Federal Ministry of Health

Health Management Information System (HMIS) / Monitoring and Evaluation (M&E)

Strategic Plan for Ethiopian Health Sector

HMIS Reform Team
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Note to the reader: This draft of the HMIS / M&E awaits the human resource strategy; HMIS HR strategy is being prepared by Tulane University in Ethiopia (TUTAPE). It will be incorporated into this broader strategy paper after completion and approval by the relevant authorities.

Introduction

The Health Management Information System / Monitoring and Evaluation (HMIS/M&E) strategy fits within the objectives and priorities set by the Health Sector Development Program's (HSDPIII) strategic plan. The HSDPIII strategic plan itself responds to the objectives and priorities of national organizations, of regional, woreda, and kebele decentralized authorities, to the health needs of the Ethiopian population, and to international agreements. Similarly, the HMIS/M&E strategy must take account of these national, local, and international requirements, as well as those of the health sector itself.

- In the national context, Ethiopia has implemented a multisectoral Plan for Accelerated and Sustained Development to End Poverty (PASDEP), with specific goals related to health. The HSDPIII strategic plan responds to these national priorities and includes detailed national objectives to improve health status through strengthening health services and healthy behaviour.

- With the decentralization of responsibility for public sector services to regions and woredas, elected Assemblies at these administrative levels have authority to allocate the financial resources and mobilize community support for health services. The health sector, in turn, is accountable to regions, woredas, kebeles, and civil society in general for achieving performance improvements with these resources.

- In the international context, Ethiopia, along with 188 other countries, has signed the declaration to achieve the Millennium Development Goals (MDGs), including the goals related to health, by 2015. Many of these countries, including Ethiopia, have also signed additional World Health Organization (WHO) and United Nations (UN) conventions for monitoring and reporting progress towards goals within the health sector and for eradication, elimination, control, and surveillance of specific diseases.

Recognizing the importance of harmonizing the national, local, and international efforts for ongoing improvement of the health of the population, the principle of having a single common plan, budget, and monitoring and evaluation system is a cornerstone of HSDPIII. A similar principle, called the "Three Ones", has been formally adopted by UNAIDS; it is also a *de facto* operating principle for many other international initiatives. The HMIS/M&E strategic plan aims to establish this single shared monitoring and evaluation system in Ethiopia.

Executive Summary

The Government of Ethiopia (GOE) has guided all public sectors towards results-oriented management, emphasizing evidence-based decision making directed towards performance improvement. GOE has introduced Strategic Planning and Management (SPM) tools at all levels and recommended the use of Business Process Reengineering (BPR) to streamline operations. In accord with these principles and practices the Federal Ministry of Health (FMOH) has integrated SPM into its procedures and is reengineering the Ministry itself using BPR methodology. FMOH bases its activities on the implementation framework of the Health Sector Development Program (HSDP), which has had three successive strategic plans. Each of these plans has identified strengthening Monitoring and Evaluation / Health Management Information System (HMIS/M&E) as a key strategy for successful implementation.

Information quality and use remain weak within the health sector, particularly at the peripheral levels of woreda and facility, which have primary responsibility for operational management under the woreda decentralization process begun in 2002 GC. Institutional will and guidance to correct this situation are strong and clear: improve information use in internal management and improve the quality of information to support improved management and to enhance credibility in reporting to external agencies.

This strategic plan is based on the principles and objectives of PASDEP, HSDPIII, and national and international best practices. It employs the methodologies embedded in SPM and BPR and observes internationally recognized technical criteria for HMIS/M&E performance. Five strategic issues have been identified as critical to strengthen and continuously improve health sector HMIS/M&E.

Capacity building. An effective HMIS/M&E requires an institutional structure that has appropriate staffing patterns, filled by persons with appropriate skills to perform their tasks, at each level. The current HMIS/M&E core process is weak in terms of both staffing patterns, including formal assignment of staff with job descriptions and assigned tasks, and established training modalities for HMIS/M&E. Therefore, the first strategic issue addresses the need to institutionalize HMIS/M&E responsibilities in the staffing structure and to establish pre-service and in-service HMIS/M&E training.

Standardized and integrated data collection and reporting. By definition, the HMIS collects data for performance monitoring from service delivery and administrative records. In Ethiopia, with the exception of some vertical programs, there are no standard instruments to collect information when clients and patients interact with care givers. Like the service delivery instruments, there is little standardization of HMIS reporting forms. The consequence is that information from one location may not be comparable to that from another location.

Standards that do exist are often determined by the needs of specific programs, whose information needs may in turn be driven by donor reporting requirements. In addition, there is little integration of the recording instruments for different services. The consequence is that the same information may be recorded several times, creating a large data burden, yet the care provider may lack essential information on other services provided.

This situation is the opposite of the objective of the HMIS/M&E core process, which is to enhance local self-assessment for performance improvement, in the most efficient possible way. In order to harmonize the information needs of all HMIS consumers, a standardized set of indicators will be collected and reported, based on standardized forms, and reported through an integrated channel.

Linkage between information sources. The HMIS relies on data collected from several sources: service delivery, finance, human resources, logistics, and capital assets. To provide as complete a picture as possible of the health sector, information from other governmental organizations and from the private for-profit and not-for-profit sectors should also be included. HMIS data should also be harmonized with health-related and multisectoral data collected by other organizations, such as vital events registration, census, survey, etc. Providers of HMIS and other health-related information need to establish common data definitions and understanding on how to interpret the information.

Information use. Action-oriented performance monitoring. All of the HMIS/M&E reforms are directed towards supporting and strengthening local action-oriented performance monitoring. This is the main objective of the HMIS/M&E core process. Accomplishing this objective requires a paradigm shift from simply reporting data and responding to the situation as instructed by higher authorities, to analyzing and interpreting the information, and self-assessment and problem-solving. Reorienting and redirecting health workers at all levels of the system, from Health Post to FMOH, will require technical interventions – to improve HMIS/M&E tools and methodologies; behavioural interventions – to change health workers attitudes towards their own capacities, their jobs, and their roles in the organization; and organizational interventions – to change the organizational values and practices to value and exhibit evidence-based decision making.

Appropriate technology. HMIS/M&E has not used information and communications technology (ICT) systematically to support data collection, transmission, analysis, or presentation. Introduction of ICT, and an electronic HMIS at woreda/subcity, regional/zonal, and federal levels, will considerably enhance the MOH's ability to transfer data quickly, accurately, and efficiently. In addition, use of ICT expands the range of data presentation and analysis options enormously. Given the current fragility of infrastructure and ICT support in peripheral areas, the HMIS/M&E system will first prove itself as a clean and reliable manual system that can be used as a fallback in case of ICT failures.

The strategic plan details these strategic issues and their associated thematic areas. Seventeen objectives have been defined to address the major themes identified. Selected strategies have also been outlined, along with activities and metrics to measure their implementation.

Implementation is scheduled for 2008-2010 GC. During the first 18 months all health institutions in seven regions, covering 90% of the population, will convert to the reformed HMIS/M&E; during the next 18 months, the remaining regions will be converted and the reformed systems will be strengthened and refined to create a firm foundation for continuous improvement of data quality and information use. Budget for the implementation during the first 18 months is estimated at 17-19 million USD, depending on the training modality selected. Annual running costs for consumables (primarily stationery and technology operations) and logistics, may be estimated at 5-6 million USD.

FMOH/ Planning and Program Department (PPD) is accountable for implementation. Regional responsibilities are delegated to the HMIS Departments/Units at the respective regions. Implementation activities are the responsibilities of the HMIS Units at zones and woredas. It is anticipated that development partners and NGOs will also be involved in implementation.

Implementation activities will be monitored at least quarterly by the responsible bodies. A complete evaluation will be undertaken during the last half of 2010 to assess the improvements in performance of the reformed HMIS/M&E.

Acronyms

ARM :	Annual Review Meeting
BPR :	Business Process Reengineering
CSA :	Central Statistics Authority
CSRP :	Civil Service Reform Program
EC :	Ethiopian Calendar
EDHS :	Ethiopia Demographic and Health Survey
EHMI :	Ethiopia Hospital Management Initiative
FMOH :	Federal Ministry of Health
FTE :	Full Time Equivalent
GC :	Gregorian Calendar
GOE :	Government of Ethiopia
HC :	Health Center
HEW :	Health Extension Worker
HI :	Health Institution
HHM :	*HSDP Harmonization Manual*
HMIS/M&E :	Health Management Information System / Monitoring and Evaluation
HMN :	Health Metrics Network
HP :	Health Post
HR :	Human Resources
HSDPIII :	Health Sector Development Program
ICT :	Information and Communications Technology
MAPPP :	Medical Association of Physicians in Private Practice
MDG :	Millennium Development Goal
NGO :	Nongovernmental Organization
OGA :	Other Government Agency
PASDEP :	Plan for Accelerated and Sustained Development to End Poverty
PPD :	Planning and Program Department
RHB :	Regional Health Bureau
SPM :	Strategic Planning and Management
SWOT :	Strengths, weaknesses, opportunities, and threats
UN :	United Nations
WHO :	World Health Organization
WMS :	Welfare Monitoring Survey

Contents

1. Situation Analysis and Problem Statement

Ethiopian context. Health Management Information System and Monitoring and Evaluation (HMIS/M&E) is one of seven components of the Health Sector Development Program (HSDPIII). The *HSDPIII Strategic Plan* lays out the relationship between HMIS and M&E, their intertwined objectives, and mutual importance.

> 1. [F]unctional HMIS and M&E are the backbone of effective health care delivery.
> 2. The key elements for a successful programme management and implementation are the designing of a programme built on a hierarchy of objectives, targets, activities and measurable indicators
> 3. The objectives of M&E are to improve the management and optimum use of resources of programme and to make timely decisions to resolve constraints and/or problems of implementation.[1]

HSDPIII and its components fit within a broader context of overall development in Ethiopia that is geared to eliminate poverty, as articulated in the guiding strategic framework for Ethiopia's Plan for Accelerated and Sustained Development to End Poverty (PASDEP), 2005/06-2009/10.[2]

Recognizing the magnitude of the need for public sector services and the importance of making optimal use of scarce resources to meet those needs, the Government of Ethiopia (GoE) and the Federal Ministry of Health (FMOH) have introduced fundamental changes in organizational structure and management over recent years.

- During the past decade responsibility and resources for public services have been decentralized to regions and then to woredas, with the goal of bringing solutions to problems as close as possible to the problems, through empowering local authorities themselves to take responsibility for actions.
- Since 2002 GC, GoE's Civil Service Reform Program (CSRP) has introduced officers to Strategic Planning and Management (SPM) to set priorities and objectives and to plan for their implementation.
- In 2006 GC, GoE recommended Business Process Reengineering (BPR) as a methodology for streamlining work processes and systems. The FMOH is applying BPR throughout the organization to more effectively and efficiently meet its goals.

While institutional will is clearly strong, and appropriate institutional reforms to improve management have been initiated, health sector M&E and its primary information source, the HMIS, remain weak. As HSDPIII began, in mid 2005 GC, FMOH initiated HMIS/M&E reform by bringing together the technical and financial resources for redesign. Between May and August of 2006 GC a situation analysis of HMIS/M&E was conducted. BPR principles guided the workflow analysis. The PRISM framework established performance standards and articulated the scope of process review in terms of technical, organizational, and behavioral interventions.[3] The strategic plan presented in this document is based on that situation analysis.

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[1] *HSDP-III Strategic Plan*, point 1: Section 3.10.6, p. 101, and points 2-3: Section 3.12.5, p. 114.
[2] *Ethiopia: Building on Progress – A Plan for Accelerated and Sustained Development to End Poverty (PASDEP) (2005/06-2009/10)*, Ministry of Finance and Economic Development. September, 2006.
[3] *HMIS Business Process Re-engineering Assessment Report*, September 2006. Hereafter called *HMIS Assessment*, p. 3.

Definition of HMIS. The working definition of HMIS used in this document conforms to the definition used by the Health Metrics Network (HMN), an international organization whose aim is to harmonize and strengthen sources of health information.

> …[H]ealth information system data are usually generated either directly from populations or from the operations of health and other institutions. [The second group, which generates "data from the operations of health and other institutions", includes the HMIS.]….
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> Institution-based sources generate data as a result of administrative and operational activities. These activities are not confined to the health sector and include police records (such as reports of accidents or violent deaths), occupational reports (such as work-related injuries), and food and agricultural records (such as levels of food production and distribution). Within the health sector, the wide variety of health service data includes morbidity and mortality data among people using services; services delivered; drugs and commodities provided; information on the availability and quality of services; case reporting; and resource, human, financial and logistics information.
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> Most data on the provision of clinical services or health status at the time of clinical encounters are generated "routinely" during the recording and reporting of services delivered.[4]

The working definition of M&E in this document is based on the M&E objectives as stated in HSDPIII and quoted at the beginning of this section: "to improve the management and optimum use of resources of programme and to make timely decisions to resolve constraints and/or problems of implementation." M&E uses the "hierarchy of objectives, targets, … and indicators" as measured by the HMIS and other data sources as the evidence base for its decisions. Because of this intertwined relationship of HMIS and M&E, this strategic plan addresses HMIS/M&E as a single objective.

HMIS/M&E exists to support institutional goals for performance assurance and improvement. HMIS/M&E performance as a supportive process is measured by whether information is continuously used to monitor and improve institutional performance and whether the data are of sufficient quality to create a basis for monitoring.[5]

The HMIS is closely linked with planning and M&E. The *HSDPIII Strategic Plan* emphasizes the crucial role of a hierarchy of objectives and indicators in M&E: they define the performance expectations and are the basis for M&E.[6] The *HSDP Harmonization Manual* (HHM) also describes the close relationship between HMIS and M&E.[7] The HSDPII Evaluation also emphasized the linkage between HMIS and M&E: "M&E is mainly based on routine data sources and HMIS and M&E are strictly linked."[8] The HMIS provides information captured from service and administrative records related to human resources, finance, capital assets, and logistics. The HMIS provides most of the indicators for monthly / quarterly / annual monitoring.

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[4] *Health Metrics Network: A Framework and Standards for Country Health Information System Development*, <http://www.who.int/healthmetrics/documents/hmn_framework200709.pdf > September 2007. pp. 28-29.
[5] "The PRISM: Introducing an Analytical Framework for Understanding Performance of Routine Health Information Systems in Developing Countries" in *Enhancing the Quality and Use of Routine Health Information at District Level: Proceedings of the 2nd International RHINO Workshop (2003),* p. 20 *et seq*.
[6] *HSDP-III Strategic Plan*, Section 3.12.5, p. 114.
[7] The *HSDP Harmonization Manual* (*HHM*) describes the relationship between M&E and HMIS as converging on the "one report", which is a cornerstone of HSDPIII. (First edition, 2007, p. 48).
[8] *HSDP II Final Evaluation Report*, p. 48.

In Ethiopia, only some locations practice performance monitoring, and the HMIS has not been designed to provide standard and consistent sector-wide and program indicators.

Data delivered through the HMIS come from service delivery and administrative records kept as part of routine transactions at health facilities and management offices. In a well-performing HMIS, data should come from every Health Institution (HI) in the country. In FMOH HIs HMIS/M&E is weak, with the exception of some local and regional institutions where HMIS/M&E performance provides benchmark and best practice examples. At other governmental HIs and private sector for-profit and not-for-profit institutions, HMIS/M&E is weak to non-existent, again with the exception of some best performers.

These gaps in completeness compromise HI's direct management of public facilities and collaboration with other Ministries and the private sector to improve health status and use of health resources.

In short, at most HIs the HMIS does not deliver its most important product – quality information that supports monitoring and performance improvement. As a result, M&E is also weak, since it lacks the foundation of an HMIS to supply reliable data.

HMIS/M&E weaknesses manifest in several ways:

1. Incomplete institutionalization
2. Unstandardized data collection
3. Unintegrated reporting and data transmission
4. Weak information use (analysis and interpretation).
5. Limited resources for HMIS/M&E

1.1 Incomplete institutionalization

The Planning and Programming Department (PPD) of the FMOH owns the HMIS/M&E core process through its HMIS Unit. Regions also have an HMIS Unit attached to their PPDs. Both of these administrative levels advise and set standards for the woredas, which are the administrative offices for implementation. While the federal HMIS Unit has advised regions and woredas to establish HMIS units with an appropriate staffing pattern and job descriptions, in the *HMIS Assessment*, only 55% of regions and 36% of woredas reported doing so.[9] At hospitals, the medical records department carries out HMIS tasks, although these duties may not be specified in the job description. At other facilities also, the job description of the staff member responsible for HMIS may not include these tasks, so they may be unappreciated, unsupervised, and carelessly done.

In short, at the facilities, where most service data are generated, the HMIS/M&E organizational foundation is weakest. And the federal HMIS Unit, which should establish nationwide HMIS standards, is weaker than some regional HMIS Units. In fact, most existing national standards for data collection have not been established by the FMOH HMIS Unit, but by vertical technical programs, that are often driven by donor priorities. The result of combining a weak federal HMIS Unit with strong vertical programs, and little organizational support for HMIS/M&E at the periphery, is that regions typically have their

[9] *HMIS Assessment*, Annex 4a.

own reporting procedures, often dominated by program and donor priorities, which may not correspond with local priorities, or with HSDPIII objectives and indicators.

Weak institutionalization of HMIS/M&E results in a lack of comprehensive national HMIS standards and guidelines. Country-wide standard instruments for data collection and guidelines for use in some technical areas have been introduced by vertical programs. However, these standards serve programmatic interests, naturally enough, not the broader interests of integrated health sector management. Many specific technical and organizational weaknesses related to the HMIS can be traced to a lack of comprehensive integrated standards. Duplicative, redundant, and unnecessary steps in workflow processes can also be traced to a lack of standard instruments and procedures.

1.2 Unstandardized data collection

Weaknesses in data collection begin with a lack of standard instruments and procedures for recording patient information at the time of service. This situation leads to unreliable counts for basic data, such as the number of attendances at the Outpatient Department (OPD) and the number of births attended by skilled health professionals.[10]

Curative services may lack standard case definitions. In some regions primary care facilities report against a list of some 50 diseases; case definitions for these diseases may not be available in facilities. In other regions, ICD-6 codes are used. While ICD codes are certainly a standard, the code numbers for diseases are recorded instead of the disease names. This can be an error prone process, especially when those recording the codes have no training, as is often the case in Ethiopia. The danger of using codes to report is that miscoding can result in obvious errors that go undetected until someone looks at the disease patterns. This type of error can be seen in the HMIS data reported to the federal level.[11]

Preventive services, such as maternal and child health services, also often lack standard recording instruments with guidelines. The GAVI Alliance (formerly the Global Alliance for Vaccines and Immunization) is an exception. It emphasizes data quality and has established principles and best practices in data recording and data quality that can be adapted for use in other technical areas.[12]

Lack of standard definitions also compromises the compilation of HMIS data from client / patient service delivery records. Data reported from one area may not be consistent with, or comparable to, data reported from another. Until the most recent annual reporting cycle, when consistent data definitions were introduced as one of the first steps in HMIS reform, different regions have had different definitions for basic indicators and data elements.[13]

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[10] *HMIS Assessment*, pp. 17-19.

[11] Between 1995 and 1998 EC nearly 2600 cases of smallpox were reported (presumably a coding error for chicken pox); in 1998 EC 10% of outpatient deliveries without complication occurred amongst men. Erroros like these could be reduced simply by using disease names on reporting formats.

[12] See *The immunization data quality self-assessment (DQS) tool* (WHO/IVB/05.04) <http://whqlibdoc.who.int/hq/2005/WHO_IVB_05.04.pdf> and *The immunization data quality audit (DQA) procedure* (WHO/V&B/03.19) http://www.who.int/vaccines-documents/DocsPDF03/www759.pdf.

13 For example, some regions included first and repeat visits in OPD attendance, while others did not; some included births attended by trained Traditional Birth Attendants to calculate deliveries by skilled attendants, while others did not.

Strong HMIS/M&E leadership can maintain a focus on management information needs. When information needs are set by programs' technical specialists, the focus turns to national reports, and to research or unusual conditions, not to local management needs. This is the current situation with the HMIS. For example, disease cases are reported according to six different age breakdowns. While this level of detail is important for research into disease patterns and treatment, it is not so useful for service management. Numerous other examples of over-collection of data could be cited. Both FMOH and several regions have recognized the importance of reducing data elements and introducing integrated reporting formats.[14] However, these efforts have not been integrated with each other and threaten to fragment a fragile system even further.

A large data burden like that imposed by the HMIS operating in most parts of Ethiopia has three negative effects. First, health workers, whose main task is serving clients and patients, spend time collecting data. This is a misuse of their time in a setting where health services are as understaffed as in Ethiopia. Second, much of the data collected is apparently unused. This demoralizes health workers and results in poor quality data. Mistakes in ICD-6 coding that produced reports of small pox cases, which were noticed during a small HMIS internal review years after the reports were submitted, is a perfect example. These reports were mistakes – chicken pox cases were apparently miscoded as small pox. If anyone had used these data when they were reported, the mistake would have been corrected immediately. The third negative effect is additional cost. If data are used to improve services or assess disease patterns there may be rationale for the collection costs; if the data are not used, there is no rationale for collection.

The distinction between data collected for specialized program interests at the national level and local management data is crucial. Research and program studies may use HMIS data collected for local management needs; register reviews, surveys, sentinel sites, operations research, and other methodologies that include specific data quality control measures can also provide information for focused studies. The HMIS is not a research tool; it is a management tool that provides warning signals if the service system is not operating as expected. When the HMIS information signals a problem, further investigation, including additional data collection, may be required to discover the source of the problem and take corrective action.

Without a guiding sector-wide orientation from the HMIS/M&E perspective the relevance and quality of information may not be adequate for making sound operational decisions. The breadth of health sector service that is covered by HMIS data is unknown. Only three regions (Addis Ababa, SNNP, and Tigray) track the completeness of reporting from public sector FMOH HIs; completeness of private sector reporting appears to be tracked and emphasized only in some urban areas. When data reflect an unknown portion of the whole service catchment area, the decisions that rely on these data may not respond to the most urgent needs and priorities. Limited information on reporting timeliness, which is apparently not systematically tracked in any region, suggests that data are not reported quickly enough to support decision making that responds to the existing situation.

[14] In 2001 GC PPD introduced an integrated reporting format with 747 data elements. (A data element is a piece of information that must be filled on a form. For example, the number of outpatient malaria cases or measles immunizations given, are both data elements.) The 2001 PPD form was adopted by Gambella, SNNP, and Somali. In recent years other regions have made similar efforts with uneven results. Multiple forms were replaced by a single form in some locations, but the number of data elements remains high, nearly 3 times the number of elements required by the same programs on the PPD form. (See *HMIS Assessment*, p. iv.)

1.3 Unintegrated reporting and data transmission

The preceding paragraphs have suggested that the absence of standardized instruments and guidelines that accord with the principles of HMIS/M&E negatively affects the quality of data captured at the point of service and its relevance for management. The absence of a perspective that emphasizes information use also negatively affects the reporting and transfer of data.

Strong vertical program priorities have created inefficient redundancies in data collection and reporting. Outpatient malaria cases are reported through at least 3 reporting channels: the monthly report of all diseases, the monthly report on priority diseases for Epidemic Prevention and Control (previously called the Integrated Disease Surveillance and Response, or IDSR, report) and the malaria control program report. Health workers duplicate their work because they must fill the same information on several different forms. All the way along the reporting chain, several program officers duplicate each other's task – to write the same data element on different forms.

These redundancies may produce inconsistent results, resulting in confusion on the part of information consumers and embarrassment on the part of information generators.[15]

Besides unnecessary duplication and redundancy, these multiple forms flow along separate reporting channels. This introduces another level of redundancy. Each reporting channel has an overhead associated with it, in terms of staff time for processing and material costs. Forms that flow along each channel contain some of the same information – reporting location, date, etc; this information produces duplicate work simply for processing the form, even when the data elements are different. There is also duplication in stationery (when 2 or more forms could be combined into 1), which incurs unnecessary costs for material and associated overheads for procurement, storage, transport, etc.

It is generally agreed that the current HMIS data burden is unreasonably high. The variations in forms used at different regions, within a single region, and sometimes a single woreda, make it difficult to estimate the number of data elements collected through the HMIS. The BPR workflow analysis makes the costs of a large data burden clear. Data aggregation accounts for one-half to two/thirds of the costs of preparing the HMIS reports; reducing the data burden by half would reduce HMIS process costs by at least 25%.

[15] Malaria is the leading cause of outpatient visits, accounting for more than 15% of visits. In 1997 EC the annual HMIS report of all diseases recorded 1.59 million outpatient malaria cases and the IDSR report recorded 1.22 million outpatient cases. (*HHRI*, Table 10.5.1, p. 41; and Table 10.8.2.B, p. 53.) This difference of 0.37 million cases amounts to 25-30% of cases; it is not an insignificant difference. The probable explanation for this discrepancy is that IDSR collects its information from Health Centers and hospitals, while the HMIS report adds cases reported from Health Stations and Health Posts. These details are not clear in the publications of reported cases.

1.4 Weak information use (analysis and interpretation)

Use of information to improve health system performance is the main output of the HMIS/M&E process. Information use relies on three strengths:

- planning and M&E procedures: strategic planning, annual planning, and monthly/quarterly self-assessment through performance monitoring, appropriate for each level
- feedback mechanisms: supportive supervision, dissemination, and peer review
- relevant and reliable evidence: a consistent set of indicators, data definitions, and quality control procedures; these create a basis for M&E and ensure comparability of performance indicators across locations.

Planning and M&E procedures. Legislation enacted in 2002 GC decentralized authority for delivery of public services to the woreda. As part of this decentralization process, the Civil Service Reform Program (CSRP) trained civil servants, including health workers, in Strategic Planning and Management (SPM). The evidence-based SPM processes focus on a strategic plan, covering 3-5 years. For implementation an annual plan need to be prepared; the annual plans implement the strategic plan in stages. Implementation of the annual plan is monitored and revised as necessary by self-assessment through monthly or quarterly performance monitoring that includes a problem solving cycle when performance shortfalls are observed. The *HHM* includes guidelines for annual planning and monthly / quarterly performance monitoring.[16]

SPM, along with the followup annual plan and self-assessment put the M&E process described in the *HSDPIII Strategic Plan* into operation; however, implementation of these planning and monitoring processes has been uneven. Fewer than 50% of all regions and Woreda Health Offices (WorHOs), and fewer than 25% of Health Centers (HCs) and hospitals, implement all three processes (strategic planning, annual planning, and self-assessment).[17]

Best practices in information use have been identified in some localities and facilities. For example, informal case studies and anecdotal evidence suggest that Health Extension Workers (HEWs) can be a potent force in stimulating communities to improve health practices and local infrastructure. The Clinton Foundation's Ethiopia Hospital Management Initiative (EHMI) is in process of strengthening HMIS/M&E in the hospitals in which it works.

Feedback mechanisms. Regular supportive supervision, usually at quarterly intervals, has been identified by most programs as an essential element for improving overall performance, and particularly quality of care. However, its implementation is irregular and based on inconsistent guidelines. Sometimes data quality is investigated during supervision, but no systematic checklist was found to prompt or guide this supervision. Only 31% of woredas, 15% of hospitals, 40% of HCs, and 51% of HPs reported receiving supportive supervision that used HMIS information during 1997 EC. Those who received supervision reported a median of 2 visits annually instead of the 4 that would be expected from a quarterly schedule for integrated supervision.[18]

[16] *HHM*, pp. 22-41 and 48-58.
[17] *HMIS Assessment*, pages 9-12 and Annex 2a.
[18] *HMIS Assessment*, pages 12-14 and Annex 2b.

The rationale usually given for weak supervision is lack of budget. While it is true that health budgets are quite limited, some regions and woredas do perform substantially better than the national average. This suggests that when supervision is viewed as a priority, resources can be found to do it.

Integrated supervision, in which all aspects of operations, including administration, are reviewed in a single team visit is certainly less costly than repeated visits to look at one aspect or another. Integrated supervision is also generally seen as more conducive to overall performance improvement because it can identify systemic problems as well as task or program specific problems.

In summary, integrated supervision, including a structured review of M&E practices and data quality, supports systematic performance improvement. Most programs see supervision as a crucial way to improve performance. Strengthening HMIS/M&E provides an excellent opportunity to strengthen and integrate supportive supervision.

Written dissemination of results to reporting institutions is just as important in the reporting chain as sending reports onwards. Internationally, both Ghana and South Africa publish regular performance reports with interpretation of results. In Ethiopia, the Tigray Annual Report serves as a best practice model. The *HMIS Assessment* showed overall levels of written feedback roughly similar to supervision, with some regions showing much stronger performance than others. Besides providing a mechanism for improving health sector performance, written reports can be used to disseminate information to external groups, including other Ministries, health related organizations, bodies of elected officials, grassroots organizations, and the public at large.

Peer review is an accepted international best practice for stimulating performance improvement; it also provides a way of stimulating interest in HMIS strengthening.[19] Ghana has several mechanisms for peer review and provides an example of international best practice. There have also been several attempts to involve the community and elected officials in the peer review process in Ghana and elsewhere.

In Ethiopia, the national Annual Review Meeting (ARM) and similar regional meetings include elements of peer review. The use of information in these meetings is improving; for example, ARM 1998 EC was the first to report performance based on a common set of sector-wide indicators with standard definitions. However, facilities report levels of peer review attendance of less than 50%,[20] similar to levels of supervision.

While all Health Institutions should practice M&E appropriate for their levels, and should receive feedback through supportive supervision, dissemination, and peer review, it is particularly important to strengthen M&E and feedback loops for hospitals. While hospitals consume some 40% of public monies spent on health,[21] they have low levels of planning coupled with M&E and receive feedback less frequently than other facilities.[22]

[19] Bruce B. Campbell. *Health management information systems in lower income countries*. KIT Press. 1997. pp. 147-8.
[20] *HMIS Assessment*, Annex 2b.
[21] *Ethiopia: A Country Status Report on Health and Poverty*. Vol. I. World Bank. March 2005, p. 38.
[22] *HMIS Assessment*, Annexes 2a and 2b.

Relevant and reliable information. "The agreed indicators are the most important management tools for monitoring, review and evaluation purposes." This statement in the HSDPIII Strategic Plan (Section 3.12.5, page 114) emphasizes the essential role of indicators. They provide the link between M&E procedures and the program activities under review.

All national programs reviewed during the HMIS assessment had program specific indicators. However, there are overlaps and gaps between programs because these indicators have not been integrated into a coherent set of sector-wide and program-specific indicators. A similar situation obtains in the area of disease reporting, where there has been no harmonization of predefined disease lists, ICD-6 codes, and the national priority disease case definitions used by the Epidemic Prevention and Control Unit (formerly Integrated Disease Surveillance and Response, or IDSR).

All three of the HSDP plans have included an indicator suite to reflect their objectives. The HSDPIII indicators form the most comprehensive set. However, they reflect national program requirements and have not been linked to M&E procedures at all levels; moreover, most do not have the detailed definitions required to ensure consistency across all reporting locations. During the second quarter of 2006 a set of sector-wide indicators was defined for reporting to ARM 2006. While they have clear definitions that meet international standards and ensure consistency across different locations, they do not include some program-specific indicators needed to monitor the accomplishment of specific program objectives because they are intended to reflect sector-wide performance. Therefore, there is a need to define a set of indicators, including definitions of the data used for their calculation, to be used for systematic M&E of performance throughout the health sector.

A second objective in defining indicators is to select the subset that should be reported through the HMIS, and then restructure the HMIS to report these indicators reliably. The HMIS supplies the indicators that are used for regular action-oriented monthly or quarterly performance monitoring. Their purpose is to warn of possible lapses in implementation that could compromise achievement of annual plans. As discussed previously in this situation analysis, the current HMIS derives its data from a large number of forms that are inconsistently applied in different reporting locations and impose an unreasonable data burden on health workers whose main task is to provide clinical services. Reducing the HMIS indicators to the most relevant will reduce the time the health worker spends in processing the data, thereby increasing the time available for performance monitoring and improvement.

1.5 Limited resources for HMIS/M&E

Limited HMIS/M&E resources appear in three main areas that are critical for a well-performing HMIS/M&E process.

1. Human resources (HR)
2. Information and communications technology (ICT)
3. Budget allocation

Human resources. The weak institutionalization of HMIS/M&E, with incomplete establishment of HMIS Units and approved positions, has already been pointed out as a major

source of overall weakness in the HMIS/M&E core process. Even when the HI has approved positions, and they are filled, additional constraints limit effective HR performance.

High staff turnover rates are known to be a problem throughout the health system. This affects HMIS positions as well. Median time in position for those assigned HMIS tasks is 18 months. At administrative offices and hospitals HMIS workers stay in position longer than the median; at Health Centers (HCs), for a shorter time than the median.[23] Administrative offices tend to have more established HMIS Units that give these positions a certain status and permanence. At HCs HMIS tasks may not be included in job descriptions and not considered in evaluating staff performance. Anecdotal evidence suggests that in this situation HMIS tasks are assigned to the most junior persons and are viewed as a punishment.

Training and skills are another HR weakness for HMIS. In most regions fewer than 20% of those assigned HMIS tasks have received training in how to do them.[24] While most HMIS workers can do basic arithmetic and make a simple graph, few know how to interpret that graph.[25] This lack of interpretive skill is a crucial weakness and points to the need to strengthen M&E skills.

Information and communications technology (ICT). Information and communications technology (ICT), the infrastructure to support it, and the trained staff to use it are all weak at woreda level and below. Some 40% of woredas report having computers, but few have an electronic HMIS system. Only 60% of woredas report having electricity. Only 9% of woredas report having HMIS staff with basic computer skills. At the Health Center level, 20% report having computers, with only 1% of HMIS staff having computer skills.[26]

Budget allocation. Budget for HMIS/M&E recurrent costs is woefully inadequate. Only 24% of woredas report having an HMIS/M&E budget, with the median allocation being 4000 birr annually. It is not clear that this sum would cover HMIS expenses.[27]

[23] *HMIS Assessment*, p. 30 and Annex 4c.
[24] *HMIS Assessment*, p. 31 and Annex 4d.
[25] *HMIS Assessment*, p. iii.
[26] *HMIS Assessment*, Annexes 4d and 5.
[27] *HMIS Assessment*, pp. vi-vii.

1.6 Problem statement

The problem can be stated simply. GOE and FMOH policy directs resources and responsibilities for delivery of public services towards the most peripheral Health Institutions (HIs): woredas, hospitals, Health Centers (HCs), and Health Posts (HPs). Currently these HIs have limited capacity to collect and analyze information, and to interpret the information to identify bottlenecks and solutions. Unless this capacity can be strengthened, the current modality for health service delivery will not work.

1.7 SWOT analysis

The strategic issues and activities presented in the following sections of this plan build on the strengths, take advantage of the opportunities, address the weaknesses, and defuse the threats in the following list of strengths, weaknesses, opportunities, and threats (SWOT).

The main strength is the desire for improved HMIS/M&E on the part of the FMOH, RHBs, health workers, and development partners; the weakness related to this strength is a limited understanding of the level of effort. The related opportunity is to build on the desire for HMIS/M&E reform to mobilize resources and support, and the related threat is that unless expectations are well managed through continuous and transparent communication, unrealistic expectations will arise and cannot be met.

Strengths:
1. Recognition that weaknesses in HMIS/M&E exist that threaten successful HSDP implementation
2. Demonstrated institutional attempts to strengthen HMIS/M&E by RHBs, projects (GAVI, ESHE), NGOs (CARE)
3. Stated institutional will for improvement from FMOH, development partners, etc

Weaknesses:
1. Limited definition and implementation of HMIS/M&E staffing standards, both for sanctioning and filling positions; few trained staff
2. Limited standardization of recording and reporting definitions, forms, and procedures
3. Unnecessarily high data burden, with duplicative and poor quality data.
4. Limited implementation of evidence-based planning and monitoring procedures
5. Limited consistency amongst health related information sources and limited collaboration amongst generators of health related information
6. Limited use of technology

Opportunities:
1. Leverage and increase resources for HMIS/M&E reform, particularly from development partners
2. Build on support from RHBs for institutionalizing change in woredas and facilities
3. Partnership with other FMOH departments and organizations who are reengineering their operations

Threats:

1. Discouragement at time and effort required for true organizational change to evidence-based management can erode support for HMIS/M&E reform
2. Poor followup and supportive supervision damages institutionalization of change
3. Without firm leadership at highest federal and regional levels, there will be a tendency to again fragment into separate reporting channels by powerful program interests

2. Vision, Mission, Goals and Guiding Principles

HMIS/M&E Vision

To see continuous improvement of the health of the people of Ethiopia through effective use of information.

HMIS/M&E Mission

To support continuous improvement of health services and the health status of the population through action-oriented, evidence-based decision making, based on quality information, by health sector planners, managers and care givers, by other public sectors, by civil society, and by development partners – with an emphasis on authorities at woreda, facility, and community.

HMIS/M&E Goals

- To support decentralized, action-oriented, evidence-based decision making, resulting in:
  - use of evidence-based M&E by managers and health workers at all levels of the health system to plan, monitor, and improve performance,
  - an HMIS that regularly provides timely, reliable, and relevant information based on routine service delivery and administrative records.
- To provide health information to international, national, and decentralized authorities; elected officials; and other public and private sector organizations.

Guiding Principles

Business Processing Reengineering (BPR). BPR provides a methodology for improving workflow processes based on criteria of quality, time, and cost. BPR relies on performance measurement to validate the implementation of a redesigned process. The expectations for the redesigned process, along with metrics for determining whether the expectations have been met need to be clearly articulated. Three overarching expectations for the redesigned HMIS/M&E process have been identified.

> ***Customer orientation.*** The consumers of health information are those who monitor health sector performance and make decisions regarding utilization of health resources – managers and providers within the health sector, as well as external authorities and civil society in general. HMIS/M&E services must cater to the needs and priorities identified by all of these groups.
>
> Information consumers at the local level are of primary importance. These are the people who can best prioritize performance problems and implement solutions. Under decentralization primary responsibility for service delivery is vested in local institutions.
>
> ***Effectiveness.*** An effective HMIS/M&E is one in which
> - There is continuous use of information to improve health systems performance, leading to continuous improvement in health status
> - Data are of sufficient quality to support quality in decision making.

Efficiency. An efficient HMIS/M&E is one in which work process and flow produce quality products with minimal resource expenditures of time and money. This is accomplished by streamlining and eliminating non-value added activity.

All of the core processes in the FMOH are being redesigned using the BPR methodology. The reformed HMIS/M&E core process will need to adapt to the requirements of these redesigned processes. Three principles have been adopted during the technical redesign to enable HMIS/M&E to adapt to this evolving situation.

Standardize. Common definitions of indicators, data collection instruments, and data processing and analysis procedures form the foundation for effective HMIS/M&E. Without consistent principles and definitions performance cannot be systematically measured and improved across locations or over time.

Integrate. A single HMIS/M&E report at each administrative level, shared by all partners, is a cornerstone of HSDPIII. Implementation of this principle requires an integrated report and reporting channel from which all consumers of HMIS information derive their data.

Simplify. Collecting, analyzing, and interpreting only the information that is immediately relevant to performance improvement makes best use of scarce human and financial resources.

Flexibility. The HMIS/M&E process operates within a complex and rapidly changing environment and must continuously adapt to this environment.

Innovation and best practices. Decentralization has stimulated innovations at regional, woreda, facility, and community levels in management and information use. These best practices can be shared and adapted for more widespread use.

Institutional will and partnerships. HMIS/M&E improvement has long been a stated goal of the FMoH and its development partners. There is strong support and opportunity to involve partners, including the private sector, for improving M&E and for restructuring the HMIS.

Sustainablity. The reformed HMIS/M&E must be sustainable both in terms of human resources and budget. Given the human resource shortages and high turnover rates, the system must be easy to use so that new staff can quickly learn to operate it. In addition to simplicity, the system should be appropriate for the M&E needs at each level so that staff find it useful. System design should take into account recurrent costs for stationery and ICT and minimize these costs. Labor costs for operating the system should also be minimized.

3. Strategic Issues

The *HSDPIII Strategic Plan* specifies performance objectives for HMIS/M&E.

- For HMIS:[28]
  - Develop and implement a comprehensive and standardized national HMIS and ensure the use of information for evidence based planning and management of health services.
  - To review and strengthen the existing HMIS at federal, regional, woreda, health facility and community levels and ensure use of health information for decision-making at all levels.
  - To achieve 80% completeness and timely submission of routine health and administrative reports.
  - Achieve 75 % of evidence based planning.[29]
- For M&E:[30]
  - To develop and implement comprehensive and integrated Monitoring and Evaluation guidelines at all levels of the health system.
  - Conduct regular supervision and review meetings at woreda health office level.
  - To harmonize the donor-government reporting cycles and monitoring and evaluation system.[31]

The weaknesses in the current, "as-is", HMIS/M&E core process can be attributed to five major bottlenecks that need to be opened in order to achieve the HMIS/M&E targets set by HSDPIII. These bottlenecks are the strategic issues addressed by this HMIS/M&E Strategic Plan.

1. Capacity building within the organizational structure and its staff
2. Standardization, integration, and simplification of data collection and reporting tools
3. Linkage between sources of health and health-related information
4. Enhanced action-oriented performance monitoring
5. Appropriate technology

3.1 Capacity building.

Capacity to implement HMIS/M&E requires

1. established staffing patterns
2. appropriately trained staff to fill those positions
3. job aids, such as manuals and guidelines
4. supportive supervision for ongoing skills improvement.

Without this basic foundation a well-functioning HMIS/M&E process cannot be created.

[28] *HSDPIII Strategic Plan*, Section 3.9.9, p 89.
[29] This is interpreted to mean that 75% of facilities, woredas / subcities, and regions have annual plans with baselines and targets.
[30] *HSDPIII Strategic Plan*, Section 3.9.9, pp. 90-91.
[31] This HMIS/M&E Strategic Plan establishes a reporting framework (the "one report") for donor-government harmonization. Other mechanisms to assure harmonization are beyond the scope of this Strategic Plan. The steering committees established for HSDPIII are also beyond the scope of this Strategic Plan. M&E objectives related to review meetings have been included where relevant. (see *HHM*, pp. 48 and 62-67).

3.1.1 Established staffing pattern

{Note: TUTAPE is responsible for the HMIS HR situation analysis and strategy, which will be incorporated into the overall HMIS strategy. The following comments are based on findings and observations made during the HMIS assessment, and on discussions of the HMIS National Advisory Committee. This discussion of human resources will be enriched by the HR situation analysis when it becomes available.}

Without adequate staff the HMIS/M&E system will not work. The HMIS requires trained technicians for manual and electronic data processing. M&E requires experienced health personnel with special training in monitoring and problem solving to use HMIS information to improve performance. The HMIS technicians and M&E health professionals working together create an HMIS/M&E team at each level.

While this mixture of personnel is clearly needed at each level, the amount of time and the staff size required for these tasks at each level is not known. Two regions, SNNP and Tigray, have had well-performing HMIS/M&E systems for some years. Staffing patterns at these regions provide a benchmark, at least for larger regions. Some 6-8 staff are employed at SNNP and Tigray; half are contract workers, employed by development partners, and additional to the allotted Regional Health Bureau (RHB) posts. Both SNNP and Tigray have electronic HMIS applications, and in both regions the RHB enters the monthly data for each facility. Approximately one third of the regional HMIS staff are data entry clerks. The remaining regions, both large and small, have 1-2 HMIS positions, sometimes staffed through development partners' funds.

Staffing patterns at SNNP and Tigray also suggest the level of staffing needed at the federal level. The federal level has fewer staff than these benchmark regions. The federal staff clearly needs to be increased in order to manage the HMIS/M&E.

These facts highlight the need to determine the qualifications, responsibilities, and number of positions needed in the federal and RHB HMIS Units. While external funds may be used for an interim period, it is essential for sustainability that government funds are made available for HMIS staff.

The number of full-time equivalent (FTE) positions needed at woreda is not known. Staffing at SNNP RHB, which processes data electronically from all facilities in the region, can be used as a benchmark to estimate staff requirements for the HMIS technician. At SNNP, 3-4 data entry clerks are able to do the monthly data entry for all facilities in some 130 woredas.

Estimates for FTE positions for data management at hospitals and HCs can be made, based on best performers and client / patient load. When the staffing needs are determined, a choice needs to be made whether to fill these posts with persons already serving in HIs, as is current FMOH policy, or to recruit from outside.

Staff assigned M&E responsibilities are assumed to be senior health professionals, serving on the HI's performance monitoring team. Their job descriptions should include these M&E tasks. The qualifications for performing M&E are quite different than the qualifications for the data management tasks of the HMIS technician. Competent completion of these M&E tasks should be noted in annual personnel evaluations and be considered when considering staff for promotion.

It is reasonable to assume that a health professional involved in performance monitoring at facility and woreda levels may spend 1-2 days per month (5-10% of their time) on this activity, including preparation for meetings, meeting, and followup.

HEWs need special attention and training because they perform all HMIS/M&E tasks at the HPs. Use of information to guide action is particularly crucial at the HP level, because the HEW is in a unique position to affect the community's health seeking behaviours.

Nearly all staff, even administrative staff, have record-keeping responsibilities. These responsibilities should be included in job descriptions and these responsibilities should be included in the employee's performance review. A career path for HMIS technicians should be defined.

3.1.2 Staff training

{Note: As with the previous section on staffing patterns, this discussion of training will be enriched by the TUTAPE HR strategy when it becomes available.}

Training in both HMIS technical tasks and in action-oriented monitoring is needed. Whether HMIS technical staff are recruited from within the system or from outside, specialized training will be needed for those who occupy these positions. For M&E, in-service training is needed for those already in the system. This training should focus on problem-solving as well as interpretation of information. In the future, pre-service training in both HMIS and M&E should be included in both the statistics and management curricula. For all health workers who record client / patient information or HMIS reporting forms, in-service training is needed.

Staff training, both in-service and pre-service, is an ongoing need. Therefore, training modalities should be established that can be used each year for students in health training institutions and can be used as needed for those already in service. All in-service training should include on-the-job followup to reinforce the practices taught and correct any misunderstandings.

3.1.3 Job aids: manuals and guidelines

Manuals and guidelines should be available to detail all aspects of data recording, from medical information to reporting forms. These job aids should also include procedures for data analysis, presentation, and interpretation.

3.1.4 Supportive supervision

As with all aspects of health care, effective, continuously improving HMIS/M&E depends on ongoing supportive supervision.

3.2 Standardized, integrated, and simplified data collection and reporting.

An integrated data collection and reporting system provides the foundation for harmonizing the requirements of information consumers internal to the MoH and external consumers such as other ministries, development partners, and civil society. It creates the basis for HSDPIII's "one report". An integrated data collection and reporting system requires

1. cascaded indicators for performance monitoring
2. standardized data collection tools for service delivery and administrative records
3. standardized reporting instruments
4. an integrated reporting channel that supplies all information consumers.

All HMIS information generators and consumers will use these tools, so their introduction requires consensus from all.

3.2.1 Standardized indicators

A shared set of cascaded indicators, appropriate for each level, to monitor sector-wide and program performance is an essential foundation for M&E, as stated in the *HSDPIII Strategic Plan*.

> The agreed indicators are the most important management tools for monitoring, review and evaluation purposes. Indicators are always directly linked to the objective setting of a programme.[32]

These indicators come from several different health information suppliers. The HMIS, which draws its data from routine service delivery and administrative records, cannot supply the data to calculate all indicators. For example, behavior and attitudes cannot be captured through the HMIS; they require a survey. Similarly, in a setting like Ethiopia, with a developing, but still relatively weak, vital events registration system, population-based mortality rates must be captured through survey.

It is essential to create consensus on the fact that these indicators create the "one report" to be used by both government and development partners. Part of the excessive data burden, and its result – poor quality data collected at unreasonable cost – is attributable to the insistence by programs and their supporting donors that specific information be collected. All too frequently this information is not used for performance monitoring, but for reporting to bilateral and multilateral donors. This practice reduces the quality of all data collected and introduces costs in time and money. The HMIS is a shared resource; it is in everyone's interest to reduce the requirements to only those data elements that are regularly used and whose quality can be assured.

The HMIS is the preferred source of information for monthly, quarterly, and annual monitoring because it relies on information recorded at the time of service delivery or administrative transaction. However, even when data are collected during service delivery, the HMIS may not be the most appropriate source for reporting. For example, information on quality of care should not be self-reported because of the danger that we humans are sometimes blind to our own shortcomings. Quality of care indicators are best reported through supportive supervision, which also provides the best means of addressing any shortcomings observed. Similarly, some indicators may be secondary, and needed only in

[32] *HSDP-III Strategic Plan*, Section 3.12.5, p. 114.

special circumstances; these can be collected through register review, sentinel surveillance, or other special studies.

The principles observed during selection of the HMIS indicators is to include all proposed indicators in a set that can be used for performance monitoring, review their definitions to ensure that they conform to national and international standards, then to select the most appropriate source for each indicator – HMIS, register review, survey, special study, etc. It is essential to be particularly selective on this point because reducing the HMIS data burden has been identified as a crucial step in improving both operational efficiency and data quality.

Rationalization of the HMIS disease classification and reporting system goes hand in hand with rationalization of indicators. The principles used are similar. Select the most appropriate diseases to report, based on national and local disease patterns, on the public health import of the disease, and on international disease surveillance requirements; then develop case definitions attuned to the diagnostic capacities at various levels of service. Additional and more detailed information can be collected through register review, survey, special study, etc.

3.2.2 Standardized data collection tools

These tools capture medical, demographic, and financial transaction information on clients and patients. They may be registers, cards, or files retained at the facility; they may also be cards retained by the client or patient. Because these are the sources of HMIS data, they must include the data required for the HMIS indicators.

An even more important consideration in designing these tools is whether they meet medical standards of care and legal record-keeping requirements. These tools must also respond to patterns of service delivery in a facility. All of the core processes in Ethiopia's public health sector are being revised using BPR principles. It is essential that the HMIS be flexible enough to adapt to new service delivery norms. For example, current practices of service delivery rely on specialized practitioners; in the future, services may be more integrated, with a generalist providing a broad range of basic services. The flexibility required to respond to these potential changes can be created by defining the data elements required for each type of service, then combining them on an instrument appropriate for new service delivery patterns.

The first principle for designing client / patient recording instruments is that a register is needed to record each attendance for preventive and curative services; this meets legal requirements for tracing care and responds to the need for financial accountability. In the case of simple services, such as immunization, a register can be used because the service information required can be predicted in advance; in the case of complex services, such as curative care, an open-ended card is needed because the service information requirements cannot be predicted. For services that become more complex if a complication is detected, recording can begin on a register, with supplementation by a card in the infrequent cases when it is needed.

Each of these client / patient recording instruments needs clear instructions for entering the information. A continuous supply of these instruments must be assured so that data will be consistently recorded and reported over time and across locations. Care providers must be thoroughly trained, using both pre-service and in-service modalities.

3.2.3 Standardized reporting instruments

Standardized reporting formats, including tally sheets, must be designed to collect the HMIS data from the client / patient records. Assurance of stationary supply and training are crucial for improving and maintaining data quality, and thereby meeting HMIS performance standards.

3.2.4 Integrated reporting channel

An integrated reporting channel that provides a single source for HMIS data is essential for an effective system (one in which data quality assurance controls can be introduced) and for an efficient system (one that minimizes operational time and cost).

This integrated channel itself has two performance criteria – the right person and the right time: it must deliver data to the right person at the right time. Most of the data reported through this channel are used for monthly or quarterly performance monitoring. These data come to the designated HMIS staff at each level, who then processes and distributes them to others at the same level.

Epidemic control has special needs. For epidemic control, the integrated reporting channel must deliver the information directly to the disease control officer, along a "fast track" and as a matter of urgency. Case-based notification must be made immediately when epidemic-prone or other designated diseases are detected. These notifications should be sent directly to the disease control officer for immediate responsive action. The disease control officer then forwards the information onwards through the integrated channel if needed and notifies the HMIS officer and others at the same HI as appropriate. A similar protocol is needed for weekly monitoring of epidemic-prone diseases at the woreda: the disease control officer should receive the information directly.

3.3 Linkage between information sources.

As noted in the discussion of the preceding strategic issue, the HMIS cannot supply all of the information required to monitor health sector performance. The HMIS uses service records, which usually come from facilities, and administrative data, as a primary data sources. Important as these records are, they provide no information about what happens outside the formal health system. A comprehensive picture of health status and needs must include information from additional sources.

Monitoring the performance of the health sector requires linkage among the information sources that supply data to the HMIS itself and among other suppliers of health-related information. These linkages require

1. agreement within public sector HMIS subsystems (service delivery, finance, human resources,etc) on
   - communication and data exchange protocols
   - population estimates
2. harmonization of reporting arrangements by MoH facilities, facilities owned by other ministries, private for profit, and private not for profit organizations
3. agreement by all information suppliers, including survey organizations, on consistent data and indicator definitions.

3.3.1 Linkages within public sector HMIS subsystems

Linkage, in terms of data definitions, frequency of reporting, and information exchange, must be established among HMIS subsystems: service delivery records, and service-related administrative information such as finance, logistics, capital assets, and human resources. While these subsystems supply information to the HMIS, they also draw information from the HMIS. For example, forecasting drugs and supply needs requires knowledge of disease and service uptake patterns. Similarly, planning for human resources and capital acquisitions requires HMIS information. Linkages between financial and service data become increasingly important as health care financing innovation proceeds, with the potential for insurance schemes. Because it is impossible to predict future information needs in these evolving systems, strong communication channels need to be established so that each can respond to the others' needs.

Many HMIS/M&E indicators require population figures to monitor performance. Examples are coverage and utilization rates. Overall population and target group estimates come from projections based on census figures. The methodology and estimates are made by the Central Statistics Authority (CSA). In the current HMIS there are discrepancies between population figures assumed by different levels. For example, correspondence between the regions' own population figures and those assumed by the federal level was rare in the 1997 EC *Health and Health-Related Indicators* publication; the HMIS Assessment provided other examples of discrepancies at lower levels.[33] Agreement is needed between CSA and MOH offices at all administrative levels to ensure consistency in population denominators.

3.3.2 Harmonization among all service providers, public and private

The current HMIS has had limited success in incorporating information from providers outside the MOH. Other governmental institutions and the private sector, both for profit and not for profit, provide substantial amounts of care, and collaboration with these providers in gathering, analyzing, and acting upon the information can have a significant effect on health status. The public for profit sector in Ethiopia has expressed its readiness to participate in HMIS/M&E data collection. This is refreshingly open in comparison with other countries, and the HMIS/M&E reform should take full advantage of this opportunity.

Two areas of collaboration on information are particularly important:

- Issues of public health importance. Collaboration on these issues by all providers of health care is in the interests of civil society and the collaborators themselves. These issues include Maternal, Neonatal, and Child Health preventive services and infections disease identification and response. Collaboration on case detection for priority diseases has begun.
- Public-private partnership. Public-private partnership has already been established in the treatment of TB and HIV/AIDS; these partnerships are likely to broaden as innovative finance, service delivery, and insurance options are considered.

The feasibility of implementing these activities has been demonstrated by current practice, and their potential for improving health status and resource allocation is well known.

[33] *HMIS Assessment*, p. 19.

3.3.3 Linkages with other health-related information suppliers

CSA conducts the Ethiopia Demographic and Health Survey (EDHS) every 5 years. It also conducts a Welfare Monitoring Survey (WMS) every 2-3 years. Both of these surveys are important sources of health information. Sometimes the results of these surveys appear to differ from the HMIS (and from each other). Other organizations also conduct surveys that collect health related information. For example, information from other sectors such as education, agriculture, and water and sanitation is also important in making health sector decisions. In order to triangulate among these different information sources, common data definitions and understanding on how to interpret the results are essential. The Health Metrics Network (HMN), an international initiative to harmonize and strengthen sources of health information, is already supporting GoE and FMOH efforts at harmonization. The HMIS clearly needs to participate in this harmonization process.

Vital events registration is particularly important for health information particularly because it provides a population-based estimate of mortality patterns. This registration system is in process of development through CSA, with support from HMN. The community-based Health Extension Workers (HEWs) are potential partners in vital events registration and other community-based information collection efforts. It is essential for HMIS/M&E to be partner to these discussions, both to plan for future information sources and to provide technical expertise and experience so that these community workers are not overburdened by data collection tasks that take their time away from community service.

3.4 Information use: action-oriented performance monitoring.

Using the information supplied through the HMIS for action-oriented performance monitoring, particularly where the information is generated, is the primary objective of the HMIS/M&E process. This is the heart of decentralized, evidence-based decision making. Putting this performance monitoring into practice throughout the health sector is a breakthrough paradigm shift that requires change in all aspects of the HMIS/M&E core process.

1. data collection and presentation;
2. health worker skills and orientation;
3. organizational culture;
4. resource allocation;
5. feedback and externally assisted performance monitoring

3.4.1 Data collection, presentation, and self-assessment

The HMIS has usually been viewed as a way of sending reports to a higher level. In the reformed HMIS/M&E process this view is nearly completely reversed. The objective is local use of information to decide actions to be taken to improve performance. The focus of data collection and presentation change accordingly. Local data consumers must assess the quality of the data, including its accuracy, completeness (how well it represents the population served), and timeliness (whether the data is fresh enough that decisions taken on its implications are likely to affect the situation). Presentation of the data also becomes important; depending on the nature of the data and decisions to be taken, a table, graph (there are many types), or map may be most revealing of the situation.

Enhancing collection and presentation skills leads to improved interpretation and self-assessment of performance. Each month every facility should review its performance to ensure that it accords with expectations in the annual plan. Each quarter every HI should hold a minuted formal self-assessment session and produce a written action plan to correct performance shortfalls. At each administrative level, a quarterly review meeting should be also be held with local authorities. The *HHM* summarizes the objectives and frequency of these meetings; "Performance monitoring meetings are held by the Kebele HIV and Health Committee and Woreda, (Zonal), Regional, and Central Joint Steering Committees. The periodicity is every month for self-assessment at facility level and every three months for performance monitoring at the kebele level and above…. The purpose of these meetings is to see whether the institution is on target for successful completion of its annual plan."[34] The *HHM* also specifies the members of these committees.[35]

3.4.2 Health worker skills and orientation

These new ways of using and presenting information will require health workers to acquire new skills and adopt new behaviours and attitudes towards their responsibilities. They will no longer be executors of instructions from their superiors but will be expected to initiate change based on their own observations and interpretations of the situation. Enhancing problem-solving and advocacy skills at each level is particularly important to build health workers' capacity to initiate and manage change.

While skills can be strengthened through pre-service and in-service training, and the process of behaviour modification begun, the real change will happen on the job, when newly acquired skills and behaviours are practiced. Strengthening and establishing these changes will require supportive supervision.

3.4.3 Organizational culture

The organizational culture itself needs to change its attitudes to support and strengthen this change in health worker behaviour. Evidence-based decision making needs to become a practice throughout the organization, with senior officials becoming a role model for others in their use of information. Sometimes this process is called building a culture of information use. It is neither an easy nor an overnight change, but once accomplished, it can make an enormous change in the organization's performance.

3.4.4 Resource allocation

As the *HSDPIII Strategic Plan* points out, HMIS/M&E is closely tied to resource allocation and accountability for use of those resources.[36] The SPM introduced with woreda decentralization and the CSRP includes a foundation for accountability. By setting performance standards in the form of targets and creating a sequence of annual plans to meet those standards, an institution can hold itself accountable for its own performance. When this internal accountability is reinforced by an external agent, in the form of a council of elected officials or another body that allocates resources, accountability is increased. One example of this type of accountability that has been introduced in some parts of Ethiopia is

[34] *HHM*, pp. 56-57.
[35] *HHM*, pp. 62-67.
[36] *HSDP-III Strategic Plan*, Section 3.12.5, p. 114.

performance-based contracting. In this operating modality an institution agrees to meet agreed performance standards in return for resources. In the health sector, of course, basic resources must be allocated for health care as a matter of social obligation. Performance-based contracting provides a mechanism for holding managers and health workers accountable for their use of resources and provides a positive incentive for well-performing officers to improve their use of resources even further.

3.4.5 Feedback and externally assisted performance monitoring

The essential role of feedback and external assistance in the form of supportive supervision to reinforce behaviour change has already been mentioned. Dissemination of results for comparison of HI performance and peer review, when an HI's performance is critiqued and appreciated by those with similar responsibilities in another HI, are both powerful methods to induce and reinforce behaviour change. Best practice identification is still another method for supporting behaviour change by recognizing and rewarding positive change.

3.5 Appropriate technology.

Identifying appropriate opportunities to introduce information and communications technology (ICT) to streamline the workflow process is a critical step in BPR methodology. In Ethiopia, all regions have computers and apparently use them for some data processing. The larger regions have electronic systems for HMIS, although these systems operate on different HMIS data and do not all use the same technology or software platforms.

Based on the current distribution of ICT, infrastructure, and training, introducing technology at woreda level to support HMIS data processing is a clear first step. Given the potential investment required in technology, infrastruct and training, electronic transfer data from woreda onwards is a radical and practical step in streamlining the HMIS/M&E process.[37]

The electronic HMIS will provide the woredas, regions, and the FMOH with the flexibility to create tables, graphs, and maps to present time trends and comparisons between locations with an ease and speed that would simply not be possible if the analysis were done by hand, even if assisted by a spreadsheet. These various presentations will help in using the data to make astute decisions for performance improvement. The ICT should be standardized across the HMIS/M&E core process and based on an ICT policy to be established by the FMOH. The system should be simple to use, expandable to other locations, and flexible to accommodate future developments. Most importantly, it should be developed and maintained by local experts, with ownership vested in the FMOH.

The architecture of the HMIS electronic system should be open enough to accommodate other electronic systems in place or under development. These include WoredaNet, telemedicine, data warehousing, and communication with other systems that contain health-related information.

[37] Introducing ICT at hospitals and health centers has been discussed. Some of these facilities already have electronic support for data processing. These initiatives should be closely watched to see if there is potential for propagation of these systems.

Introduction of an electronic HMIS will be an important breakthrough in administrative offices' ability to monitor performance and pinpoint constraints and bottlenecks. At the same time there must be a fallback option in case of ICT breakdown. Therefore testing and implementation of the reformed HMIS/M&E process will create a clean and reliable manual system before introducing technology.

4. Thematic Areas, Objectives and Strategies

4.1 Capacity building

Create the basic institutional structures and skilled staff to implement a well-functioning HMIS/M&E process.

4.1.1 Established staffing pattern

Objective 1: Institutionalize HMIS units and/or positions at appropriate levels.

Selected strategies:

- Establish HMIS units at appropriate levels, with job descriptions.
- Include HMIS/M&E tasks as responsibilities for all relevant staff.

4.1.2 Staff training

Objective 2: Ensure appropriate training for all staff who perform HMIS/M&E tasks.

Selected strategies:

- Establish in-service and/or pre-service training modalities for HMIS/M&E positions and tasks.

4.1.3 Provide job aids for HMIS/M&E tasks

Objective 3: Ensure that job aids such as manuals and guidelines are available for all staff who perform HMIS/M&E tasks.

Selected strategies:

- Ensure all tasks have job aids in the form of manuals or guidelines that are available when needed
  - Indicators and disease classification / case definitions
  - Client / patient recording and tallying
  - HMIS reporting
  - Performance monitoring (information use)
- Ensure mechanism exists for adequate supply of job aids

4.1.4 Supportive supervision

Objective 4: Ensure that HMIS/M&E practices are continually reinforced and improved through supportive supervision.

Selected strategies:

- Include HMIS/M&E practices in integrated supervision.
- Establish practice of quarterly integrated supportive supervision at all levels.

4.2 Standardized and integrated data collection and reporting.

To construct and maintain an HMIS that supplies agreed indicators that conform to agreed quality standards of timeliness and reliability, based on standardized instruments, and delivered through a well defined and consistent channel.

4.2.1 Standardized indicators

Objective 5: Establish standardized cascaded indicators for M&E at all levels. Establish disease case definitions for all levels.

Selected strategies:

- Develop standardized indicator set for health sector and programs and disease list and case definitions for HMIS reporting
- Establish use of indicators and case definitions in Health Institutions through supportive supervision
- Establish mechanisms for regular indicator / disease classification and case definitions; update every 2-3 years
- Establish mechanisms for immediate change in indicators / disease classification and case definitions

4.2.2 Standardized data collection tools

Objective 6: Establish client/patient encounter recording formats, including household and community records, that conform to standards set for service delivery and that contain the information required for continuity and quality of care.

Selected strategies:

- Establish standardized client/patient recording procedures.
- Train providers in use of client/patient records and tallying procedures
- Ensure mechanism exists for adequate supply of client/patient recording formats

4.2.3 Standardized reporting instruments

Objective 7: Establish mechanism and reporting formats to collect HMIS data from the client/patient recording formats in the most efficient way possible.

Selected strategies:

- Establish standardized reporting format based on indicators and disease classification
- Train providers in reporting procedures
- Ensure mechanism exists for adequate supply of HMIS reporting forms

4.2.4 Integrated reporting channel

Objective 8: Establish data flow procedures that capture and transmit information in a timely fashion through an integrated reporting channel.

Selected strategies:

- Establish integrated reporting channel that delivers information to primary user when it is needed

4.3 Linkage between information sources.

To establish close communication and consistent practices amongst all who supply and use HMIS and other health-related information.

4.3.1 Linkages within public sector HMIS subsystems

Objective 9: Establish ongoing collaboration among public sector HMIS subsystems.

Selected strategies:

- Establish mechanisms for regular consultation amongst owners of HMIS subsystems
- Establish standardized data definitions, reporting protocols, and channel for data communication between owners and operators of HMIS subsystems

4.3.2 Harmonization of information practices amongst all service providers, public and private

Objective 10: Harmonize information practices and amongst all providers, public and private, to establish a basis for collaboration in improving health status.

Selected strategies:

- Establish mechanisms for regular consultation on information practices amongst governmental organizations and private for-profit and not-for-profit sectors (NGOs) in HMIS/M&E
- Integrate nonMoH providers into system of standardized data definition, reporting protocols, and channel for data communication, shared with MoH subsystems

4.3.3 Linkages between HMIS and other health-related information suppliers

Objective 11: Establish ongoing communication with other suppliers of health-related information.

Selected strategies:

- Establish consistent methodology to estimate population denominators at all levels
- Establish common understanding regarding potential sources and interpretation of health-related information
- Establish mechanism to standardize data definitions used by all suppliers of health-related information

4.4 Information use: action-oriented performance monitoring.

To establish an HMIS/M&E core process that continuously uses data to improve performance.

4.4.1 Data collection, presentation, and self-assessment

Objective 12: Develop tools and examples for ensuring data quality, appropriate models for data presentation, and performance monitoring through self-assessment.

Selected strategies:

- Ensure that data quality is assessed on the basis of accuracy, completeness, and timeliness
- Develop and distribute examples of data presentation for decision making
- Develop protocols and tools for quarterly self-assessment of performance by each HI

4.4.2 Health worker skills and orientation

Objective 13: Ensure that health workers who perform HMIS/M&E tasks have essential training, opportunities for skills enhancement, and are appreciated for their HMIS/M&E work by seniors.

Selected strategies:

- Ensure health workers understand and use indicators, case definitions, and M&E process, as appropriate for their levels
- Include performance of HMIS/M&E tasks as part of performance appraisal and criteria for promotion

4.4.3 Organizational culture

Objective 14: Ensure that health workers at all levels appreciate the importance of information use, by the personal examples of senior officers and through organizational reward for exemplary HMIS/M&E performance.

Selected strategies:

- Include demonstrated skills in information use in performance appraisals of all senior officers
- Establish a clear career path for HMIS/M&E professionals
- Establish mechanisms to recognize and reward outstanding HMIS/M&E performance by teams and individuals

4.4.4 Resource allocation

Objective 15: Ensure that necessary human, financial, and material resources are available for HMIS/M&E process.

Selected strategies:

- Ensure adequate funds for filling HMIS/M&E posts are available and that filling vacant posts is viewed as a priority.
- Ensure availability and use of funds for HMIS/M&E implementation and operation

4.4.5 Feedback and externally assisted performance monitoring

Objective 16: Ensure that performance monitoring through HI self-assessment is supported by external performance monitoring modalities.

Selected strategies:

- Establish guidelines for integrated supervision, dissemination, and peer review
- Establish practice of producing quarterly and annual dissemination reports at all levels.
- Establish practice of regular peer review
- Identify, recognize, and propagate best practices

4.5 Appropriate technology.

To use technology appropriate for each HI to support HMIS/M&E.

Objective 17: Establish ICT support for the HMIS at woreda, subcity, zone, regional, and federal levels.

Selected strategies:

- Establish policy guidelines and standards for hardware and software used in MoH
- Establish customized HMIS software system at woreda, subcity, zone, regional, and federal levels.
- Procure and install required hardware
- Train staff in basic computer literacy and in HMIS electronic system

5. Comprehensive HMIS/M&E Strategic Plan Matrix

5.1 Thematic area 1: Capacity building

Objective 1: Institutionalize HMIS units and/or positions at appropriate levels.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish HMIS units at appropriate levels, with job descriptions (See Objective 14.)	Define positions and job descriptions at all appropriate levels, obtain necessary administrative approval for establishment	- by end 2008 + at FMOH and all regions + 80% of zones, woredas, and hospitals with reformed HMIS/M&E implemented - by end 2010 + remaining zones, woredas, and hospitals	Institutional establishments	FMOH, RHB, ZHD, WorHO, hospitals
	Secure necessary resources for staffing and fill positions	- by end 2008 + 80% staffed as per standard at FMOH and each region + 60% staffed as per standard at zones, woredas, and hospitals with reformed HMIS/M&E implemented - by end 2010 + complete staffing as per standard at FMOH and each region + 80% staffed as per standard at zones, woredas, and hospitals	Institutional personnel records	FMOH, RHB, ZHD, WorHO, hospitals

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Include information recording and HMIS/M&E tasks as responsibilities for all relevant staff (See Objectives 12 and 13)	Include information recording responsibilities in job descriptions of all health workers and administrative staff that record information	- by end 2008 + job descriptions include relevant tasks	Institutional personnel records	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs
	Include HMIS/M&E tasks in job descriptions for persons who have other primary responsibilities (eg, department heads, facility in charge, etc)			
	Include performance on HMIS/M&E and information recording tasks in performance appraisal.	- by end 2009 + all performance appraisals include assessment of information HMIS/M&E related tasks	Individuals' performance appraisals	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs

Objective 2: Ensure appropriate training for all staff who perform HMIS/M&E tasks.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish in-service and/or pre-service training modalities for HMIS/M&E positions and tasks. (See objectives 5, 6, and 7 for specific content of training.)	Establish federal and regional capacities for ongoing in-service training for health professionals and administrative personnel who record information	- by end 2010 + in-service training done at least once annually at federal level and in each region	Training records	FMOH, RHB
	Establish in-service or pre-service training for HMIS technicians	- by end 2008 + at least one training class begun	Training records	FMOH
	Establish pre-service training in HMIS/M&E in curriculum for all health professionals	- by end 2009 + training established in curriculum and used	Curricula and training institute's records	FMOH, RHB

Objective 3: Ensure that job aids such as manuals and guidelines are available for all staff who perform HMIS/M&E tasks.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Ensure all tasks have job aids in the form of manuals or guidelines that are available when needed	Card room and other administrative procedures Indicators and disease classification / case definitions Client / patient recording and tallying HMIS reporting Performance monitoring (information use)	- by end 2008 + available at all workplaces with reformed HMIS/M&E implemented	Observation at health institutions	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs
Ensure mechanism exists for adequate supply of job aids	Ensure printing, storing, and distribution mechanisms in place at federal and regional levels	- by end 2008 + order for manual / guideline can be delivered to requesting institution within one month	Health institution records	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs

Objective 4: Ensure that HMIS/M&E practices are continually reinforced and improved through supportive supervision.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Include HMIS/M&E practices in integrated supervision. (See Objectives 11 and 15)	HMIS data quality and M&E practices included in supervisory guidelines; HMIS data used other supervisory tasks	- by end 2008 + HMIS data quality and M&E practices in guidelines	Supervisory guidelines	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs
Establish practice of quarterly integrated supportive supervision at all levels.	Integrated supervision with HMIS/M&E components implemented	- by end 2008 + 50% HIs with reformed HMIS/M&E implemented receive quarterly supervision - by end 2010 + 80% HIs with reformed HMIS/M&E implemented receive quarterly supervision	Records of supervision	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs

5.2 Thematic area 2: Standardized, integrated, and simplified data collection and reporting.

Objective 5: Establish standardized cascaded indicators for M&E at all levels. Establish disease case definitions for all levels.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Develop standardized indicator set for health sector and programs and disease list and case definitions for HMIS reporting	Develop standardized cascaded indicator set and create consensus on its use	- by end 2007 + indicators defined and agreed	HMIS NAC and workshop records	FMOH, RHB, development partners
	Develop standardized disease classification and case definitions and create consensus on its use	- by end 2007 + disease classification and case definitions defined and agreed		
Establish use of indicators and case definitions in Health Institutions through training and supportive supervision	Pre-service and in-service training materials developed and used	- by end 2007 + Pre-service materials developed - by end 2008 + In-service materials developed	Curricula and training institute's records	FMOH, RHB
	Use of indicators for performance monitoring and understanding / use of case definitions included in supervisory guidelines	- by end 2008 + indicators and case definitions included in supervisory guidelines + 50% HIs with reformed HMIS/M&E implemented receive quarterly supervision - by end 2010 + 80% HIs with reformed HMIS/M&E implemented receive quarterly supervision	Records of supervision	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs
Establish mechanisms for regular indicator / disease classification and case definitions; update every 2-3 years	Establish coordinating committee with members from FMOH, RHB, CSA, development partners, etc, with regular 6-monthly meetings to review emerging needs.	- by end 2008 + at least one meeting held - by end 2010 + first review and update of indicators	Meeting minutes and records	FMOH, RHB, CSA, development partners
Establish mechanisms for immediate change in indicators / disease classification and case definitions	Establish coordinating committee with members from FMOH, RHB, CSA, development partners, etc, with regular 6-monthly meetings to review emerging needs and more frequent meetings as needed. (May be same committee as in previous activity.)	- by end 2008 + at least one meeting held	Meeting minutes and records	FMOH, RHB, CSA, development partners

Objective 6: Establish client/patient encounter recording formats, including household and community records, that conform to standards set for service delivery and that contain the information required for continuity and quality of care.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish standardized client/patient recording procedures.	Develop recording forms and procedures and create consensus on their use	- by end 2007 + forms and procedures defined and agreed	HMIS NAC and workshop records	FMOH, all HIs, providers, and development partners
Train providers in use of client/patient records and tallying procedures	Pre-service and in-service training materials developed and providers trained	- by end 2007 + Pre-service materials developed - by end 2008 + In-service materials developed - training completed according to schedule developed by FMOH	Curricula and training institute's records	FMOH, RHB
Ensure mechanism exists for adequate supply of client/patient recording formats	Ensure printing, storing, and distribution mechanisms in place at federal and regional levels	- by end 2008 + order for formats can be delivered to requesting institution within one month	Health institution records	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs

Objective 7: Establish mechanism and reporting formats to collect HMIS data from the client/patient recording formats in the most efficient way possible.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish standardized reporting format based on indicators and disease classification	Develop recording forms and procedures and create consensus on their use	- by end 2007 + forms and procedures defined and agreed	HMIS NAC and workshop records	FMOH, all HIs, providers, and development partners
Train providers in reporting procedures	Pre-service and in-service training materials developed and providers trained	- by end 2007 + Pre-service materials developed - by end 2008 + In-service materials developed - training completed according to schedule developed by FMOH	Curricula and training institute's records	FMOH, RHB

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Ensure mechanism exists for adequate supply of HMIS reporting forms	Ensure printing, storing, and distribution mechanisms in place at federal and regional levels	- by end 2008 + order for formats can be delivered to requesting institution within one month	Health institution records	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs

Objective 8: Establish data flow procedures that capture and transmit information in a timely fashion through an integrated reporting channel.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish integrated reporting channel that delivers information to primary user when it is needed	Develop protocols for integrated channel and build consensus on their use	- by end 2007 + protocols defined and agreed	HMIS NAC and workshop records	FMOH, all HIs, providers, and development partners

5.3 Thematic area 3: Linkage between information sources.

Objective 9: Establish ongoing collaboration among public sector HMIS subsystems.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish mechanisms for regular consultation amongst owners of HMIS subsystems	Establish coordinating committee amongst appropriate departments and RHBs for service statistics, finance, assets, drugs & supplies, and human resources	- by end 2008 + at least one meeting held, with framework for technical agenda and timeline agreed	Meeting minutes and records	FMOH, RHB, relevant departments
Establish standardized data definitions and channel for data communication between owners and operators of HMIS subsystems	Establish coordinating committee amongst appropriate agencies, based on HMN framework			

Objective 10: Harmonize information practices and amongst all providers, public and private, to establish a basis for collaboration in improving health status.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish mechanisms for regular consultation on information issues between MOH and other public and private care providers	Establish coordinating committee amongst MoH, other governmental agencies, and the private sector.	- by end 2008 + at least one meeting held, with framework for technical agenda and timeline agreed	Meeting minutes and records	FMOH, RHB, other ministries, and appropriate private sector organizations.
Establish mechanism to integrate other governmental organizations and private for-profit and not-for-profit sectors (NGOs) in HMIS reporting	Develop protocols and forms and build consensus on their use	- by end 2007 + protocols defined and agreed	HMIS NAC and workshop records	FMOH, MAPP, OGAs, NGOs, other interested parties

Objective 11: Establish ongoing communication with other suppliers of health-related information.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish consistent methodology to estimate population denominators at all levels	Develop protocols for estimating population and target populations at each level	- by end 2007 + protocols defined and agreed	HMIS NAC and workshop records	FMOH, all HIs, and CSA

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish common understanding regarding potential sources and interpretation of health-related information	Establish coordinating committee amongst appropriate agencies, based on HMN framework	- by end 2008 + at least one meeting held, with framework for technical agenda and timeline agreed	Meeting minutes and records	FMOH, CSA, development partners
Establish mechanism to standardize data definitions used by all suppliers of health-related information				

5.4 Thematic area 4: Information use: Action-oriented performance monitoring.

Objective 12: Develop tools and examples for ensuring data quality, appropriate models for data presentation, and performance monitoring through self-assessment.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Ensure that data quality is assessed on the basis of accuracy, completeness, and timeliness	Incorporate data quality assessment into reporting methodology	- by end 2007 + data quality assessment included in reporting methodology	HMIS reporting procedures	PPD
	Incorporate data quality assessment into supervisory practices	- by end 2008 + data quality assessment included in supervisory guidelines and practices	Supervisory guidelines Records of supervision	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs
Develop and distribute examples of information presentation for decision making	Develop guidelines and manuals	- by end 2007 + develop guidelines and manual for information presentation and display	Guidelines and manuals available	PPD
	Incorporate review of information presentation into supervisory practices	- by end 2008 + review of information presentation included in supervisory guidelines and practices	Supervisory guidelines Records of supervision	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Develop protocols and tools for quarterly self-assessment of performance by each HI	Develop protocols and tools in accord with HHM guidelines	- by end 2007 + develop and test protocols and tools	Protocols and tools available	FMOH, RHB

Objective 13: Ensure that health workers who perform HMIS/M&E tasks have essential training, opportunities for skills enhancement, and are appreciated for their HMIS/M&E work by seniors.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Ensure health workers understand and use indicators, case definitions, and M&E process, as appropriate for their levels	Train health workers in execution of all steps of HMIS/M&E process, as appropriate for their responsibilities: Client / patient recording and tallying; HMIS reporting; Performance monitoring	- by end 2007 + develop and test training materials and tools	Protocols and tools available	FMOH, PPD
	Include skills improvement in information use as part of supervisory process	- by end 2008 + review of information presentation included in supervisory guidelines and practices	Supervisory guidelines Records of supervision	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs
Include performance of HMIS/M&E tasks as part of performance appraisal and criteria for promotion	Include performance on HMIS/M&E and information recording tasks in performance appraisal.	- by end 2009 + all performance appraisals include assessment of information HMIS/M&E related tasks	Individuals' performance appraisals	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs

Objective 14: Ensure that health workers at all levels appreciate the importance of information use, by the personal examples of senior officers and through organizational reward for exemplary HMIS/M&E performance.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Include demonstrated skills in information use in performance appraisals of all senior officers	Include information use skills and stimulation of staff in similar skills as part of performance appraisal	- by end 2009 + all performance appraisals of senior officials include information use skills and stimulation of similar skills development in staff	Individuals' performance appraisals	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish a clear career path for HMIS/M&E professionals	Create steps for advancement for HMIS technicians and health professionals with M&E specialties. Ensure that these staff have the same benefits and credits for advancement as health care providers.	- by end 2009 + clear path for advancement and equivalent benefits in personnel system at all levels	Personnel policies	FMOH, RHB, ZHD, WorHO, hospitals
Establish mechanisms to recognize and reward outstanding HMIS/M&E performance by teams and individuals	Create awards and prizes for best practices and performance in HMIS/M&E	- by end 2009 + existence of recognition system at federal level and in each region, at each level	Personnel policies; Institutional policies and records	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs

Objective 15: Ensure that necessary human, financial, and material resources are available for HMIS/M&E process.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Ensure adequate funds for filling HMIS/M&E posts are available and that filling vacant posts is viewed as a priority.	Determine positions and salary levels required at each level. Source funds, recruit and fill posts	- by end 2010 + complete staffing as per standard at FMOH and each region + 80% staffed as per standard at zones, woredas, and hospitals	Institutional personnel records	FMOH, RHB, ZHD, WorHO, hospitals
Ensure availability and use of funds for HMIS/M&E implementation and operation.	Determine capital needs for physical reengineering and equipment. Determine recurrent expenditure needs for consumables such as stationary, ICT supplies, etc. Determine responsibility for providing funds and source funds.	- by end 2008 + all HIs with reformed HMIS/M&E implemented have necessary physical infrastructure, equipment, and recurrent budget - by end 2010 + all HIs have necessary physical infrastructure, equipment, and recurrent budget	Observation, Institutional records and budget	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs

Objective 16: Ensure that performance monitoring through HI self-assessment is supported by external performance monitoring modalities.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish guidelines for integrated supervision, dissemination, and peer review	Establish guidelines for integrated supervision, dissemination, and peer review with appropriate partners	- by end 2008 + all guidelines established	Guidelines published and available at all relevant HIs and organizations	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs, development partners
Establish practice of producing quarterly and annual dissemination reports at all levels.	Guidelines and examples produced by FMOH, RHBs	- by end 2008 + 60% HIs with reformed HMIS/M&E implemented have produced at least one quarterly or annual report - by end 2010 + 80% of all HIs produced at least one quarterly or annual report per year of reformed HMIS/M&E implementation	Dissemination reports available at all relevant HIs and organizations	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs
Establish practice of regular peer review	Guidelines and meeting protocols produced by FMOH, RHBs	- by end 2008 + 60% HIs with reformed HMIS/M&E implemented have attended at least one peer review meeting - by end 2010 + 80% of all HIs have attended at least one peer review meeting per year of reformed HMIS/M&E implementation	Institutional records. Minutes of peer review meetings	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs
Identify, recognize, and propagate best practices	Guidelines and best practice identification protocols produced by FMOH, RHBs	- by end 2008 + 60% HIs with reformed HMIS/M&E implemented have participated in at least one best practice review - by end 2010 + 80% of all HIs have participated in at least one best practice review per year of reformed HMIS/M&E implementation	Institutional records. Minutes and proceedings of best practice reviews	FMOH, RHB, ZHD, WorHO, hospitals, HCs, HPs, development partners

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Ensure that HIs hold regularly quarterly meetings with local authorities	Develop reports and procedures for working with local external review boards, as per *HHM* guidelines.[38]	- by end 2008 + 80% HIs with reformed HMIS/M&E implemented have participated in at least quarterly review with external groups - by end 2010 + 80% of all HIs have participated in at least four performance review meetings per year of reformed HMIS/M&E implementation	Institutional records. Minutes and proceedings of review meetings	FMOH, RHB, ZHD, WorHO, HPs

5.5 Thematic area 5: Appropriate technology.

Objective 17: Establish ICT support for the HMIS at woreda, subcity, zone, regional, and federal levels.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish policy guidelines and standards for hardware and software used in MoH	Draft guidelines and reach consensus with FMOH departments, RHBs, CSA, and development partners	- by end 2008 + Guidelines agreed and published	Guidelines available	FMOH/PPD

[38] *HHM*, pp. 57-58 and 61-68.

Selected Strategies	Major Activities	Indicators	Verification	Responsible Body
Establish customized HMIS software system at woreda, subcity, zone, regional, and federal levels.	Develop customized software application as per requirements of FMOH; pilot test; install at HIs with required infrastructure after implementation of reformed HMIS/M&E	- by end 2008 + 50% of RHBs, ZHDs, and WorHOs with reformed HMIS/M&E implemented and required infrastructure installed eHMIS - by end 2010 + 80% of all RHBs, ZHDs, and WorHOs with required infrastructure installed eHMIS	Software available and installed at sites as they become ready	FMOH/PPD, RHBs, ZHDs, WorHOs, and development partners
Procure and install required hardware	Assess needs, source funds, procure (with maintenance contract) and install computer, printer, UPS, and other required peripherals			
Train staff in basic computer literacy and in HMIS electronic system	Develop training materials and prepare training teams			

6. Budget Requirement and Justification

The following budget has been prepared according to the following priorities:

- Conversion to reformed HMIS/M&E should be done as quickly as possible to enable the use of evidence-based management practices and to shorten the transition process.
- Direct training (not cascaded) of every health worker, clinical and administrative, to provide the highest quality training possible, with the depth to absorb high staff turnover.

A plan has been prepared to complete conversion to the reformed HMIS/M&E tools and procedures in 18 months in the seven most populous regions (90% of the population). These regions are Addis Abeba, Amhara, Dire Dawa, Harari, Oromia, SNNP, and Tigray. Data quality and information use are strengthened through supportive supervision during the following months. The conversion process is executed by a team of experts assembled for this purpose. The strengthening process is an ongoing part of regular HMIS/M&E operation and supportive supervision, implemented by the local health institutions and authorities.

The comprehensive budget for the 18 month conversion process is 17-19 million USD, as described below. A comprehensive budget for annual running costs should include staff time, but the necessary data for calculating this cost is not available. Recent literature estimates that the annual cost of operating HMIS/M&E in a low resource country at 17¢US per capita. This suggests 12.8 million USD for a country of 80 million, like Ethiopia.[39] In Ethiopia, annual running costs for consumables (primarily stationery and technology operations) and logistics, may be estimated at 5-6 million USD.

Throughout the 18 month conversion process, national and regional teams provide technical leadership in HMIS/M&E, training, ICT, and logistics. Four months are allowed for preparations – primarily recruiting and training a team of 90 master trainers who will train all health workers in month long sessions held in each woreda. The remaining 14 months are spent in training.

[39] DT Jamison, et al. 2006. *Disease Control Priorities in Developing Countries*, 2nd ed. New York: Oxford University Press. Chapter 54: Information to Improve Decision Making for Health, p. 1024, Table 54.2, includes benchmarks for Health Service Statistics and Public Health Surveillance. Table 54.2 estimates annual per capita costs for these information systems in low income countries.

Illustrative Budget for Conversion

Management		
Personnel Costs	$1,605,216	
Consultants	$46,240	
Subcontracts	$102,500	
Office setup and operation	$107,546	
Project Staff Travel	$383,166	
Total Management	$2,343,668	
Other resources		
Training		
1. 90 FMoH trainers	$4,380,000	or
2. 90 Hired FMoH trainers	$5,280,000	or
3. 90 Hired External Trainers	$6,336,000	
Other workshops	$500,000	
Computers	$1,000,000	
Printed Materials		
Data collection	$8,000,000	
Manuals	$250,000	
Distribution Costs	$150,000	
Total	$16,623,668	(Training Option 1 - MoH trainers)
	$17,523,668	(Training Option 2 - hired MoH trainers)
	$18,579,668	(Training Option 3 - hired ext trainers)

7. Governance and Institutional Arrangements

FMOH/ Planning and Program Department (PPD) is accountable for implementation. Regional responsibilities are delegated to the HMIS Departments/Units at the respective regions. Implementation activities are the responsibilities of the HMIS Units at zones and woredas.

Public sector health institutions have both moral and legal obligations to report to civil society on their performance and its effect on the health status of the community. It is the responsibility of the HIs to actively engage local assemblies and governing authorities in health sector performance monitoring. The membership in these quarterly performance monitoring review meetings is specified in the governance section of the *HHM* (pp. 61-67).

The private sector (for profit and not for profit) and other government agencies' (OGA) health facilities also have moral and legal obligations to report to the HI in whose area they operate. It is the mutual responsibility of the private/OGA facility and the administrative HI to ensure that all facilities report, regardless of ownership.

8. Monitoring and Evaluation

Implementation accomplishments will be monitored at least monthly by the responsible bodies, to make sure that training, introduction of new instruments and procedures, and supervision are proceeding as planned. A complete evaluation will be undertaken during the last half of 2010 to assess the improvements in performance of the reformed HMIS/M&E.

The HMIS reports themselves include indicators on data quality and information use. It is the responsibility of the supervising HI to ensure that all facilities under their jurisdiction proceed towards the expected levels of performance for the end of HSDPIII in 2010:

- HMIS reporting completeness > 80%
- HMIS reporting timeliness > 80%
- HMIS date quality > 80%
- compliance with performance monitoring standards (meetings held vs meetings expected) > 90%

9. Challenges and the Way Forward

Three main issues challenge successful implementation of this plan.

1. *Mandate.* The absence of standardized, well documented recording and reporting formats and information flow has led to inconsistent results and poor data quality. Objectives 5, 6, and 7 include activities to produce guidelines and standards. However, unless there are policy guidelines that set the terms of compliance in a decentralized setting, there is no assurance that these standards and guidelines will be followed.

2. *Sustainability*. Without an assured supply of materials, including stationery and consumables, it may be impossible to observe standards for recording and reporting. The HMIS assessment found that only 25% of woredas have an HMIS budget. Woredas that do have budget average 4000 birr per year, an amount that is unlikely to cover the recurrent costs for supplies.[40] There is a need for policy guidelines that designate responsibilities for assuring these supplies.

3. *Accountability*. The HMIS is a major source of information for monitoring and adjusting policy implementation and resource use. This information must comply with standards for accuracy, completeness, and timeliness. Within MoH HIs, mechanisms to assure compliance can be introduced. However, in the private sector (both for-profit and not for-profit), MoH has less authority and more limited resources for encouraging compliance. Therefore, there is a need for policy guidelines that specify the level of accountability for information supplied by the HMIS.

The best way to face these challenges is with open and transparent consensus building.

[40] *HMIS Assessment*, pp vi-vii.