasonably regular, but puts little emphasis on data quality assurance, data use for quality of patient care or information for facility management. RBF focus is mainly on fault finding on data quality but does not emphasis data use or use of DHIS2 for improving data quality.

Supervision needs an integrated process with clear guidelines on information use.

Continuous education – training schemes

The best HIOs met in the field had all been through the previous Health Record training program which was discontinued around 2008. We were everywhere asked to raise the need for revitalization of this training scheme in our evaluation. It is a serious shortcoming of the current efforts to strengthen the HIS that no appropriate training is available. It is important re-start the Health Record training program and update and modernize it to include DHIS2 and other current systems and strategies. To re-establish a training scheme in information systems is also needed in order to establish a career path for HIOs.

It is recommended to establish an integrated Health Informatics educational scheme including certificate courses, diploma and Masters, which can be taken over time as modules.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

Many of the international challenges identified in the HIS roadmap4 apply to Zimbabwe:

- ***Insufficient government investment*** *to building sustainable and comprehensive information systems at district and facility level, so that much data from national systems are of low quality.*
- ***Inefficient investments in data collection and analysis*** *where Individual programs prioritise the production of quality data for their own indicators: investments are ad hoc and fragmented and often focused on stand-alone surveys and one-off impact evaluations. National institutions responsible for monitoring national health priorities are frustrated by programs with different reporting systems and funding tied to specific diseases.*
- ***Lack of country capacity*** *to produce quality health data and statistics: Ministries of health, National Statistical Offices and civil registries, the backbone of data production and management, lack the required capacity, tools, and resources. Low-quality data is used to make decisions without sufficient checks to verify completeness and accuracy.*
- ***Limited access to and usability of data****: Data are not always shared or disseminated according to international standards. Ministry of Health officials and managers at lower levels—who, with decentralization, should be the key champions for measurement and accountability—are not sufficiently trained and incentivized to utilize data.*

However, the Health information strategy 2009-2014 is basically sound and the broad objectives and principles should be maintained. In spite of these challenges, the HIS has made enormous strides in the past 7 years, with a good HMIS data "pipeline" design and the basic infrastructure for implementing HIS is in place at all levels. The results compare favourably to neighbouring countries and the potential is there for Zimbabwe to be a best practice site, with adjustments to governance, the implementation process and strengthening of management.

The HIS strengths identified in 2008 have been used to implement the HIS strategy and the HIS has largely dealt with major weaknesses identified in 2008. The major challenges that remain are human resources skills development, development of SOPs and management of implementation and ICT.

Most facilities, district and provinces are at level 1 (See Annex 4 TALI tool), in that data is collected and entered onto the system on time. The challenge for the next 5 years is to move to level 2 so that information is assessed for quality, analysed, locally used and disseminated effectively.

Health centre committees are functioning at most facilities and this is a great opportunity to share information with communities and their leadership. This community HIS needs to be further strengthened, along with other missing systems, particularly health accounts, logistics, and hospital information systems.

[4] Health Measurement and Accountability post-2015: A Common Roadmap (draft for consultation) World bank / WHO 2015

Governance and institutional capacity is generally weak and data sources need to be strengthened through increased investment in MoHCC, ZimStats, national public health and academic institutions. EHealth strategies and national data architecture covering access to and use of information need to be developed and practical interventions put in place to empower health workers, managers and the general public to maximize performance monitoring and accountability at all levels.

Accountability for health needs to be strengthened, with regular independent analyses and reviews to strengthen accountability and stimulate remedial actions. This requires transparent, inclusive mechanisms at local level that can discuss and analyse the findings and identify remedial actions.

Data collected needs to be disseminated and shared with those who use the information, as well as those who have a right to know how the system is functioning. A supportive legal and administrative framework is needed to enable sharing in accordance with agreed standards for confidentiality and data security.

Data sharing has taken great steps forward by setting up a data warehouse that functions as a repository of current and past data from diverse sources. This data warehouse needs to be further strengthened by ensuring common data standards to facilitate integration and analysis, strengthening staff skills in data interpretation, presentation and allowing controlled web access for the public, local press and media to help them to interpret indicators, report on health information and make it understandable to the public.

SWOT Analysis 2015

Strengths	Weaknesses
• Facility populations and catchment areas well-defined • Data reported regularly and on time from most units to national level • Graphs and maps displayed at all facilities • Health Centre committees in place at level 1 facilities • HMIS unit and DHIOs in place, with increased skills to coordinates HIS activities. • Human resources at facilities strengthened by addition of EPMS data entry clerks • IDSR system in place with regular local meetings. • EPI and RBF data checked for quality and used regularly • DHIS2 adapted to local needs and rolled out to all districts and admitting hospitals • DHIS2 training has happened for DHIOs and health centre in charges	• Poor HIS policy and planning framework • M&E plan not developed, so performance indicators and targets not monitored • Standard operating procedures absent, leading to unclear accountability and responsibility. • National indicator and data sets not revised • Registers cumbersome and not user friendly • Population data not available on DHIS2 • Systems for local “discussions about data” not in place • Health staff and managers have inadequate HMIS skills for data analysis, interpretation and dissemination • Analysis and use of information weak, with DHIS2 analysis and dissemination features hardly used • Supportive supervision guidelines do not focus on information use • Program managers not involved in HMIS and lack skills • DHIS2 setup is cumbersome with too many sections, poor indicators and much unused data • ICT infrastructure weak at rural level 1 facilities • Central server hosting is inadequate, with no security policy • Lack of data access policy causes difficult access to approved

• Demand for health-related information growing • Vital registration system in place at all hospitals. • Results based financing strengthening data quality •	information for staff and public • DHIS2 training not applied by trainees or followed up during supervision • EPMS staff poorly distributed and not contributing to routine HMIS data entry • Most electronic systems (EPS, IMMIS, LMIS etc.) not interoperable with DHIS2 data warehouse •

Opportunities	**Threats**
• Standard operating procedures developed for all aspects of routine HMIS • Practical HMIS skill development for health staff and managers according to national training plan • Strengthen local systems for on-the-job skills development and "discussions about data" • Phased program for DHIS2 rollout to all level 1 facilities • Electronic health records to replace registers for priority programs • Integrate all available electronic information into DHIS2 data warehouse. • Server hosting to international standards • Long term HIS training program of linked certificate, diploma and degree • Zimbabwe is well placed to receive donor support for strengthening M&E and HMIS. • Increased access to approved information ▪ Develop and test community, health accounts, hospital and other priority information systems	• Some vertical programs (notably HIV) have not integrated data into the routine HMIS • Investments not coordinated due to absence of costed HMIS action plans • Communication infrastructure (computers and internet) inadequate in rural areas • HMIS staff attrition and demotivation due to poor working conditions •

Conclusions by level

1 Facility Level

Catchment areas and administrative boundaries are well defined and populations are locally known, though the population data are not available on DHIS2.

Infrastructure is adequate at level 2 and 3 facilities, but weak at level 1, particularly in rural areas.

There is a well-defined system of data collection and reporting from the facility to the national level with data reporting done regular and on time from most units. Shortages of forms for recording and reporting at facility level have been virtually eliminated. Reporting channels are clear with missions and many private health facilities reporting to the HIS. Data collection tools are a major burden on health staff and need to be revised urgently, replaced by electronic health records where feasible.

The major data systems (routine, IDSR, IMMIS, vital registration) are in place, though most need strengthening, streamlining and integration Efforts to improve functional integration of vertical programme administrative and management information (TB, HIV, malaria) at local level are under way, but need more attention.

50% or more of potential financing from results based financing is not distributed due to poor data quality. Information use remains a major challenge, with most facilities merely sending data to higher

levels without analysis. While most facilities have graphs and maps displayed and write basic summary reports, there is weak demand for quality data, minimal use for program monitoring or feedback.

Staff skills are weak, though facility in-charges, HIS staff and EPMS clerks have received basic training. Other facility staff and program managers have not received training.

Health centre committees are functioning at most facilities and this is a great opportunity to share information with communities and their leadership. This community HIS needs to be further strengthened.

2 District

District level HIS structures are basically functional, but the "culture of information use" is lacking. Collaboration between HIOs and the DHMT program managers needs to be institutionalized and demand for quality data strengthened, with training for all DHMT members in DHIS2 quality control, analysis, interpretation and use of information. The DHIO should be formally part of the DHE.
Support systems and supervision have improved, though could be made more effective by increasing use of information through regular written feedback, during supervision and improving data accuracy for the RBF program.

3 Province

Provinces are generally not providing adequate management of the HMIS implementation process. Given the key role of the district and the need to support them, provinces need to be strengthened in HIS management and implementation from technical, organisational and behavioural aspects. This improvement should be supported by SoPs and backed up by practical training and supervision to improve staff skills and to increase data demand by program managers.

The provincial training structures at polytechnics that were in place till 2008 need to be re-established and adapted to meet current needs.

4 National

The Health Information department has been strengthened and supported by Research Triangle Institute for the past few years and efforts have been made to strengthen governance of the HIS, though institutional and human capacity are still weak.
There is a well-defined national core indicator and datasets though these need to be revised.
The national data warehouse has been set up using DHIS2 software, though the infrastructure needs to be strengthened and security and access policies developed.
Zimbabwe has received support from a number donors for strengthening HMIS and donor-driven vertical programs have started to integrate their reporting requirements with the routine health information system and are collaborating with the government HIS Strategy implementation effort.

The HIS management team has taken increasing ownership of the HIS and has developed HIS action plans. The organisational framework should be strengthened, with SOPs for all HIS related activities to clarify processes, procedures, roles and responsibilities.

HIS Management

The various governance and stewardship committees (Steering, technical, technical working groups) have been set up at national level and meet, though not regularly. However at provinces and districts there is minimal institutional oversight of HMIS.

Policy and planning for HMIS are generally weak.

- There is no M&E plan, resulting in fragmented M&E efforts and duplicated efforts by programs.
- EHealth plans have been started but not finished and there is no agreed national data architecture
- Funding for the HIS is largely by donors and is not an integral part of an overall HIS plan, tending to be ad hoc and focusing on individual donor requirements
- The 99 indicators developed in 2008 are not used regularly and should be revised to suit local needs and aligned with the post 2015 agenda.
- Data collection tools and DHIS2 database should be aligned to these new indicators
- Population data is not updated and included in DHIS2 to act as denominators for indicators, which greatly hampers effective information use.

System strengthening

To ensure timely and reliable statistics from health facilities and community health workers, there should be emphasis on strengthening all information systems in an integrated way:

- Updated Census projections are needed down to district level in DHIS2, with local facility population estimates adding up to these numbers
- The health facility data collection system needs to be streamlined and registers revised
- Disease surveillance is strong, but needs to be integrated with DHIS2
- The community system strengthened, with CHW data collected and aligned with facility HMIS
- All facilities and workers should move towards use of electronic recording and reporting systems

Other health system data sources are weak and generally not integrated with the data warehouse. There is a need for electronic tracking systems on health workforce, health facilities and services, finances, expenditure and logistics including commodities, medicines, equipment, and supplies. The system of national health accounts must be made operational, using international standards

Health services assessments should be performed in a transparent manner on facility and community information systems for regular verification

Data collection

The system of facility data collection is strong and reports are regular and largely timely. Paper data collection tools have been standardised, partially revised and linked to the 2008 national indicator set. Most duplications have been removed but some still exist.

Registers are a major problem and need to be simplified, streamlined and redesigned to support continuity of care and reduce workload. Electronic health records should be considered to replace registers where feasible.

THE MAJOR CAUSE OF POOR DATA QUALITY IS CUMBERSOME AND TIME CONSUMING REGISTERS

[Cite your source here.]

Electronic health records (EPMS, IMMIS and Frontline SMS) are starting to be used with good effect. These need to be made interoperable with DHIS2 and broadened in scope to include more programs. Other electronic patient record systems such as DHIS2 tracker, Afyapro, LMIS etc. need to be tested and introduced, with offline functionality wherever possible, to reduce health staff workload.

Data flow

Data flow from level 1 facilities to district is nearly all on paper (Frontline SMS is the exception). Paper forms go to the Community Nursing department for "quality control and checking" before entry onto DHIS. This situation causes delays. Feedback to lower levels is virtually non-existent, apart from fault finding.

Data flow should be modified to reflect the web based nature of DHIS2 and encourage facilities to enter their own data on DHIS2 by distributing computers and training computer literate staff. Data entry for paper forms should be at the nearest computerized facility, rather than only at the district.

Information Use

Information use remains a major challenge and needs to be actively dealt with in the next strategic plan through creating a "culture of information use". This will need clear SoPs and development of skills of integrated teams to use DHIS2 analytic and reporting functions. Routine aggregate data should be used at all levels of the health system for patient care, facility planning, reviews, and action

IMPROVING INFORMATION USE NEEDS DISCUSSIONS ABOUT DATA AT ALL LEVELS

Information products are minimal, mostly facilities producing graphs for EPI and maps. Annual action plans are made, but largely without use of information and little effort is made to monitor ongoing activities. There is lack of clarity around indicators and their use, as supervisors often lack these skills. Accountability for producing results and achieving targets is minimal. Facility quarterly and annual reports are usually hand written and contain tables rather than graphs, with little or no analysis.

M&E is minimal (apart from EPI and recently RBF) at lower levels and there is no M&E plan at national level. M&E of the implementation of HIS has not been done systematically or according to the implementation plan.

Supervision does not address DHIS data and supervision guidelines need to be revised to emphasise data quality assurance and use. Feedback to lower levels is weak and usually consists of acknowledgement of receipt or fault finding. Few districts provide even basic comparisons of facility level performance and none provide time trends or GIS analysis.

Horizontal data flow to program managers, other ministries and local government is virtually non-existent. This should be addressed by developing flexible templates in DHIS2. Advocacy using information is not done except for one health centre (Mandava clinic)

Results Based Financing (RBF) has started to transform rural facilities service delivery and HMIS. However many clinics lose a great deal of money through poor quality data. This presents a major opportunity for improving HMIS data quality, to avoid these missed opportunities for more money for facilities. Information should be used for planning RBF activities at facilities, but most plans hardly use information and focus on infrastructural and supplies rather than improving information use. This should be dealt with by sharing information using DHIS2.

Data collection tools

Paper data collection tools have been partially revised and linked to the 2008 national indicator set. Some duplications still exist (e.g. ANC data in PMTCT and T5 / HS3/5). There were frequent changes of these tools that caused confusion amongst data collectors

Registers are a major problem and these need to be simplified, streamlined and redesigned to support continuity of care and reduce workload. Electronic patient records should be considered to replace registers here feasible.

Electronic patient records (EPMS, IMMIS and Frontline SMS) are starting to be used with good effect. These need to be broadened in scope to include more programs. Data quality

Data quality is generally perceived by health workers (and RBF) to be poor, though there are conflicting opinions from limited analysis. Causes of the poor quality have not been adequately researched, but include cumbersome registers, poor training in data collection, lack of SoPs, weak supervision and feedback and limited use of the data. DHIS2 data quality assurance tools are not systematically used.

The causes of poor data quality, particularly poor data use, need to be systematically investigated and the "low hanging" causes minimized through decentralised local action and discussions.

Human resources

There is a great shortage of Human Resources for Health, and particularly for HMIS, both in number and skills of staff at all levels[5]. This is an area of great concern and will need great effort in the next strategic plan.

HMIS CAPACITY DEVELOPMENT IS THE MAJOR CHALLENGE FOR THE NEXT STRATEGIC PLAN

HIOs do not have a clear career path or adequate training opportunities, do not have job descriptions available and are not members of the Health Executive teams. There is no provision for HIOs at clinic level

A training needs assessment and training plan has not been done as planned. HMIS training has been conducted for a number of cadres but this was not followed through and has generally not had visible results. Follow up of most HMIS training has been inadequate and there are no standard operating procedures for HMIS to guide training, supervision or ongoing support. Job descriptions for program managers do not emphasise use of information or DHIS2.

Team work between "information" and "program" staff is poor and program managers have minimum responsibility for any data or HMIS activities.

Information and communication technology (ICT)

Computer and Internet availability has increased dramatically during the period of the strategy, with computers most level 2 and 3 facilities. ICT Officers have recently been appointed at Provincial level

DHIS2 is widely available at provincial, district and hospital levels, though few rural level 1 facilities have computers. DHIS2 is used for data capture rather than as a data quality assurance, analysis and

[5] Health Facility survey 2012

dissemination tool. Many useful features of DHIS2 such as dashboards and messenger, are not used adequately and training in DHIS2 has not been applied.

The hosting of DHIS2 data warehouse at national level needs to be improved to international standards, as does its set up.DHIS2 has too many datasets, excessive data element category combinations, many "indicators" that are not indicators and 95% of data collected not needed to calculate national indicators.

Data Dissemination / Access

Data dissemination is poor and access to DHIS2 is difficult. There are no policies or SoPs to guide access to data and it is complicated to get permission to access DHIS2. Data collected is not widely disseminated and shared with those who use the information, in spite of the existence of the data warehouse. There are no common data standards to facilitate integration and analysis, weak skills in data interpretation, presentation, and delivery. Users outside the MoHCC are not supported to analyse or interpret indicators, report on health information or make it understandable to the public.

Data dissemination is most commonly through hand written, poor quality reports with limited analysis. Computerized dissemination is limited and most provincial and district managers do not know DHIS2 potential, have forgotten their DHIS2 user names don't know how to use DHIS or access dashboards and information products. Computerised data is not shared with program managers, so it is not adequately analysed, interpreted or compared to planned targets. There is no systematic dissemination of analysed information between levels, with other ministries, local government or the community.

DHIS2 QUALITY ASSURANCE, ANALYSIS AND DISSEMINATION FEATURES ARE GREATLY UNDERUSED

Integration

Program integration is limited, with most programs maintaining their vertical reporting systems. In the absence of an M&E plan, M&E is totally along program lines, causing duplication of effort and resources at all levels

Program managers are not involved with assuring HMIS data quality for their own programs or doing analysis of data at any level. HMIS is not integrated organizationally into health service management and the HIOs are not part of the executive teams at any level.

Technical integration with DHIS2 is limited to Frontline SMS. Other computerized systems such as EPMS, IMMIS, Natpharm, Human resources, logistics etc. are not integrated with DHIS2.

Ways to integrate RBF, learn lessons from its approach and make results more available through DHIS2 should be explored.

4.2 RECOMMENDATIONS

The Health Information strategy 2009-2014 is basically sound and the original objectives and principles should be maintained. However, new approaches are needed to create sustainable cultures of data use at all levels of the health system. This will require aligning all stakeholders within the national HIS to get integrated investments in strengthening data sources and capacities and to empower health workers to use the digital revolution to scale up health interventions.

The country has adapted the free open source platform (DHIS2) for health information and accountability and needs to strengthen this platform for health accountability and reporting, creating an enabling environment that promotes use of information and strengthens the sources of information that support the HIS platform. This enabling environment should build demand for, and strengthen the supply of quality data (see Fig 1), to work towards a common goal which is to have the necessary information to manage the HIS to show achievement of national health goals

Actions needed to achieve this goal include strengthening health facility data and community health information systems, strengthening and integrating disease surveillance and strengthening health system data sources. MoHCC needs to work with other ministries to strengthen civil registration and vital statistics and to ensure regular census projections and an integrated program of household surveys.

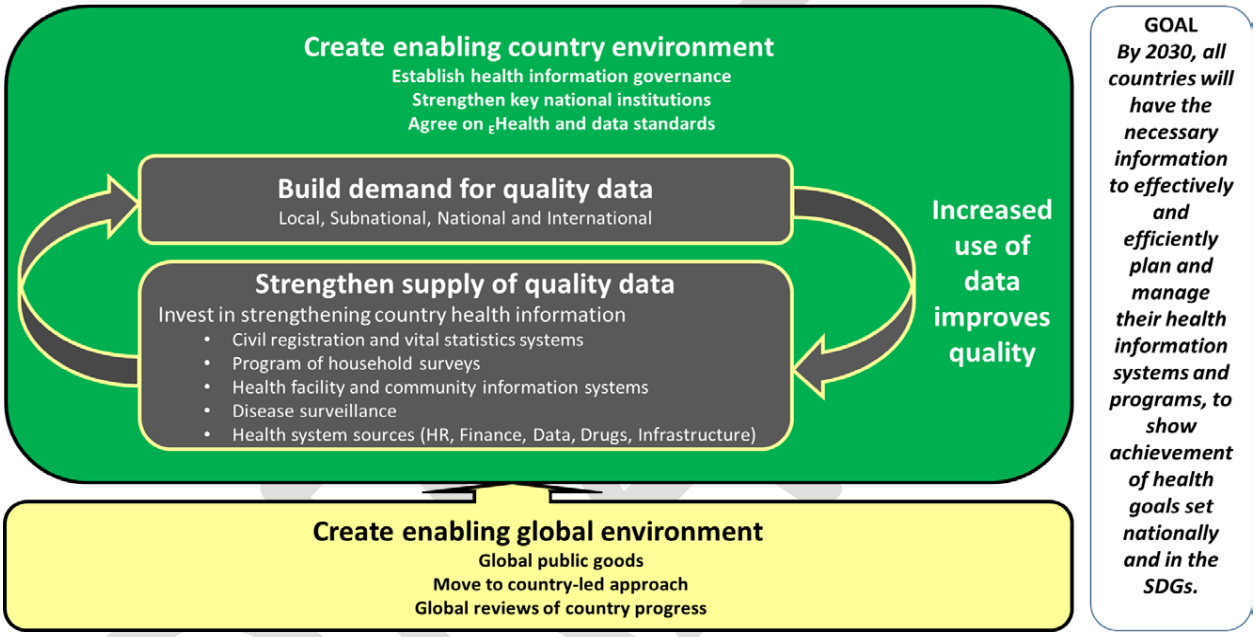

Figure 1. Creating an enabling environment for quality information (WHO /World Bank 2015)

HIS Management

1. . MoHCC should improve health information governance
    a. Increase stewardship by ensuring that existing HIS governance committees (Steering, technical, technical working groups) are more effective at all levels.
    b. Integrate funding for HIS into an overall HIS implementation plan and budget
    c. Develop an integrated HIS architecture, where aggregated data and indicators are reported to the national data warehouse.
    d. Develop policies and implementation plans for E-health, ICT, M&E, data access etc.
    e. Develop and test new information systems such as community, hospital logistics /drugs and financial HIS and a system of national health accounts.
    f. Work with other ministries to strengthen civil registration, Census and household surveys
2. Management and monitoring of the HIS implementation process must be strengthened through

STREAMLINE NATIONAL INDICATOR AND DATA SET AND ALIGN DATA COLLECTION TOOLS

   a. a national M&E plan developed to reduce duplication and fragmentation of M&E efforts
   b. M&E of the implementation of HIS done systematically according to plan.
   c. SOPs developed for HIS related activities to clarify processes, procedures, roles and responsibilities
   d. annual costed action plans made with use of routine DHIS2 information, with built in monitoring of planned activities
   e. integrated funding (MoHCC, RBF and DPs) of these action plans at each level
3. The indicator and data set should be revised to suit local needs and the post 2015 agenda.
   a. Data collection tools and the data warehouse aligned to these new indicators, with the only data collected being linked to these indicators.
   b. Flexible templates developed for reporting and feedback that enable M&E through comparison of performance and trends over time
4. Programs must use the national data warehouse to encourage transparency and data access,
   a. systematically dismantle their vertical reporting systems
   b. ensure that all computerized programs are inter-operable with the data warehouse

Human resources

5. Human resources need sustained attention and investment, based on
   a. HIS Training needs assessment and a costed training plan for HIS staff, program and area managers and facility staff
   b. Decentralized Training teams, specially trained in action oriented training methods to develop practical HMIS skills for staff.
   c. Classroom training backed up by practical SoPs and revised job descriptions and supported by on-site supervision, support and mentorship programs.
   d. HIS courses updated to current needs and restarted, with longer term modular educational schemes established (certificate, diploma, degree)
6. Information use to be linked to capacity development of health workers at all levels through
   a. Institutionalised data use workshops that promote “discussions about data” between peers
   b. Strengthened collaboration between HIOs, Health Executive teams and program managers.
   c. Improved information products such as graphs, GIS maps, reports for all programs
   d. Flexible DHIS2 feedback and report templates developed for comparisons of performance and trends over time
   e. Horizontal data flow promoted to program managers, other ministries
7. Data quality improvement should be an executive team responsibility, rather than just HIOs,
   a. DHIS data use and quality should be an agenda item at every PHE and DHE meeting
   b. Registers radically revised to ensure continuity and collect only data used for indicators
   c. DHIS2 used for integrated on-site data verification, analysis and interpretation of HIS data.
   d. Results Based Financing activities should include improving quality through local use
      i. RBF data about non-payment available on DHIS2, identifying specific errors made
      ii. RBF funds integrated into overall facility plans
      iii. RBF initiatives and methods expanded to other data sets
8. Program managers and health Executive members to be held responsible for monitoring, using key performance indicators

a. DHIS2 training in data quality, analysis interpretation and dissemination
b. Institutionalised feedback and reporting of analysed information.
c. Job descriptions revised to include HMIS tasks

9. Supervision guidelines revised to focus on HMIS use by supervisors
   a. Guidelines emphasise DHIS2 use before, during and after supervision,
   b. Technical support for drawing, analysing and interpreting graphs, learning from EPI example
   c. Community nursing officers to get specific training in DHIS2 use
10. HIOs need to be upgraded and made members of the PHE and DHE,
   a. Job descriptions revised and linked to SOPs,
   b. A clearly defined career path and long term training opportunities (linked certificate, diploma, degree etc.)

PROGRAM MANAGER CAPACITY DEVELOPMENT AND TEAMWORK IS KEY TO STRENGTHENING HIS

Information and communication technology (ICT)

11. ICT Policies and plans are needed for
   a. EHealth and ICT, DHIS2 Server security and hosting
   b. Coordinated ICT supply to facilities linked to a national facility computer audit
12. DHIS2 database setup needs urgent attention to eliminate unused data:
   a. reduce number of data sets, data elements and categories collected,
   b. include updated population data, core indicators and metadata dictionary
   c. National server hosting and networking to be upgraded to international standards
   d. Develop offline tracker functions for laptops and dashboards and messenger for mobile
13. Computerisation of facility data should be a priority, linked to practical staff training in DHIS2 use
   a. Roll out DHIS2, electronic health records and tracker.
   b. Replace existing registers with electronic records wherever possible
   c. Paper reports should be entered at the nearest computer, rather than only at the district.
   d. DHIS2 data quality assurance tools to be used systematically at all level.
   e. EPMS, IMMIS and Frontline SMS to be broadened in scope to include more programs
14. Information products to be strengthened, using DHIS2 to produce
   a. Dashboards for managers, tailored to individual needs
   b. A defined set of graphs and GIS maps for all levels.
   c. Analysed data for annual action plans that includes use of (anticipated) RBF funds,
   d. Information for quarterly and annual reports and monitoring of plans,
   e. Monitoring and evaluation of implementation of HIS
15. Data access procedures for DHIS must be simplified and SoPs developed for sharing information
   a. Information approval system developed for each level
   b. HIOs empowered to give access to DHIS at their level
   c. Managers to have DHIS2 dashboards tailored to their needs
   d. Messenger and interpretation functions widely used for information dissemination
   e. Other ministries, local government, community leaders, development partners and the general public given appropriate access to DHIS2 products and data.

ELIMINATE ALL UNUSED DATA FROM DHIS2

Annex 1 Terms of Reference: Evaluation of the National Health Information Strategy (2009-2014),

This task will be completed by a multi-sectoral team selected by the MoHCC and led by UiO, using a set of tools developed by UiO that address the HIS strategy 2009-2014 using the approaches presented in the UiO document "Approach to Zimbabwe HIS assessment" (15th February) including Systems Development; the Performance of Routine Information Systems Management (PRISM) framework; and the Information Cycle.

Timing

- **February**: finalising ToRs, reviewing documents and starting tool development.
- **March**: selection of the team by MoHCC and finalisation of the tools by UiO
- **April**: Stakeholder meeting (9th April) and key stakeholder interviews to get an overview of HIS implementation to date and inputs into the review tools. Field visits by 3 teams to 3 provinces, a city and two central hospitals, using the review tools. On return from the field, a draft report will be prepared and presented to a second stakeholder meeting (28th April)
- **May: F**inalisation of the report by UiO and selected team members, for presentation to MoHCC by 9th May

Deliverables by 9th May

- Final report of the HIS assessment, with key findings and recommended interventions to inform the development of a new National Strategic Plan and to strengthen the current system

	Responsibility	Activity / Month	February				March				April				May	
		WEEK	1	2	3	4	1	2	3	4	1	2	3	4	1	2
1	MOHCC / UiO	Finalisation ToR														
2	UiO	Document review														
3	MoHCC	Selection of team														
4	UiO	Development of Tools														
5	UiO	Database analysis														
6	MoHCC	Stakeholder meeting										9				
7	Team	Key Stakeholder interview														
8	Team	Field Visits														
9	Team	Draft Report writing														
10	MoHCC	Feedback Meeting												28		
11	UiO	Finalisation of report													8	

Figure 2 Gantt chart for HIS Strategic plan review

Annex 2 Itinerary and people met

Key Stakeholder Interviews

Agency	People met
UNDP	Emmanuel Boadi (M&E)
RTI	Henry Chidawanyika
Crown Agents	Caroline Mubeira (Operations) Kudzai Dr Shumba (Team leader)
WHO	Dr Midzi – (HSS), Anderson, Parsi (Malaria). Admire (Nutrition): Trevor (MCH): Ms Munyoro - EPI
CordAid	Dudzai (Health) Eubert Vara(Data analyst) Moses Marimo (Programmer) Rozina (Database manager)
UNAIDS	Michael Gboade
USAID	Matthews Maruwa (M&E)

Midlands and Mashonaland West Provinces

District	Type of site	# of sites	
Gweru **Tues 14 April** **Friday 17 April**	Urban Clinics Provincial Hospital Gweru City Health Special Hospitals Provincial Hospital	2 1 1 1 1	Sr Ngara: – Mutapa Clinic Mkoba clinic: Daniel Chagweda- Town Council Mr Ruwodo(Director Health Services) Gweru Infectious: Sr Chiuswa Prov Hosp: Mrs Mbewe
Zvishavane **Wed & Thurs 15&16 April**	DMO Rural Clinics Lundi Rural Hospital District Hospital Private Hospital	1 3 1 1 1	DMO: Dr Mavurai DHIO - Njabulo Mandava clinic: Itai Moyo – Mapanzure: Chakamanga & Sibanda – Mhondongori: Sr Maphosa, Sr Virukai Shabanie Mine: Sr Mudzviti Lundi Rural: Sr Makombe, Sr Sibanda, C Madindo
Friday 17 April	Midlands PMD Office Midlands DHIOs meeting	1 1	PHIO: Manes Munyanyi All DHIOs and HIOs from all admitting hospitals
Gokwe Sat- Monday 18 – 20 April	Rural Clinics Mission Hospitals Districts Hospital	1 1 1	DMO Gokwe: Dr Sola – Sesame: Sr Nganwa – Kana Mission: Sr Ncube –
Chegutu Tues 21 Thursday 24 April	DHMT District Hospital Rural Hospital Clinics	1 2 4	Chegutu DMO: Dr Nhende CNO Mr Mfumamadi HIO: …??… Mhondoro: Sr Maphosa, Sr Virukai Watyoka: Sr Shoniwa, Sr Nyenge Rwizi: Sr Sikanda, Sr Ganagana

Matebeleland South Province

Place	People Met	Designation
Provincial Medical Directorate(PMD) Matebeleland South	Mr Mangwende	Provincial Health Services Administrator(PHSA)
	Mr Jira	Provincial Health Information Officer(PHIO)
	Ms Mpala	Accountant
Bulilima District Office	Mrs Moyo	Matron
	Mr Mahlobo	Administrator

	Mr Ndlovu	District Nursing Officer(DNO)
	Mr Nduna	Community Nurse
	Ms Maseko	DHIO-Bulilima District
	Ms Mlotshwa	DHIO-Mangwe District
Lady Barring Rural Hospital	Mr Ngwenya	Sister in Charge(RGN)
	Ms Mazwi	Primary Care Nurse(PCN)
	Siziba s	Primary Care Nurse(PCN)
Lady Stanley Rural Hospital	Ms Ndlovu	Sister in Charge(PCN)
Dombodema Clinic	Tsambali S	Sister in Charge(PCN)
Village 13 Rural Health Centre	Ndebele	Sister in Charge(PCN)
Nswazwi Rural Health Centre	Zhou A.	A/Sister in Charge(RGN)
	Moyo C.	Environmental Health Technician
Matobo District Office	Dr Mthunzi	District Medical Officer(DMO)
	Mr Mhlokwa	District Environmental Health Officer (DEHO)
	Mr Sibanda	District Nursing Officer(DNO)
	Ms Ngwenya	District Health Information Officer(DHIO)-Matobo
	Mr Muteveri	District Health Services Executive(DHSE)
	Mr Gandhi N	District Pharmacy Technician
	Ms Maphosa	Accounts
Kezi Rural Hospital	Mr Ndlovu	Sister in Charge(RGN)
	Ms Mwale	Nurse(PCN)
Tshelanyemba Mission Hospital	Mr Ndlovu	Matron
	Mr Nkhoma	Health Information Officer(HIO)
	Ms Ngwenya	Health Information Assistant(HIA)
Natisa Health Centre	Mr Ndiweni	Sister in Charge(PCN)
United Bulawayo Hospitals	Mr Mashingaidze	Director Operations
	Mr Mavhenyengwa	Health Promotions Officer
	Mr Gambukira	Health Information Assistant(HIA)
Bulawayo City	Dr Hwalima	Director City Health
	Dr Sibanda	Deputy Director
	Mrs Hove	Chief Nursing Officer
	Ms Ngwenya	Admin Assistant

Mashonaland East Province

District	Name	Place
Harare	Dr Dhliwayo-PEDCO	Mash East Province
	Mr Muchira -PHIO	Mash East Province
	Chaneta Chakwana -	Chitungwiza Central Hospital
Goromonzi	Mukudu -Matron	Ruwa Rehabiliatation centre
	Mr Mangwanani -Administrator	Ruwa Rehabiliatation centre
	Mangwanani HIO	Ruwa Rehabiliatation centre
	E Mudhovodzi –Nurse in Charge	St Joseph clinic
	Zhou –Nurse in charge	Chikwakwa rural hospital

	Muchinewuta -RGN	Chikwakwa rural hospital
Mudzi	S Tiagu Matron	Kotwa Hospital
	Mr Chikomba -DHIO	Kotwa Hospital
		Dendera clinic
	Chiyaka P -Nurse in charge	Nyamatawa Clinic
	Chafanza- Nurse	Nyamatawa Clinic
	Chikara	Makaha clinic
	Madzinga	Makaha clinic
Zvimba	Dr Masiye	Father O hea memorial hospital
	Madondo –Acting Matron	Makumbe Mission Hospital
	Chipangura –DNO Goromonzi District	Makumbe Mission Hospital
	Chirau - DHIO	Makumbe Mission Hospital
Harare	Goredema - HIO	Parirenyatwa Central Hospital
	Miti SIC	Wilkins Hospital
Zvimba	C Chigogo	Raffingora Rural Hospital
	Chivende-DNO Zvimba district	Zvimba District Hospital
		Mutorashanga Hospital
	N Tsuro	Father O hea memorial hospital
	Madhumbu SIC	Darwandale Hospital
	Utseya HIA	Darwandale Hospital

Annex 3 Facility scorecards

Legend: GREEN = good, Orange = acceptable Red = problematic.

Facility Scorecard Midlands

	Mtapa Clinic	Mukoba Polyclinic	Gweru city	Zvishavane DMO / Hosp.	Mandava clinic	Mapanzure RHC	Ml cli
HUMAN RESOURCES							
HIS staff in post in adequate numbers.		EPMS		EPMS	EPMS		
Staff skilled in data collection and reporting							
The HIS team has adequate office space	N/A	EPMS		EPMS		N/A	N/
HIS staff trained in statistics, DHIS software, database maintenance, epidemiology	N/A						
Program managers trained in epidemiology, report writing, information management							
Health facility staff trained in data collection, self-assessment, analysis, presentation							
HIS staff able to analyse data and create DHIS2 graphs and dashboards for program managers							
INFRASTRUCTURE & COMPUTERISATION							
PCs, internet access are in place		EPMS		EPMS	EPMS		
DHIS is used to submit monthly data							
Frontline SMS is used to submit data				N/A			
EPMS is functioning							
IMMIS is functioning	N/A	N/A	N/A		N/A	N/A	N/
DATA MANAGEMENT							
Only government approved registers, tools used							
Reports submitted on time facility to district				N/A			
Population denominator data are available							
Managers are demanding quality HIS information on time							
Program Managers DHIS2 for local programme management, planning and monitoring							
Standard dashboards are prepared on DHIS							
Key performance indicators are known and understood by programme staff							
Managers have easy, regular access to HMIS data and analysed information							

Results based financing provides incentives for good information performance							
INFORMATION USE							
Summary reports are produced regularly							
Graphs are widely used to display information:							
Maps are widely used to display information							
HIS reports covering MDGs are disseminated to local government / community leaders							
Regular written HMIS feedback reports sent	N/A	N/A			N/A	N/A	N/
Program Managers use information for local management, planning and monitoring							
HIS information resulted in significant changes in results based financing, resource allocation					RBF	RBF	RB
Challenges identified based on HIS indicators and addressed through a written action plan							
Action plans monitored using HIS indicators							

Facility Scorecard: Matabeleland South

	PMD Mat South	Bulilima District	Lady Barring Hospital	Lady Stanley Hospital	Dombo-dema Clinic	Village 13 Clinic
HUMAN RESOURCES						
HIS staff in post in adequate numbers.			EPMS	EPMS		
Staff skilled in data collection and reporting						
The HIS team has adequate office space			n/a	n/a	n/a	n/a
HIS staff trained in statistics, DHIS software, database maintenance, epidemiology			n/a	n/a	n/a	n/a
Program managers trained in epidemiology, report writing, information management						
Health facility staff trained in data collection, self-assessment, analysis, presentation						
HIS staff able to analyse data and create DHIS2 graphs and dashboards for program managers			n/a	n/a	n/a	n/a
INFRASTRUCTURE & COMPUTERISATION						
PCs, internet access are in place						
DHIS is used to submit data	n/a					
Frontline SMS is used to submit data	n/a					
EPMS is functioning	n/a				n/a	n/a
IMMIS is functioning					n/a	n/a
DATA MANAGEMENT						

	PMD Mat South	Bulilima District	Lady Barring Hospital	Lady Stanley Hospital	Dombo-dema Clinic	Village 13 Clinic
Only government approved registers, tools used						
Reports submitted on time from facility to district	n/a					
Population denominator data are available						
Managers demanding quality HIS information						
Program Managers use DHIS2 for programme management, planning and monitoring					n/a	n/a
Standard dashboards prepared on DHIS					n/a	n/a
Key performance indicators are known and understood by programme staff						
Managers have easy, regular access to HMIS data and analysed information						
Results based financing provides incentives for good information performance	n/a	n/a				
INFORMATION USE						
Summary reports are produced regularly						
Graphs are widely used to display information:						
Maps are widely used to display information						
HIS reports covering MDGs are disseminated to local government / community leaders						
Regular written HMIS feedback reports			n/a	n/a	n/a	n/a
Program Managers use information for local management, planning and monitoring						
HIS information resulted in significant changes in results based financing and resource allocation			HTF	HTF	HTF	HTF
Challenges are identified based on HIS indicators and addressed through a written action plan						
Action plans monitored using HIS data, indicators						

Annex 4 District / Facility questionnaire

Tool1: Tool to assess levels of information usage (TALI)

This tool is a simple assessment of information USE and can be used at any level of the system

Level	Broad description	Detailed description of criteria
Level 0	**The information system is not working according to specification:**	• No data set, reporting mechanisms or staff

Level 1	**The information system is working technically according to its specification:** Facility submits timely and accurate data to the district; District manages data quality in its database and provides written feedback to facility. Similar at provincial and central levels.	1 Essential datasets for compulsory reporting are clearly defined 2 An information manager is in post and is able to use DHIS2 appropriately 3 Routine reports are regularly shared with all program and area managers 4 Feedback reports are issued to level below on time, and tailored to the needs of appropriate individuals 5 Written guidelines (SoPs) for information handling are available and being used
Level 2	**Routine data is locally analysed, disseminated and used:** Summary reports of data quality and coverage are produced and disseminated regularly Indicators are analysed to assess performance towards local targets on a regular basis.	1 Summary reports on data quality and coverage are available 2 Program managers have appropriate DHIS2 dashboards on their computers 3 Indicators for key programs are identified and up to date graphs are publicly displayed 4 Key performance indicators are discussed and documented in routine management meetings
Level 3	**Information from the routine system is used for planning and evaluation of achievements:** Indicators and information are used by managers to inform action plans. Indicators from routine information is used to document performance in written reports	1 Program managers are able to interpret and explain key performance indicators. 2 Routine data informs the development of annual action plans 3 Program management problems are identified based on routine information? 4 Management problems are addressed using indicators and data, with steps documented, and improvement shown

Tool 2: HIS Assessment Tool

Note: The grading is from **0** representing No / None to **3** representing Yes/fully adequate. *As far as possible, each situation that the four values 0-1-2-3 should represent has been specified.*
If the answer to the question is NOT known, make a comment in the right hand column.

1 Context and resources

Legal and planning framework

		Score (0= No to 3= Yes)
1.	There is a costed annual action plan that outlines activities to improve HMIS (0: No Plan ; 1: Plan, but no HMIS activities detailed ; 2: Plan, but HMIS activities details are not explicit or not costed, 3: Yes)	0 1 2 3
2.	There is a representative local **HIS committee** that meets regularly, encourages and supports routine HMIS innovation and an "culture of information use" at this level (0: No, all important decisions are centralised; 1: Local innovation allowed, but must be authorised; 2: Local innovation sanctioned, but the HIS committee follows national advice, 3: Yes)	0 1 2 3

Human resources

3.	There are adequate numbers of dedicated **HIS staff** with required skills in approved posts at this level a) Full time Epidemiologist in HIS office in each province b) District / Facility **Information Officers** in post & functioning (0: No; 1: < 40% have epidemiologist / permanent IOs Skills generally weak; 2: 40-80% of have adequate staff; Reasonable skills 3: >80% have adequate HIS staff)	 0 1 2 3 0 1 2 3
4.	**Capacity building** activities has occurred over the past year for a) HIS staff (**statistics**, software and database maintenance / epidemiology) b) program managers (epidemiology, report writing, information management) c) health facility staff (data collection, self-assessment, analysis, presentation) (0: No; 1: Limited capacity building; 2: Some capacity building, largely focused on vertical donor driven programs; 3: Significant capacity building occurred as part of a long-term HRD plan)	 0 1 2 3 0 1 2 3 0 1 2 3
5.	Written SOPs/ **guidelines** exist defining how supervisors, program and district managers should use information for overall health service management (0: No guidelines exist; 1: Written guidelines exist but are not implemented/used; 2: Written guidelines exist and are used, but not integrated into overall service supervision; 3: Yes)	0 1 2 3
6.	Job descriptions for health workers contain specific mention of HMIS tasks a) For managers b) For professional staff (0: No Job Descriptions available; 1: JDs exist but are not implemented/used; 2: Written JDs are available and used, but do not mention HMIS tasks; 3: Yes)	 0 1 2 3 0 1 2 3
7.	The **career path for information officers** is felt to be adequate with sufficient training opportunities and realistic progression from one level to another (0: No; 1= There is some career path, but no opportunities for progression; 2: Career path exists, but no training opportunities and no hope for promotion; 3: Yes)	0 1 2 3
8.	Program managers have DHIS2 dashboards on their laptops and use them to analyse data (0: No, no dashboards 1= Dashboards are there but not used 2= Dashboards are there but analytic skills are lacking; 3: Yes)	0 1 2 3

Finances

9.	There is a specific **local budget** (government and donor) for core funding of routine HMIS activities that is part of the district plan (0: No; 1: Yes, but budget only covers salaries for existing staff; 2: Yes, but the budget allocations are not based on a long-term strategic HIS plan 3: Yes, with both recurrent and capital budgets based on a long-term strategic plan)	0 1 2 3
10.	The (district) allocations cover the cost of providing equipment and running costs for the HMIS (computers, internet, talk time) (0: No, many facilities do not have equipment; 1: There is a budget line for it, but it is not sufficient to satisfy the needs; 2: Districts rely on higher levels to provide all data collection tools (i.e. no local customisation) 3: Yes)	0 1 2 3
11.	The government **budget** for HMIS activities covers at least 50% of HIS activities (0: No, HIS expenditure (if any) is centrally controlled; 1: Yes, but government covers only salaries for existing staff; 2: Yes, but the budget allocations are not based on a long-term strategic HIS plan 3: Yes, government provides recurrent and capital budgets based on a long-term strategic plan)	0 1 2 3

Health Information Infrastructure / Computerisation

12.	Facilities have adequate transport/ finances to be able to easily submit paper reports to district level (0=Not at all 1= some (<40%) facilities have transport 2= 40-80% have transport 3= all have transport	0 1 2 3
13.	The HIS team (including EPMS data capturers) has adequate office space for working 0= Office space inadequate 1= Office space cramped with desks being shared and not all in same office 2 = Most have space, but some sharing desk 3 = Space adequate	0 1 2 3
14.	The basic computerised information communication infrastructure (PCs, email, adequate internet access for DHIS) are in place at this level and regularly used. (0: Only a minority of managers have access to a PC; 1: Most managers have a PC but no internet access; 2: Most managers have access to a PC and adequate Internet; 3: Yes)	0 1 2 3
15.	There are functional **"hot-lines"** (telephone or internet) for DHIS2 and IT technical support available from higher levels (0: No hotlines available; 1: Hot-line not regularly available; 2: Hot-line(s) available at all times, but response time is slow; 3: Hot-line(s) available at all times and within DHIS2 messenger	0 1 2 3
16.	Technical IT support (networks, installation, repairs, general hardware/software maintenance) is available and functional, with acceptable response times (0: Technical IT support not available; 1: Technical IT support available, but response/repair/replacement times are 2 weeks or more; 2: Technical IT support available, but response/repair/replacement times are usually from 3 days to 2 weeks; 3: Technical IT support available with response/repair/replacement times usually less than 3 days)	0 1 2 3
17.	Routine and semi-permanent data are captured at the facility level on DHIS2 and mobile phones is used to submit disease surveillance data a) DHIS submitted electronically by facilities b) Mobile phones used to submit data (0: No, reports are on paper; 1: Have equipment but it is not used to send data; 2: Data is submitted but internet poor; 3: Data regularly submitted to national server)	 0 1 2 3 0 1 2 3

18.	Integrated dashboards showing data and analysed information are readily accessible to managers (0: No; 1: Some analysed reports are available; 2: Dashboards are available on some computers, but not all; 3: All required dashboards are available,	0 1 2 3
19.	A patient based Electronic Health Record system is running at facility level for key programs (e.g. EPI, Malaria, MCH, ANC/PMTCT, ARV, TB) (a) Outpatient (b)Inpatient (0: only some programs; 1: some programs at most facilities2: Most programs at most facilities; 3: All programs at both public and private facilities.	 0 1 2 3 0 1 2 3

2 Process

Data management

	Score (0= No to 3= Yes)	
20.	There are written SOPs / guidelines for how information from routine HIS should be used a) in the annual planning processes b) in the annual budget process c) For monitoring annual plans d) For supervision and support visits (0: No; 1: Yes, but they are outdated and/or not suitable; 2: Yes, but there are several sets of guidelines and regulations from different agencies; 3: Yes, up-to-date guidelines are in use)	 0 1 2 3 0 1 2 3 0 1 2 3 0 1 2 3
21.	There are written procedures (SoPs) for dissemination of reports/information "horizontally" to all programmes and management at the same level (0: No written procedures and negligible "horizontal" dissemination; 1: There are no *written* procedures, but dissemination is common practice; 2: There are written procedures, but they are not fully implemented; 3: Yes, written SoPs exist and are largely followed)	0 1 2 3
22.	Health and program managers are demanding complete and validated HIS information delivered on time (0: Negligible demand from managers; 1: Demand from managers are ad-hoc, usually as a result of external pressure (e.g. questions from politicians or the media); 2: General strong demand from managers, but they do not have the skills and experience to evaluation completeness and quality; 3: Yes)	0 1 2 3

Plans and indicators

23.	All key indicators, with numerators and denominators, are known and understood by programme staff at this level (0: No; 1: Limited knowledge/understanding, need continuous support; 2: Good knowledge/understanding, but need backstopping; 3: Yes)	0 1 2 3
24.	The private for-profit and private not-for-profit health sectors are reporting HMIS data regularly (0: No; 1: Some (<40%); 2: 40-80%; 3: >80%	0 1 2 3
25.	Program Managers feel that they are part of a process whereby lower levels are able to influence any extensions or additions to the HMIS Indicators and Data Set (0: There is no way local managers can influence data; 2: A system exists but is only used for higher levels; 3: New indicators/data elements can be introduced by a consensus process)	0 1 2 3

26.	Data reporting is integrated, so that all programs are covered in one form, with no duplication or overlaps 0: Many vertical reports 1: some programs have their own vertical reports 2 Most programs covered by national HMIS report 3 Programs fully integrated	0 1 2 3

Data sources

27.	All managers at this level have easy, regular **access** to the DHIS data and analysed information (0: No or very limited access; 1: Access to data/information for their own programme area or facility only; 2: Sector wide access, but only to processed indicators and not "raw" data; 3: All managers have access to all data and information)	0 1 2 3
28.	There are user-friendly SOPs / **guidelines** and computerised templates for data analysis using indicators at each level, customised to support managers (0: No guidelines or formats; 1: SOPs exist, but not user-friendly and/or outdated: 2: User-friendly SOPs exist for *technical* analysis only; 3: SOPs and formats covering both analysis and *use* of indicators for planning and decision-making exist and are in regular use)	0 1 2 3
29.	Current **Population** denominator data are available electronically for facility level (0: No mid-year estimates available or out of date; 1: Mid-year estimates available for district level; 2=: Mid-year estimates at facility level but not trusted 3= Accurate facility level populations	0 1 2 3

3 Results

Analysis and Use of Information

	Score (0= No to 3= Yes)	
30.	Integrated summary **reports** with analysis covering key indicators from all programme areas are produced regularly (quarterly) a) district/provincial levels b) at facility level (0: No reports produced during last year; 1: Few reports; too late for routine management; 2: Regular reports, but poor analysis 3: Yes, always)	 0 1 2 3 0 1 2 3
31.	Graphs are widely used to display analysed information from priority programs: a) Each health programme has at least two **up-to-date graphs** of relevant indicators displayed publicly in the national office b) The health Information office has at least 6 up-to date graphs of relevant indicators from different MDG programme areas c) Facilities have up to date set of graphs displayed (0: No graphs; 1: Graphs for only 1 program, or not up-to-date; 2: Up-to-date graphs displayed, but only for few programmes; 3: Yes)	 0 1 2 3 0 1 2 3 0 1 2 3
32.	**Maps** (GIS or hand drawn) are widely used to display information: a) GIS maps of relevant indicators are displayed publicly b) HIS offices have up-to date maps of key performance indicators c) Program offices have up to date maps displayed (0: No maps; 1: Some maps, but not up-to-date; 2: Up-to-date maps displayed, but only for some programmes; 3: Yes) GIS / Maps are used at every level	 0 1 2 3 0 1 2 3 0 1 2 3
33.	**Results based financing** is functioning and staff are aware of results of audits. RBF funds are used according to an integrated annual plan (0: No; 1: Ad hoc use of incentives; 2: RBF funds are used according to plan but it is not integrated; 3: Yes)	0 1 2 3

	Score (0= No to 3= Yes)	
34.	Managers are held accountable for performance, based on routine and/or survey-based health indicators at this level (0: Management positions not performance related; 1: Managers have performance agreements, but nobody are *actually* held accountable; 2: Managers have performance agreements, but *actual* accountability are determined by other factors; 3: Yes)	0 1 2 3

Dissemination of Indicators and Interpreted Information

35.	There are written **data flow guidelines** in local use that include integrated collection and dissemination of indicators and information from priority programs (0: No data flow policy available; 1: Data/information flow policy exists, but not adhered to; 2: Data/information flow policy in use, but does not include dissemination of indicators; 3: Yes)	0 1 2 3
36.	HIS information is readily available in an integrated written annual (or biannual) report that critically analyses health information from all subsystems (0: No report 1: Report out of date or poor quality 2: Report made but analysis weak 3: Yes)	0 1 2 3
37.	Regular written feedback is produced by Management teams from the level above to this level (0: No feedback; 1: Under 40% of managers receive regular written feedback; 2: 40-80% of managers receive regular written feedback; 3: All managers receive regular written feedback)	0 1 2 3
38.	The key performance indicators on are well known and regularly used at this level a) Immunisation coverage is known b) Maternal mortality rate is known c) HIV prevalence rate is known d) Bed occupancy rates are known (0: No; 1: Known by a few "specialists" only; 2: Known among health-focused politicians, but generally not in the media; 3: Yes)	 0 1 2 3 0 1 2 3 0 1 2 3 0 1 2 3

Information for action

39.	Managers have skills to analyse information from DHIS2 for local programme **management**, planning and monitoring (0: All key decisions are centralised; 1: Information is used for monitoring, but no real planning done; 2: Programme planning and monitoring done, but not resource allocation; 3: All resource allocation (budgets, staff allocations) are supposedly based on HIS data/indicators)	0 1 2 3
40.	HIS data/information has during the last year resulted in significant changes in results based financing initiatives and general resource allocation (0: Budgets are not result driven; 1: Some shifts, but links to information not clear; 2: Information driven resource allocation adopted in principle, but not yet fully implemented; 3: All resource allocation (budgets, staff allocations) are based on HIS information,	0 1 2 3
41.	At least five problems/challenges from different program areas have been addressed through a **written action plan** based on HIS data/indicators (0: No; 1: Addressed yes, but not via a written action plan; 2: Written action plan, but no clear use of HIS data/indicators; 3: Yes)	0 1 2 3
42.	The effects of the written action plans have been demonstrably **monitored** using integrated HIS data and indicators from different subsystems (0: No; 1: Partially; 2: Yes, but not documented; 3: Yes, documented)	0 1 2 3

Advocacy

43.	HIS information used to advocate for **equity** and increased resources to disadvantaged communities by e.g. documenting poor access to health and other public services (0: Not used for equity purposes; 1: HIS information are used for equity purposes on an ad-hoc basis; 2: HIS information are regularly used to promote equity, but not linked to socio-economic indicators; 3: HIS information used to pursue equity and linked to socio-economic indicators)	0 1 2 3
44.	Members of the **local administration** have used routine HIS information to evaluate performance on health during the last year (0: No; 1: HIS information used occasionally, but with reservations; 2: HIS information used frequently, but with reservations; 3: Systematic use of HIS information, with Members accepting the HIS information as largely reflecting the real situation)	0 1 2 3