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Assessment of Health Management Information System (HMIS) in Addis Ababa Health Bureau

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DECLARATIONS

This thesis is original work and has not been presented for a degree in any other university. and that all sources of materials used for the thesis have been duly acknowledged.

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ACRONYMS

AA Addis Ababa

AAU Addis Ababa University

CBAW Child Bearing Age Women

CHW Community Health Worker

CBHW Community based health workers

CMR Child Mortality Rate

DHM District Health Management

DHIS District Health Information System

DHMIS District Health Information System

DMO District Medical Officer\Office

E.G As for example

FMOH Federal Ministry of Health

FP Family Planning

FR Fertility Rate

HIV Human Immunodeficiency Virus

HIS Health Information System

HMIS Health Management Information System

HSDP Health Sector Development Program

HPN High-per-tension

ICD International Classification of Disease

IMCI Integrated Management of Childhood Illness

IS Information System

IT Information Technology

MCH Maternal and Child Health

MIS Management Information System

MR Mortality Rate

NA Not Available or Not Applicable

NGO Non Governmental Organization

OPD Out Patient Department

PHC Primary Health Care

PPD Planning and Programming Department

RHB	Regional Health Bureau
SNNR	Southern Nations, Nationalities and Peoples Region
TB	Tuberculosis
WHO	World Health Organization

ABSTRACT

The HMIS in development countries lags seriously behind as compared to the development countries; and the existing HMIS in many developing countries is insufficient to support health management functions.

The purpose of the study was; to assess and determine how health information is generated and utilized in the decision-making process in Addis Ababa Health Bureau and health care facilities in the region. The study also attempted to identify factors affecting the quality of reporting, information generation and utilization at regional, sub-city and health facility levels.

The finding of the study indicated that; there is increased awareness for better quality of information and steps are taken to improve the HMIS capacity at sub-city and health facility levels by adopting the District Health Information System (DHIS) software.

However the study also indicated that there is critical constraint of trained personnel; to analyze value and utilize the available data; which seemed to be significant challenge for the progress of the system at all levels.

To improve the performance of HMIS; not only technology acquisition will be required but it should also be viewed as a long-term socio-cultural, political, and technical development process. It is equally important to improve the understanding of health managers and health professional on the importance health information as well as the proper utilization of the available data and information for improved health service management. This can be achieved only through proper training and increasing the proportion of trained staff in HMIS on a sustainable manner.

(HMIS, health information, utilization, DHIS, capacity, constraint, data, socio-cultural)

1. INTRODUCTION

1.1 Back ground

At the beginning, health information systems were oriented only to collect information on disease and health services outputs; but in the contemporary era health information systems are referred to be part of the health system; and hold great importance in the planning and decision-making of health care delivery services.

Health information systems generate information to inform health planners and decision – makers on what is happening at the health delivery facilities. HMIS improves health management; which is pre-requisite for good health care delivery services. HMIS is there to fill the gap between disease occurrence (health problems) and the response of the health service providers.

If information is believed to be an indispensable resource for effective health management; it has to generate meaningful, reliable, accurate and timely information to the health managers.

The WHO has also emphasized that; the lack of improved HMIS to support effective management is the major obstacle in the achievement of health for all in the year 2000(Mahler, 1987 as cited by Lippeveld, Sauerborn and Bodart).

Despite the potentials the HMISs have; the collection, compilation, analysis and utilization of health data remains to be practically major problem in the context of developing countries.

Many countries have decided to tackle the problem of HMIS by addressing at its root, and plan for more integrated approach to improve it. Countries like Cameroon, Tanzania, Pakistan, and Mozambique concentrated on routine information system for first level care facilities (Lungo, 2003).

The drive for reform in HMIS has coincided with the information technology that most HMISs structured since 1980s are computerized to various degrees. WHO has also strongly emphasized on the use of computer technology in the design of district-based health information system (Rodrigues and Israel, 1995,as cited by Lungo, 2003). However many of the countries which have computerized their HMISs are suffering from lack of

appropriately trained staff, hardware and software Maintenance Problems (Campbell 1997), (Hedberg 2003),(WHO 2004)

The national health information systems in many developing countries have been strongly based on the primary heath care (PHC) service. The district becomes then the most appropriate level for coordinating top-down and bottom-up planning, for organizing community involvement in planning, and implementation, and for improving the coordination of government and private care.

A broad participatory action research project, started in South Africa which has also spread to other countries like Mozambique, Tanzania, and India, Health Information System Programme (HISP), demonstrates strong methodologies and address how to develop district–based health information systems that is featured by an open source soft ware (Braa et al .2003,as cited by Lungo, 2003).

The argument is; regional or provincial and district health managers and planners in the developing countries have not been able to analyze and interpret such data for planning, and should be empowered through strong decentralization. Computer-based information system should be implemented to facilitate better storage, analysis and dissemination of health data. However introducing computer technology in the development of health information system is not necessarily the "silver-billet" that solves the efficiency problem of the health service (Sandiford et al .1992, as cited by Lungo, 2003).

The challenge lies in the question of: *How to transform the existing information system for generating and utilization of meaningful, reliable, accurate and timely information to support management?*

How to build the culture of appreciation and information use for decision making to improve the health service?

How to integrate *HMIS at national level: while maintaining decentralization for responsiveness and innovation at regional and district levels. ?*

Since much of the health service priority is given to primary health care: the routine reporting system is the focus of the study. The study focus is to asses the features and trends of the current HMIS in AA in relation to the above questions.

1.2 Statement of the problems

There is a big concern for the improvement of the health care services delivery system, which is widely seen to be attributed to the shortcomings of HMIS in the developing countries; where WHO calls for reform.

Despite the credible use of HMIS for evidence based decision making (strategic planning, improved patient care, efficient allocation of scarce resources and effective targeting of intervention to those in greatest need leading for better outcome), countries with the highest burden of ill health and the most acute needs for good data have the weakest HMIS in the vast majority world's poorest countries (Health Metrics Network, Jan 2004, Journal).

Countries with most limited resources need to make assessment to identify critical priority in planning. This is because planning is very much dependent on the quality, quantity, reliability and timely available information (data) which in turn is dependent on:

- Internal and other users
- Structural organization (internal)
- Method of collection and relevance of data
- Method of reporting (completeness, timeliness, accuracy and comprehensiveness)
- Human capacity to collect and analyze the data
- Degree of integration internally and with other users
- Culture of information utilization for decision-making and others.

Health planning and the solution to health problems should be reflected in the social, political and economical value of the society as well. At national level, the problems are general and often normative and strategic; they are more of a tactical and operational nature at regional and local level (White, 1977).

If planning is to be based upon needs of population and be integrated at each level with social political values and properties; it requires a well-established information system structured at each level to enable a decentralized management at national, regional and local level to enhance planning accordingly.

Acquiring and disseminating information about *performance quality*, *pricing* and others intended to guide the health related decisions of the actors (the state, private sector and the people) are the

primary means to ensure *safety*, *provision* and *responsiveness* to consumer demand of the health care.

Furthermore, the development of suitable HMIS being important, it is meaningless without the commitment of the health managers, administrators to make use of the information. This commitment is vital to build the sense of responsibility and motivation on the concern of appropriateness and quality of data, the reliability and utility of the information (evidence) and the validity of the conclusions.

Despite the current effort to decentralize decision–making and building capacity at the district level, the use of information was found to be especially weak at district level, which raises serious concern. There is also lack of consensus between producers and users of data at each level of the health care system regarding the information needed (Lippeveld, Sauerborn and Bodart 2000).

To improve the capacity of those responsible staff means improving decision-making capacity and making better decisions (White, 1977).

Ethiopia is one of the least developed countries and its HMIS is by no means different from the feature of other developing countries. Ethiopia is also in the phase of decentralization and democratization and great managerial responsibility are to be assigned to the health managers at different levels.

A.A, as is the urban center of Ethiopia, is composed of varieties of health organizations, different levels of health management units and more sophisticated interaction. Major budget of MOH is also allocated in the urban center, which accounts for about 70% of its budget. Despite such budget absorption; the quality and access of health care delivery to the needy is questionable.

Further more there is a fast growing contribution of the private sector in the provision of health care, which needs efficient and timely regulatory measures to ensure; safety and standards of care.

So, assessing the features of the current HMIS of A.A Health Bureau can demonstrate the characteristics of; *how efficiently information is generated and utilized* with the current necessary inputs (material, financial and human), and *what are the prevailing problems of the system* to support decision making at each level to addresses community health problem at grass root level and yet be integrated at higher levels.

Under the concern of the technology of information management; computers become essential to handle large volume of data or information in a structured and rapid way for speed, quality. precession, clarity, regularity, reliability and efficiency. However it cannot produce information, rather it can only process it.

Thus it must be understood in the first place that the data entered must be accurate, management must be capable of manipulating the computer system into meaning full information especially when non-medical personnel or very low-level professionals do the data gathering. However, the key issue to come up with meaningful information lies in the accurate inputting of relevant data and a standardized cost-effective IT system (Keen 1994).

Common problems in the use of IT include; lack of user-friendly hard ware, poor system maintenance, and lack of sustainable energy source and shortage of adequately trained personnel.

1.3 Rational of the study

Assessment is one of the initial steps in any planning and one concern of assessment is identifying nature of problems, their magnitude of severity, distribution and trends. It helps to determine strength and weaknesses of the existing system.

If planning is to make any difference or improvement in out put, specific objective can be defined and intervention can be measured only after base line assessment is available. And repeated assessments provide a logical basis for modifications.

Improving any information system means first of all identifying strengths and weaknesses of existing system so as to focus on areas functioning least. HMIS assessment is then the early step in the strategy for strengthening and improving it.

At present, health planning is too often based solely on mortality and morbidity statistics. Thus routine health service report has an important place in providing data input for generating the necessary information.

The value of generated information is determined by its utility in decision-making. This is expressed in turn by the extent of the managers' commitment to generate reliable information or make use of the currently available information (data) for decision- making and for setting priorities to be responsive to health service demand at each level. So it is important to identify information problem at its root and plan for more integrated approach for improvement.

Undoubtedly, the role of computer technology in most management functions whether the public or private will continue to expand. But, it raises many questions like; what proportion of the limited resource available to the health sector in low-income countries should be invested in this technology? At what managerial level of the health management system can HMIS (information) be handled well (efficiently in cost effective) with human labor and /or computer technology? Under this context the assessment of perceived role of computerization of the HMIS of the A.A .RHB can help to investigate the contribution and problems faced in the improvement of current HMIS.

1.4 Research Questions

- What are the strengths and weaknesses of the current HMIS?
- Does the current HMIS generate the necessary data and information to support planners to address health problems of the society at different levels?
- How far are health managers at different level committed to generate, appreciate and utilize *health information as resource input* in their managerial activities?
- To what extent does the current HMIS *motivate* and *reflect* responsiveness and accountability of health care providers?
- What is the current situation of computer based HMIS in the AA Health Bureau?

1.5 Objective of the research

General Objective:

To asses the strength and weaknesses of the existing HMIS and suggest possible solutions for improvement.

Specific Objectives:

- To describe the process of data generation, processing and transmission in the existing HMIS and routine reporting system;
- To examine the degree of utilization of the generated information for health management functions (planning, monitoring, and evaluation);
- To investigate the human behavioral factors affecting the efficiency of HMIS from valuing of generated data, sense of responsibility in the system and information culture perspectives;
- To asses the status of the RHB in using high technology in the current HMIS.

1.6 Scope of the Research:

The study focused on Routine Service Reporting System in the HMIS and is limited to health facilities and management units at district and regional levels.

1.7 Significance of the research:

Though the research is targeted to fulfill academic requirement; it can serve as a good starting point for reviewing the current HMIS situation in the region to identify the strengths and weaknesses of the system so as to address the problem areas. The research can also contribute to the understanding of theoretical and practical views of the existing HMIS in Ethiopia that can be relevant to further studies for academicians, the health sector and its allies. It will also provide information to Federal MOH for the current NHMIS strategy discussions.

The study area is selected with the agreement of the Addis Ababa Regional Health Bureau officials. The final results of the study is expected to be helpful input in the improvement efforts of the HMIS and in the dissemination of learning gained in the study.

The knowledge gained in the research can be directed into three main audiences.

- The new knowledge gained by the research can be employed for restructuring of the organizational norms.
- It can be a base for future research setting and information handling for cyclical research practices.
- It helps in diagnosing the region's HMIS's problem and for the preparation of further intervention.

2. LITERATURE REVIEW

2.1.1 Health System Management

Health System Management is the management of interrelated component parts, both sectoral and inter-sectoral, as well as the community itself, which produce a combined effect on the health of a population (WHO, Regional Office for Africa, Jan, 2000,).

Health system Management includes the resources, actors and institutions related to the financing, regulation and provision of health actions.

The health system has four key functions

- Stewardship (broader concerning than regulation)
- Financing including resource generation fund pooling and purchasing.
- Service provision (for personal and non-personal health services)
- Resource generation; including personnel, facilities and knowledge

Health Action is any set of activity whose primary intent is to improve or maintain health with in these boundaries. The concept of performance is centered on the main goals of *improving health, enhancing responsiveness* and assuming of *fairness of financial contribution,* (J. Christopher, Murray and Frenk, 2000, Bulletin of the WHO)

The measurement of effective *health care system* is judged in terms of goals on improved capacity of

- Physical health status of the population
- Satisfaction and comfort of population
- Equitable distribution of outcome to beneficiaries
- Optimum allocation and use of resources and health care organization; through:-*Incorporating selected information on perceived needs; Description of elements and indicators of practical information base for decision making (action-led information system;*

-The development of suitable and sustainable technology for HIS and *conducting researches on education, evaluation, and statistics as integral part of HMIS* (White, 1977).

2.1.2 Theoretical concepts of Health Management Information System

Definitions

Data: factual information, often in the form of facts or figures obtained from experiments or surveys, used as a basis for making calculations or drawing conclusions (Encarta Dictionary ® Reference Library 2004).

Information: Pieces of data organized in such away that allows to make conclusions or gain knowledge (Awassa RHB, 2002).

Information: definite knowledge acquired or supplied about something or somebody data that has been organized and presented in a systematic fashion to clarify the underlying meaning (Encarta Dictionary ® Reference Library 2004).

MIS: a system that provides specific information support to decision-making process at each level of an organization (WHO, 2000).

HMIS: " An HMIS is an organized system of record keeping, reporting, processing analysis, use and feed back of information which is designed to provide different level of beneficiaries (clients, community, service providers, managers, planners and policy makers) with timely and relevant information necessary to formulate policy, plan, implement, monitor, supervise and evaluate health programmers"(Campbell, 1997).

HMIS is required to insure the production of high-quality information as '**resource**' or input on timely fashion for the needed purpose. The very term of health management information system is; to emphasize the use of the information for management of the health systems.

HIS is a process where by health data (input) are recorded, stored, retrieved, and processed to provide information (output) for the management of health programme or system and for monitoring health activities (Bodavala 2000), (WHO, Jan. 2000, Regional Office for Africa).

The structure of the HMIS needs two major components in terms of input and in terms of process.

System input:

a) The HMIS system resource includes:

- Persons-planners, managers, statisticians, epidemiologists, data, collectors and others;

- Hard wares- registers, telephone, computers etc
- Soft ware-report forms, data processing programs, logistics

b) Organizational input includes:

- Rules, standards, definitions, responsibilities, procedures to ensure sufficient use of HMIS. (Lippeveld, Sauerborn and Bodart,WHO. 2000 .Geneva).

System Process:

a) Information management: data collection, data processing and analysis

b) Using information for management purpose: problem identification, prioritization, decision-making, action and results monitoring (Awassa, 2002).

2.1.3 Major subsystems of HMIS: For systematic HMIS; WHO proposes to categorize under five interrelated subs-systems.

1. Epidemiological surveillance for notifiable infectious disease, certain environmental condition and risk factors.

2. Routine service reporting from basic services at community level, health center first level hospitals, referral hospitals, and special and territory referral hospitals

3. Special program reporting system (TB, HIV AIDS, Malaria etc)

4. Administrative systems financing, personnel, drugs and logistics, training, research and documentation and external health resource

5. Vital registration:–formal recording of events of human life: birth, death, marriage, divorce and migration.

The routine service reporting components of HMIS subsystems are categorized by WHO, (Sapirie, 2000 p.75 as cited by Lungo 2003):

__ *Data input*: validity and completeness of data recording and collection, including surveillance, routine case and activity data, surveys, data emerging from administrative process, and registration data.

__*Data analysis*, transmit ion and reporting: efficiency, completeness, and quality of data analysis, at all levels of the health system, in order to produce actionable information.

__*Data presentation:* includes production of reports with graphs, charts, tables and maps,

__*Use of information*: decisions and actions for patient/client, community, health unit, and executive management:

_*Information system resources*: sufficiency and use of critical resources to support: the health system budget; facilities such as space for record storage, records and formats; and necessary equipment for data communication, storage, analysis, and document preparation.

_*Information system management:* organization and coordination mechanisms for ensuring that data and information are properly defined standardized, produced, maintained, shared and reported.

2.1.4 Theoretical considerations in building the HMIS

- HMIS is an integral part of the health system, which includes all stakeholders. Hence; policy concerning HMIS should state; the objectives, implementation and maintenance responsibilities of various stakeholders, management structures and the necessary resources required at each level.
- Information needs at each level should be defined; which includes the development of data collection methods and instruments, data processing and transmission, and appropriate feed back mechanisms that not only based on perceived needs but also based on resource availability.
- Based on the set up and defined responsibility, the presence of competent staff should be ensured through in-service training and regular supervision The higher level of the HMIS should identify capacity building requirement for lower levels to provide the necessary support to ensure the quality of data collected from the grass roots.
- The HMIS should ensure that all components of the system are integrated in a systematic manner at all levels (central, regional and districts) and with all the concerned stake-holders including private sector. This includes definition of catchments areas and mapping of districts, mechanisms for information sharing.
- Computer technology can greatly enhance and expedite the data processing, storage and retrieval. So to enhance computerization; sustainable regular power (electric) supply, adequate protection, adoption of soft ware to local context, skilled manpower and net working are important.
- There should be continuous assessments on relevance, timeliness and utilization of produced information at all levels. Plans should be compared with actual performance to reflect changes and timely feed backs

- There should be defined minimum package of standard for HIS that can be modified to fit local requirement without violating the NHMIS. (WHO, Regional Office for Africa. 2000).

Steps to be considered during restructuring HMIS

1. Identifying information needs and indicators
2. Defining data sources and developing data collection instruments for each indicator
3. Developing data transmition and data processing procedures
4. Ensure use of the information generated
5. Planning for the required information system resource and
6. Developing a set of organizational rules for health information system management. (WHO, 2000)

2.2 Role of HMIS in improving health services delivery system and it's elements

2.2.1 Role of HMIS

Health is an integral part of national socio-economic development. And information is crucial input at all management level of the health services from periphery to the center, for patient/client management, for health unit management as well as for health planning and system management. The question is; how can information become a real "resource" (input) to solve health problem at all level of the health services system?

Information system should be able to,

- *Define essential indicator,*
- *Standardize reporting systems at different levels,*
- *Assure quality of information (data)* in
  - Accuracy
  - Timeliness
  - Comprehensiveness
  - Representative ness
  - Relevance
  - Complementarily
  - Ownership, (WHO, Regional Office for Africa, 2004)
- *Reflect the use of information at all level of health service Management and quality of health service delivery,*

➢ *Arouse or motivate the personnel to develop the culture of responsibility accountability and appreciation of information use*

Planning is an indispensable arm of health services management and has also moved; from an intuitive, spontaneous and subjected projection based on the past experience; to much deliberate, systematic and objective process of mobilizing information and organization of resources. This justifies the basis for the importance of information system in the health services making information available; that can be manipulated to particular planning, objectives, decision-making, and functional use.

However excessive flow of traditional habits, borrowed formats and redundancy in the developing countries HIS; increase the burden of the peripheral units where data starts through which not only the data are not trusted but are not even looked at (Reinke, 1972).

Of the major obstacles to effective and improved health management in the developing countries; lack of information support is the one most frequently sited. The need for well-designed routine information system to ensure that services are delivered according to standards is thus stressed

Since decision making process hopefully utilizes quantitative and objective information; consideration must be given also to the nature of system employed by an organization.

Unlike the traditional reporting system (data-driven), which emphasizes on data collection to satisfy the administrative and routine requirements; HMIS involves routine activities that increase knowledge of inputs, processes, outputs and outcomes to provide operational (action–led) information required for management decisions at each level.

2.2.2 Theoretical background of data processing

Through data process, raw data (inputs) are transformed into information in a *"usable"* from for management and decision-making. The data process is composed of data *collection, data transmition, data processing and analysis, and data presentation.*

Health information is basically required for three health management functional categories; *patient/client management, health unit management and health system management.*

Accordingly, the HMIS should be designed in such away to fit and serve all these categories both for clinical and community health services.

2.2 2.1 Data collection

Methods of Data collection:

i. Routine methods of data collection: Routine data collection is data collected at the health facility /unit level, (which is the focus of the study and will be discussed later), community data collection and civil registration.

ii. Non- routine data collection: Is method of data collection for more comprehensive understandings of the health problem in low accessible situations or areas. This includes rapid assessments, surreys. It provides information more on impacts, attitudes, and behaviors.

iii. Information from other sectors: such as from education, agriculture, economics, that contribute for decision-making on majors issues towards improvement of health status; particularly for health policy formulations.

iv. Informal investigations: through meetings of individuals or groups.

Whatever collection method is used or chosen, the data collected should fulfill a particular information need.

Routine HMIS:

As the focus of the study is on routine information system; only routine HMIS will be dealt with. Routine HMIS should support three functions; patient/client management, health unit management and the health system management. Routine data collection methods are classified into three.

I. Health unit data collection: The most common form of routine data collection is health unit managed data collection; that is particularly geared towards data based on the health care services or activities carried out on the people who use the regular heath service of the facility. It is data recorded by regular health staffs working in the facility while performing their daily health care activities. However, it is the most criticized one for its poor quality and low utilization rate.

But, this type of routine data collection at the facility level not only can be transformed to helpful information tool for planning and management of the health service at different level; but can become the trigger for sustained improvement in the health service delivery system through utilization of information at institutional level.

Routine health unit data collection is usually organized into separate vertical approach program-specific data collection; such as Immunization, Malaria, TB, HIV, MCH and others, which are handled by separate staff and supervised by program-specific supervisors. Such systems are often

well structured, staffed, well oriented and supervised. Care providers of such programmes use standardized instructions and ensure more regularity and higher quality of data.

ii. *Community data collection:* is an approach which helps to adapt or bring health care delivery system to the needs and limitations at the community level and involving the community in planning and management of local health services. It does not only help managers and care providers understand better the community health needs, but also increases community participation in the generation and use of information specially in health promotion and disease prevention activities.

A skilled clinician does not just treat symptoms (as is aspirin for fever) rather performs relevant examinations to obtain the necessary information to identify so as to treat the underlying health problem. By the same talken; community (population) based HMIS helps to reveal the unseen health problems, reach people those are poor, uninformed, at greater risk and the powerless. It allows more careful health assessment on what is happening on the community so as to respond not only to readily visible issues as fever is to the clinician but act on health problems which are least visible too.

The questions of coverage, comparisons, and causations are best explained (approached) by proper analysis and utilization of community based HMIS.

It helps to reveal community -specific and target population based health problems and act to solve the problems through well-informed community participation.

Routine community-based data can be obtained from home-based records, such as immunization card, visit reports, community-based supervisions coordinators. Local government and local NGOs are also good data sources and intervention instruments.

The routine community-based data collection can be facilitated through CBHW. More representative data on community health status can be obtained through proper professional assistance of the CBHW. But often even the professionals are not well trained to provide such assistance & make full use of such potentials.

iii. *Civil (vital events) registration:* is also a form of routine data collection system related to health. However in developing countries, they function poorly.

Data collection instruments

(a)For the patient/client management data collection instruments are individual's medical records. These formats vary according to their particular services and functions; such as curative care, follow-up, preventive care, risk identification and others.

(b)Data collection for health unit management: The main purpose of these data is to permit health unit staff to make operational decisions; namely for *service delivery management* decisions and *resource management* decisions.

Service delivery records; such as registration books, tally sheets, help mainly to gather data on the main services provided. Data obtained from these instruments permit the generation of multiple data and information through calculations and aggregations of the obtained data; to determine amount of services provided, prepare reports to the higher management, determine geographical origin of diseases and others. In fact, these records often constitute the main database for the system management data.

The resource management records: are data gathered on personnel, equipment, supplies, drugs, finance and other resources to make appropriate planning and management decisions as required.

(C) For Health System Management: The data for the generation of information for system management can be collected (obtained) from two sources; from the *health unit reports* and from *the staff assigned at the system level.*

The data reported from the health units are mainly pertaining to the health status of the population, services provided and resources used.

Much of the information needed for system management is generated outside the routine HMIS through various qualitative quantitative methods.

Data can be collected through supervision, interviews, checklists, inspections and routine HMIS and is aggregated for the purpose of evaluation monitoring & programming of the health service.

2.2.2.2 Data Transmission

The simplest form of data transmission is the transfer of raw data form lowest lever to higher level of the health system for processing. However the essence of data- transmition includes considerate of him data is transferred among interdependence parties (bodies) in the health system to ensure decisions are based on the best available data or information.

A well designed if system will not only ensure that data transferred to high management are relevant but are also utilized for day-to-day activities management at the data generators level (health unit).

Data transmission in the three functional categories includes:

In patients/ client management: referrals

Health unit management: Transmition of detailed or summary reports of services provided.

Health service management: Transmition of detailed or summary reports on disease incidence from lower to higher management, from central unit to lower levels regarding feed backs, budget allocations others.

Horizontal data transmition: The horizontal actors in the health system can be numerous; consumers, community representatives, governmental agencies and NGOs.

2.2.2.3. Data processing:

The goal of data processing is to produce information to aid decision making at all levels in the health service delivery system. In the data-processing step; inaccuracies of data have to be treated prior to data processing. Information needs' indicators* for the various health management functions at all levels (health facility, community, district, regional and national) have to be established.

This can be over-come through making effective use of community based HMIS. It helps to reveal information related to the neglected, minorities and helps to ensure equity and community empowerment through active participation. It also helps to ensure errors are minimal so as not to bias decision making.

Data can be processed using manual, computerized or combination of the two systems. But care must be taken not to hide important information and peculiarities during aggregations.

2.2.2.4 Data presentation:

It is a means of displaying generated information to the understanding of the reader. Summary reports, charts, graphs, tables and others can be 6roduced at each level. Visually enhanced presentations facilitate understanding both by the reader and presenter.

2.2.2.5 Data interpretation and utilization:

Basically, the very essence of HMIS is to produce information that can be utilized for the health management at each level. One of the attributes for the failure of HIS is stated to be the non-or

under-utilization of data at facility level. This in turn has negative impact on the staffs motivation and commitment to appreciate the information system.

The analysis and interpretation of data at any given health service level can help to identify health problems at the place of there origin to solve the problems using local resources. Community-based (oriented) designed action plan; not only helps to solve problems at their infantile stage but also makes extensive use of the community participation that has great contribution for efficiency and sustainability.

2.2.2.6 Overall management of HMIS

i. The HMIS should be designed in such away; so as to facilitate effective use of the system in a sustainable manner. The HMIS should provide information for planning and managing of the health service at affordable cost with well-established organizational rules.

ii. Resource requirement: the HMIS succeeds or fails due to resource constraints at both primary and higher levels; especially at district levels. HMIS design and implementation should be related to fit the required function and resources available.

iii. Staff positions, rules responsibilities: Facilities at all level require staff to perform (support) the HMIS and related activities. Whether these activities are performed by care provides or by full time staff being dependant mainly on budget condition. Mostly clinical staff responsible for specific services can perform the data recording including daily tallies of the services activities as a routine part of their daily activities. However, specific clinic staff should be assigned to compile data & prepare reports, (monthly, quarterly others).

iv. Training: To produce valid, reliable and useful information; staffs' skill must be built through initial training, refreshing courses and regular follow-ups. Staffs' training can be incorporated with regular courses to improve the function of HMIS and health care provision as well.

v. HMIS supplies distribution: Basic supplies such as reporting forms, tally sheets computers, software on timely fashion insures the prompt functioning the system..

vi. Organizational rules: The HMIS should be designed to meet the need of various users. Data collectors and users at all level should be aware about the role of the system in the improvement of health service delivery system.

vi. Data collection: such as data definition, transmission, processing, reporting standards and schedules should be established. Data are only comparable if they have been collected using some instruments. (Lippeveld, Sauerbon, Bodart, WHO, 2000).

(* Indicators - are variables that help to measure changes in a given situation directly or indirectly.)

2.3 Back ground of Health Information System in Developing Countries:

2.3.1 General features:

At present, health planning is too often restricted to the health sector, which usually is solely based on mortality and morbidity statistics. However, it should be rather based on measures of the health and health needs of the total population, users and non- user of the health services.

The WHO hypothesis is that the development of rationally structured routine information system closely adapted to the information needs of health services at all level including at the communities level can potentially contribute to the overall improvement of the health service management. (Lippeveld, Sauerborn & Bodart,WHO .Geneva. 2000).

There is also a feeling of the necessity for taking action to fulfill human needs with the emphasis of self determination and community participation to consider goal, objectives and priorities in light of local, regional and national values and expectations and level of development as well.

Although many factors contribute to the gap between health planning and implementation (at different level) one of the most critical problems cited is lack of getting timely and relevant information to support rational and effective decision-making.

HMIS design and implementations are then seen (advocated) to be very cost effective technical and financial investment. But much is remaining to be learned (work on) about the most appropriate design, implementation and utilization under the contextual framework of the users (economical, cultural, technical skill and capacity, for use maintenance and others) on sustainable nature and responsive manner. Thus any ultimate achievement of a service or system should be examined from "user's" perspectives.

Additionally policy makers and managers at all level often also have access to routinely generated information from the health service statistics but this information is frequently in the form of raw data from low level (not integrated to give meaning) that their use for decision making becomes questionable.

In addition, health policies appear to be markedly influenced by the positions and shifts of definitions of priorities at global level.

Following the economic recession of 1970s priority of health services was redefined with the declaration of Alma Ata in 1978. Global consensus built around the new famous definition of P.H.C stated; Essential health care based on practical scientifically sound and socially acceptable

methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of development in the spirit of self reliance and self determination (Campell, 1997, (WHO 1981)).

As a result, essential indicators for monitoring the progress of the PHC area were proposed (WHO, 1979 and WHO 1981b; as cited by Campell, 1997Z). This emphasis shifted the focus of HIS on the development of recording, reporting instruments (formats, cards, registers and referral slips and others) to suit illiterate and semi- illiterate volunteer staff including the CHW, TBA and extension health workers program; which in fact brought the reporting system more closer to the community level (Chabot and Rutten 1990 as cited by Campbell 1997).

Inline with the direction of decentralized management; emphasis was given to the concept of integration to be more manageable at lower level of health management which gave emphasis to strengthening district health management with the availability of up-to-date relevant information to guide variety of actions (WHO 1989, as cited by Campell, 1997).

However WHO study revealed health workers spent too much time (about 40% of the workers' time) on endless filing, registering and colleting data and peripheral health workers often find themselves working with rare supervision and support from higher levels (Feuerstein 1993, as cited by Campbell 1997).

Reporting data upwards becomes an end in itself for many service providers' managers and information system tended to be data driven instead of action driven (Sandiford Annett and Cibulski, 1992, as cited by Lippeveld, Sauerbon, Bodart, WHO 2000).

This gave rise for the emphasis on need to establish HIMS and WHO proposed that revamping HMIS is an attractive investment both because it is relatively inexpensive, and poor decisions based on inadequate information can be very costly (WB 1993 as cited by Campbell 1997). In line with this, WHO took a global stance on the utility of information system in its statement of cooperation for countries and regions in building their analysis interpretation and dissemination to improve the health related decision making in its statement at International Conference on Population Development held in Cairo 1994 (WHO1994, as cited by Campbell 1997).

The chaotic status and inefficiency of most existing information system in developing countries are linked to structural weakness of the system and lack of integration (WHO, 2000).

This can be explained as in most developing countries:

- Information system procedures were not intentionally planned to provide management support in an integrated way instead were designed to fulfill bureaucratic requirement for centralized (colonial) system.
- Too much emphasis was given (placed) on the measurement of impacts which called for costly assessment: which are neither for the identification of needs nor supportive for future planning and improvement in a sustainable and cost effective way (Campbell 1997).
- Many decisions on policy, planning and resource allocation are made without analysis of the information that is readily available. Furthermore, the data received are often incomplete, inaccurate, untimely, obsolete, and unrelated to priority tasks and functions of the local health personnel.

Current HMIS's are therefore widely seen as management obstacles rather than as tools: which are considered to be attributed to:

- *-Irrelevance of information gathered*; data collected do not fully address the management objectives at the level of health facility or administrative unit and yet data that are needed are not included.
- *-Poor quality of data;* frequently data collection is performed without taking into account the technical skill of the health workers or diagnostic facilities of the health units.
- *Duplication and wastage among parallel health information systems*; vertically structured programmes have *separate programme information systems,* which exist side by side in addition to the general routine HIS. Since the data are not cross-referenced among the deferent systems, health care providers and system managers spend considerable time in collecting redundant and overlapping information.
- *-Lack of timely reporting and feedback*, delays in data transmission and lack of feedback at the district level are often caused by the presence of strong vertical programmes, planners get outdated information and managers at district level get outdated feed back if any or not at all.
- *-Poor use of information*, insufficient use of the available data at all levels and especially at front lines (health institutions, districts health managers) which further contributes to lack of appreciation, value and concern to HMIS (WHO 2000, Regional Office for Africa, 2004).

2.3.2 HMIS in Ethiopia

2.3.2.1 Background:

Geographic and Demographic:

Ethiopia is situated in the Horn of Africa between 3 and 15 degrees north latitude an 33 and 48 degrees east longitude. There are three climatic zones: the "Kolla",hot lowlands (below approximately1,500 meters),the "Weyna Dega"(1,500_2,400meters),and the Dega or cool temperate highlands (above 2,400 meters).Mean annual temperature ranges from 1.-16,16-29,23-33 degree centigrade in the Dega, Weyna Dega and Kolla respectively.

Ethiopia is estimated to have population size of 65.3 million on 2001.Of the total 49.8 and 50.2 are females and males respectively (CSA 1994, as cited by MOH, 2002).

Health status:

Ethiopia has poor health status relative to other low-income countries in the Sub-Saharan Africa. Infections and communicable diseases account for about 60_80 %of the health problems in the country.

Health System Organization:

The health policy emphasizes the importance of achieving health service access, for all segments of the population via a decentralized state system of governance. To attain this goal, the government introduced HSDPs of different phases with four-tier health service delivery system; characterized by primary health care units, district hospital, zonal hospital and specialized referral hospital.

Management and Support:

Overall responsibility of the health policy is and regulation being of the FMOH; management responsibility of health services is assigned to Regional Health Bureaus (RHBs).

Health Sector Management and Information Systems:

The RHBs are primary institutions responsible for the health service delivery. Capacity for effective health management at all levels remains to be low. There is major concern regarding the Health management Information System. Timeliness and completeness of the system reporting are among the major weaknesses of the system.

Progresses are also observed in some regions.

The RHB of SNNP has developed reporting formats and a reference guideline for health workers in the region with collaboration between the RHB, Regional government. and the ESHE?JST project funded by USAID. This guideline consists of standard data collection formats, standard information presentation instruments; such as charts and tables to be followed by the health workers and other pertinent information on the subject. The Tigray RHB has also conducted similar efforts.

Initiatives are also under process to prepare National Management Health Information System Strategy by the Planning and Programming Department (PPD) of the FMOH (PPD, 2003).

Considering the problems experienced by many developing countries, the HMIS in Ethiopia seems not to be different from other developing countries. Preliminary assessment of NHMIS and experiences of some regions (SNNR); the current HMIS showed that it has the following major deficiencies.

In general, the current HMIS is inadequate in providing the required information for management support; hence, data coming from the system is not a resourceful input for decision-making.

There is considerable underutilization of the information generated by the system for decision making at all levels specially in the front line where the data is collected and information is generated.

These and other problems as stated in other counties are believed to be attributed to many factors such as:

- The data quality is considered to be very poor.
- Outputs of HMIS are not related to the priority tasks and functions of the local health personnel.
- Lack of technical knowledge and skill of data collectors at the lower level.
- Lack of uniformity and consistency in definitions.
- Outdated ICD
- Considerable limitation of financial and material resources. (PPD, 2003)

2.3 HMIS and IT

The drive for the reform of HMIS coincided with the revolution of information and communication technologies that most recently created or structured HMIS are computerized to various degrees. The role of computerized information system to permit efficient, timely data analysis for decision-making is not questionable. But introducing computer technology in the

development of improved HIS is not necessarily the "silver bullet" that solves all the problems of efficiency of health services (Sondiford Annet Cibuslk 1992), WHO 2000, as cited by Lungo. 2003). On the contrary; lack of appropriately trained staff, lack of hard ware, poor system maintenance and lack of sustainable energy source of computer equipment can result in the decay and obsolesce of expensive computer equipment (WHO, 2004, Regional Office for Africa), (Lippeveld, Sauerbon, Bodart WHO, 2000).

There is another paradigm on IT. Though it improves efficiency and makes work easier it created addiction and dependency on improved information. In fact its addiction, associated with the generation of quantitative "informed information' has destructed managers from qualitative aspects of services project delivery (Graham Jones and Nabarro, 1988, as cited by Campell, 2000,).

HMIS, monitoring and evaluation must be viewed; as long term socio-cultural political and technical development process with short term practical functional application that actually work not mainly as a *technology acquisition* process aimed at purchasing a turn key universal solution (Hedberg.Calle, 2003).

Experience showed: it is a fundamental question of major structural change in management practice, large-scale education and training of the work force. Despite the hopeful prospective of IT and decentralized HMIS, there are so many constraints experienced by developing countries (especially in the development of computerized DHIS.), which is considered to play pivotal role as unifying force on the NHIS. Some of the constraints include:

- Limited funding
- Deficiency in information infrastructure
- The network is still vulnerable to external shock caused by virus, repair and /or replacement delays, difficult system codes etc.
- Significant underutilization of data / information for decision making
- Lack of interest or / and experience of use of information by managers
- Inadequate human resource, lack of expertise for strengthening HMISs and leadership, to develop, administer and use the HMIS at all levels.

Even though there are indications that these conditions may change gradually and many in developing countries have in recent years observed to adopt various ICT applications: IT to be more than just equipments; infrastructure, technical and managerial skill, are needed to operate it.

The problems of information system then interplays with the concern of human, organizational and technical factors, which have behavioral and social elements. Thus information system development is also a social process.

"Information technology is often confused with computer applications that are designed to improve efficiency by automating manual systems and are justified from the replacement of human labor. Since many developing countries are 'labor-rich', any technology that adversely affects the already high unemployment rate can be viewed as potentially unwise investment (Bjorn-Anderson *et al* 1990", as cited by Lungo 2003,).

"Information systems are much more than computers and telecommunication equipment, as they involve also people and their actions in the organizational setting in which they work" (Heeks, 1998). It is thus important to account for the people and the implications of their actions in the study of information system, whether manual or a computer-data base (Lungo2003).

"International literature and experience of South Africa and others show that there are no quick solution and in particular no quick technical solution (of ICT) despite systematic propaganda from venders to the contrary" (Hedberg S.A 2003 Latvia 2004).

"Countries that have the resource to computerize should be prepared to process data manually as well. Hard ware maintenance should take into account the local capacity to bear the recurrent costs of such a network. If the HIS is being totally reliant on computer technology data processing; is likely to fail in case of hard ware break down. Therefore manual data process should also be included in training courses" (WHO 2004, Regional Office for Africa).

HMIS and any plan in HMIS and IT should be conceptualized with in the context of the existing infrastructure in the country and create balance between adoption of existing IT standard with the local condition to be integrated with research, social change and education in the health sector.

("World-wide experience with large health IT projects are similar with 50%-80% failure rate Heeks et al 1999; Lippeveld et al 2000" as cited by Hedberge, 2003). HMIS development needs to address the problem through appropriate approach and emphasis on learning. "The principle of

"learning by doing" and implementing combined with a strategy to go for achievable results 'hanging fruit' has proven valuable in South Africa" (Braa, 2003 as cited by Hedberg, 2003).

The process of improving HMIS requires appropriate institutional framework consisting of technical expertise, adequate funding and strong institutional commitment to ensure long-term sustainable HMIS (Braa, 2001, as cited by Lungo,). Whenever computerization becomes the primary objective of the health information system development efforts; the most important purpose of serving the data needs of the care providers tend to get lost (Lungo, 2003).

2.4. HMIS Reviews Conducted in Developing Countries

2.4.1 Tanzania Joint Health Technical Review 2002:

Tanzania took action to improve its HMIS based on reform proposal, which also included development of essential health package that focused on increased power to district health system and local government through devolution. As a result HMIS was one of the reform areas. The MOH commissioned review of reform held in Feb 2002. One of four key areas selected for review was decentralization and HMIS.

The review focused on technical issues with special emphasis on data collection in public sector; that is conducted by HMIS Sub-Group. The review was conducted to assess progress in implementation and identify emerging issues. Of the major areas of concern in the review of Decentralization and HMIS were;

- Assess the ability of HMIS to respond flexibly to current and future information requirements with special emphasis on performance linked to poverty reduction, debt relief and support to devolution at district level
- To identify technical and institutional constraints on data collection and data use at all levels for decision-making with particular emphasis to district level. (Collection, compilation, utilization taking place).
- Assess current system (computer) from user prospective.
- Identify additional capacity requirement and others.

2.4.1.1 Assessment on operating progress:

Organizational arrangement of the health system has three levels. National, Regional and District .The assessment took place at each level.

Assessment on operating progress showed that according to 3year plan of action (2001-2003).

- Responsibility assignment (plan) was not appropriate in the HMIS; responsibility for the capacity building in HMIS rests only on HMIS.
- Recommendation provides detailed activities needed but sufficient attention was not given how to achieve.

Actual achievement of two years showed;

Progress was slow - none of the major recommendations were fully implemented. Out of ten only three-implementation progresses of the recommendations were recorded.

Constraints stated included:

- Lack of ownership
- Sudden departure of key personnel
- Underutilization of high technical capacity
- Reactive response to task rather than proactive and retroperspective acting was only partially successful.
- Lack of management capacity
- Shortage of man power
- Earmarked funding for support

Aside from constraints major challenge was found how to satisfy the immediate need for generating HMIS at national level while generating long-term better use of information at each level especially at the district level.

2.4.1.2 Assessment on Collection, compilation and utilization of HMIS data for effective Decision-making:

National level: process involved total data originated at facility level are aggregated at the district and regions before submission to control HMIS unit.

Assessment revealed the following:

- Lack of complete data
- Current reports did not assist senior staff decision making due to:
  - Crowded format and inaccurate data
  - Lack of analysis of trends and indicators

- Question of relevance of facility based information to national level: which also has adverse effect on influencing perceived relevance of routine data for evidence based decision making at national level.

- Missing data, software limitations; no aggregate national figure was sometimes available, absence of source codes and systemic maintenance, inadequate virus protection.

Sub-national level

Facility

- Staff was required to enter data in details and numerous different registers,
- Compilation of data was perceived as lengthy and laborious at the facility level,
- No evidence was found for use the of information for decision-making at facility level
- Perceived absence of feed back by staffs at lower level.

District

- Over emphasis on reporting to regional level and assumption of computerization would assist better use of information,
- Over reliance of key HMIS personal contact leading to lack of perceptive responsibility for district affairs,
- Lack of feed back on reported problems,
- Lack of interest in HMIS at hospital level.

Region

- Knowledge of HMIS – operational procedures was largely vested in one of the members of the management team.
- Reporting was of greater priority than follow up and supervision.
- Greater emphasis on frequency of supervision (based on checklists guide) rather than quality and content.
- Supervisors may be outside the skill or technical line.

2.4.1.3 Implications of Current HMIS

- Increased perception of non use of information
- Increased emphasis on computerization

- Increased emphasis on quantity of routine data rather than quality
- Current supervision neither promotes efficient data collection nor fosters support.

Despite all the constraints and challenges; success and other progress of HMIS included:

- A wide range of information is collected nation wide which most of it is facility-based
- The district-processing file is a well-developed tool for local-evidenced decision-making and performance monitoring, but not generally used for the purpose designed
- Data collection tools are well developed (Lungo, 2003).
- Complementarities_ each individual system is part of the whole.
- Dependency – some indicators developed on HMIS as primary source of data.
- A number of additional potential opportunities exists (E.g. Local government through village executive officer (VEO) creates link (outline between data) at facilities and community level.
- MOH through HMIS oversees IS at facility level and national level. Devolution, if realized has the potential to complement and support improved performance of HMIS especially at district level.

But still gap exists between information and data collection and evidence-based decision making. The challenge is how to use the opportunities of decentralization to improve HMIS and maintain HMIS at national level.

2.4.2 Assessment on Evaluation of HMIS in India;
Need for: Computerized Databases in HMIS

2.4.2. I. Organizational Structure

India has three levels of HMIS, Central, State and District levels with the following responsibilities.

Central Level (national)

- Main Organization at national level: deals with the collection, compilation, analysis and dissemination of information regarding health conditions in the country covering various aspects (health status, resources utilization at health facilities etc).

- Statistic Division: organized into computer unit, demography, unit performance and monitoring unit
- Sample Registration System (SRS): Conducts census operations (birth death mortality indicators fertility) at national level.

State level (regions)

- Have clear demarcated structure in the form of directorates for PHC, secondary health and medical education.
- Each directorate has statistics section and computing units.
- Each development project has statistical officer.
- Separate unit maintains vital statistics.

District level

- It is managed by District Chief Medical Officer (DCMO) sometimes two (District Coordinator Hospital Services & PHC District Medical Officer) .The DMO is supported by two statistical officers who are key personnel in HMIS chain. HMIS depends a lot on their perseverance, support and skills to continue & sustain HIMS.

2.4.2.2 Contents and flow of HMIS

Issues

i Structural –No coordination effort at district, state and national level.

ii Procedural- exhaustive into collection PHC but ignores the logical information principle of;" No need for information collection that is not used".

- IS design tool requires enormous number of registration to be maintained.
- Vertical program is separate.
- Professionals spend 2 hours per day of the available time on data collection
- Indicators are poorly harmonized for inter-district comparisons.
- Extra efforts in compiling reports.
- Some events are reported afresh (E.g. Location, number of hospitals are all included in the monthly report).
- There are long list of cards for every term of entry.
- Absence of feed back creates problems of motivation to insure accurate and reliable data-(example, no feed back on report with district sending CMR zero for one year).
- Reports delay – sent by post or person.

- ➢ Less information sent up by high level hospitals on PHC (because patients usually prefer to visit referral hospital first despite good numbers of staff usually resort to their own ruled reporting forms (E.g. major senior surgeons).
- ➢ Usually primary suppliers and user of information have not much interest in the information and fail to participate in the main issues that state: should feel they own the system; the system should involve extra work and should be perceived as use full.
- ➢ The first level HMIS DMO-are generally not attending the PHC and do not take active role in the management of PHC; don't understand the registers and information produced.
- ➢ The second level users, who are supposed to guide and supervise, feel indifferent of the data for targets.

iii) Content of existing system

Aggregation:

- Is not adequate, may not mean much in many instances because it is usually done by the higher level,
- No useful data on the incidence of many diseases and disabilities
- Delay in processing
- Large size of population is considered as single unit for planning, (50 -100million) fails to consider differentials
- No village (least block level) indicators and focusing on efficient targeting of needy population and does not address peculiarity

Service statistics State level is mostly concentrated on limited indicators (MR, FR. etc). No nationwide community based estimates are available for the incidence of various diseases and disabilities (e.g. Diabetes Mellitus, Heart disease, AIDS even to some infectious diseases, e.g. malaria).

- ➢ Usually existing IS in developing is managed by bio-medically trained personnel and general health administrators and they focus only on epidemiological services and finance. They generate little or no socio-cultural data needed for adjusting services and disease control to local health related perceptive, values, resources.

IV. Human Resource

- Absence of training and motivation, which applies to all levels. Key functions of HMIS lies on district or state (Regional) level; but usually 50- 70 % of district statistical officers constitute of promoted officers from clerical cadres; not properly oriented to new jobs. Most of them have stayed in the same position for long period and have tendency to maintain statuesque and lack professional power in extracting information. Officers at higher level too lack computer skills to build the system.

V. Technological

- In addition to manual paper based system, computers have been supplied to almost all districts. But computers are only used to summarize and collect at state level and are even worst at district levels, which are used for word processing and printing works.

VI. Surveys

Policy makers & external donors place greater reliance on the survey data – usually state is not to the state government in data base

- Reports are supplied after longtime of production and hardly is there any follow up

VII. HMIS and other Agencies

Usually other agencies engage to conduct studies before lunching any program and consultants organize survey to get the necessary information. However, the needed information could have been available through normal channel with government in so fragmented way, that no particular officers or individual would know where & with whom the data exists.

- Even if available to donors, the information or data may not suit to the donor's particular requirement. Employed assistants do thus many times ad hoc irregular processing of the data collection and processing. Towards end of project; assessment becomes very difficult, for information produced may be manipulated to convince results sometimes don't keep records for amounts (budget) spent

- Data generated by donor agencies mostly are owned by them and passed on to research institutions or researches and are monopolized for personal publication or consultancies. Even if data is passed to senior officials can probably be personalized.

VIII. *HMIS & private /NGOS* – Integration is very weak.

IX . Use of Information for Decision Making:

The common practice in developing countries, priorities in health sector are set by government in light of political pressure. Role of computerized technology on development is understood too. But unfortunately the data culture is very limited in all levels of administration. So as long as HMIS doesn't help in improving the managerial functions, it remains as a mere data based system (not information based). Whatever tool and technology facilitates the process of effective utilization of recourse should be welcomed and adopted in real time.

2.5 General Observation

Assessment on obtaining reliable data and information use for decision making have been conducted in several countries like Ghana, Nepal, Latvia, South Africa, Pakistan; all have stated the presence of similar problems, which mainly emphasized on the *lack of culture of use* of even the available data and information at al levels of heath mgt units and facilities, *lack of motivation and work overload of data collectors*, and *system failure specially computerization at district level*. "Most of the time planning and management. Decisions are done without relevant information and there is culture of non-evidence based decision making (National HMIS an overview, Pakistan 2003). "A case study of such a project in developing countries reveals that each health center had filed 7770 pieces of data each month from 105 slums, yet no one had analyzed the data. The problems were just greater than lack of computers" (P Ganer, H Annet,T Hapham1992).

3. BACKGROUND OF A.A HEALTH BUREAU

3.1 ADDIS ABABA (A.A)

A.A is the capital city of Ethiopia with the total population of 3million.It has a total geographic area of 540 square km. It is situated between 9 degrees latitude and 38 degrees east longitude in a plateau that stretches at a range of 2200_2800 meters of altitude above sea level.

The climate is divided into two major seasons: summer about 9months, and cool months of rainfall about 3 months with an overall average of maximum and minimum temperature of 22.9 and 10.8 degree centigrade respectively.

Currently the city is divided 10 sub-cities and 103 Kebeles (The lowest administrative units).

Population profile:

Men are 48%*, women in child bearing age (WCBA) are 35.3%, Children under 1 year are 2.1%, children under 5years are 10.2%. Christians are 83%*and Muslims are 13%*.

Economy:

The economy of the city largely depends on small and large-scale factories which accounts for about 18%* of employment.

Health Indicators, 2004:

Potential Health Coverage	87%
Fertility Rate (FR)	1.9
IMR	93/1000
EPI Coverage	93%

The ten leading causes of OPD visit

1. Acute Upper Respiratory Infections
2. Broncho-Pneumonia
3. Other Helminthes
4. Gastritis and Duedenitis
5. Infection of the Skin and Subcutaneous Tissues
6. Inflammatory Eye Disease
7. Hypertrophy of Tonsils and Adenoids

8. Other Toxemia

9. Muscular Rheumatism

10. Acute Bronchitis

Prevalence of Malnutrition and Diarrhea are 27%* and 12%respectively. *

(Source of *-MOH Health Sector Development Programme, 2oo2/3- 2004/5, Jun.2000 A.A)

Table3.1

Health Facilities in Addis Ababa by Category, 2004

Health Institutions:		A .A Health Bureau			
	Total	Public	Private	MOH, NGO &Others	Total
Hospital	24*	5	17	7	30
Hospital Beds-					
Health Centers	23*	23	-	4	27
All Clinics	456*	9	400	31	440
Health Post& stations				39	
Pharmacies	137*				
Drug Shops	43*				
Rural Drug Vender	8*				

NB: The figures under A.A and A.A Health Bureau are not the same because some of the health institutions are directly accountable to the Federal Ministry of Health (FMOH) and are not registered in the A .A Regional Health Bureau.

Health Professionals in A.A

There are a total of 1497 and 1636 health professionals working in public and private sectors respectively. *

(Source of *-MOH Health Sector Development Programme, 2oo2/3- 2004/5, Jun.2000 A.A)

Table3.2 Health professionals in the Region

Categories	Public	Private
Doctors (all types)	219	377
Health Officers	2	21
Nurses (all types)	658	778
Pharmacists	2	14
Paramedical &Others (TBA, CHW)	218	388

(Source AA RHB. 2004)

3.2 Organization of the A.A Health Bureau:

Currently the bureau has one head, one deputy and four line departments with the required sub units.

Hospitals are managed by authorized board, which currently is under formulation, and are accountable to the Regional Health Bureau. Health centers, clinics and health posts are directly accountable to their respective sub-cities health offices.

Major problems of the health bureau are stated to be:

- HMIS
- Lack of quality of care and managerial capacity
- Severe shortage of pharmaceutical and other medical supplies
- Financial problem
- Lack of staff motivation

The problems are put in the order of their priority. The problems are believed to be attributed mainly to: old infrastructure, acceleration of health problems due to newly emerging health problems such as HIV, stress related health problems such as Diabetes Mellitus, HPN, Heart Diseases; fast urbanization; finance (about 30% of the user are unable to afford user fee), accelerated price; lack of guide lines and training, (R. H. B. 2004).

The general Feature of HMIS in A.A R H B

Generally, data are registered and collected using paper based tools at the individual service provider level in the health facilities: which are the major data source of the HMIS.

The HMIS in A.A RHB is under reform starting from June 2004. The reform focused on the design of reporting formats, training of staffs and computerization of the system. The bureau has adopted new software called DHMIS. This software is believed to be adaptable to the local requirements; that users are able to add data elements for local use as long as higher-level standards are maintained.

The current HMIS is functioning using both paper work and computer system. The sub city has computers in the sub city HMIS unit and health institutions. The initial data collection and entry to the computer are done by the data clerk of the health institutions; the health institutions bring their monthly (reports) on floppy to the sub city HMIS unit, where it is again is summed-up for analysis and sent through floppy to the regional HMIS unit. Reports from clinics and health centers are sent to the sub city HMIS unit and hospital reports directly sent to the RHB HMIS unit.

There is one acting statistic personnel in each hospital, health centers and sub city HMIS units trained for the purpose. However, some of them are currently equipped with non-trained personnel; because the training program was conducted only once in cooperation with the AAU; and the HMIS units whose staffs have left for different reasons couldn't be replaced by other trained staff.

Each of the HMIS units of the public hospitals, sub city HMIS and health centers are supposed to have computers and one statistics clerk.

4. RESEARCH DESIGN

4.1 Research Settings

The study is qualitative or descriptive in nature, which is based on secondary data, obtained through different literature, primary data obtained from questionnaires, interviews with key persons and active observations.

The study focus is on the analysis of HMIS process and information utilization for decision-making in the region under study.

Study population is categorized in to two major groups-the Administrative Units and the Service providers.

1. Administrative units'	Regional level
	Sub city level (district)
2. Service providers	Hospital level
	Health Center
	Clinic

Samples are taken from the stakeholders under study from data collectors and users perspective under the two categories.

Assessment tools

The method used is qualitative research characterized by the use of questionnaires, interviews, participant observation, and analysis of certain documents.

Major variables are selected on the bases they can reflect the issues stated on the objectives namely from organizational structure, technical capacity and behavioral aspects. In addition to questionnaires, valuable interviews and discussions have been conducted with the heads of each specimen unit.

This method is selected for the understanding of social aspect and culture of information generation; processing, utilization and understanding of the participants. The participants are categorized into:

-*Unit heads*; people who are responsible for the management of their respective unit,

- *Front-line*; people who are assigned to routine activities and according to their qualifications; that is: *physicians, nurses, technicians and statistic clerks*.

Data Collection methods

As mentioned above questionnaires with open ended and optional choices, interviews especially with department heads or unit heads at health facilities (physicians, nurses, technicians & statistic clerk) and management units, observation of documents, reports, graphs, plans and others have been utilized.

At districts and regional level the respondents were department heads. As the focus of study is at regional level and below; the sub city health offices play pivotal role in the health care delivery system in general and HMIS in particular.

Indicators or variables selected

1) ***Organizational variables***
2) ***Technical Variables (for quality of data)***
3) ***Behavior: Staff attitude towards information***

The above indicators are selected, because it is often believed they affect significantly the production of reliable information and it's utility to support decision-making in the management of health service (for details look annex I).

4.2 Study sampling

Specimen from each category is taken as follows

Region	Head of PPD
	Head of epidemiology
	Head of health service
	Coordinator of HIV prevention and control
	Head of Family Health
	Other pertinent respondents
Sub city	Head of sub city or on behalf
	Head of HMIS
	Head of health service
	Head of epidemiology
	Head of PHC
	Other pertinent respondents

Health Institutions Public. Private and NGO

Hospitals

Health centers

Clinics

The sub units in the health institutions are categorized into the following units:

Medical Director

HMIS unit (or on behalf of)

General OPD/ Emergency/IMCI/FP/Specialized Clinics (HIV, TB and Referral clinics)

Delivery room/ Operation room

Laboratory /Radiology/ Dispensary

These subunits are selected because most of the routine reports generate from these areas. Sample units are selected randomly.

Sample size: Sub-cities 2

Health institutions	Public	Private/NGOs
Hospitals	3	3
Health Centers	6	-
Clinics	2	5

5. ASSESSMENT RESULTS AND DISCUSSIONS

Content of Data Analysis

Data collected through the assessment tool namely the questionnaires were coded and reorganized to seven categories as follows:

1. How data are generated: data generation, codes, formats, and registrations;
2. How data are managed: collected, summed, presented, and stored;
3. How data are analyzed and transmitted or reported. For timelines, analysis, use of computers;
4. Information interpretation and utilization: if data are analyzed to reflect community health problems, to make assessment for comparison between plan and performances, for future planning, design for community participation and others;
5. How feed backs and supervisions are carried out, information share and training;
6. Staff commitment in the overall HMIS activities;
7. The contribution of computer in the current system.

Table 5.1Distribution of respondents by *Region*, *Sub city* and *Health Institution*

Count

		Respondents Distribution			Total
		Regional Health Bureau	Sub-city Health Office	Health Institution	
Job title	Doctor	2	2	23	27
	Nurse	4	12	81	97
	Technician	1		18	19
	Data manager/ stat. clerk	1	2	7	10
Total		8	16	129	153

Table 5.2 Respondents' Distribution by Job Category of Health Institutions

			job title				Total
			Doctor	Nurse	Technician	Stat. clerk	
respondent position	unit head		14	40	12	6	72
			10.8%	31.0%	9.4%	4.6%	55.8%
	no position		9	41	6	1	57
			7.0%	31.8%	4.6%	.8%	44.2%
Total			23	81	18	7	129
			17.8%	62.8%	14.0%	5.4%	100.0%

5.1. Data generation

Data collection tools at the health facilities are forms, book registers that are designed and supplied by the Regional Health Bureau HMIS acting department; the Health Service Management Department and the Planning and Programming Department (PPD) jointly.

However, most of the private health institutions don't have the regional health bureau formats for most of health activities registration and reporting; except for MCH, FP and EPI services.

Diagnostic units (laboratory and radiology) also do not have designed standard formats for the registration and collection of their daily activities. The staff design their own data registration and

collection formats to register their daily activities and to simplify their work. As a result the uniformity of the data collected cannot be ensured.

As per the conveniences of the current recording formats, 75% of the respondents have said to be simple and complete to register on. However there are also respondents who have expressed inconveniences; mainly stressing on redundancy of number of formats and contents. As for the availability (continuity of supply or copies) of the formats most of the health institutions respondents have assured; they never faced shortage of formats. If shortages are to appear, they try to solve it by getting the formats photo copied; especially in private institutions.

Table 5.3 Convenience of registration and reporting formats

			Simple and complete	Difficult to manage	Total
Job title	Doctor		12	5	17
			70.6%	29.4%	100.0%
	Nurse		47	13	60
			78.3%	21.7%	100.0%
	Technician		9	5	14
			64.3%	35.7%	100.0%
	Stat. clerk		6	1	7
			85.7%	14.3%	100.0%
Total			74	24	98
			75.5%	24.5%	100.0%

5.2. Data registering and collecting personnel

The research result shows that the major task of data registration is performed by the health professionals who provide the service (doctors, nurses and technicians). More than 80% out of the total service; is registered by health professionals However in certain clinical areas; nurses take the major role of registration .84% of the nurse respondents register their service while only 57.2% of the doctors responded that they register their service and the remaining is registered by other personnel.

88% of the nurse and 66.7% of technician respondents have stated that they take data registration and collection as part of their job. But only 52% of the doctors stated that they take it as part of their duty, which shows marked decline. In the overall observation; 78% of the respondents have stated that they take data registration as part of their duty.

Table 5.4 Responsible person to record daily activity by job category

			I my self	Other health professional	Traind persons or clerk	Total
Job title	Doctor		*12*	*9*		*21*
			57.8%	*42.2%*		*100.0%*
	Nurse		*55*	*8*	*2*	*65*
			84.6%	*12.3%*	*3.1%*	*100.0%*
	Technician		*14*		*4*	*18*
			77.7%		*22.3%*	*100.0%*
	Stat. clerk		*6*	*1*		*7*
			85.7%	*14.3%*		*100.0%*
Total			*96*	*12*	*3*	*111*
			86.5%	*10.8%*	*2.7%*	*100.0%*

Table5.5 Attitude on data registration and collection to take it as part of duty by staff category

			Yes	No	Total
job title	**Doctor**		***12***	***11***	***23***
			52.1%	***47.9%***	***100.0%***
	Nurse		***64***	***8***	***72***
			88.9%	***11.1%***	***100.0%***
	Technician		***12***	***6***	***18***
			66.7%	***33.3%***	***100.0%***
	Stat. clerk		***7***		***7***
			100.0%		***100.0%***
Total			***95***	***25***	***120***
			78.2%	***21.8%***	***100.0%***

As one of the problems in the HMIS is repeatedly stated to be poor staff commitment in the data registration and collection process; questions were directed to evaluate it; and 28% and 32.2% responded that the staff is poorly committed to collect and register data; both the unit heads and other staff respectively showing that there is similar observation by all staff.

This finding has an impressive observation result. It contradicts with the commonly stated factor for the HMIS's failure to be lack of staff commitment. Rather it indicates that, potential of the staff should be upgraded through proper training.

Table5.6 Self assessment of staff commitment to data collection and reporting by job category

			Very committed	Committed	Poorly committed	Total
Job title	Doctor		*2*	*8*	*9*	*19*
			10.5%	*42.1%*	*47.4%*	*100.0%*
	Nurse		*7*	*40*	*16*	*63*
			11.1%	*63.5%*	*25.4%*	*100.0%*
	Technician		*4*	*3*	*4*	*11*
			36.4%	*27.3%*	*36.4%*	*100.0%*
	Stat. clerk		*3*	*4*		*7*
			42.9%	*57.1%*		*100.0%*
Total			*16*	*56*	*28*	*100*
			16.0%	*56.0%*	*28.0%*	*100.0%*

Table 5.7 Self-assessment of staffs' commitment towards data collection and reporting by respondents position

Count

		Job title				Total
		Doctor	**Nurse**	**Technician**	**Stat. clerk**	
Respondent position	Unit head	*14*	*40*	*12*	*6*	*72*
	No position	*9*	*41*	*6*	*1*	*57*
Total		*23*	*81*	*18*	*7*	*129*

Though the overall observation on the staff's commitment towards data generation does not show crucial problem, there still exists wide gap between information need and the capacity to produce reliable data.

5.3 Data source

The major data source in the RHB is obtained from the public health facilities reports. There is no defined method or designed format for the community participation; especially for the public

health institutions. There is minimal use of CBHW such as CHW. This is evidenced in the respondents answer for the question; *how any health institutional obtains information from the community;* 23 % responded kebele, 16.8 % CHW and from individuals 16 8%. However, the NGOs work closely with CBHW and obtain data through them. There is no community based or other designed means to obtain data on vital statistics so far.

Table 5.8 Source of information for community participation

		Frequency	Percent
	Kebele	*25*	*23.2*
	CHW	*18*	*16.8*
	Individual report	*18*	*16.8*
	Kebele, CHW and individual report	*11*	*10.1*
	Not designed and DK	*35*	*32.1*
	Total	*107*	*100.0*

(DK _do not know)

5.4. Data processing

The objective of data processing is to produce pertinent information that aids in decision-making at all levels of the HMIS. Reports are produced by compiling and analyzing the available primary data registers or tally sheets; and 82% of the respondents have stated that they did not face shortage of formats.

95 % of the public health farcicalities have HMIS unit to collect and process the data registered by the health professionals. But most of the private health institutions visited have no separate unit for data collection and processing. Data are collected and reported by the individuals working in the specific department either by the health professionals assigned to the specific area or by auxiliary staffs.

The health professionals working in the public area are mostly overloaded by clinical work specially the staff working on IMCI, laboratories and dispensaries in health centers, and in the OPD in the hospitals to register their daily activities and paper reports. This in turn has adverse consequences on the registration, collection and production of routine reports and to conduct other data analysis. As a result 60% the respondents have stated they have no adequate capacity

to collect and process data. The major limiting factor (47.9 %) was stated to be shortage of trained staff and lack of time.

Table 5.9 Existence of separate HMIS unit by ownership of health facilities

			Yes	No	Total
Ownership	Public		*76*	*4*	*80*
			95.0%	*5.0%*	*100.0%*
	Private		*10*	*13*	*23*
			43.5%	*56.5%*	*100.0%*
	NGO		*1*	*4*	*5*
			20.0%	*80.0%*	*100.0%*
Total			*87*	*21*	*108*
			80.6%	*19.4%*	*100.0%*

Despite less work load and large coverage of the private health institutions; all these institutions are not using the RHB's standard registration and reporting formats. They do not produce reports on certain activities such as diagnostic procedures; some of the OPD activities are not even registered. The major contributing factor can to be lack of responsible HMIS unit. 56% have no responsible unit that serves on data collection and reporting. Lack of standard registration and reporting formats and supervision are also contributing factors.

Table 5.10 HMIS's Limiting Factors

		Frequency	Percent
	Trained staff	*35*	*47.9*
	Traind staff and equipment	*21*	*28.8*
	Traind staff, equipment and office	*17*	*23.3*
	Total	*73*	*100.0*

5.5. Data Analysis

During the study; it has been tried to assess whether the data gathered at health facility level are analyzed to get meaningful information that can be utilized as an input to support the management of health service at the institution level. For the question *what they do with the reports they produce*; 76.5% of the front-line staff answered that they transfer the sum to the higher management as periodical reports. 69.6% of unit heads responded they analyze. However only 23 8% stated they present their analysis as a form of graphs, charts and some printout.

The most common analysis observed through interviews and inspections were; the analysis prepared from summed up reports on the incidences of disease or services provided and some presented in manually prepared graphs. These reports are aggregated according to the report forms (designed) provided by the RHB and others are comparisons of plans and performances.

Some graphs were prepared in a meaningful ways in some health centers; namely in Kirkos Health Center, that is prepared on the sequential disease prevalence of the health services recipients in different categories using the current IT and DHIS software which was observed to be mainly attributed to the medical director's initiatives assigned in the health center.

Table5.11 Data Processing Status by institutions ownership

			Analyze it	**Transefer its' sum**	**Total**
Ownership	Public		20	52	72
			27.8%	72.2%	100.0%
	Private		2	20	22
			9.1%	90.9%	100.0%
	NGO		4	1	5
			80.0%	20.0%	100.0%
Total			26	73	99
			26.3%	73.7%	100.0%

Table 5.12 Data Processing Status by Respondents' Position

			Analyze it	Transefer the sum	Total
Respondent position	Unit head		*14*	*32*	*46*
			30.4%	*69.6%*	*100.0%*
	No position		*12*	*39*	*51*
			23.5%	*76.5%*	*100.0%*
Total			*26*	*71*	*97*
			26.8%	*73.2%*	*100.0%*

To help further the assessment of data analysis; a was question enquired stating; *what is your observation on the trends of some health problems like diarrhea, accidents and other health issues based on your data analysis?*

Only 22% have responded to indicate some trends; even those who tried to respond some trends were just based in their perceived observation not based on data analysis at all levels. But in the MCH and Family Planning health service units; recipients' observations have been answered based on data available at their respective department in RHB and in the sample NGOs.

There was also no data analysis conducted to generate information that can reflect health problems, which are specific to the local community. This is to stress the importance of data analysis should also focus on the generation of information that reflects community (local) health status and needs so that intervention health service plans can be community based.

However during the interviews and discussions conducted with the unit heads; there was a common understanding reached on the possibility to conduct some analysis which can be valuable input in the health service management and the design of intervention at each level.

Interviews and discussion were conducted with medical directors of health institutions, district officers and sub city HMIS officers; if they have tried to analyze the data and reports they obtain from their respective health institutions. The only 28.3 %unit heads responded that there were some efforts done.

This was augmented with the question; *if they feel any gap between the information they can generate with the available data, the reports they have & the services they render (provide). Majority (60%) of all* the respondents have stated; that there is no felt gap, meaning that no more information can be generated with the available data. *This response was also more pronounced*

by the statistics clerks, who are supposed to perform more of the data analysis and production of information; indicating the limited capacity of staffs in the HMIS's units.

Though there is marked increase of felt gap by physicians and unit heads; there is significant gap between the information that can be generated with the available data and the overall staffs' understanding and capacity on information generation; reflecting the staffs' limitation of knowledge on information need and information generation.

For the question; *what are the possible reasons for not analyzing and computing the available data to identify what are happening to the health problems magnitude*; the common cited reason for not analyzing the data was (62%); *because it is not requested*; some were lack of incentives and some responded lack of facility at health facility level.

However on the interviews conducted with most of the health professionals; the most stated factor was the limitation of the knowledge they have on the essence of how to produce information and make use of it in their daily activities and have limited awareness on what can be done with the available data.

Despite the availability of computer in most of health institutions including the private ones to make variety of analysis; most of the health planning are based on population size and available resource; not on the major identified health issues specially at regional and sub city levels. This shows that the computers are under utilized at all levels, which may mainly be attributed to lack of knowledge on computer system and health statistics.

Table 5.13 Gap felt between potential to produce more Information with available data and current produced reports by staff position

			Yes	No	DK	Total
respondent position	unit head		20	21	4	45
			44.4%	46.7%	8.9%	100.0%
	no position		17	28	13	58
			29.3%	48.2%	22.5%	100.0%
Total			37	49	17	103
			36.7%	47.2%	16.1%	100.0%

(DK- don't know)

5.14 Gap felt between potential to produce more information with available data and current produced reports by job category

			Gap	No gap	DK	Total
job title	Doctor		8	5		13
			47.0%	53.0%		100.0%
	Nurse		25	48		73
			34.3%	65.7%		100.0%
	Technician		7	7		14
			50.0%	50.0%		100.0%
	Stat. clerk		1	3	1	5
			20.0%	60.0%	20.0%	100.0%
Total			41	63	1	105
			39.0%	60.1%	.9%	100.0%

5.6. Data interpretation and information utilization

The ideal correlation between data, information and decision –making is explained when the data collected are transformed into information with the knowledge of utilizing it for problem solving process. The knowledge of interpretation of the information will then guide to make objective judgments to make future plans and adjustments in the management of the health services.

To assess the data interpretation and utilization, there were questions that help to assess if comparative analysis are carried out that can help to reveal trends of health problems, assess quality of services, efficient use of resource utilization; and what possible explanations were discovered to the data findings.

However there is significant underutilization and lack of information interpretation at all levels. On the interviews conducted with the unit leaders and department heads at all level; there is marked effort done to raise the awareness of the necessity of information utilization, which shows a good start. But no evidence of trial was obtained for the interpretations of the generated information.

Furthermore to assess the knowledge of the staff on information utilization and interpretation a question was asked; if they feel any gap between the services they provide, the information they generate and the information they can generate with the available data and report; but most of the staff stated no gap was felt. But during interviews and illustrative discussion, the interviewed

respondents were very much impressed and aroused how to produce more relevant information. which can be an ideal input to their respective health management tasks.

From the discussion held were: *"Have you ever tried to evaluate the incidence of intestinal parasite and or dental caries in a school age children"*; in the health facilities, and *"Have you ever tried to assess the trend of accident by categories and is there analysis conducted to identify the leading cause of accident so as to plan preventive action"* to sub city health officers and regional respondents.

There was no ready answer to all of the above questions. However, there was a common understanding reached on; that much more can be done with the available data; if staff's knowledge on data analysis and information use are upgraded so as to act at each level of health service provision and make it responsive to community needs.

Table 5.15 Use of generated information as stated by Respondents' position

			Health Institution	Higher management	DK	Total
Respondent position	Unit head		*28*	*31*	*1*	*60*
			46.7%	*51.6%*	*1.7%*	*100.0%*
	No position		*21*	*32*		*53*
			36.8%	*66.3%*		*100.0%*
Total			*49*	*63*	*1*	*113*
			43.3%	*55.2%*	*1.0%*	*100.0%*

5.7. Reporting and information transmission

Reports are initially generated at health facility level. The reports of clinics and heath centers of public, private and NGO are sent to their respective sub city HMIS units where the data is entered in the computer, aggregated and sub city's reports are produced. These reports are utilized as input for the sub city health service management and are also transmitted to the regional health bureau for further analysis. Hospitals send their reports directly to the regional HMIS. In the public health institute there are HMIS units for data collection, equipped with one staff and computer to prepare reports. Reports are then sent to their respective higher level using floppies.

All health faculties are required to send their periodic reports to their respective higher offices For the question; how timely reports are collected from the health intuition; 67% responded that reports are received on the required time and on the interviews conducted with the HMIS unit officers; 95% of reports received from public health intuition are sent timely. But reports from hospitals, the private and NGOs are delayed. Reports from private and NGOs in addition to their delays are not summarized to enter them in the sub city computer system; so is difficult to aggregate with the public one. As a result sub city's reports are based mainly on the reports received from the public health institution. Some of the main reasons given were, the reports of private and NGOs are untimely, there is no proper use of ICD, repots are not coded using ICD, rather are sent written in words and is difficult to code them sub city.

From the sample NGOs and private health institutions (except one hospital), they have no the current reporting formats to register their daily activities; they rather prepare their own format for the convenience of their work.

However the MCH reporting formats are available in most health institutions.

Data reporting coverage for the public health institution, responded to be 95-100% both at district and regional level, where as for private and NGOs coverage is less than 30% at district level and not available at regional level. As a result the reporting coverage of private and NGOs could not be obtained. No respondent has also tried to cite the reason. Despite the significant role of the private sector in A.A; the absence of reports coverage both at district and regional level may show that no emphasis has been given to the private sector. And without adequate information from the private sector no plans could be made either to share knowledge, experience or control their activities.

As for the question if they have problems to prepare reports 62% have responded, that they do have. The major reason of the problems stated was to be lack of staff and time. Lack of staff knowledge, commitment, feed back and incentives were also some of the problems stated.

5.8. Data presentation is a means of displaying data to be accessible to other people. 12% of health institution and 72% of sub city and regional respondents have responded that they present their data analysis in different forms as graphs and charts. On personal observation, there were handwritten figures in Kazanchis Sub City Health Office in the MCH department on coverage of plans with some explanations on significant figures. In Kazanchis Health Center graphs on

services rendered and reports in the IMCI, IDSR & EPI were displayed on walls. Similar presentations are also observed in Gandhi Memorial Hospital about staff distribution and activities performed, in Kirkos Health Center on TB prevalence, and Techlehaimanot Health Center on the prevalence of malaria patients and vaccinations given.

These presentations are evidences of the initiatives taken by the health professionals. However HMIS units and different departments in the sub cities, those who can produce some graphs and other presentations using their computer facilities; there are no data presentation displayed as compared to the responsibility they bear. In private health institution no data presentation was observed in any unit. Most presentation is also hand written except in Gandhi Hospital.

5.9. Feed back & supervision

Regular supervision, feed back and timely staff training are very important in building the capacity of the HMIS at all levels.

As per the question *if there are supervisions and feedbacks on reports from the higher management*; 37% of public health institutions' respondents stated that they rarely get. And supervision and feedback to private and NGOs are almost non-existent.

In some departments especially in radiological units; no communication was observed as stated by the respondents in the unit.

The respondents from the regional and sub city health office have responded that there is organized supervisory team and time schedule. Supervision coverage by both the sub city and regional health offices was also stated to be 90% for public health institutions and 35%_50% for private and NGOs. However the figures from higher management and health institutions do not correspond; indicating the insufficiency of feedback and supervisions to support and improve the HMIS and health service performance.

Table 5.16 Frequency of supportive feedback and supervision from higher management by respondents' position

			Very often	Often	Rare	IDK	Total
Respondent position	Unit head		*10*	*13*	*17*	*14*	*54*
			18.5%	*24.1%*	*31.5%*	*25.9%*	*100.0%*
	No position		*8*	*15*	*24*	*9*	*56*
			14.3%	*26.8%*	*42.9%*	*16.1%*	*100.0%*
Total			*18*	*28*	*41*	*23*	*110*
			16.4%	*25.5%*	*37.3%*	*20.9%*	*100.0%*

5.17 Presence of feedback and supervision records from RHB or sub city health office by health institution ownership

			Yes	No	DK	Total
Ownership	Public		*38*	*32*	*12*	*82*
			46.3%	*39.1%*	*14.6%*	*100.0%*
	Private		*6*	*15*		*21*
			28.6%	*71.4%*		*100.0%*
	NGO		*1*	*4*		*5*
			20.0%	*80.0%*		*100.0%*
Total			*45*	*51*	*12*	*108*
			41.7%	*47.2%*	*11.1%*	*100.0%*

(DK-Don't know)

Table5.18 Presence of feedback and supervision records from RHB or sub city health office by respondents' position

			Yes	No	DK	Total
Respondent position	Unit head		20	27	2	49
			40.8%	55.1%	4.1%	100.0%
	No position		24	28	11	63
			38.1%	44.4%	18.3%	100.0%
Total			44	55	13	112
			39.6%	49.1%	11.3%	100.0%

Table 5.19 Major areas of focus of supervision in the last six month by respondents

		Frequency	Percent
valid	HIV AIDS , TB	7	16.2
	Management	24	55.8
	Reporting system	4	9.4
	All others	8	18.6
	Total	43	100.0

5.10 Overall Management of the HMIS

Conceptually, the HMIS unit needs a management structure that mainly includes system resource and system rules. System resource includes personnel, supplies, computer and others. Organizational rules are necessary to insure optimum use of the systems resource and standardization of the system. HMIS units at all level require staff that run and support the system's activities.

Currently, the HMIS at all levels are in their infantile stage and are not well organized. Especially at the regional level, there is no organized separate HMIS unit. The heads of the Department of Health Service Management and the Planning and Programming Department jointly facilitates the responsibility and task of the unit.

Though 72.2% of the regional and sub city respondents have responded the presence of job description for the staff of the HMIS units at the various levels; there is no clearly defined training requirements developed.

There is no clearly stated staffs' requirement by qualification and number. All sub city HMIS units have only one upgraded staff to collect, compile and analyze all the reports that come from their respective health institutions. As a result, despite the presence of computers in the sub city HMISs, their main duty has only been confined to sum up and sends reports to higher level. This was evidenced in the response for the question; *if there are any analyses conducted to evaluate disease prevalence and or to compare disease prevalence between health institutions on certain diseases* (both in the interviews and questionnaires). Only 38.85% have responded to analyze the reports they receive. This figure was mainly obtained in the Department of Family Health, both at sub city and regional level. On observation for data presentations; there are hand written graphs and descriptive presentations on plans verses performance; which were more observed in Kirkos Sub city Health office; and it was reflected also in the Kazanchis Health Center. Health institutions' HMIS units are also poorly staffed to assume the expected responsibilities. Some sub cities even do not have printers to produce paper printout.

As to the overall support and supervision, 60%of the respondents have responded that they have checklist, regular periods and organized team for supervision. According to respondents answer; 90% of public and 50% of private health institutions respectively have been supervised in the past six months. But only 38.8% could say something on the findings of their supervision. Thus supportive supervision couldn't be evidenced, indicating that supervisions are more of quantitative and inspective in nature.

60% of the respondents have proved that reports are received (transmitted) on timely bases and delays are mostly observed in private health institutions.

As to how plans are prepared, on the interviews conducted; most plans are prepared in the Regional Health Bureau. In fact there is an observation of desperation on some staff stating their complaints: "*our plan proposals are not considered by the RHB, policy makers are not responsive to our requests*" and others; which have percussions on the value felt on health information by the data generators.

There is no an organized HMIS review team with established criterion to evaluate and follow the progress of the newly launched HMIS.

Table5.20 Attitude towards value of health information by job category

			Crucial	Necessary	Total
Job title	Doctor		9	10	19
			47.4%	52.6%	100.0%
	Nurse		43	20	63
			68.3%	31.4%	100.0%
	Technician		11	3	14
			78.6%	21.4%	100.0%
	Stat. clerk		6	1	7
			85.7%	14.3%	100.0%
Total			69	33	103
			66.9%	33.1%	100.0%

Quality of data and information management is highly dependent on the value and importance given both by the information generators and users. The study showed that there is marked fall; that is only 47% in the physicians' respondents to appreciate strongly the importance of health information for the improvement of health service

6. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of the findings

This section responds to the research questions and objectives by discussing the findings in relation to theories of HMIS.

The A.A Health Bureau has started to conduct HMIS reform. The bureau has focused on strengthening the HMIS by adopting the South Africa DHIS software and designing various reporting formats, tally sheets by categories of health activities. It has also trained staff on HMIS in collaboration with AAU department of Informatics.

Currently the reform is undertaking and the newly organized HMIS is functioning. Health professionals record data on the newly prepared formats, tally sheets and registration books manually. The HMIS unit clerk at the health facilities level collects these records. Data are summarized and sent to sub city HMIS units using floppies within a determined time schedule for further aggregation and analyses. The district information desk officer further summarizes these reports and sends them to the Regional Health Bureau using floppies. Hospitals send their reports directly to the RHB HMIS unit. Finally the RHB HMIS unit further aggregates the received reports to prepare variety of information.

There is perceived need for improved capacity of HMIS at regional sub city and health facility levels; and for improved data collection, analysis and better information demand at all levels with special emphasis on the sub city health offices. Registration and reporting formats have been introduced and most of the health professionals are working responsibly with these formats.

Reliable health statistics and other health information can be obtained through well organized HMIS and infrastructure. Creation of the unit alone will not ensure achievement of the desired objectives. There should be well-organized team at the Regional Health Bureau to guide and follow the performance of the units at all levels. The absence of organized HMIS team has an adverse effect on the over all performance of the unit. Inadequacies in the system lead to production of low quality information. Limited knowledge of health managers on the importance of health information leads to poor appreciation of data quality and limited information utilization for decision-making.

With the current policy of decentralization; health managers at regional and district level are expected to play major role in producing health plans cooperating with local government and

administrative units to promote local heath. This can be achieved if sufficient and reliable heath information is available; and if health managers have the capacity to analyze and interpret results so as to use it as an input and promote local innovations. The facility staff members should get adequate training, feed back and supervisory support to enhance staff motivation and commitment in the generation of reliable data. However at present the primary purpose of data collection continues to be reporting to the higher level.

There is marked shortage of trained personnel in HMIS; which seems to be the most important constraint to the progress of the system. The staff working in the HMIS units are with low level of educational status and training. No one of the HMIS clerk has a first degree in any qualification (medical field, IT or health statistics).

Furthermore unless adequate training in HMIS is given to the staff registering the source data and data collectors, to convince them the health service; the quality of data generated remains to be poor. The poor quality of data has adverse effect on the progress of the HMIS reform as well.

There is no established training requirement (qualification) of the statistic clerks at all level. So who does what is not clearly stated; and what type of information results or analysis can be produced by each statistic clerk (HMIS unit head) are not so far established. As staff assigned as statistics clerk in the health facilities is of low educational status and are non-health professionals; the possibility of data analysis and information manipulation for required input is significantly limited. At the sub city level people assigned in the information desk (DHMIS unit) are engaged in a multiple of responsibilities with high workload, which adversely affects the capacity and effectiveness of the unit. Further more computers in the unit are also used for other administrative activities.

HMIS units Hospitals are not equipped with the necessary qualified personnel; as a result the reporting system of hospitals is of poor quality as compared to the public health centers. In addition there is poor staff commitment in the registration of health activities and services provided especially in the general OPDs.

Added with the low capacity of the statistic clerk; the HMIS units have heavy work burden which has a significant repercussion for the quality of reports produced.

No designed standard registration formats or books are available in the diagnostic departments (laboratory and radiology) for recording their daily activities. Staff of these departments prepare

registration formats based on their own perception on the importance of items (lines) that should be included.

Though there is commitment on data registration and reporting at the health institution level; there still exists discrepancy of reports sent to regional office and data analysis reports produced at the regional HMIS. This is an indication of poor data quality.

Despite the large health service coverage of the private sector and NGOs in the capital city there is little emphasis given to the reports coming from these health institutions.
There is more emphasis on quantity (frequency) of supervision than quality. There is little evidence obtained on supportive supervision and feedback on reports. Health managers at lower level and at health institutions have responded that they do not get feed-back on their reports; and supervisions are more for inspection purposes, not in its supportive sense; which neither promote efficient data collection nor facilitates experience sharing to improve the skill of the staff in data analysis and information use. This was also supported from the findings of the NGOs and private respondents.

There is marked complaint of non-utilization of the generated data and information by higher officials and policy makers at the sub-city and regional respondents.
There still exists the domination of vertical reporting and interdepartmental information sharing is minimal.

Usually primary suppliers and user of information have limited interest in the information thus fail to participate in the main issues. This is evidenced by the minimal effort of unit heads to assist, supervise and utilize the HMIS functions at all levels. They are rather indifferent.

In the current reporting formats community based health activities seem to be forgotten. There are no items included in the reporting formats for community based health activities which are important tools of interventions in the prevention and control of disease such as school health, community health related campaigns e.g. sanitary campaigns conducted, any health related activities performed in cooperation with different associations e.g. youth association, community Edirs (forms of community based associations) and others.

6.2 Conclusions

There is significant awareness created on data generation; as a result, timely reporting coverage from health centers and some hospitals is high.

The newly designed standard registration and reporting formats have got acceptance by most of the health professionals and are being utilized in the daily activities in the health institutions. No significant shortages of these formats are also reported.

Some of the health institutions like Gandhi Memorial Hospital and Kirkose Health Center are trying to make effective use of the adopted DHIS using their computers. These show that there is good start to expand it in the long run.

The sub-city health management in general and the HMIS in particular plays pivotal role to grasp the reports generated by the health institutions. And if, its capacity is improved it can be utilized to its full extent so as to perform variety of analysis and to reduce load on the regional HMIS.

However changing a system is not a short-term task. Adequate infrastructure and trained staff in the area are important. Changing the social aspects, especially staff commitment to collect reliable data, information utilization for decision making and improving computer knowledge should be taken as long run achievement which needs persistent follow up and hard work to insure success and sustainable change.

But the efforts to bring the above-mentioned developments at all management levels are minimal. As a result support to the system by higher management namely positions run by physicians do not seem to play significant supportive role; which currently is a crucial constraint in the progress of the system and utilization of generated information.

The staff working in the HMIS units (statistics clerks), at health centers and hospitals do not have adequate training. In some areas even those who have taken training are not in place. The statistics clerks do not have any health related basic training; hence even the properly registered data by the health service providers are not properly compiled.

Despite the large coverage of the private health institutions in the capital city, reports coming from these institutions are not incorporated in the analysis of reports at the sub-city level for the reasons mentioned earlier. This reveals that attention given to them is poor.

Generation of reliable data alone does not ensure information use. Information should be well analyzed an interpreted to identify prevailing health problems and to identify areas of intervention. But this is non-existent in the current situation. which has an adverse effect on the utilization of health information as resource input for decision-making.

The regional HMIS does not currently seem to get adequate support from the MOH in the reform process. But building HMIS is a national issue as well. So this has repercussion for the future plan of designing standardized National HMIS.

The experience of other developing countries, and results of the study indicate the importance of capacity building of the HMIS unit not only in terms of technology; but it is also important to support it with social and political commitment.

6.3 Recommendations

Build organizational capacity

It is important to identify the capacity requirement of the HMIS unit at all levels. Standards of resource and staff requirements including qualifications should be clearly developed to improve and insure the data collection and information generation in the respective levels.

There should be closer proximity and functional supports between the health managers (medical directors) and the HMIS unit in the data collection and data analysis to improve quality of out puts (reports, graphs, charts and trend oriented data analysis).
The functional support of health managers and doctors is indispensable to build accountability to exploit the potential opportunity that exists and reduce the undermining of the importance of HMIS.
Roles responsibilities and job description of staff assigned in the HMIS unit at each level has to be clearly defined. This will help to identify the training requirements and to incorporate it within the curricula of training of the health professionals.

It would be ideal if the staff assigned to the HMIS units especially at the health facility level; where the initial data registration and data entry takes place, be basically health professionals that are upgraded in health statistics. Public health nurses who have especial interest in health statistics and HMIS can be ideal candidates. Health professional can assume more professional responsibilities and can easily feel and check any contradictory data entry at its origin that is

important for the improvement of data quality. Furthermore the health professionals have more potential to identify necessary health information which helps in the generation of wide range (variety) of information that reflects health problems related to the specific locality.

The needed data may be collected or reported on the designated time; but data quality, information use and HMIS sustainability can be assured by training and involving health professionals to focus on local needs. Thus HMIS design not only should enable to collect and summarize data; but also perform certain procedures that help in the analysis and interpretation of the generated information. Such improvements can be achieved by creating improved awareness on information culture through creation of data dictionary and manuals.

Standard work sheets and wall charts for all health institutions and administrative units should be established. This helps improve the social (cultural) aspect of information generation for local use. It also assists health managers and supervisors to compare institutions on service provision and function of the HMIS unit.

Strengthen higher management support

At present one of the contributory factors to under-utilization or non-utilization of data and information in the health service management seems to be the inclination (focus) of the health service on curative (clinical) aspects rather than preventive and community-based (oriented) health service. So to improve the data and information utilization; the health service activities have to be directed to include community based and preventive health service as well.

Health facility level operational researches need to be encouraged through appropriate incentives; which not only improves data quality, but also information generation and utilization for local intervention.

Research units have to be established at least at regional level for proper documentation of findings in cooperation with the HMIS unit to support vision oriented planning.

As most health institutions' managers are physicians; they have to take the lead and initiative for the successful functioning of HMIS. There should be a consensus on the importance of health information for the improvement of health services at local and national levels, to conduct research and meet other objectives as well.

Optimize effective supervision:

Roles and responsibilities of supervisors should be clearly defined to encourage and ensure supportive follow-up. Qualitative supervision should be stressed rather than frequency of supervision.

Improve community-based health information system

The reporting formats should include community based health activities; such as school health, sanitary campaigns conducted, number of houses visited, reports of CBHWs on health issues e.g. number of new borns, number of deaths with their possible causes and others. Such reporting format design not only are part of the ordinary system; but they also foster the initiatives taken or can be taken to improve the health services provision and community participation. They can also be utilized for comparison of innovative and community based approach as to health performances of health intuitions.

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ANNEX I

Indicators or variables selected

1) Organizational variables

- Structure of the HMIS in relation to decentralization, availability of clearly stated: role, responsibility assignment and job descriptions
- Availability of minimum package of information (MPI)
- Organizational relationship of the systems' stakeholder (vertical, horizontal)
- Level of awareness of health policy, goals objectives and HMIS,
- Availability of responsible unit for supervisory, feed back & follow ups
- Level of concentration of HMIS operational knowledge, responsibility to key persons
- Degree of community participation
- Degree of integration and flow of information (amount of information transferred to the next higher level, level of data analysis)
- Presence of demarcated catchments (population) area
- Level of reliance on survey
- Who uses the reports of survey
- Presences of utilization and follow up unit for surveys
- Degree of relationship with other agencies on data sharing {e.g. Donors' projects, documentation of reports in the HMIS of private & NGOS)
- Presence of research unit
- Resource profile (Human financial physical) of HMIS at each level
- Incentive or disincentives provided for information generation and use or non use

2) Technical Variables (for quality of data)

- Presence of standard indicators, manuals, reporting time, data presentation & analysis for analysis and intera-organization comparisons
- Presence of standard procedures (diagnosis, treatment and reporting systems)

- Presence of trained personnel accountable or responsible for the HMIS (identified medical, newly trained, upgraded, profession oriented etc)
- Technology used & available:(manual, computer, diagnostic procedures)
- Personnel responsibilities for data entry & collection (professional specifically assigned)
- Presence of indicators for various diseases including newly emerging disease & disability (HIV, TB, Diabetic Mellitus or HPN etc)
- Presence of ICD& level of staffs' understanding

3) Behavior: Staff attitude towards information

- Staff motivation to collect data, value & use of information
- Sense of responsibility in preparation and presentation of reports (taking HMIS as part of job)
- Culture of need assessment, setting priority and self assessment
- Technological know-how to use existing facility of HMIS
- Level of commitment for change (adoption) or improvement
- Level of knowledge on HMIS; Coding (ICD), Mapping, graphing,
- Power for information use in planning and decision-making, information sharing, ownership

ANNEX 2

2.1 Questionnaire 1

Region

Respondent's department and position ____________________

Educational status: secondary ☐ university/college ☐

title/occupation______________________

A. Structural

1. Do you have responsible unit for HMIS? Yes ☐ No ☐

2 If your answer for question No.1 is NO; who takes care of HMIS? ____________________

3. If yes, how many staffs are in the unit? Head ☐ Others ☐

4. What is their training? Basic statistics ☐ upgraded ☐ No special training ☐

5 .Is there clearly defined and written guideline on the following criterion of the staffs in HMIS unit?

	Yes	NO
- Training requirement	☐	☐
- Job description	☐	☐
- Career	☐	☐

6. Do you think the unit functions adequately? Yes ☐ NO ☐

7. IF your answer is No, what does it lack most? Put your opinion.

____

8. What problems have you faced so for with your HMIS facilities? ____________________

____

9. Do you have established list of major functions for the different level of administrative units and health facilities regarding information generation? Yes ☐ No ☐

10. Is there established standard for information needs and utilization of these respective units?
Yes ☐ No ☐

11 If your answer is YES for question 9 and 10, did these respective units participate in the development of these standards? Yes ☐ No ☐

12. What enforcement tools do you use to monitor data collection & reporting of health facilities?

- Incentives____________________

- Disincentives. (e.g. renewal of license}_____________
- Others____

13. How often do you conduct / rely on surveys?

    0ften ☐ Rare☐ Not at all ☐

14. Who uses reports of surrey &makes follow up

    -Planning department ----------------------

    -HMIS Unit--------------------------------------

    -Others specify-----------------------------

15. Do you have document of the last survey conducted

    Yes☐ N☐

16 Is there any research unit? Yes ☐ No☐

17. Are you familiar with the current National Policies?

Health Policy	yes	☐	No	☐
Drug Policy	yes	☐	No	☐
Population Policy	yes	☐	No	☐
Women policy	yes	☐	No	☐
HIV/AIDS Policy and Strategy	Yes	☐	No	☐

18. What assistance have you received from the MOH? How frequent?

	Regularly	Often	Rarely
Training	☐	☐	☐
Feed back	☐	☐	☐
Research	☐	☐	☐
Supervision	☐	☐	☐

Technical

19. Have you tried to computerize your HMIS?

    Yes ☐ No☐

20. If yes; was need assessment conducted or/and tested? Yes ☐ No ☐

21. What success or failures have you registered so far? ___________________________

    ____

22. If failure out weights what do you think were the most possible causes or reasons?

____

23. Do you have standards for HMIS facility requirement of Sub city and health facilities?

		Yes	NO
i) Physical &t technical – equipment		☐	☐
	Computer -	☐	☐
	Office	☐	☐
	Logistics (eg.forms}	☐	☐
ii) -Personnel	Trained	☐	☐
	Auxiliary	☐	☐
iii) Budget		☐	☐
iv). Reporting requirements			
-Time schedule		☐	☐
Aggregation guidelines		☐	☐

24 Do you think your Sub-city HMIS are well equipped? YES______ NO_________

25. If No, is your answer please give your reasons______________________________________

____

26. Do you have supervision cheek list? Yes ☐ No ☐

27. Do you have regular programs for supervision? Yes ☐ No ☐

28 How frequent are you supervision program? Monthly ☐ Quart. ☐ Not definite ☐

29.. Who performs supervision?

Organized team ___________

Others specify____________

Behavioral

30. What percent of the health institutions have been supervised for the last 6-month?

Hospitals ______% Clinic______% Pharmacies______%

Health Center____% Training Center____%

31. What surprising findings were identified? ______________________________________

32 What have you benefited from your HMIS unit to identify the priority needs of health service of your region?

____

33.What percent of health coverage does the private sector account for? ___ % NA ☐

34. What percentage of your facilities has submitted report for the last 3 month?

Health Institutions _____%. Public__ % Private___ % Administrative *units*__ % NA____

35. If NA; what is the possible reason you can site? ________________________________

____

36. What are the observation on the trends of the following based on your HMIS analysis results?

HIV/AIDS	Increasing----- Decreasing------ Not computed-------DK
High-risk mothers	Increasing----- Decreasing------ Not computed-------DK
TB	In creasing----- Decreasing------ Not computed-------DK
D. Mellitus,	Increasing----- Decreasing------ Not computed------- DK
HPN	Increasing----- Decreasing------ Not computed-------DK
Malnutrition	Increasing----- Decreasing------ Not computed----- DK
Diarrhea	Increasing----- Decreasing------ Not computed-------DK
Accidents	Increasing----- Decreasing------ Not computed-------DK

37. If your answer is *Not computed* or DK please state the possible reasons. ______________

____

38. How timely do you get report from the sub city and /or health facilities?

On time ☐ Delayed ☐ Very delayed ☐

39 .How often do you use it for planning? Often ☐ Rare ☐ No ☐

40. Do you think you get reliable reports from the respective administrative & facility units? Yes ☐ No ☐

41. IF *NO* is your answer for question 40, what is the possible reason can you site?

No adequate reports. ☐

No timely submitted report ☐

Poor quality of reports- ☐

Others____

42. If yes, what priority health information have you satisfactorily identified?

- -Leading cause of deaths ☐
- -Trends of disease prevalence ☐
- -Training needs ☐
- -Financial needs Yes ☐

- Unusual trends ☐
- Others specify ____

43. Do you feel any gaps exists between the information you need and you can generate, on data you have or obtain ? Yes ☐ No ☐

44. If yes how can the information system you have be improved? ____________________

____

If you have any comment please add here. ______________________________

Annex 2.2

Questionnaire 2

District (Sub City)

Sub-city ________________

Respondent's department position ______________________________

Educational status; secondary ☐ university/college ☐

Title/occupation__________

Geographic area of Sub-city __________________

Total Population__________ By Category Males_______% Females_______%

Others ______________________

Health Coverage____________ %

Where do you get these figures? Computed in the District ☐ from the RHB ☐ Others ☐

Health facilities	Ownerships Public	Private	NGO	Total
Hospital	☐	☐	☐	☐
Health Center	☐	☐	☐	☐
Clinic	☐	☐	☐	☐
H. Post	☐	☐	☐	☐
Pharmacies	☐	☐	☐	☐
Health training Institutions	☐	☐	☐	☐

A Structural

1. Do you have responsible unit for HMIS? Yes ☐ No ☐
2. If your answer for question No.1 is NO; who takes care of HMIS?

   ____

3. If yes how many staffs are in the unit? Head_________ Others __________
4. What is their training? Basic Statistics ☐ Upgraded ☐ No special training ☐
5. Is there clearly defined written guidelines of their; Put Y in the box if you have and N if not. Training requirement ☐ Job description ☐ Career ☐
6. Do you believe your HMIS unit is adequately organized?

	Adequate	Not adequate	NA for the purpose
Staff	☐	☐	☐
Space	☐	☐	☐
Logistics	☐	☐	☐

7. IF your answer is NA put your opinion. ____

____

8. What system do you utilize for your HMIS?

Manual______ Computerized _______Combined_________

9. How convenient do you find them?

	Very help full ____	Helpful ______	Difficult to manage_____
Manual	__________	_______	______________
Computerized	__________	_______	______________
Combined	__________	_______	______________

10. Please give your reasons for you answer of question9.

____

11 How functional do you think is the unit? Effective ☐ weak ☐

12. IF*weak*, is your answer please give your reasons.

____

13. What mechanisms do you have to ensure participation and information sharing with your community?

Kebele administration ☐ CHW ☐ Edirs ☐ volunteers ☐ other ☐

14How frequently do you make use of this relationship? Regularly ☐ If necessary ☐ Rarely ☐

____

15. Do you have a defined area or population to serve/? Yes ☐ NO ☐

16. What enforcement tools do you have to monitor data collection & reporting of health facilities and administrative units?

- Incentive ____
- Disincentives. {e.g. renewal of license) ______________________
- Not yet designed ________________
- Others specify ____

17. Are you familiar with the current National Policies? Yes No

	Yes	No
Health Policy	☐	☐
Drug Policy	☐	☐
Population Policy	☐	☐
Women policy	☐	☐
HIV/AIDS policy and strategy	☐	☐

Technical

18. How frequent do you use computerized HMIS? Always ☐ Frequently ☐ Rarely ☐

19. How much do you think you have benefited from the computerization of your HMIS to bring change in the generation and utilization of health information? Significantly ☐ Poorly ☐

20 If poor is your answer, what is the problem? ______________________________

____

21. How frequent do you face any shortage of formats for data collection?

Usually ☐ Rarely ☐ Never ☐

22. What is your opinion about the convenience of recording on the current formats in use?

Easy to handle ☐ Difficult to understand ☐ Time taking ☐

23. Did you participate in the design of the standards and formats of the HMIS? Yes ☐ No ☐

24. Is there definite time for report submission and receiving? Yes ☐ No ☐

25.How efficiently does the time schedule work? Usually ☐ Rarely ☐ Not at all ☐

26. Who collects and analyses the reports you receive from your respective institutions?

____

27. Do you have the International Code of Disease {ICD}at your hand? Yes ☐ No ☐

28. How do you assure that service giving institutions use ICD in their daily activity registration?

____

29. Do you have supervision cheek list? Yes ☐ No ☐

30. Do you have regular programs for supervision? Yes ☐ No ☐

31. How frequent is you supervision program?

Monthly ☐ Quarterly ☐ No definite time schedule ☐

32. Who performs supervision?

Organized team ___________

Others specify___________

33. How efficiently does the team supervise? Effective ☐ Satisfactory ☐ poor ☐

34. If poor is your answer please put your reasons. ______________________________

35. Do you think you have enough capacity to collect reliable data and generate the required information? Yes ☐ No ☐

36. If No, is your answer, please give your reasons ______________________________

____

37. Do you have established standards & guidelines or procedures in treating the following disease?

	Yes	No
ARI	☐	☐
TB	☐	☐
Diarrhea	☐	☐
Obstetric emergencies	☐	☐
High-risk mothers	☐	☐
Others – drug mgt,	☐	☐

Behavioral

38. How timely do you collect/get data from your respective health institutions?

Timely ☐ Delayed ☐ Very delayed ☐

39. What percent of health coverage does the private sector account for? ___ % NA__ NA___

40. What percentage of your a facilities have submitted their monthly report for the last 3 month?

i) Health Institutions _____ %, NA________

iii) Public________% NA_______

iv) Private________% NA________

41. If NA; what is the possible reason you can site? ______________________________

42. What do you do with the data you get?

a. Analyze to use it in our department. ☐

b .Collect and send them up for analysis. ☐

43. What is your observation on the trend of the following?

	Increasing	Decreasing	Not computed
Diabetes Mellitus	☐	☐	☐
Malnutrition	☐	☐	☐

Accidents
ARI
TB

44. If analyzed give examples – (graph, chart, tables etc)
45. Do you use the information for design of plan in your own work? YES ☐ NO ☐
46. How timely do you send your reports? Timely ☐ Sometimes delayed ☐ usuallydelayed ☐
47. Are there any problems to prepare &submit your report? Yes ☐ No ☐
48. If yes could you list the problems you face in recording and reporting? Put X on the factor you consider is most influential.
    - Institutions do not send their reports on time _______
    - The reports received are of poor quality _______
    - Lack of time _______________
    -Lack of staff commitment ________
    - Lack supervision & feed back ____________
    - Lack facility (formats, guidelines, ICD, staff, computer etc) ____________
    -Others, specify _____________
49. Do you have any evidence of supervisions analyzed? Yes ☐ No ☐
50. What percent of the health institutions have been supervised for the last 6-month?
    Hospitals ----- Health Centers -----
    Clinic -------- Training Center -------- Pharmacies ------
51. What surprising findings were identified?

---

52. Do you get feed back on the reports you send up? Yes ☐ No ☐
53. In what forms do you get feed backs from the RHB?
    Written ☐ analyzed reports ☐ Graphs ☐ Others ☐
54. What are your observations on the feedback you obtain from the RHB to improve your performance?
    Strongly adequate ☐ Not adequate ☐
    Adequate ☐ Not responsive to our requests ☐
55. What gaps do feel between the information you need and you have, obtain or generate?

____

56.How can the information system be improved?____

If you have any comment please to add.

____

____

____

Thank you.

ANNEX 2.3

Questionnaire 3

Health Institution (facility)

Name of Health sub-city_______________________________

Name of Health facility ____

Type of Health facility

Hospital ☐ Health center ☐

Clinic ☐ Health post ☐

Ownership public ☐ private ☐ NGO ☐

Respondent's position----------------------------- Title/occupation-----------------

Educational status: Primary ☐ Secondary ☐ Collage/University ☐

Structural-

1. What is your major means of communication with Regional or Sub-city Health Bureaus?

	Very often	Often	Rarely
Feed back on reports	☐	☐	☐
Supervision	☐	☐	☐
Others (seminars, meeting etc)	☐	☐	☐
No communication	☐		

2. Is there separate unit for data collection and information processing?

   Yes ☐ No ☐

3. If your answer is NO; who is responsible for the unit? ___________________________

4. If yes; are there guidelines on the objectives, responsibilities, and job description of the unit and personnel assigned? Put yes if you have all?

   Yes ☐ No ☐ DK ☐

5. Do you think your Health Information unit is adequately equipped to generate the necessary information? Yes ☐ No ☐ DK ☐

6. IF No is your answer what most does it lack?

   Trained staff ☐ Office ☐

   Equipment ☐ Logistics ☐

   Others____

7. How do you get information from the community in case of health emergency or epidemic?

kebele ☐ CHW ☐ Individuals report ☐ Not designed ☐

8. Do you have specific catchments area for your service? YES ☐ NO ☐

9. Are there any records of supervision &/or feed back from the RHB or Sub-City Health Department? YES ☐ NO ☐

10 .If yes is your answer; what were the major issues?____________________

Technical

11. Who records your daily activities and the services provided?

I my self ☐ Other health professionals ☐

Trained personnel- ☐ clerk ☐ Others ☐

12. Do you have the International Code of Disease {ICD} with the professionals and data collectors? Yes ☐ No ☐

13. Do you have any problem with the current ICD? Yes ☐ No ☐

14. If yes is your answer, what are your reasons?

Lack of uniformity in definition ☐ Lack of interpretation ☐ Missing of code ☐

Others specify______________________________

15. Do you think you have enough diagnostic facility? Yes ☐ No ☐

16. Do you have standard formats based on category?

E.g. Reporting form Yes ☐ No ☐

Tally sheet Yes ☐ No ☐

17. What is you opinion about the convenience of recording on the current formats?

Simple and complete ☐ Difficult to manage ☐

18. If your answer is difficult to manage please give your reasons. ________________

____

19. Do you think you have enough capacity to collect reliable data?

Yes ☐ No ☐

20 If No is your answer what do you lack? Facility ☐ Staff ☐ Time ☐

21 How often do you run short of reporting formats? Usually ☐ Rarely ☐ Never ☐

22. Do you have established standards & guidelines or procedures in treating the following disease?

	Yes	No
ARI	☐	☐
TB	☐	☐
Diarrhea	☐	☐
Obstetric emergencies	☐	☐

23 Do you have computer system for generating and utilization of health information?

Yes ☐ No ☐

24 If YES is your answer, how far do you think you have benefited from the system?

Very helpful to analyze data and generate new information ☐

Helpful to sum-up data ☐

Poorly utilized ☐

Behavioral

25. How often do you register the health activities /services rendered?

Routinely ☐ Rarely ☐ No at all ☐

26. Have you collected & submitted statistic reports for the last 3monthes?

Yes ☐ No ☐

27. If yes, can you show as your copies?

Yes ☐ No ☐

28. What do you do with the data you collect?

Analyze it ☐ Transfer its Sum ☐

29 If analyzed can you give examples – (graph, chart, etc)

30. What are the most fife prevalent diseases report in your institution? Put them in accordance of their prevalence.-------------------,--,-

------------------------------,-------------------------------,-------------------------------------

31. Who uses the information you generate?

The health institution ☐ Higher management ☐ I don't know ☐

34. Do you have any problem to prepare &submit the report? Yes ☐ No ☐

35 If yes could you list the problems you face in recording and reporting?

	Very often	Often	Rarely
Lack of staff's knowledge.-	☐	☐	☐

Lack of time-- ☐ ☐ ☐

Lack of staff's commitment ☐ ☐ ☐

Lack supervision & feed back ☐ ☐ ☐

Lack facility (formats, ICD, staff, computer etc)--- ☐ ☐ ☐

Others ,specify------------------

36. What is your observation based on your data analysis about the following?

	Increasing	Decreasing	Not computed
Diarrhea	☐	☐	☐
ARI	☐	☐	☐
Diabetes Mellitus	☐	☐	☐
Malnutrition	☐	☐	☐

37. If not computed is your answer please give your reasons

38. Do you have list of defaulters of TB in the last 3 month?. Yes ☐ No ☐

39. If NO, can you site the reasons?________________________________

40. If yes, how often do you use them for follow-ups?

    Always (often) ☐ Usually ☐ Rarely ☐ Not at all ☐

41. Do you know what reportable or notifiable disease means Yes ☐ No ☐

42. Have you ever reported of reportable diseases? Yes ☐ No ☐

43. How much of your time do you devote for data collection?

    Very long ☐ Long ☐ Manageable ☐

44. How much do you think the staff is committed to collect and prepare reports?

    Very committed ☐ Committed ☐ poorly committed ☐

45. Do you take data collection as part of you duty? Yes ☐ No ☐

46. What is your opinion on the time and effort spent for data collection on the improvement of health service/?

    Strongly necessary ☐ Necessary ☐ Not necessary ☐ I D K ☐

47. Do you feel any gap between the services you provide and the report you generate with the available data? Yes ☐ No ☐

48 If Yes is your answer, What are the possible reasons?

Services are not fully recorded ☐

Data are not recorded correctly ☐

Data are not properly recorded and compiled ☐

Others specify____

49 How can the existing health information system be improved? ____________________

____

50. Please add here any thing you want to add. --

ANNEX 3.1a

Region: <ALL> Sub-City: <ALL>

Laboratory Test Report by II

Region: aa Addis Ababa HB
Sub-City: aa Kirkos SHD
Health Facility: aa Kirkos HC
Period: Jul 2004 To Mar 2005

NO.	Type of Test	Number of – Out Patient – Positive M	Positive F	Negative M	Negative F	Total M	Total F
1	Stool and Other parasite test	1515	1435	1202	1066	2717	2501
2	Bacteriology sputum for AFB	166	[illegible]	1344	1570	1510	1704
	Others					0	0
3	Urinalysis					1991	2798
4	Pregnancy Test		115		156		271
5	Hematology Blood Film					274	176
	Malaria	4	2			4	2
	Relapsing Feve	2				2	
	Others					2062	1574
6	Serology VDRL	19	77	104	697	123	774
	WIDAL					301	216
	WEILFELX						
	Others						
7	Chemistry						
8	HIV Screened	75	166	337	546	412	712
9	Others						100
	Total	1761	1929	2967	4035	9396	10830

Number of tested persons Male 9444

Region: aa Addis Ababa HB Sub-City: aa Kirkos SHD Health Facility: aa Kirkos HC

Top 20 Leading Causes of Female Out-Patient Visit by Health Facility

Region: aa Addis Ababa HB
Sub-City: aa Kirkos SHD
Health Facility: aa Kirkos HC
Period: Jul 2004 To Mar 2005

Type of Diagnosis	ICD Code	Cases	%
Observation without need for further medical care (no abnormality detected)	137.2	2256	15%
Acute upper respiratory infections	087	2238	15%
All other diseases of Genito-Urinary system	114.6	1242	8%
Infections of skin and subcutaneous tissue	121	1051	7%
Bronchopneumonia	090	974	7%
Hypertrophy of tonsils and adenoids	094	636	4%
Gastritis and duodenitis	101	553	4%
Acute Nephritis	108	513	3%
Muscular rheumatism and rheumatism unspecified	123	456	3%
Other Helminths	042.6	420	3%
Otitis media and mastoiditis	077	328	2%
Dental caries	098.1	298	2%
Gastro-enteritis and colitis (age 2 years and over)	104.2	296	2%
Amoebiasis (excluding symptomless carriers)	016.2	250	2%
Gastro-enteritis and colitis (age 4 weeks to 2 years)	104.1	246	2%
Hypertension without mention of heart	084	200	1%
Acute Bronchitis	092	200	1%
Bronchitis, chronic and unqualified	093	196	1%
Inflammatory diseases of eye (except Trachoma 043.6	074	187	1%
Typhoid Fever	012	174	1%
Total of 20 leading causes		12716	65%
Total of all cases		14947	100%

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Region: <ALL> Sub-City: <ALL>

Voluntary Counseling and Testing (VCT) Service

Region: aa Addis Ababa HB
Sub-City: aa Kirkos SHD
Health Facility aa Kirkos HC
Period: Jul 2004 To Mar 2005

Age	Pretest Counseled M	F	Total	Tested M	F	Total	Positive case M	F	Total	Post test Counseled M	F	Total	HIV Positive Referred M	F	Total
<15	11	18	29	16	24	40	2	5	7	16	25	41			0
15-19	44	92	136	34	102	136	1	11	12	34	109	143	1	1	2
20-24	86	193	279	93	220	313	6	25	31	95	231	326		4	4
25-29	89	118	207	88	135	223	8	48	56	93	159	252	2	13	15
30-34	43	55	98	45	56	101	8	33	41	48	72	120	1	5	6
35-39	30	44	74	34	41	75	14	24	38	39	48	87	1	7	8
40-44	14	13	27	16	16	32	8	8	16	18	18	36	2		2
45-49	11	9	20	15	8	23	5	3	8	17	10	27			0
50+	9	6	15	12	10	22	13	5	18	15	12	27	3		3
Unrecorded			0			0			0			0			0
Total	337	546	885	353	612	965	65	162	227	375	684	1059	10	30	40

Referrals for:-

- Clinical Care
- TB Follow-up
- STI Follow-up
- Family Planning
- ANC
- Orphanage
- Follow-up cousneling
- Spiritual counseling
- Home based care
- Financial support
- Other (Specifiy)
- Total 0

Thursday, April 28, 2005

Page 1 of 1

ANNEX 3.1b

Region: <ALL> *Sub-City:* <ALL> *Health Facility:* <ALL>

TT Vaccination Report by Health Facility

Region: aa Addis Ababa HB
Period: Jul 2004 To Mar 2005

Health Facility	Pregnant Women						Non-pregnant Women						Vit A
	TT1	TT2	TT3	TT4	TT5	TT2+	TT1	TT2	TT3	TT4	TT5	TT2+	Given
Sub-City: aa Kirkos SHD													
aa Kirkos HC	522	363	71	32	14	480	1588	693	467	172	70	1402	143
Total	522	363	71	32	14	480	1588	693	467	172	70	1402	143
Grand Total	522	363	71	32	14	480	1588	693	467	172	70	1402	143

Region: <ALL> *Sub-City:* <ALL> *Health Facility:* <ALL>

Delivery Report by Health Facility

Region: aa Addis Ababa HB
Period: Jul 2004 To Mar 2005

Health Facility	Referral From			Delivery		Caesarean	Twins	Ref.	New born						Cong.	Neonatal
									Alive			Still Birth				
	HF	Self	BBA	Normal	Abnor.	section			< 2.5	2.5-3.5	> 3.5	< 2.5	2.5-3.5	> 3.5	Malf.	Death
Sub-City: aa Kirkos SHD																
aa Kirkos HC		52	2	226	3		2	90	7	198	20	4				
Total		52	2	228	3		2	90	7	198	20	4				
Grand Total		52	2	228	3		2	90	7	198	20	4				

Region: <ALL> *Sub-City:* <ALL> *Health Facility:* <ALL>

Children Vaccination Report by Health Facility

Region: aa Addis Ababa HB
Period: Jul 2004 To Mar 2005

Health Facility	BCG	Polio0	Polio1	Polio2	Polio3	DPT1	DPT2	DPT3	Measles	Fully Vaccinated	Children < 5 Got Vit A		
											9-11	12-59 1st dose	2nd dose
Sub-City: aa Kirkos SHD													
aa Kirkos HC	420	430	647	666	576	631	658	660	683	681	318	8	0
Total	[illegible]	430	647	666	576	631	658	660	683	681	318	8	0
Grand Total	420	430	647	666	576	631	658	660	683	681	318	8	0

ANNEX 3.2

N° of male 16 + 14 + 12 + 14 + 18 + 16 + 16 + 13 + 11 + 14 + 8 + 19 + 12 + 12 + 11 + 5 + 11 +

N° of Female 20 + 00 + 24 + 22 + 18 + 20 + 20 + 23 + 26 + 20 + 28 + 17 + 24 + 24 + 26 + 31 + 26 +

Slide Pos F	Slide Pos M	Neg F	Neg M	R-F M	R-F F	Blood film Pos F	Blood film Pos M	Blood film Neg F	Blood film Neg M	U/A F	U/A M	Blood group M	Blood group F	WBC + DIFF + ESR F	WBC + DIFF + ESR M
5	3	5	7	–	–			1	2	18	6	–	2	6	4
2	3	16	5	–	–			–	3	6	8	–	1	2	2
5	5	5	8	–	–			–	2	18	–	–	4	4	2
6	6	5	3	1	–			3	5	16	4	–	1	[illegible]	4
1	2	10	9					2	3	12	4	–	2	9	2
6	9	9	4					1	–	8	2	–	–	2	7
9	5	2	7					–	3	18	12	–	4	–	2
5	3	8	6					2	2	22	2	–	6	3	4
5	1	4	5					3	2	34	6	–	5	[illegible]	2
3	5	6	2					–	2	28	8	–	2	5	4
9	1	9	4					2	1	14	2	–	2	11	4
1	5	7	8					–	1	18	4	–	2	8	2
7	7	7	1					1	–	22	8	–	–	3	2
5	4	2	2					–	1	24	8	–	6	5	4
6	3	9	3					1	–	34	12	–	4	10	–
9	1	10	–					1	1	24	4		2	9	2
7	2	5	5											5	3

20/7/97 – 18/8/97

የኢትዮጵያ ጀሚኒ ትረስት
ወርሃዊ የወሊድ መከላከያ ሥርጭት የመረጃ ትምህርትና ግንኙነት እንቅስቃሴ ሪፖርት ቅፅ

የሕብረተሰብ አቀፍ ሥነ ተዋልዶ ጤና ተጠሪ ስም [illegible]

ክፍለከተማ [illegible] ቀበሌ 10/11/7

ቀን	የአገልግሎት ዓይነት: ኪኒን አዲስ	ኪኒን ድጋሚ	ኮንዶም አዲስ	ኮንዶም ድጋሚ	መረጃ ትምህርትና ግንኙነት: የተጎበኘ ቤቶች ብዛት	የተጎበኘ ሰዎች ብዛት ወ	የተጎበኘ ሰዎች ብዛት ሴ	የቡድን ውይይት ብዛት	የቡድን ውይይት ቦታ	የተሰጠ ትም ህርት ርእስ	የተላታፊ ብዛት ወ	የተላታፊ ብዛት ሴ	የተ ሰራጨ በራሪ ጽሑፍ ብዛትና ዓይነት	ትምህርቱ የወሰደው ጊዜ	የተሠራጨ የመከላከያ ዘዴ: የኪኒን ዓይነቶች ገቢ	ወጪ	ቀሪ	ኮንዶም ገቢ
11/7	–	7	–	–	6	2	2	–	–	–	–	–	–	30	23	7	16	[illegible]
	–	–	–	–	–	–	–	–			–			–		–		
	–	–	–	–	–	–	8	–			–			–		–	–	
	2	5	2	2	6	2	–	2	[illegible]	[illegible]	3	25		3		8		
	–	–	8	–	–	–	8		–		–	–				–	–	
	–	10	5	4	6	2	5	–	–		–			–		10		
	–	–	–		–		–	–	–							–		
11/7	–	–			–		–	–	–		–			–		–		
	2			6	18	6	21	2			3	25		90		24	9	32.0

ለከፍተኛ አገልግሎት የተላኩ

ለምርመራ ______ ለሉፕ ______ ለመርፌ ______ ለኖርፕላንት ______ ዘለቄታ

መከላከያ ______ ለሌላ ______ ድምር ______

አገልግሎት ጀምረው ያቋረጡ ______ ያቋረጡበት ምክንያት ይገለጽ ______ ያጋጠሙ ችግሮች ______

የተወሰዱ እርምጃዎች

ወርሃዊ ገቢ ዝርዝር

ኮንዶም በቁጥር 144 ብር 10 ኪኒን በቁጥር 24 ብር ______ መርፌ በቁጥር ______ ብር ______

ጠቅላላ ______ ብር 34.00 ፊርማ ______

[illegible] =144

[illegible] = 11

[illegible] =13

[illegible] = 22

[illegible] = 19

[illegible] = 9

[illegible] = 1