Japan International Cooperation Agency
Ministry of Health, Islamic Republic of Pakistan

THE STUDY ON IMPROVEMENT OF MANAGEMENT INFORMATION SYSTEMS IN HEALTH SECTOR IN THE ISLAMIC REPUBLIC OF PAKISTAN

FINAL REPORT

February 2007

System Science Consultants Inc.

CONTENTS OF FINAL REPORT

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PREFACE

In response to the request from the Government of the Islamic Republic of Pakistan, the Government of Japan agreed to conduct the Study on Improvement of Management Information Systems in Health Sector in the Islamic Republic of Pakistan, and entrusted the Study to Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Hiroshi Abo of System Science Consultants Inc. between January 2004 and February 2007.

The team held a series of discussions with the officials concerned of the Government of Pakistan and conducted field investigations at the study area. Upon returning to Japan, the study team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of this project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Pakistan for their close cooperation extended to the study.

February 2007

Yoshihisa Ueda
Vice-President
Japan International Cooperation Agency

February 2007

Mr. Yoshihisa Ueda
Vice-President
Japan International Cooperation Agency
Tokyo, JAPAN

LETTER OF TRANSMITTAL

Dear Sir,

We are pleased to submit to you the report for "The Study on Improvement of Management Information Systems in Health Sector in the Islamic Republic of Pakistan". This report presents the result of all work performed in both Pakistan and Japan over 38 month period from January 2004 to February 2007.

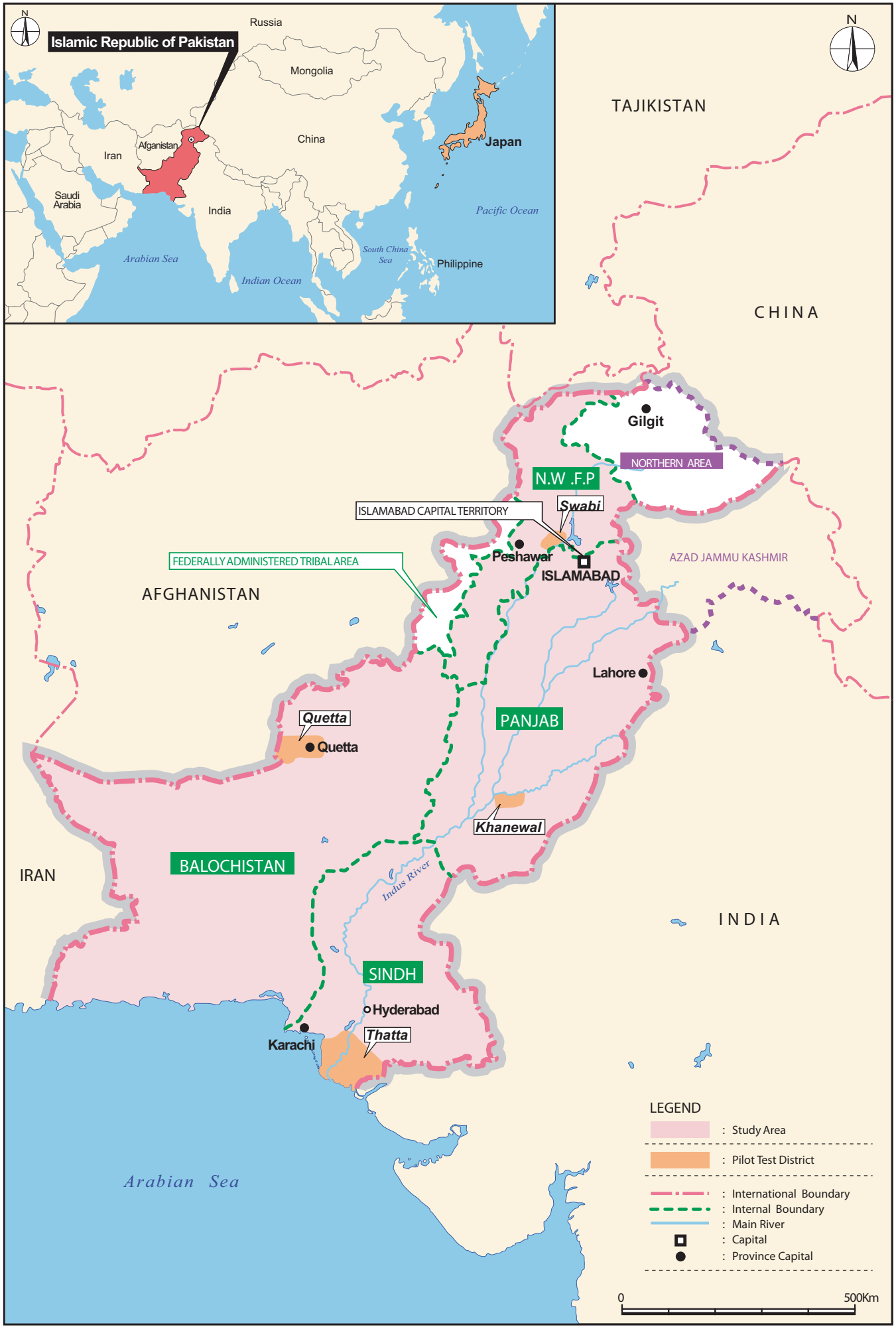
The health information system (HIS) is indispensable for the improvement of the health services through the evidence-based management. From this viewpoint, the National Action Plan was developed in the Study for reform and creation of an enabling environment for the HISs in Pakistan in order to continuously evolve and improve the information needs of the health sector. District Health Information System (DHIS) was also developed in response to the devolved setup of the health system in Pakistan. In the DHIS model, selection of new indicators, development of tools/instruments and open-sourced software were carried out for the improvement of data/information quality and continuous use of information for the contribution of district health services management.

We hope this model will be applied not only in Pakistan but also to improve the HIS of other countries widely. Moreover, we believe this milestone Study will not only contribute to HIS development but also to the improvement of governance for an overall health system.

We wish to express our deep appreciation and sincere gratitude to the officials concerned of your Agency, the Ministry of Foreign Affairs and the Ministry of Health, Labor and Welfare of the Government of Japan for the courtesies and cooperation kindly extended to our team. We would like to inform you that we had sincere cooperation from our counterparts of the Ministry of Health, National Health Information Research Center, all Provincial Health Departments and all parties concerned of the districts. We would also like to express our hearty gratitude to the officials concerned of JICA Pakistan Office and the Embassy of Japan for the close cooperation and various form of assistance extended to our team during field investigations and studies in Pakistan.

Very truly yours,

Hiroshi Abo
Team Leader
Study on Improvement of Management Information Systems in Health Sector the Islamic Republic of Pakistan
System Science Consultants Inc.



MAP OF STUDY AREA

Meeting on Inception Report (IC/R) on 24th January 2004; explanation to Pakistani side and approval

Situation Analysis implemented in 2004 by study team members in field investigation for lady health workers

Examining existing HIS data quality at Basic Health Unit by team members

Monthly meeting for discussion among Lady Health Workers on community level health situation at RHC

Explaining the results of field investigation to Steering Committee Members on 14th October 2004

Signing the Minutes of Meeting of 4th Steering Committee on 20th December 2005
(Center: Dr. Qazi Saboor, Executive Director, National Health Information Resource Center)

Private Health Sector Thematic Group Meeting for Development of National Action Plan with NWFP Health Regulatory Authority and representatives of Private Sector

Tertiary Hospital Thematic Group Meeting for Development of National Action Plan in Islamabad with Medical Superintendents from Tertiary Hospitals

Training on DHIS Software at HMIS Cell of Thatta Pilot Test District

Demonstration of the DHIS Software at HMIS Cell of Khanewal Pilot Test District

Meeting with General Director (Health), Ministry of Health in December 2006 for Implementation of National Action Plan; headed by Mr. Yojiro Ishii, Mission Leader, JICA Headquarters

Final Steering Committee meeting on 26th January 2007; Implementation of the DHIS for the whole country approved and committed

SUMMARY

S U M M A R Y

1. BACKGROUND AND OBJECTIVES

In August 2003 the Government of Pakistan and the Government of Japan through the Japan International Cooperation Agency (JICA) agreed to collaborate on a "Study on Improvement of Management Information Systems in the Health Sector in the Islamic Republic of Pakistan (Study)". The objective of this study was to formulate a National Action Plan (NAP) for the improvement of health information systems (HISs) in Pakistan to respond to the information needs at each level of the health services management. Implementation of this Study began in January 2004 and completed in January 2007.

2. PROCESS OF IMPLEMENTATION OF THE STUDY

The Study adopted the "Prism Framework" as the conceptual framework for the improvement of routine HIS in Pakistan. According to this Framework, the performance of routine HIS is measured by the quality of the data and clear evidence of continuous use of information generated by the system which are the result of the technical factors (design of the HIS) but is also of organizational (HIS leadership, coordination, resources, support, etc.) and behavioral (HIS skills, motivation, attitude towards HIS, etc.) determinants. This Prism Framework was used for conducting the Situation Analysis of the existing Health Management Information System (HMIS) in Pakistan and it also formed the basis of the design of District Health Information System (DHIS) and NAP for the improvement of HIS in Pakistan.

The Study was implemented in a collaborative and consultative manner; it went through the stages of Situation Analysis, design of improved HIS, Pilot Test, evaluation of Pilot Test and development of NAP for the improvement of HIS in Pakistan. Ministry of Health (MOH), Provincial Health Departments (PHDs) and District Health Departments (DHDs) were involved from the beginning and in every stage of the study. The Government formed a Steering Committee for overseeing the activities of the Study and provided approval to the developments and at each stage of the Study implementation. Counterpart meetings with important stakeholders were also arranged for sharing and deciding on technical issues related to the Study design and implementation. Provincial participation was ensured through the formation of Core Groups and provincial Technical Advisory Groups. Technical experts and senior officers from all the four provinces and MOH were the members of these Groups. The result of these consultative and collaborative processes was the design of DHIS. This DHIS was pilot tested in four districts of four provinces. During the Pilot Test of DHIS, provincial and district managers and staff were provided with formal and on-the-job training on DHIS instruments, data quality assurance (DQA) and use of information. National Health

Information Resource Center (NHIRC), PHDs and pilot districts were involved in the monitoring and evaluation (M&E) of the DHIS Pilot Test. Provincial Working Groups and District Implementation Bodies were established for this purpose. A series of workshops with senior MOH and PHD officers were held for the development and finalization of NAP for the improvement of HIS in Pakistan.

3. SITUATION ANALYSIS

The first year's activities of the Study carried out in 2004 include a situation analysis and formulation of the conceptual design of a model HIS for the public health sector. The broad guiding principle in the design of the Situation Analysis approaches as well as the basic design of HIS was that the information system (IS) would contribute to improving health status of the population through improving evidence-based health service delivery management. This requires that the IS is producing good quality information and that there is continued use of that information for management of health services. A variety of qualitative and quantitative methodologies were used to assess the performance of existing HISs in terms of data availability, quality and use, and to investigate the technical, behavioral and organizational factors (Prism Framework) that influence the performance of the HISs in the public sector. The assessment studies were conducted at facility level (Basic Health Unit (BHU), Rural Health Center (RHC), secondary and tertiary hospitals), management levels (district, provincial and federal, including vertical programs (VPs)' management) and of private and parastatal institutions.

The salient features of the situation analysis were that (1) the data generated through these HISs, particularly the HMIS for First Level Care Facility (HMIS-FLCF), was not of good quality and (2) the use of information for management decision-making was only discretely practiced, if any. Though reporting timeliness was encouraging, the data accuracy and completeness of reporting were compromised, the system was covering only the out-patients of FLCFs and some secondary hospitals (situation varied from province to province in case of secondary hospitals). In the context of the devolved health system, the data/information generated by the HMIS-FLCF was insufficiently relevant to the management needs.

The direct causes of low quality of data/information were found to be (1) obsolete design of existing HISs (e.g., HMIS-FLCF, secondary hospital HIS, HIS sub-systems) as a result of their failure to evolve/improve relevant to the information needs according to the changing situation, (2) constraints of human resources and logistics for HISs, (3) lack of data quality assurance mechanisms, and (4) low level of motivation and limited knowledge/skill to collect and report data; deficient capacity for data analysis and interpretation. These deficiencies, in turn, were the result of weak institutional mechanism for M&E of the HISs, planning and implementing their revision, weak supervisory system for quality control, lack of a well organized system of capacity building of facility/outreach staff on data collection and

reporting, and low motivation of managers to monitor the district health system performance.

Similarly, the causes of lack of use of information from the HISs were low accuracy and insufficient relevance due to gaps between the information collected and needed. Also, the district managers as well as the facility staff/managers are less motivated to use HISs information. This resulted from a number of organizational and behavioral factors including deficiency in capacity and practices of self-evaluation and use of HIS data for performance improvement, resource allocation not being according to the performance, little feedback being regularly provided from province to districts and from districts to facilities on performance appraisal based on HIS data. In addition, the management of HMIS-FLCF and VP-ISs are centralized.

Further analysis of these issues revealed the root causes of the low quality and limited use of information, which are (1) inadequate strategic framework for authority, ownership, coordination and organizational support for HISs, (2) weak linkage between information and strategic decisions, planning/management, (3) lack of ownership and accountability of HISs at provincial/district levels, (4) health system is not managed in performance-based (output oriented) manner, and (5)lack of internal capacity for HISs to evolve and respond to the changing situation and changing needs of the health sector.

In addition, the tertiary hospitals in public sector are maintaining their own ISs, but standardization of the tertiary hospital information system and regular reporting to the government are lacking. Similarly, as a stated responsibility of protecting public interest and preventing harm to the population, the government has a duty to oversee and ensure that the private health sector is providing quality care to the population. The function of IS to support that function of the government is non-existent in Pakistan.

Thus, in order to improve HISs in Pakistan, the main areas recommended for improvement/strengthening were:

i. Creation of HIS strategic framework
ii. Strengthening/improvement of HIS design for districts, tertiary hospitals and private health sector
iii. Strengthening of institutional and staff capacity to perform HIS tasks; and
iv. Improvement of HIS resources and management

4. BASIC CONCEPT OF NATIONAL ACTION PLAN (NAP)

In December 2004, the vision of HIS for Pakistan was agreed and approved by the Steering Committee whereby the HIS in Pakistan will be such an IS that aims to improve the health care services through evidence-based management of service delivery; this in turn will

contribute to the improvement of health status of the population. Given that health has been devolved to the districts and that information for ongoing program monitoring is easier and more efficiently obtained through routine data collection and most of the data necessary for district health management can be made available through routine HIS, the Steering Committee also approved the concept of DHIS as the core component of the NAP.

5. DESIGN OF DISTRICT HEALTH INFORMATION SYSTEM (DHIS)

The design of DHIS takes into account the Situation Analysis findings and the results of a series of extensive consultative meetings with national, provincial and district stakeholders. It was successfully pilot tested in 2006 in four districts of four provinces of Pakistan, viz. Thatta/Sindh, Quetta/Balochistan, Khanewal/Punjab and Swabi/NWFP. DHIS is designed to ensure ownership and augment continuous use of information at all levels by strengthening of feedback loops within the districts and supporting problem identification and solving the performance improvement. DHIS caters to management needs of devolved district health system. It enhances coverage of FLCF, secondary hospitals, VPs, and HIS sub-systems, viz. logistics, financial, human resource, capital assets information for self-regulation and performance monitoring at facility/district/province levels. Improved DQA procedures and use of DHIS information mechanism are in-built within the design. Also, there is flexibility in the design to evolve for accommodating future information needs. DHIS software was also developed and piloted in the Pilot Test Districts. The DHIS software provides ready access to Provincial managers and decision makers (e.g. Secretary Health, Director General (DG) Health) and district managers and decision makers (e.g. District Nazim or District Coordination Officer, Executive District Officer of Health (EDOH)) or any other authorized user to analyzed feedback reports as soon as data entry is completed; the ownership is with the DHSs/ PHDs and PHDs or DHSs can introduce new forms according to their local changing needs.

The results of the Pilot Test show that the design of DHIS is well accepted by the district managers and facility staff. Its relevance to meeting the information needs of the district managers was satisfactory. Some modifications were suggested during Pilot Test which were incorporated in the final version of the design of DHIS after thorough review by the Core Group.

6. OUTLINE OF NATIONAL ACTION PLAN (NAP)

6.1 Objective of NAP

The guiding principle for the improvement of HIS in Pakistan is that the HISs should meet the information needs of the health sector so as to contribute to the continuous performance improvement of the health system in Pakistan with a vision of improving the overall health

status of the population. For that there is need for an enabling environment that will positively influence the technical, organizational and behavioral determinants of HIS and allow continuous evolution of the HIS to meet the changing needs of the health system itself. Therefore, the overall goal of NAP, as approved by the Steering Committee, is:

> "To reform and create an enabling environment for the HISs in Pakistan to continuously evolve and improve to respond to the information needs of the health sector in Pakistan."

6.2 Outline of NAP

Given that the major thrust of the government is towards enhancement of DHIS (providing primary and secondary care) and tertiary care (provided by tertiary hospitals) and protection of public interest through ensuring quality care provided by private health sector, that routine HIS caters to most of the health system's performance monitoring and management information needs, and that the DHIS has been designed to that end for the district health system, the scope of NAP is:

(1) Implementation and continuous improvement of DHIS
(2) Development, implementation and continuous improvement of public health sector tertiary hospital IS (TH-IS)
(3) Development, implementation and continuous improvement of private health Sector IS (PvtHS-IS)

Within the ambit of each of these three scopes, the major areas that the NAP addresses are:

A. Formulation and implementation of strategic / administrative decision on routine HIS and related organizational issues;
B. Establishing leadership, coordination and management mechanisms at MOH, provincial and district levels for routine HIS, including data management, DQA, data processing, analysis, interpretation, feedback and use for evidence-based decisions, and establishment and improvement of Information and Communication Technology (ICT) support for HIS;
C. Mechanisms for development/ continuous improvement and implementation/ expansion of HIS design;
D. Mechanisms for provision of sustainable financial resources for HIS; and
E. Mechanisms for HIS capacity building, including institutionalization of capacity building mechanisms.

The major actions under the NAP are as follws.

(1) Strategic/policy decisions to be taken by MOH/PHDs

1) Making it mandatory for all the districts (including District Headquarter Hospital, Teshil/Taluka Headquarter Hospital) to implement DHIS
2) DHIS to replace HMIS-FLCF gradually by December 2007. (i.e. as soon as a district has its staff training on DHIS complete, software installed and received all the required printed materials, that district will switch to DHIS)
3) Integration of VP- ISs and channeling all health information through a single organization of MOH (e.g. NHIRC)

(2) Administrative decisions by PHDs/districts

1) Making it a rule to hold regular Districts' performance review meetings by PHD (Secretary Health) using DHIS information
2) Administrative directive for holding monthly meetings by EDOH (or District Health Management Team (DHMT)) to review performance of the district health system using DHIS information
3) Administrative directive for holding monthly facility staff meetings using DHIS information for reviewing performance of health services provided in the catchment population of the facility
4) Establishing regular HIS units at districts and PHD with full-time staff

(3) Developing and implementing Provincial PC-Is or provision of funds from regular budget for establishing DHIS in all districts by January 2008

1) Initial DHIS establishment/implementation budget provided by Provincial Governments (and Donor Agencies)
2) Subsequent maintenance cost borne by District Governments from their regular budget
3) Main budgetary items
   i. Training of Master Trainers, District Trainers, Facility Managers and staff
   ii. Printing and distribution of DHIS instruments/tools
   iii. Procurement/provision of Information Technology (IT) hardware and installation of DHIS software (IT Ministry/Department can help)
   iv. Strengthening HIS Units at Districts and PHDs
      - Recruitment/appointment of staff
      - Headed by Director at PHD, and Grade 17/18 Officer in the districts

(4) Strengthening of NHIRC

1) Strengthening HIS leadership capacity of NHIRC

i. Policy decision to make NHIRC as the competent authority of MOH to receive and analyze data from provinces/districts (DHIS data, tertiary hospital data, surveillance data, survey data etc.)

ii. Enhancing the HIS leadership capacity of Executive Director-NHIRC

iii. Appointment/recruitment of full-time technical staff

- Epidemiologist, Statistician, staff experienced in surveillance system
- IT experts – expert in software design, maintenance, trouble shooting
- HIS experts/consultants
- M&E staff for regular field visits and support to PHDs/districts on DHIS, tertiary hospital HIS
- Training experts – experienced in developing training curriculum, training methodology, conducting trainings

a. Provision of budget for organizing trainings, seminars, workshops, supervision and monitoring visits

b. Increasing collaboration with National Institute of Population Studies (NIPS) for conducting surveys on health issues and analyzing survey data

c. Regular reporting by NHIRC to MOH of its activities and achievements

(5) Establishing HIS Forum

The HIS Forum will be constituted by high level decision makers in MOH and PHDs. Major decisions for the implementation and improvement/development of HISs in Pakistan will be taken in this forum. This forum will be responsible for overseeing, guiding, and coordinating HIS activities in the country.

Key areas of action are summarized into Table S-1.

6.3 Duration of NAP

The implementation of NAP will take place in three stages over a period of 10 years (a. Initial stage: year 1 and 2, b. Mid stage: year 3 to 5, c. Final stage: year 6 to 10). An image of the status of development/implementation of each component during each stage of NAP is shown in Table S-2.

7. CONCLUSIONS

The Study also resulted in transfer of appropriate technology to the Pakistani side. Consensus on and ownership of the DHIS and NAP were also achieved by the end of the Study. Federal MOH committed to implement DHIS in the whole country and NHIRC was made responsible for coordinating, monitoring, and providing technical support for HIS from federal level. Each provincial government also fully owned the DHIS and initiated the preparation of financial arrangement (provincial PC-I or provincial regular budget from 2007/8) for the implementation of DHIS.

Table S-1 Key areas of action

Key action area	Action item	Actions
1. Strategic/ administrative decisions	1. Decisions for introduction of DHIS in all districts 1) Mandatory for all districts to implement DHIS 2) DHIS will replace existing HMIS-FLCF 3) Gradually, other Routine HISs (e.g. VP-IS) will become integrated / complementary to DHIS	1. Constituting Provincial Working Group for developing HIS strategy paper 2. Broad-based participation and consultation on HIS strategy matters 3. Vetting by MOH, PHD 4. Approval of HIS strategy/administrative decisions by competent authority
	2. Decisions for DHIS management 1) Ownership with districts a. Providing budget and other logistics for DHIS b. District budget to have line-item for DHIS printing & procurement c. Managing data, ensuring data quality, doing analysis, generating feedback reports and using DHIS information 2) Province providing technical guidance and stewardship a. Organizing trainings b. Compiling districts' data & generating analysis/feedback reports, helping in software maintenance, promoting use of DHIS information 3) NHIRC providing overall coordination & technical assistance. (Financial/logistic support only in the very beginning of DHIS implementation.)	
	3. Decisions for improving health system management practices that are directly influenced by DHIS 1) Regular performance review meeting utilizing DHIS information for performance monitoring and problem solving by: a. EDOH, district managers b. Facility in-charges c. Secretary Health of PHD 2) Supporting regular holding of these meetings a. Reflection in manager/in-charge's performance evaluation b. Availability of budget to implement decisions	

Key action area	Action item	Actions
	4. Decision on PHD's role in TH-IS management 1) Provincial HIS Unit, under DG (Health), to collect and compile data from tertiary hospitals 2) HIS and Tertiary Hospital Management (H&THM) Unit in Health Department to review TH-IS data a. Organize quarterly performance review meetings b. Assist Budget & Accounts Dept. to review financial management vis-à-vis performance c. Recommend development projects based on performance of tertiary hospitals	
	5. Strategy/decisions on PvtHS-IS 1) Formulation of Legislation or Health Regulation Ordinance that provides legal support for establishing PvtHS-IS.	1. PHDs constitute Working Groups on Private Health Sector Regulation 2. Broad-based participation and consultation on HIS strategic matters 3. Vetting by MOH, PHD 4. Approval of HIS strategy/administrative decisions by competent authority 5. Establish/Strengthen Health Regulation Authorities (HRA)
2. Coordination & management	1. DHIS organizational structure at districts 1) District HIS unit at EDOH Office 2) Headed by Grade 17/18 Officer 3) Assisted by Statistical Officer/Statistician & Computer operator/Data entry staff 4) Equipped with 2 computers – server and work station, & 24 hrs telephone line 5) Responsible for data management, DQA, analysis and feedback reports, staff training, DHIS logistics management	1. Executive/Administrative decisions at provincial level 2. Develop/approve Provincial PC-Is/ regular budget/ Schedule for New Expenditures (SNEs) 3. Recruit/depute appropriate staff 4. Human resources for DHIS deputed or appointed/recruited under initial PC-I or regular budget or through SNE 5. Procurement of equipment 6. Printing of DHIS instruments, manuals

Key action area	Action item	Actions
	2. DHIS management at facility 1) At BHU/ RHC, DHIS Focal person assigned 2) At hospitals, MO as DHIS Focal person with Statistical assistant recruited/appointed 3) District Health Management Team (DHMT)/District Health Team (DHT) already is place, made responsible for using DHIS information for self-assessment & developing and implementing Action Plans for continuous performance improvement 4) Facility in-charge responsible for conducting monthly staff meetings	7. Carryout respective unit's functions/ responsibilities
	3. Provision of sustainable financial, human and logistic resources for DHIS	
	4. HIS management by PHD 1) Provincial HIS unit under DG (Health) a. Headed by Director b. HIS Focal Person of BPS 18/19 c. Computer experts and data analysts 2) HIS and H&THM Unit under Secretary Health/PHD a. Responsible for districts' performance review based on DHIS b. Holding districts' performance review meetings with Secretary Health (PHD) in chair c. Management of Tertiary hospitals	
	5. Coordination and technical assistance by NHIRC 6. Management & supervision of NHIRC activities - especially stewardship of DHIS implementation, by Board of Governor (BOG)/Steering Committee 7. Support continuous improvement of DHIS design	1. Notification of HIS Steering Committee by MOH 2. Further strengthening of NHIRC 3. M&E activities and consultations with PHD/Districts for continuous improvement of DHIS

Key action area	Action item	Actions
3. Provision of sustainable financial resources for Routine HIS	1. Provision of sustainable financial, human and logistic resources for DHIS	1. Initially NHIRC & afterwards PHD provide finances for DHIS implementation 2. Ultimately Districts take responsibility 3. Develop proposal for DHIS expenses in District's health budget 4. Approval by District Assembly 5. Exemption of No-Objection-Certificate (NOC) from Govt. printing press 6. Drawing Disbursing Officers: (District Health Officer/Director of Health (DHO)/DOH), MS) exercise full sanctioning and procurement powers under financial rule for DHIS implementation
4. DHIS capacity building, institutionalization of capacity building mechanism	1. Strengthening of Provincial Health Development Center (PHDC)/ Provincial Health Services Academy (PHSA) as center for HIS training 2. Strengthening of District Health Development Center (DHDC) 3. Training of Master trainers, District Trainers, District staff/managers, and orientation of facility staff	1. Training of master trainers/district trainers from PHDC/DHDC on DHIS, Software application, DQA and use of DHIS information 2. Provision of financial resources to PHDC/DHDC for training 3. Regular holding of training activities for initial launching, refreshers and new/re-training of staff
5. Development and implementation of TH-IS	1. NHIRC, in collaboration with PHDs/Tertiary hospitals, will design TH-IS 2. PHD/NHIRC introducing and maintaining the TH-IS	1. Further need assessment 2. Finalization of & consensus building on conceptual design 3. Development of generic computer software with provision for customization 4. Gradual introduction of TH-IS in public sector Tertiary hospitals 5. Establish Provincial HIS Unit, under DG (Health), to collect and compile data from tertiary hospitals 6. Establish H&THM Unit in PHD to review TH-IS data 7. Regular holding of review meetings by PHD

Key action area	Action item	Actions
6. Development and implementation of PvtHS-IS	1. Consensus among government departments on the conceptual design 2. Legislation or Health Regulation Ordinance for establishing any form of PvtHS-IS 3. Gradual incremental implementation of PvtHS-IS	1. Hiring/appointing consultant/expert group on developing PvtHS-IS 2. Promulgating/amending Health Regulation to incorporate clause on information sharing/reporting – PHDs 3. Pilot testing PvtHS-IS 4. Gradual incremental implementation of PvtHS-IS by PHDs in collaboration/ cooperation with private health sector

Table S-2 Status at each stage of NAP

NAP Component	Pre-NAP Status (Development Study – 2006)	Status at each stage of NAP		
		Initial stage (Year 1 & 2)	**Mid stage (Year 3-5)**	**Final stage (Year 6-10)**
DHIS	1. DHIS Designed and Pilot Tested 2. DHIS software developed	1. Capacity of PHD/Districts to conduct DHIS training developed 2. DHIS owned by PHD/Districts, both having full-fledged & efficiently functioning HIS units 3. DHIS implemented in all districts 4. NHIRC/PHD collaborating & assisting districts to implement DHIS	1. PHD, in collaboration with NHIRC, establishing and implementing DHIS improvement mechanism 2. M&E of DHIS conducted 3. 2nd version of DHIS (that incorporates ISs for logistics, financial and human resource management) developed by NHIRC in collaboration with PHD/Districts and implemented by PHD/Districts	1. Continuous improvement of DHIS taking place 2. 3rd version of DHIS (that integrates VP-ISs) developed by NHIRC in collaboration with PHD/Districts and implemented by PHD/Districts
TH-IS	Design of core component of TH-IS conceptualized & computer application developed	1. Design of core component of TH-IS & computer application pilot tested 2. Core component of TH-IS gradually introduced in Public Sector Tertiary Hospitals 3. Work on design of fully computerized TH-IS initiated	1. Design of fully computerized TH-IS & computer application developed and pilot tested 2. Gradual introduction of fully computerized TH-IS in public sector tertiary hospitals – Central Registration Point (CRP), Out Patient Department (OPD), diagnostic units, admin units, Matron's Office, Record Room & Statistical Room all linked through main server, & computer application facilitating hospital management	1. Fully computerized TH-IS implemented in all public sector tertiary hospitals – indoor wards also linked to main server, computer application also used for facilitating patient management in addition to hospital management.
PvtHS-IS	Consensus on broad concept of the design of PvtHS-IS achieved	1. Design of PvtHS-IS developed 2. Legislation for implementing PvtHS-IS promulgated 3. Health Regulation Authorities (HRA) made fully functional in all provinces	1. PvtHS-IS pilot tested 2. Mapping/database of private health facilities implemented & maintained 3. PvtHS-IS gradually introduced in private sector hospitals and large clinics 4. PvtHS-IS implemented in facilities under public-private partnerships	1. Mapping/database of private health facilities and practitioners implemented & maintained 2. PvtHS-IS maintained in private sector hospitals and large clinics

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THE STUDY ON IMPROVEMENT OF MANAGEMENT INFORMATION SYSTEMS IN HEALTH SECTOR IN THE ISLAMIC REPUBLIC OF PAKISTAN

APPENDICES

LIST OF FIGURES, TABLES AND GRAPHS

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ABBREVIATIONS

BHU	Basic Health Unit
CH	Civil Hospital
CRP	Central Registration Point
DCO	District Coordination Officer
DG	Director General
DHD	District Health Department
DHDC	District Health Development Center
DHIS	District Health Information System
DHMT	District Health Management Team
DHQH	District Headquarter Hospital
DQA	Data Quality Assurance
EDOH	Executive District Officer, Health
EPI	Expanded Programme on Immunization
FLCF	First Level Care Facility
GOJ	Government of Japan
GOP	Government of Pakistan
HIS	Health Information System
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
HMIS	Health Management Information System
HMIS-FLCF	Health Management Information System for First Level Care Facility
ICT	Information and Communication Technology
IS	Information System
JICA	Japan International Cooperation Agency
LHV	Lady Health Visitor
LHW	Lady Health Worker
LQAS	Lot Quality Assurance Sampling
M&E	Monitoring and Evaluation
MCH	Maternal and Child Health Center
MOH	Ministry of Health
MS	Medical Superintendent
NAP	National Action Plan
NHIRC	National Health Information Resource Centre
NWFP	North West Frontier Province
OPD	Out-Patient Department
OJT	On-the-Job Training
PC-I & II	Planning Commission Form Number I & II
PHD	Provincial Health Department
PHDC	Provincial Health Development Center
PvtHS-IS	Private Health Sector Information System
RHC	Rural Health Center
TB-DOTS	Tuberculosis - Directly Observed Treatment, Short-course
TH-IS	Tertiary Hospital Information System
THQH	Tehsil/Taluka Headquarter Hospital
TOT	Training of Trainers
VP	Vertical Program

CHAPTER 1 INTRODUCTION

1. INTRODUCTION

1.1 Background

In Pakistan, the public health sector comprises a comprehensive set of first level care facilities (FLCF), secondary and tertiary hospitals, and outreach activities at the community level. After the devolution of health care system in 2001, the management of the primary and secondary level facilities and implementation of most of the outreach activities became the responsibility of the districts. The Provincial Health Departments (PHDs) and the Federal Ministry of Health (MOH) are primarily responsible for policy, planning, monitoring and evaluation, as well as the management of tertiary hospitals and regulation of private health sector. MOH also directly manages a number of national priority programs or vertical programs (VP) implemented through the District Health Departments (DHDs).

In order to support the management of public health system and policy/planning and monitoring functions of the government, a number of Health Information Systems (HISs) evolved over time. Until 1992, HIS in the public health sector was considered as inadequate and no comprehensive HIS existed. In 1992, Health Management Information System for FLCF (HMIS-FLCF) which primarily focused on the health services from FLCFs was developed and its implementation throughout the country was completed by 2000. Program specific information systems for VPs were established at their own pace and according to their own need with very little effort for integration and coordination among the various HISs. HMIS-FLCF was, nevertheless, seen as the backbone of the HIS in the public sector. However, many lacunae in HMIS-FLCF were identified and a strong need was felt for the improvement of HIS as a priority in order to make it compatible with the current information needs, especially in the context of the devolved health system.

With this backdrop, Government of Pakistan (GOP) requested Government of Japan (GOJ) for technical assistance. In response, Japan International Cooperation Agency (JICA) Mission visited Pakistan in August 2003 and an understanding was reached for the implementation of Study on improvement of management information systems in the health sector in Pakistan. The Scope of Work of the Study was signed during that visit of the JICA Mission. Subsequently, a “Study on Improvement of Management Information Systems in Health Sector in the Islamic Republic of Pakistan” was commissioned and JICA dispatched a Study Team to Pakistan for the purpose in January 2004. The Study commenced in January 2004 and was completed in February 2007. The Study was implemented in close collaboration with and proactive involvement of National Health Information Resource Center (NHIRC) of MOH. In order to ensure MOH’s participation and contribution to the Study, GOP approved the Planning

Commission Form II (PC-II) for the "Development Study on Improvement of National Health Management Information Systems in Islamic Republic of Pakistan" in September 2004.
According to that PC-II, GOP designated NHIRC at the federal level and PHDs at provincial level to act as the Pakistani counterparts. A Steering Committee was approved for managing the Study activities at federal level; at provincial level Technical Advisory Groups were prescribed for assisting Study activities. In the PC-II, GOP also committed to approve a long term scheme for the implementation of the National Action Plan (NAP) formulated at the completion of the Study for the improvement of health information system.

This report is the Final Report of the Study and it describes the Study in detail. In Chapter 1.2 the overall Study design and implementation methodology is explained. In the subsequent chapters, the major outputs of the Study, viz. Situation Analysis of the existing HISs, design of District Health Information System (DHIS) and its Pilot Test, and NAP for the improvement of HIS in Pakistan are described.

1.2 Study objectives, conceptual framework and methodology

1.2.1 Study objectives

Good management is a prerequisite for efficiency and efficacy of health services and improvement of HIS has been linked to improvement of health management. On the other hand, ownership of the HIS by its actual implementers/users through in-country availability of appropriate technology and skilled personnel is an essential requisite for the success of the HIS in a country. Therefore, there are two main objectives of the Study as indicated below:

(1) Development of a NAP for the improvement of HISs in Pakistan, and
(2) Transfer of relevant technology to the concerned persons through the Study.

1.2.2 Study conceptual framework

In Pakistan, strengthening of the districts' capacity to manage their own health services has been emphasized within the devolved setup of the health system. One of the key strategies to improve their management capacity is to improve the districts' accessibility to and use of quality health data according to the information needs of the districts. This will help them in regular monitoring of the performance of district's health care services and their supporting sub-systems (e.g. logistics, financial and human resource management systems) which would then lead to identification of problem area or best practices, problem analysis and planning solutions, implementation of the solutions and their monitoring and evaluation. No single data

source can provide all the information required for planning and monitoring the health services. Nonetheless, information for ongoing health programs/activities is easier and more efficiently obtained through routine data collection. Therefore, the main focus of the Study was on routine HIS.

The Study adopted the "Prism Framework" [1] as the conceptual framework for the improvement of routine HIS in Pakistan. Normally, there is a preference among information experts and public health professionals to narrowly define performance of routine HIS as the production of good-quality data. But the ultimate objective of HIS is to produce information for taking action. Thus, according to this Prism Framework, the performance of routine HIS is not measured by how much data it produces, but by the quality of the data and clear evidence of continuous use of information generated by the system. This performance of HIS (production of quality data and continuous use of information for management decision-making) is not only the result of the design of the HIS but is also influenced by organizational (HIS leadership, coordination, resources, support, etc.) and behavioral (HIS skills, motivation, attitude towards HIS, etc.) determinants.

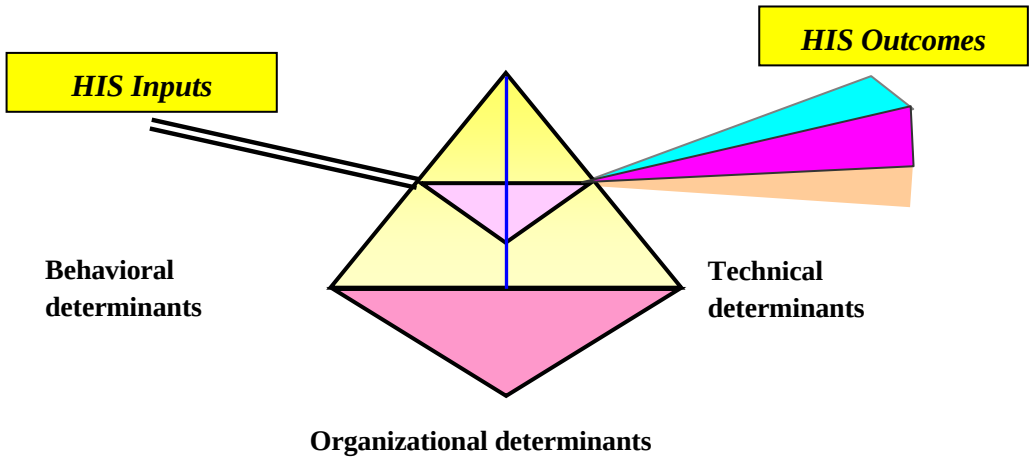

Figure 1.1 Prism framework for understanding/improving HIS performance

This Prism Framework was used for conducting the Situation Analysis of the existing HISs in Pakistan and it also formed the basis of the design of DHIS and of NAP for the improvement of HIS in Pakistan.

1.2.3 Study methodology

The Study was implemented through collaborative and consultative process in which the

[1] PRISM paper, Introducing an Analytical Framework for Understanding the Performance of the Routine Health Information System in Developing Countries, September 2003, Dr. Theo Lippeveld, et al.

stakeholders from MOH, PHDs and districts participated throughout the implementation of the Study.

Steering Committee was formed by MOH with participation of all the PHDs for the overall supervision of the Study, taking important decisions at each stage of the Study, and approving the Study methodology, HIS vision and implementation approaches, DHIS design, Pilot Test districts and methodology, and NAP. A number of Steering Committee meetings were held during the 38 months of the Study.

During the initial stage of the Study, Counterpart meetings participated by MOH, NHIRC, Planning and Development Division, National HMIS Cell, provincial HMIS Coordinators and World Health Organization (WHO) were held to finalize the design of Situation analysis, its methodology, tools and questionnaires, and selection of districts for Situation analysis.

Later, Core Working Group at federal level and Provincial Technical Advisory Groups in all four provinces were formed. These groups actively participated and contributed to the finalization of the Situation Analysis design, review of the Situation Analysis findings, development of the conceptual design of improved HIS model, design of DHIS and formulation of NAP.

In the later stage of the Study, three Thematic Groups were formed. These were DHIS Thematic Group, Tertiary Hospital Information System (TH-IS) Thematic Group and Private Health Sector Information System (PvtHS-IS) Thematic Group. These groups worked for the finalization of the design of DHIS based on the results of Pilot Test and develop the conceptual design of TH-IS and PvtHS-IS.

As mentioned earlier, District Implementation Bodies and Provincial Working Groups were also formed for the monitoring and evaluation (M&E) of Pilot Test.

Throughout the Study, the Study Team maintained close liaison and coordination with NHIRC who provided the necessary assistance and facilitation for the smooth implementation of the Study. NHIRC remained actively involved in organizing the various workshops and meetings of the Steering Committee, Core Group, Provincial Technical Advisory Groups and Thematic Groups, and participated in the training and M&E for the Pilot Test of DHIS.

Such an arrangement of MOH/NHIRC and PHD/districts involvement from the very inception of the Study till its completion ensured the development of NAP and the transfer of technology to relevant Pakistani officials, the main objectives of the Study, and resulted in the ownership

of DHIS/NAP by GOP and other stakeholders.

Details of the Steering Committee meetings, Counterpart meetings, Technical Advisory Group meetings and Thematic Group meetings are given in Annex, Part II.

1.2.4 Stages of Study implementation

The implementation of Study was completed in 38 months from January 2004 to February 2007. The major stages of Study implementation are as follows.

1) Situation Analysis and conceptual design stage (2004)

During 2004, Situation Analysis of the existing HISs in Pakistan was carried out. Quantitative and qualitative assessments were done for that purpose. On the basis of the Situation Analysis findings, an overall HIS vision for Pakistan, a conceptual design of the improved routine HIS model and the proposed interventions for its implementation were developed and presented to the GOP. The Steering Committee meeting held in December 2004 approved the HIS Vision for Pakistan (Ref. Chapter 3) and the conceptual design of the improved HIS model. This model was named as DHIS (Ref. Chapter 4)

2) Intervention detail design stage (2005 and early 2006)

During this stage, detail designing of the improved HIS model, i.e. DHIS was carried out through extensive consultations with MOH, PHDs and districts. Technical, organizational and behavioral interventions for the implementation of DHIS were detailed out and shared with the counterparts. During this stage, DHIS indicators and data elements, instruments for data collection, aggregation and transmission, district feedback (analysis) reports, procedures manual, DHIS training manuals and training manual on use of DHIS information, and conceptual design of DHIS software were developed and shared with Core Working Group and Provincial Technical Advisory Groups. The DHIS instruments were also pre-tested during this stage.

3) Pilot Test and NAP development stage (2006)

In this stage the DHIS design, its instruments and manuals were finalized. DHIS was pilot tested in four districts, one in each of the four provinces. For the purpose of Pilot Test, training of MOH/PHD master trainers, training of district trainers and training/orientation of district managers and health facility staff were conducted DHIS instruments were printed and supplied to all the health facilities in the Pilot districts, DHIS software was installed in both

the Pilot districts and the provinces. District Implementation Bodies were formed in each pilot district for smooth implementation of the Pilot Test and Provincial Working Groups were formed for the M&E of the Pilot Test. NHIRC along with the Provincial Working Groups took the lead role in the M&E of the Pilot Test.

At the completion of the Pilot Test and based on the results of the Situation Analysis, Pilot Test and consultations with MOH and PHDs, the NAP for the improvement of HISs in Pakistan was developed and finalized. The broad outlines of NAP were approved in the Steering Committee meeting and the detailed NAP was circulated to MOH and all four PHDs for their perusal and approval. Ownership of DHIS/NAP by all the four PHDs was achieved during the meeting of the Core Working Group and this was reiterated by the PHDs during the visit of JICA Mission from Tokyo in December 2006. Ultimately NAP was approved in the Steering Committee meeting held in NHIRC on 26th January 2007.

CHAPTER 2 SITUATION ANALYSIS

2. SITUATION ANALYSIS

2.1 Introduction

(1) Objectives

In the public health sector, there are a number of information systems (ISs) that are currently nationally implemented in Pakistan. These include HMIS-FLCF, ISs for various VPs like Expanded Programme on Immunization (EPI), the TB-DOTS[2] program, the Malaria Control Program, the HIV/AIDS[3] control program, and National Program for Family Planning & Primary Health Care (LHW[4] program). Among these programs, the HMIS-FLCF was designed and launched as a comprehensive and integrated IS for the FLCF-based primary health care services delivery systems in the country[5]. Both GOP and international agencies invested heavily on the system design, nationwide staff training and provision of hardware and software for HMIS-FLCF. MOH has put significant emphasis on improving the HMIS-FLCF[6]. Thus, the situation analysis of the Study primarily concentrated on assessing the performance of HMIS-FLCF and its determinants. Nevertheless, relevant issues concerning other ISs were also studied (Details are shown in Annex, Part I Situation Analysis Report).

The main objectives of the Situation Analysis were (i) to understand the strengths and weaknesses of the existing HIS, especially HMIS-FLCF, in public health sector in Pakistan, and (ii) to develop a conceptual framework for the implementation of HIS by providing a basic design of the HIS and (iii) to prepare a basic approach so that a draft NAP formulation could be drawn-up based on the findings of Situation Analysis.

Following is a brief description of the Situation Analysis.

(2) Situation Analysis framework

The broad questions investigated during the Situation Analysis were: (i) what is the existing situation of the various HISs in Pakistan (e.g., unused, unreliable information currently generated by these HISs, duplications among them, unmet information needs at various levels, enablers of and barriers to information use), and (ii) how can they be improved (what opportunities are there to improve both the supply and use of information). To answer these Study's questions, the Prism Framework (Ref. Section. 1.2.2) for assessing HIS performance and its associated factors (i.e. technical, organizational and behavioral determinants) was used. Under the Prism Framework, the performance of HIS is assessed

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[2] TB-DOTS: Tuberculosis - Directly Observed Treatment, Short-course

[3] HIV/AIDS: Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome

[4] LHW: Lady Health Worker

[5] Health Management Information System for First Level Care Facilities: Instruction Manual. August 1994 (Revised Edition); published by Ministry of Health, Special Education and Social Welfare (Health Division), Government of Pakistan.

[6] PC-II for Development Study on Improvement of National Health Management Information Systems of the Islamic Republic of Pakistan. July 2004. Ministry of Health, Government of Pakistan

by picking up two issues of “quality of data/information” and “continuous use of information”.

The quality of data/information was measured in relation to the following six parameters.

a. Timeliness: Whether data is transmitted to the next level in a specified time (meeting a deadline by which reports are required to be submitted to the upper level, etc.)
b. Data accuracy: Whether transfer of data from registers to the reporting form is accurate
c. Completeness: Whether all data fields (i.e., all the cells in the form) are filled in the reporting form(s), and monthly report submittal ratio from all health facilities
d. Relevance: Whether data/information collected is relevant to management information needs of the health systems
e. Coverage: Whether data is collected from all points of the health service delivery network, including each level of the health facility, the private sector and other health resources, as well as the geographic area of data/information to be collected
f. Analysis and Interpretation: Whether data is properly analyzed, presented and interpreted into meaningful information

Continuous use of information was measured by observing whether staff and manager were using the collected information for decision-making. These decisions are related to policy formulation and management of the services and support functions (logistics, finance etc.). Other uses of the information are: to identify performance gaps, to investigate causes, to develop a solution, to monitor implementation of the solution and to evaluate changes to start a new cycle for improvements.

2.2 Situation Analysis methodology

For the Situation Analysis, a variety of quantitative and qualitative methodologies were used to assess current performance of HMIS-FLCF and to investigate the technical, organizational and behavioral factors that influenced its performance. Based on the findings of the Situation Analysis, the Study Team conducted an analysis of problems and developed a problem tree (Appendix 5 Figure 2.1 Problem tree) for quality of data/information and use of information. After development of problem tree, objective analysis was carried out for identification of the desirable situation that would be attained once the problems have been solved (Appendix 6 Figure 2.2 Objectives tree).

2.2.1 Quantitative studies

Three quantitative studies were carried out to identify lessons learned in HMIS-FLCF.

Table 2.1 Outline of quantitative studies for Situation Analysis

Name of study	Target	Purpose	Method
1. Clinical diagnostic capability assessment	62[7] BHUs and RHCs and 196 personnel	To explore diagnostic capability of health providers	Self-administered questionnaire
2. HMIS assessment study	Same as the above	To explore: 1. Availability and utilization of HMIS materials 2. Time taken to fill out various forms 3. Data accuracy	1. Check of availability and utilization of register and forms 2. Data cross-check (The both were implemented by surveyor)
3. Organizational behavioral assessment	85 BHUs and RHCs and 135 personnel	To explore the behavioral and organizational factors affecting HMIS performance	Self-administered questionnaire

Note: BHU (Basic Health Unit), RHC (Rural Health Center)

2.2.2 Qualitative studies

In addition to the desk review of published reports and documents on HIS in Pakistan, interviews and focus group discussions at the various levels of relevant personnel were held as shown below.

Table 2.2 Outline of qualitative studies for Situation Analysis

Target	Purpose	Method
FLCF	To acquire staff's views of the record keeping and data quality	Focus group discussion
District level key informants (EDOH, HMIS and VP Coordinators etc.)	To understand the operation of existing HISs	Semi-structured interview with key informants in 10 districts
Tehsil/Taloka, secondary and tertiary hospitals	To review record keeping and reporting system of hospitals	Semi-structured interview with medical superintendents of 12 hospitals
Provincial level key informants (DG Health, HMIS and VP Coordinators)	To understand their perspective on improvement of HISs	Focus group discussion in all four provinces
Parastatal organizations	To review their ISs	Key informant interview
Private sector	To understand the opportunities/complexities of bringing the private sector within the scope of HIS	Key informant interview
Federal VP managers	To understand the IS and possibilities of linkage for data collection	Key informant interview

Note: EDOH (Executive District Officer, Health), DG (Director General)

[7] This sample size was calculated based on probability of finding 80% accuracy of data, with 95% confidence interval and 10% margin of error.

2.3 Situation Analysis findings

2.3.1 Quality of data/information

The following aspects of quality of data/information were examined. The overall issues in these aspects in the existing HISs resulted in the production of low quality data/information.

(1) Timeliness

A high level of timeliness in report submission was found where monthly report submission was tied to the receiving of salary. Nevertheless, there were several cases where the submission rate was below 50% before the due date.

(2) Data accuracy

The data accuracy could not be ascertained for 60% of the facilities visited due to unavailability of both monthly report forms and registers. Of those 40% facilities where both monthly report form and registers were available, data accuracy was between 20 and 50% depending upon the data item chosen. This finding substantiated earlier study findings[8].

(3) Completeness

The completeness was low as well about 13%, especially for those fields in the monthly report that are intended to be filled-in by calculation. During the Provincial Technical Advisory Group meeting, the participants informed that facilities were told not to fill those fields. This policy decision reflects the assumption that the data collectors do not require the data, consequently affecting HIS performance.

(4) Coverage

The coverage defines two cases: information from health service delivery facilities and geographic areas. In the former case, HMIS collects information from only FLCFs. It does not cover secondary care level facilities and other sub-system information (priority program information and resource information). In the latter case, many districts in Balochistan are not fully covered by HMIS-FLCF. In addition, information from tertiary hospitals, parastatal institutions, and facilities in the private sector are not part of the existing system.

(5) Relevance

Is the data relevant to the management function needs of the health system at the district,

[8] Hozumi D., Aqil, A., Lippeveld (2002) Pakistan Situation Analysis, MEASURE Project, USAID

province and federal levels? To answer this question, firstly, management functions were explored at the district, province, and federal levels. Secondly, the management functions were compared with the information collected through HMIS-FLCF monthly reports - the results showed that the existing HMIS-FLCF covers district functions only partially. Hospital indoor data, diagnostic services, financial and human resource information is not captured by HMIS-FLCF. On the other hand, some HMIS-FLCF data are collected in duplication with VP-ISs.

(6) Data analysis and interpretation

The Study found that only 28% of the data collectors could plot the data while 8% of the data collectors could evaluate plotted data. About 42% of those who participated in the Situation Analysis could calculate percentage/rate. Only 27% could describe at least one reason why information on monthly basis was collected on disease, immunization, and population data. About 40% of the facilities and district offices displayed population charts and very few showed that staff and management were using any data for performance monitoring. On the other hand, polio campaign data were prominently displayed. This observation was substantiated by key informant interviews and secondary sources[9].

2.3.2 Determinants of quality of data/information

As explained above, problems occur in all the aspects of data/information quality. Analysis of the direct, indirect and root causes of low quality data/information was carried out by constructing a Problem Tree. The result of that problem analysis for low data quality are given below.

(1) Direct causes

The direct causes of low quality of data/information evolved over the years due to a multitude of factors are discussed in the following Section (2) as the indirect causes of low quality of data/information.

1) Low motivation

Study Team found that the motivation of HIS staff was too low to perform designated tasks. The immediate factor was that the staff did not perceive positive incentive by carrying out HIS task. The DHDs had an ill-defined reward system; 50% of the study respondents believed that the department did not provide any reward for good performance.

[9] Hozumi D., Aqil, A., Lippeveld (2002) Pakistan Situation Analysis, MEASURE Project, USAID

2) Insufficient staff capacity (knowledge and skills) for data collection/reporting and analysis/ interpretation

Low level of data accuracy was affected by the staff's insufficient knowledge and skills of the HIS tasks. Only 42% of the respondents were able to calculate at least one percentage rate, while only 28% of the respondents could plot the given data. Of those respondents who plotted the data correctly, only 8% of them were able to recognize a trend, if any and even less of the study case group were able to explain the bar chart findings. However on average, respondents perceived having more than 80% confidence in performing the HIS-related tasks. This indicates the willingness on the part of the staff, but also a gap when compared with the observed low performance. Overall, 12% of the respondents stated at least one measure to solve this problem is to provide training to staff in data collection, but very few suggested any other steps. Only 27% could describe at least one reason why information on a monthly basis was collected on disease, immunization, and population data. Ten percent described one technique for checking data quality. These findings indicate that HIS implementers had insufficient skills to analyze, display and interpret the data. A majority of the study respondents were not aware of what they could do nor how their actual performance related to HIS tasks. Since they did not understand the rationale for data collection their motivation was also low for the purpose. Lastly, they had little consciousness to solve problems in information use for performance improvement. The low knowledge and skills result from not having an adequate training program or training manuals.

3) Lack of data quality assurance mechanisms

Data quality assurance (DQA) mechanisms to improve data quality, especially data accuracy, do not exist. Each HMIS Cell mainly keeps track of the timeliness of reporting and the completeness of the reports (i.e., whether all fields in the report are filled). In only a few instances when unusually high figures for some particular variable were reported, the HMIS Cell proactively inquired about its correctness, primarily over telephone.

4) Technical design issues and the failure of HIS to evolve/improve relevance to information needs

The review of monthly reporting form showed that there are over 446 data points in the form, thus leading to data burden. Some of the record-keeping instruments are complex and many staff feel that these are difficult to fill-in. As a result, data collectors are overwhelmed with the multitude of data collection and report forms causing a low quality of data/information output. Furthermore, there were complex feelings about the procedural manuals. The data coverage of HMIS-FLCF is limited to

FLCFs. Only recently, the Out-patient Department (OPD) of secondary hospitals were included within HMIS-FLCF coverage, but the same reporting form for FLCF level was adopted for these secondary hospitals as well. There is weak coordination and data sharing among facility staff and outreach staff of VPs at the facility level. There is also weak coordination and sharing of data between the HMIS Cell and VPs at district level. The software is outdated and does not provide an integrated picture of the district performance. Thus, the report results are not useful for making management decisions. Though the communication channels are well established, the data transfer from district to province and federal government is problematic as diskettes having raw data get damaged while in delivery by mail. Internet service and infrastructure to that end are not yet well established to send data directly by e-mail or to file transfer it on a website.

5) Insufficient HIS resources

Resources are necessary to perform HIS tasks. Study Team found that the tools for checking data quality and use of information were very limited. Fifty percent of the facilities had only 57% (19/33) of the total HMIS-FLCF forms and registers necessary to record and report. Logistics for HMIS-FLCF were made available on ad-hoc basis. The storage capacity is also weak. The existing software is outdated and reports produced do not adequately assist managers to make decisions.

One important weakness in the HIS in Pakistan has been that once the various HISs were developed, they did not have the capacity to evolve nor improve to respond to the changing needs of the health sector. For example, the HMIS-FLCF was developed in 1992 with the assistance of United Stats Agency for International Development (USAID). Since then, revision of the system to adapt to the devolution process did not occur. Efforts undertaken at the federal level for the revision remained stalled. As a compromise to having no standardized IS for secondary hospitals at all, the same HMIS-FLCF was introduced for the outdoor secondary hospitals. The IS for Malaria program is based on the former malaria eradication program that is different from the priorities of the current Roll Back Malaria program. The EPI-IS still adopts the data points to capture vaccination given to children 12-23 months old, whereas the national policy is to provide immunization to under-one year old children only. Sub-system ISs like logistic, financial or human resource management information systems are still in their initial stages.

(2) Indirect causes

The indirect causes for the above-mentioned causes of low quality of data/information in Pakistan are as follows.

1) Weak supervisory system for quality control

The HIS supervisory system is weak as reflected by a lack of a supervisory checklist and insufficient feedback on HMIS-FLCF data quality. The District HMIS Cell lacks sufficient manpower and logistics to carryout regular supervisory visits. Quality assurance mechanisms to improve data quality are not in place. Concomitantly, the supervision of the facility and outreach activity by the district is also weak; there is insufficient monitoring of and feedback on changes in facility performance. Weak supervisory system in turn affects motivation and availability of resources. At the facility level, the person in-charge is reluctant to lead both the facility and outreach staff. This affects coordination between outreach and facility staff resulting in duplication or missing data.

2) Lack of continuous capacity building of facility/outreach staff on data collection and reporting

With regard to staff's knowledge and skills on HIS tasks, there is lack of continuous capacity building of facility/outreach staff on data collection and reporting. At the initial stages of HMIS-FLCF implementation over 20,000 staffs were trained on HMIS-FLCF, but even that could not cover all the staff who required training. Recent efforts for re-training staff on HMIS-FLCF were sporadic and smaller in magnitude, heavily depended on provision of small grants by the international agencies. No institutional capacity was built for providing continuous training to the staff or arranging new training for untrained staff.

3) Weak institutional mechanisms for M&E of the HIS, and planning and implementing their revision

Similarly, there is weak institutional mechanism for M&E of the HIS, and planning and implementing of their revision. There is no institutional mechanism at the provincial and district levels to monitor and evaluate the performance of the HIS, identify areas for improvement, and take initiatives for revision of the HIS according to their needs. Some efforts for the revision of HMIS-FLCF were made by the National HMIS Cell at the federal level with involvement of the provinces. However, after progressing for some time, those efforts also became stalled. This institutional weakness to improve the HIS according to the needs of their public sector has greatly affected the relevance of the HMIS-FLCF in particular and the HISs in general.

4) Low incentives for managers to monitor the district health system performance

The motivation of managers to monitor the district health system performance is low. During the situation analysis it was found that less than half of the respondents knew about their annual performance criteria, and about 50% of the respondents believed

that the department did not provide rewards for good performance. There is little feedback from province to district based on performance appraisal. The capacity at district level to use the HIS data/information for performance monitoring is lacking, and HIS data/information is not used for developing district plans, targets, or the allocation of resources or advocacy for resources.

2.3.3 Continuous use of information

(1) Low level of information use

There are various stages at which information is used - problem identification and study of best practices, planning for problem solution, requesting support from higher-level organizations and related persons, and evaluation, monitoring and feedback. The Study found few examples of role modeling by senior management for using information. About 12% of respondents showed problem solving skills. HMIS-FLCF feedback reports at various levels were found infrequent. Moreover, HMIS-FLCF information is infrequently used for annual district plans, setting targets, monitoring, resource allocation or advocacy of resources.

2.3.4 Determinants of information use

The problem tree (Appendix 6 Figure 2.1 Problem Tree) was designed to easily understand the lack of continuous use of information. The two problem trees are linked together by the fact that low quality of data/information affects use of information and vice versa. Three major causes for lack of continuous use of information were identified as (i) low quality of data/information, (ii) little motivation by the district managers to use HIS information, and (iii) little motivation and capacity of the facility staff/managers to use HIS information. These three direct causes of the lack of information use result from a number of indirect causes elaborated below.

1) Low quality of data/information generated by HIS

Among various causes described above under quality of data/information section, one important determinant is the insufficient relevance, i.e. gap between the information collected and needed.

Relevance of information for management functions is an important factor affecting data/information quality and thereby the use of information. Staffs perceive that HIS is geared towards federal government’s needs rather than aimed at local performance improvement. In addition, there is a gap between targets set by the federal government and implementation at district level.

2) Little motivation to utilize information on the administrators' side

Little motivation to utilize information on the part of the administrator results from:

a. Lack of capacity to use HIS data for performance improvement

Insufficient knowledge and skills inhibit the use of information. Low HIS tasks competences contributed to low levels of use of HIS information. Only about 46% of the study respondents knew about their annual performance criteria and 40% stated that HIS data/information was not used for their annual performance appraisal.

b. Less clarity of coordination roles and mechanisms for the health administration

Data/information from different HISs are not coordinated at the district or provincial levels, thus creating lack of holistic picture of different services at district and other levels. Lack of coordination of data/information is also seen at facility level.

c. Centralized management of HMIS-FLCF and VP-ISs.

HMIS-FLCF and VP-ISs are managed federally. These ISs are also managed and implemented separately by various programs under the federal MOH without any coordination or linkages among them. The district level staffs perceive that these various ISs are geared towards federal government's needs rather than aimed at local performance improvement.

d. Little feedback from the province to district level based on performance appraisal

HIS is not seen as part of the monitoring performance at various levels. The Study found a lack of performance appraisal, monitoring and supervision. Fifty percent of the cases showed that information was used for the annual performance appraisal. Feedback reports are infrequent to improve use of information.

e. Resource allocation is not according to the performance

The study found HIS staff motivation was low to perform HIS tasks. The immediate factors were that the staff did not perceive positive outcomes of performing HIS tasks. As explained in the Section 2.3.2, the DHDs do not have defined reward system.

f. HIS is not part of the Planning/M&E Cell

HIS is not part of the Planning/M&E Cell. Managers do not meet to discuss the information for making management decisions. The information is not used to

create an understanding that the performance is a function of interdependent officers and staff. There is little coordination and sharing of information between the HMIS Cell, VPs and the Planning/M&E Cell. For annual budgeting at the end of the year, the HIS information is not taken into account. Therefore, district managers see very little importance of the HIS information for any practical purpose.

3) Less motivation and capacity of the facility staff/managers to use the HIS information

Less motivation and capacity of the facility staff/managers to use the HIS information results from:

a. Lack of capacity to use the HIS data/information for performance improvement

As described in Section 2.3.2, lack of capacity building of facility staff has adversely affected the use of HIS data/information. One of the reasons for this low capacity was that the facility staff are not expected to calculate percentages for their own understanding of the situation, and as such developing those skills were not included as part of the training curriculum for the staff.

b. Lack of self-evaluation and performance improvement at facility level

At the facility level, the practice of using the HIS information for self-evaluation is lacking. Staff are more concerned about their own individual work and do not sit together to review the data from HIS for monitoring their collective/individual performance and coordinating their activities.

c. Little feedback from the district level based on performance appraisal

The feedback received by the facilities from the district level is mostly on completeness and timeliness of the reporting. Very little analysis of the reports is done at the district level and, therefore, feedback from the district is also lacking. The Provincial HMIS Cell and National HMIS Cell have published a number of reports based on HMIS-FLCF data analysis, but by the time these reports are published, they are already outdated and of little relevance for the district or the facilities concerned.

d. Resources are not allocated according to performance

Resource allocation for the facilities is done through pre-determined criterion and does not reflect the performance of the facility. For example, resource allocation for hospitals is based on the approved bed-strength of the hospitals with no

considerations for patient-load. Thus, the facility in-charge does not feel any urge to carryout meticulous analysis of yearly patient load, logistics requirements, etc.

2.3.5 Root causes

The root causes of the low quality and limited use of information are as follows.

(1) Less accountability, authority and ownership of the HIS at provincial/district levels

(2) Inadequate policy and organizational support for the HIS: weak linkage between information and policy, planning/management, and supporting

(3) Health system is not managed in a performance-based (output oriented) manner

2.3.6 Information system for secondary and tertiary hospitals, parastatal and private institutions/facilities

Secondary hospitals are part of the existing district health system and the district needs to monitor their performance. Secondary hospitals have indoor and diagnostic services and serve as the first referral level in the district. Secondary hospitals can be useful sources of information on diseases and other preventive/promotive services, especially maternal and newborn care services. Further, the district management also needs hospital information for their management and management of overall district health services, particularly for strengthening the referral linkages.

On the other hand, tertiary hospitals are under the PHDs or MOH; they have a very complex setting and vary in their information needs according to their specialization. However, the need for a minimum set of core information is common for all tertiary hospitals. Therefore, efforts to improve HIS for tertiary hospitals should start from the basic minimum and further developed in a phased and customized manner according to the specific information needs of the specific tertiary hospital.

The Study Team explored opportunities and constraints in expanding HMIS-FLCF to secondary, tertiary hospitals in public sector, parastatal[10] institutions and facilities in private sector. The findings showed that the ISs of the parastatal and private sector institutions are limited to their internal use in mostly tracking logistics, finance and utilization of the facilities. They are usually paper based. The reporting mechanisms and frequency of reporting varied from institution to institution. These institutions do not feel obligated to report to the district or other health departments. There was a concern shown by the private

[10] Parastatal refers to semi-government and autonomous institutions that receive government funding to provide health care to its target population. These include: Pakistan Armed Forces, Pakistan International Airlines, Pakistan Railways, Social Security Institutions, etc.

sector institutions that sharing information with government will hinder their work and the information might be used for determining taxes. The Study Team found that regulatory mechanisms to collect information from the private and parastatal institutions do not exist, except in North West Frontier Province (NWFP) and Balochistan where regulatory bodies have been set up but with minimum resources to function effectively. Discussions during Technical Advisory Group meetings and with government officials confirmed that the purpose of collecting information from these institutions is not clear and difficult without the supporting regulatory mechanisms. Also, the capacity within the DHD and PHD to collect information from these institutions does not exist. The cost of building such capacity in the private and parastatal institutions would be enormous.

CHAPTER 3 CONCEPTUALIZATION OF HIS IMPROVEMENT FRAMEWORK

3. CONCEPTUALIZATION OF HIS IMPROVEMENT FRAMEWORK

3.1 Background

Based on the findings of the Situation Analysis a framework for improving the HIS in public health sector was conceived. Later, through a consultative process involving Provincial Technical Advisory Groups, federal counterparts and donors, an overall vision of HIS for Pakistan along with the strategic approaches for achieving this vision and the principles of implementation were agreed upon. These were later approved by the Steering Committee. These basic concepts, which are explained below in this chapter, then formed the foundation framework for the further work of the Study towards the improvement of HIS in Pakistan.

3.2 The vision

HIS is defined by WHO as "a system that integrates data collection, processing, reporting, and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of health services"[11]. A major objective of the management of the health system is to improve its performance in order to contribute to the improvement of the health status of the population. Commensurate with these basic concepts, the vision of HIS for the public health sector in Pakistan was formulated and later endorsed by the Steering Committee.

The Vision of the HIS in health sector is "to improve the health care services through evidence-based management of service delivery"; improved service delivery will in turn contribute to the improvement of health status of the population.

3.3 Strategic approaches (Figure 3.1)

Since after devolution the responsibility of managing the health service delivery system largely falls on the districts, the district managers and political administration in general and the district health managers in particular routinely need information for that purpose. The IS should be such that it is owned by the districts themselves and they have the necessary skill/capacity to use the information for decision-making and have the required authority/capacity for implementing those decisions. Within the devolved system, PHD and MOH have important roles to play in assisting the districts to execute and manage the district health service delivery system. Similarly, they will continue to provide the necessary support and guidance to the districts regarding the HIS. Thus, to achieve the above stated vision, the strategic approaches that were approved by the Steering Committee are as follws.

[11] World Health Organization: Regional Office for the Western Pacific. Developing Health Management Information Systems - A Practical Guide for Developing Countries

1) Establishing a "DHIS" that is based and managed at the district and facility level, and meets the district health information needs
2) Strengthening the roles, authority and capacity of district health managers and staff enabling them to use data/information generated by DHIS in order to improve health services performance (evidence-based management)
3) Stewardship and technical assistance from DHDs/PHDs and federal MOH supporting the vision.

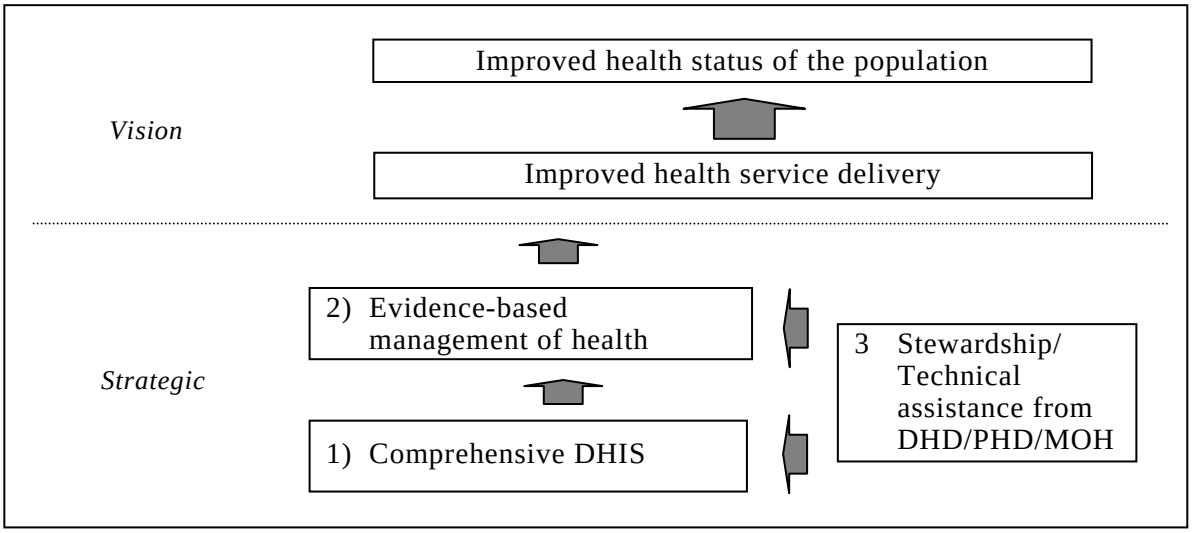


Figure 3.1 The HIS vision and its strategic approaches

1) Comprehensive DHIS

The basic characteristics of a comprehensive DHIS (Figure 3.2) would be the followings

a. It is based and managed at district and the district / facility has the required capacity and resources of data processing, analysis and use for health service delivery management.
b. The system caters to the district's health information needs making all the necessary data available for the district health managers and facility staff. At the same time, the system provides the minimum routine data for the provincial and federal levels
c. In order to ensure that the data produced by the system are reliable, quality assurance procedure should be in place. There should be prompt feedback loops from district to facility and from province to district – both in terms of quality and completeness of data as well as analysis of district/facility performance and early detection of epidemics.

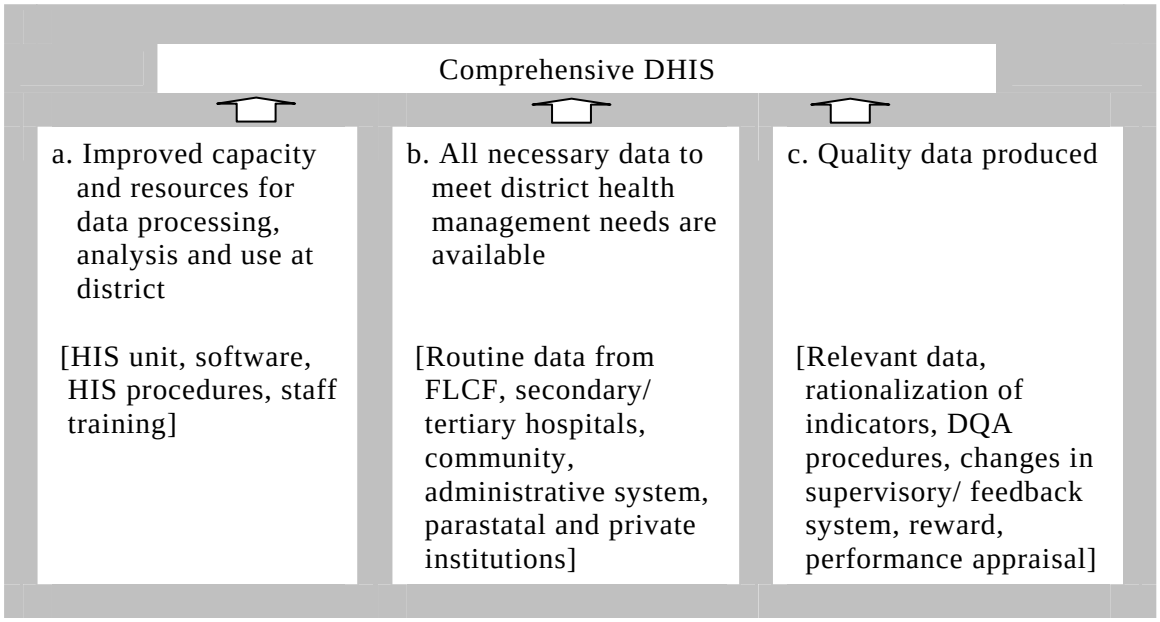


Figure 3.2 Attributes of DHIS

2) Evidence-based management of health services

Use of information is an essential feature of the district HIS ingrained in the management IS vision. Thus, in order to achieve the vision, evidence-based management of health services would be institutionalized at district as well as facility levels. This would require capacity-building and redefining roles and authority of district health managers, the facility in-charge and the staff to enable them to use data for improving health services performance.

3) Stewardship[12]/technical assistance from PHD/MOH supporting the vision

In this design of district-based HIS, the PHDs and federal MOH/NHIRC would play a vital role in supporting the DHIS and promoting evidence-based services delivery management.

3.4 Suggested stages of implementation (Figure 3.3)

Towards achieving the vision, the implementation of the strategic approaches would be according to two principles approved by the Steering Committee meeting in November 2004.

i. Start improving what is already there, building from simpler to more complex design
ii. The interventions are staged over time and implemented in feasible step. The stages of implementation of interventions for the improvement of HIS in Pakistan were suggested to be as following.

[12] Stewardship encompasses the tasks of defining the vision and direction of health policy, exerting influence through regulation and advocacy, and collecting and using information.....providing an evidence base to guide (districts') efforts to improve the performance of their health systems. (World Health Report 2000)

- In the short-term, the principal focus would be on designing and Pilot Test of DHIS and formulation of a NAP for replication and expansion.
- In the mid-term, mainly the replication and expansion of the pilot tested HIS design (i.e. DHIS) to other district would be initiated and accomplished. At the same time, work on solving the critical assumptions or prerequisites would continue during this stage, for example, allocation of resources (tools/financing/human resources, etc.), establishing the legislative bases, or building consensus among government-private, MOH/PHD-parastatals, etc.
- In the long-term, the more complex HIS designs would be done depending on the solution of critical assumptions or preconditions affecting their implementation.

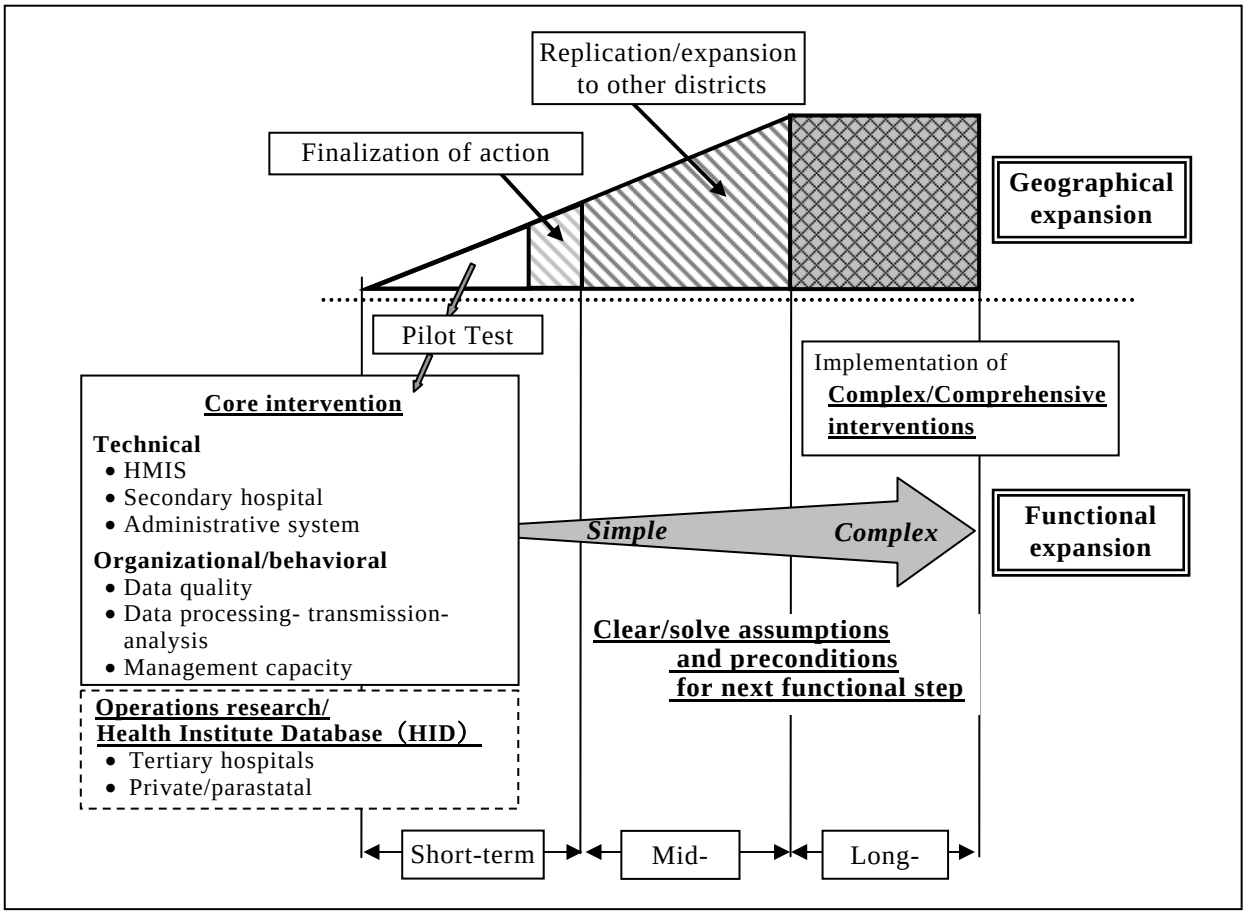


Figure 3.3 Staged implementation of HIS interventions

3.5 Implementation responsibility

In the short-term, the Pilot Test would be accomplished and the NAP would be formulated through the Study in close collaboration and consultation with JICA, MOH/NHIRC, PHDs and concerned EDOHs/district governments.

1) In the mid-term, replication and expansion of the tested HIS design would be primarily the responsibility of the provincial/federal government through their own

resources or with technical and/or financial assistance of international agencies and donors.

2) Similarly, in the long-term, the provincial/federal government would be responsible for implementation of more complex HIS designs.

Even during Pilot Test, the PHDs and federal MOH/NHIRC have important responsibility in supporting the DHIS and they will be responsible for the follwings.

- Providing technical assistance for districts' capacity building in managing the information system, including Information and Communication Technology (ICT), and in analysis and use of information
- Supporting the district governments to institutionalize evidence-based management practices at district and facility levels and to redefine the role of FLCF in-charge as a team leader responsible for management of all health activities in the catchment area
- Policy, planning, M&E
- Use of information from existing non-routine sources and integration of health and other sector databases
- Establishing the regulatory mechanisms for private/parastatal ISs and incorporating tertiary care hospitals in provincial/federal IS

Further work of the Study was guided by this founding framework for the improvement of HIS in Pakistan and DHIS constituted the core component of the overall efforts to improve the routine HIS in Pakistan through the implementation of a NAP.

CHAPTER 4 DISTRICT HEALTH INFORMATION SYSTEM (DHIS) DESIGN

4. DISTRICT HEALTH INFORMATION SYSTEM (DHIS) DESIGN

4.1 Background

As described in Chapters 1 and 3, after the devolution of the health system the districts have been given a major role in the management and performance improvement of primary and secondary health care provided by the public health sector. In this context, one key strategy to improve districts' management capacity is to improve the districts' accessibility to and use of quality health data according to the information needs of the districts. As discussed in Section 1.2.2 "Study conceptual framework" and Section 3.3 "Strategic approaches" the districts themselves and they have the necessary skill/capacity for using the information for decision-making and have the required authority/capacity for implementing those decisions. This routine HIS, called DHIS (as explained in Chapter 3) is designed to improve accessibility to and use of quality health data at the district level, and it constitutes a core component of the overall efforts to improve routine HIS in Pakistan.

4.2 Objective of DHIS

Regular monitoring of the performance of the primary and secondary health care services and their supporting sub-systems (i.e. logistics, financial, human resource and capital assets management systems) is the first step in the management and performance improvement function of the districts. This would then lead to identification of problem areas or best practices and actions to improve the situation. DHIS primarily caters to the key routine information needs of the districts' function of monitoring the ongoing health programs/activities and their supporting sub-systems. Improvement of other routine HIS in the health sector (e.g., Logistics IS, Financial-IS, Human Resource-IS, Vital Statistics, and Disease surveillance, as well as improvement of ISs for EPI, Roll Back Malaria, LHW Program, etc.) will follow suit.

Districts are an integral part of the wider health system in Pakistan where MOH and PHDs play important roles in setting policies, planning and establishing performance standards, monitoring national targets and goals, generating and allocating health resources and establishing regulatory standards. Therefore, DHIS needs to be able to furnish important routine information to the provincial and federal levels that would meet many of their information needs for carrying out those functions.

Thus, the objective of DHIS is "to provide information for management and performance improvement of the district health system". More specifically, the DHIS is designed as follows.

(1) To provide selected key information from FLCF, VPs, secondary hospitals and sub-systems such as logistics, financial, human resource and capital asset management systems for improving the district health system's performance

(2) To provide access to key information from the private sector and the tertiary hospitals

(3) To cater to the important routine information needs at the federal and provincial levels for strategy formulation, planning and M&E of health programs

4.3 DHIS specifications

In this chapter, the specifications of DHIS are described in terms of;

(1) The performance monitoring indicators that DHIS will generate and the data elements that the system will capture for calculating those indicators.

(2) DHIS data collection procedures and what data elements will be collected at which level; with particular reference to what and how data from VPs will be integrated

(3) How DHIS data will be processed and transmitted/reported to the higher tier?

(4) What are the mechanisms to assure data quality?

(5) What are the mechanisms to ensure use of the information produced by DHIS for the improvement of health services management?

It may be noted here that the design of DHIS takes advantage of the existing HMIS-FLCF's system, infrastructure and staff. However, the design of DHIS is not simply an add-on to the existing HMIS-FLCF. There are many similarities, but important improvements are also proposed within the design of DHIS. The HMIS-FLCF focuses mainly on performance monitoring of FLCFs; within DHIS, the core IS component is for integrated performance monitoring of the district health system, but it also includes ISs for financial, logistics, human resource and capital assets management.

4.3.1 DHIS indicators and data elements to be collected

The DHIS provides a limited number of indicators required for the overall monitoring of health services at the district level. While the DHIS prioritizes the needs of facilities and district managers, the provincial and federal requirements for monitoring policy implementation have also been addressed. DHIS indicators are not intended to be an exhaustive list of all possible indicators that could be collected, or are required by technical specialists. Instead they provide readily understandable indications of the performance of the health service activities and of the

sub-systems that support service delivery. Once performance gaps are identified through DHIS, a problem solving process should be initiated. This process may need more detailed information from other ISs in the health sector such as VPs-ISs, or need to use non-routine information sources such as register review or small-scale special studies.

For the list of DHIS indicators see separate Volume of "National Action Plan, Annex 1 DHIS indicators list which elaborates on what data are collected through the DHIS, along with the frequency, sources and locations of data collection, and provides the frequency of analysis of these indicators. These indicators have been selected through consultation meetings with provincial and district officials and with VP managers. In brief, eight categories of indicators are included in the design of DHIS, and there are as follows.

(1) Overall health facility utilization: 15 indicators
(2) Preventive and curative service delivery: 48 indicators – 14 preventive care and 34 curative care
(3) Financial management: 3 indicators
(4) Logistics: 1 indicator
(5) Human resources: 2 indicators
(6) Capital assets: 6 indicators
(7) Regulation: 1 indicator
(8) Information system: 3 indicators

The variables required to calculate most of the indicators are compiled on a monthly basis, even though many are recommended for analysis on a yearly basis. This has been done for two reasons. Firstly, many of the variables are collected daily, as services are delivered. Waiting to compile them at the end of the year would result in a long and tedious year-end process, which would likely increase the error in comparison to monthly compilation. Secondly, many of these indicators can be used on a monthly basis; compiling them monthly makes them available if they are needed.

The current HMIS-FLCF includes 114 indicators. The existing HMIS-FLCF monthly reporting format includes 446 variables collected from OPD and other preventive services; the RHC monthly reporting format requires collecting data on some 276 DHIS variables on outdoor, indoor and preventive services and support systems. Thus, from the perspective of the number and range of indicators and the number of variables collected, DHIS is efficient in monitoring the health facility’s performance.

Indicators for each of the MOH's six (6) VPs and the Population Welfare Programme of the Ministry of Population Welfare are included in DHIS, as well as priority disease indicators. VP indicators in DHIS will be used by the programs to assess their performance. For example, the EPI's childhood immunization program aims at immunizing all children before they reach their first birthday against seven priority diseases (diphtheria, measles, whooping cough, polio, tetanus, tuberculosis and hepatitis B); this performance will be monitored through indicator on fully immunized children.

In case of TB-DOTS, designated facilities manage diagnosis and treatment of TB patients; all facilities participate in case detection and supervised distribution of drugs after a confirmed diagnosis. Therefore, two DHIS indicators suggest how well all facilities are performing their tasks of identifying suspected cases and supervising treatment. The performance of the TB-DOTS program will continue to be monitored through quarterly collection of data on case detection, sputum conversion and cure rates.

Out of the seven malaria indicators, three will be taken together – trends in OPD cases, admitted cases, and case fatality rate – in order to suggest the severity of the cases. One reflects diagnostic acuity (slide positivity), and the other the prevalence of the more virulent parasite (*plasmodium falciparum*).

4.3.2 Components of DHIS

(1) DHIS instruments

There are 25 DHIS instruments for collection, aggregation and transmission of data from the primary health care facilities (BHU, RHC, Maternal and Child Health Centers (MCH)) and secondary care facilities (District Headquarter Hospital (DHQH) and Tehsil/Taluka Headquarter Hospital (THQH)). The list of DHIS instruments is shown in separate Volume of "National Action Plan, Annex 3 DHIS instruments list".

In order to ensure proper filling of the DHIS instruments, a Procedures Manual (both in English and Urdu) is available along with Training Manuals for trainers and participants (see separate Volume of "DHIS manuals")

(2) DHIS software and hardware

The main features of the DHIS software are that it is based on open-source Linux system and, therefore, does not require any licensing, it has been developed as a user-friendly system and

the data transmission is through web-based dial-up connection; the DHIS software provides ready access to provincial managers and decision makers (e.g. Secretary Health, DG Health) and district managers and decision makers (e.g. District Nazim or District Coordination Officer (DCO), EDOH) or any other authorized user to analyzed feedback reports as soon as data entry is completed; the ownership is with DHDs/PHDs and they can introduce new forms according to their local changing needs; the software also supports any future extension of the network up to facility level. Any change, however, will be coordinated with PHD/NHIRC; districts will recommend to PHD/NHIRC who will execute the changes in the forms.

The software application is installed at EDOH Office (District HIS Unit) where data comes from the health facilities/institutions (and VPs) in the pre-defined format (e.g. Monthly Report format) on monthly or yearly basis. District HIS Unit carries out data entry and produce different pre-formatted feedback reports and need-based ad-hoc reports. The summarized/consolidated data is synchronized through communication media with Provincial HIS unit. The Provincial HIS Unit generates provincial reports and electronically provides provincial data to federal level (NHIRC).

There is provision in DHIS software to be installed at facility level as well. Facility can enter relevant data and generate required reports. In this case, data will be stored directly in facility local database and will be synchronized with the district database. Similarly, DHIS software can be installed at Tehsil/Taluka level. If installed, Tehsil/Taluka will be able to enter facility data and generate relevant reports and upload/synchronize consolidated data with the district database.

The DHIS hardware is composed of the Server and the Clients that are connected with telephone line. The Server is installed at Provincial HIS Unit and the Clients are installed at Provincial and District HIS units. The DHIS software and its database are based on an open-source system, and the Server and Clients are able to operate both the Windows and the Linux operating systems. Therefore, the capacity of hardware requires that Linux/other open-source system can be operated. Required features of DHIS hardware as shown below.

- Central Processing Unit (CPU) : Pentium 4 (more than 3.0 GHz)
- Main memory : more than 1GB
- CD-drive : Combo Drive
- Modem : Linux ready modem
- Uninterruptible Power Supply/ Automatic Voltage Regulator : required

(3) Use of DHIS information mechanism

The overall goal of the DHIS is to use DHIS information for continuous improvement of health system performance. For this reason, one essential component of DHIS is the mechanism for use of DHIS information. Manual on use of DHIS information and training curriculum has been developed for that purpose. Problem solving is the first principle applied in developing this mechanism. It helps in stating problem as performance gap, understanding causes and developing solution for those causes, action plan and monitoring solution for the desired impact. Thus, the problem solving process is translated into a cycle of use of information for continuous improvement of health system performance. Continuous improvement also means that there are performance target, which provide a reality check of achievement status. It also implies that when proficiency in the task or a target is achieved the standards or target are raised. Self-regulation is another principle for promoting DHIS information use. Thus, DHIS will be contributing to improving evidence based decision-making, transparency and accountability, in other words, strengthening culture of information.

This mechanism of use of DHIS Information will be implemented both at health facility level and at district level. At the health facility level, the facility in-charge will monthly organize staff meetings to review the monthly facility report and compare the performance of the month with targets or previous months' performance and take decisions for improving the facility's performance. All the concerned facility staff and other outreach staff attached to the facility will participate in the meeting. In hospitals, the Medical superintendent (MS) will have monthly meetings with the person in-charges of various units or departments of the hospital and use DHIS data for review of their performance and apply the model of use of DHIS information mentioned above.

At the district level, the District HIS Unit will prepare the analysis reports and review the DHIS data to identify areas that need attention. The District HIS Unit will submit the analysis reports to EDOH and circulate them to concerned district/facility managers for their review. EDOH will be responsible for calling monthly meetings of the district managers (District Health Management Team (DHMT) or District Health Team (DHT)) and facility in-charges and review the DHIS information and take decisions and develop action plans for implementing solutions. The subsequent meetings will review the progress in resolving the issue and the progress in the performance and may identify new areas for problem solving. In this way continuous improvement of the district's health system's performance will be propagated. Summary reports prepared by the District HIS Unit will also be sent to district's political and administrative heads (Nazim and DCO) for their necessary attention and action. The District HIS Unit will also prepare monthly "News Letters" using the DHIS information and widely

disseminate them to the health facilities and political and administrative organizations within the district.

PHD will support the use of DHIS information by organizing periodic (e.g. quarterly) performance review meetings with all the districts in the province and provide necessary guidance and technical support for improvement of the districts' performance. Such meetings at provincial level chaired by Secretary Health will have a ripple effect and will encourage the districts and health facilities to make use of DHIS information part of the organizational management culture. The Provincial HIS Unit will also be responsible for publishing quarterly "News Letters" using the DHIS information from all the districts of the province and disseminate them widely in the districts and within the provincial departments, ministries and national/international development partners.

(4) DHIS DQA mechanism

Apart from the use of DHIS information model which in turn will influence improvement of data quality, a number of DQA mechanisms based on Lot Quality Assurance Sampling (LQAS)[13] technique have been made the intrinsic part of DHIS. These are as follows.

i. LQAS at facility level, whereby the facility in-charge will carryout monthly cross-checking of recorded data and assess the level of data quality, discuss it with the facility staff and take necessary measures to improve the data quality
ii. LQAS at district level, the District HIS unit will cross-check the recorded data at randomly selected health facilities, make an assessment of the overall quality of DHIS data and provide necessary feedback to the facility in-charges. He will also monitor the practice of LQAS at the facilities.
iii. Computer program for identifying blanks cells in monthly reports and late submissions
iv. LQAS Job-Aide[14] and training guidelines (explained in DHIS training module) are also available
v. Supervisory checklist to check the availability of the stock of DHIS instruments in the facility, review the facility meeting minutes for DQA activities carried out by the

[13] LQAS is a sampling technique that allows using small random samples (e.g. 12 to 19) to distinguish between high and low performance areas/units; it is an efficient quality-control technique to get information on whether a certain standard/ target is achieved; its relative ease of implementation and relevance to smaller subdivisions/units makes it an efficient method for both monitoring and evaluation; it offers the flexibility of aggregating data across subdivisions to obtain a coverage estimate for the entire project area.

[14] The LQAS Job-Aide is one of the DHIS tools developed during the Study for assessing Data Quality by facility staff and the districts supervisors.

facility in-charge and assess the level of use of DHIS information.

(5) DHIS procedure manual

This manual describes in details about DHIS indicators, instruments for data collection and reporting, data flow mechanism and roles and responsibilities of the staff involved, DHIS feedback reports, data analysis methods and DQA mechanism.

(6) DHIS training module

DHIS training module consists of three separate modules are as below.

i. Training module on DHIS instruments and DQA Tools
ii. Training module on use of DHIS information, and
iii. Training Module on DHIS software

These training modules describe the training methodology, transparency/presentation slides, model schedule, and budget estimation. Each module consists of a Trainer's manual and a Participant's manual. The training will be based on adult learning principles and techniques, building on existing experiences, emphasizing dialogue, relevance of information, immediate results, respect, recognition and appreciation, and using feeling, thinking and actions for learning. They include discussion, questions and answers, individual and group activities, role plays etc.

4.3.3 Procedure for DHIS monthly report compilation at the facility

The person in-charge of each facility will be responsible for ensuring the preparation of the monthly DHIS report. Responsibility for checking and verifying the report and submitting it to the EDOH will also be within the duties of the in-charge. The facility in-charge will designate one staff as a person who is responsible for timely compilation of the monthly reports. Each service provider will be responsible to compile data relevant to his/her duties. OPD staff will compile the data from OPD register on an abstract register. Similarly, Lady Health Visitor (LHV) will compile the data from the maternal health register and the child health register on another abstract register. Upon completion the abstract registers would be sent to the designated facility staff for transfer of the data to the DHIS report.

In case of hospital in-doors, at the end of each day, the duty nurse will prepare a bed statement on the number of patients newly admitted, discharged and total patients present in the ward.

The daily bed statement will be submitted to the hospital matron/charge nurse. The matron/charge nurse will be responsible for monthly compilation of the daily bed statements and submit it to the MS who will arrange the compilation of DHIS report by a designated staff. Also, at the end of each month the nurse in-charge of the ward will compile data from the patient registers and submit it to the matron/charge nurse.

In case of laboratory/radiology departments, the person in-charge of the department will prepare an abstract report and submit it through the MS to the designated person for compiling the DHIS report.

The designated staff will prepare a monthly report based on the abstract registers and abstract reports received from various departments/service providers. He/she will submit the compiled DHIS report to the facility in-charge for his/her scrutiny and for further transmission. The facility in-charge will ensure that all reports are prepared on time. He/she will also check the consistency of the reports and submit them to the District HIS Coordinator through EDOH.

4.3.4 Data processing at the district and PHD

At the district, the District HIS Unit is responsible for receiving the monthly reports from the facilities, data entry and generation of analysis reports. The District HIS Unit will maintain a logbook for registering the name of the facility and data submission of the monthly reports. The district aggregated report and analysis reports will be generated by the District HIS Unit using the DHIS software and disseminated to EDOH and other concerned managers.

Data from district servers will be uploaded through dial-up connection with the respective provincial server. At the provincial level, the DHIS software will allow for provincial aggregation of the DHIS data and generation of district comparisons. These reports will be circulated to the Provincial DG Office and Health Secretariat for perusal and necessary action.

CHAPTER 5 PILOT TEST OF DISTRICT HEALTH INFORMATION SYSTEM (DHIS)

5. PILOT TEST OF DISTRICT HEALTH INFORMATION SYSTEM (DHIS)

5.1 Background

The Situation Analysis of the existing HISs including HMIS-FLCF identified the achievement as well as problems of the existing ISs. However, these achievements were not enough to produce high quality data and facilitate use of information; the Situation Analysis also revealed areas that required improvement based on these findings. One of the interventions for the improvement of HISs in Pakistan is the evolvement of HMIS-FLCF to DHIS.

Although DHIS was developed based on the existing HMIS-FLCF, it was a new version of routine HIS with new data collection and reporting tools/instruments and a set of new procedures, e.g. DQA and use of Information mechanisms. Extensive consultations with the stakeholders and experts and vigorous scrutiny using logical/programmatically relevant criteria were done in the finalization of design of DHIS. Nevertheless, prior to the large scale implementation of DHIS, this called for a well-controlled Pilot Test to examine if it could functions as it was expected and to identify design issues that might require further improvement.

5.2 Objectives of Pilot Test

The main objectives of the Pilot Test were as below.

1) Confirm the applicability and relevance of the design of DHIS to the existing district health system
2) Identify areas for further improvement towards making it appropriate for scaling up to other districts in the futur; ande
3) Estimate the cost of introduction and implementation of DHIS, i.e. DHIS training, software/hardware, data collection and processing

Relevance of current design of DHIS was analyzed in view of the following aspects.

(1) Five major DHIS components, i.e.

a) Tools/instruments
b) Training
c) Information use
d) DQA
e) DHIS software

(2) Contribution of DHIS to improve data quality from in view of the aspects as a) timeliness, b) accuracy, c) completeness and d) indicators

(3) Contribution of DHIS to reduce workload for data collection

5.3 Preparation of Pilot Test

(1) Approaches for selection of target districts

The main objective of the Pilot Test was to contribute to the improvement of the proposed design of DHIS that will be applicable as the national and regional model for the NAP. This Study did not aim to develop specific model for each region based on local characteristics. Therefore, in order to develop the national standard model reflecting regional differences at each stage of data collection, processing, analysis and usage, it was appropriate to adopt a concrete and integrated approach by minimizing the number of the selected districts, namely, one Pilot district from each province representing regional characteristics.

(2) Criteria for selection of target districts

Pilot Test was carried out in the selected districts of all four provinces (Punjab, NWFP, Sindh and Balochistan) of Pakistan. One district per province was selected to test key components of the DHIS design. The design of DHIS was implemented in all the facilities of the selected districts to ensure that overall district health performance could be monitored by DHIS. Criteria for selection of target districts were:

1) Pre-requisites that must be fulfilled are as follows.

i. The district/PHD agrees to the following pre-requisites.
   a. Transfer of trained staff suspended during the Pilot Test period from the selected district
   b. Authority for coordinating health administration by EDOH re-emphasized in the target district during the Pilot Test
   c. Commitment from provincial and district governments (district Nazim, DCO, etc.) for full support to the Pilot Test, i.e. official order, notifications, logistics support, resources allocation, etc.

ii. Existing management structure at the district level preferably complete
iii. Health management motivated at the district level
iv. District falls within the acceptable Safety Guideline issued by GOJ (Pilot Test must be carried out in accordance with the security guideline of the GOJ)
v. Physically accessible (distance)

2) Criteria for rating

a. Performance of HIS tasks (submission rate)
b. Health delivery services performance (e.g. child immunization coverage, LHW coverage)
c. Donor involvement (involved/or not involved in integrated strengthening donor programs)

The PHDs evaluated and graded candidate districts in accordance with each criterion. Based on the grading, the districts which satisfied the selection pre-requisites were categorized into high, middle and low performance groups. Middle and high performance category groups were the possible candidates for Pilot districts selection.

Performance rating	Low	Middle	High	Mark
HMIS-FLCF performance (Reporting rate)	<60%	60~80%	>80%	
District EPI coverage	<60%	60~80%	>80%	

High : 1 point, Middle : 2 points

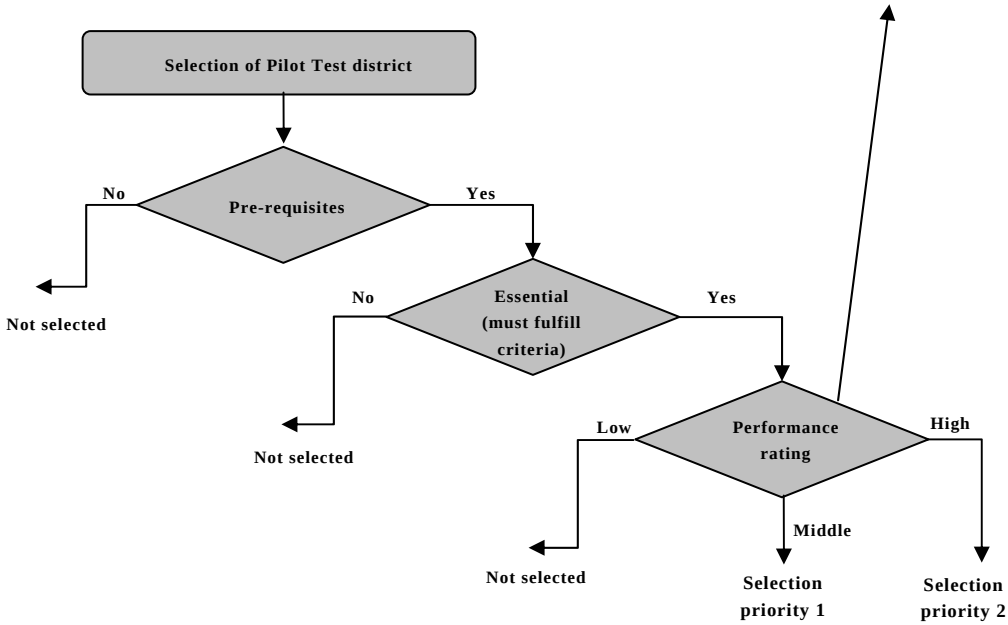


Figure 5.1 Flow chart for finalization of Pilot district selection based on criteria

Based on the criteria on performance of HIS tasks and health delivery services, which was laid down by the Study Team, each province nominated one candidate district. At Steering Committee meeting in December 2005, those candidate districts were officially selected as target districts for Pilot Test. Names of target districts are shown below.

- Punjab Khanewal district
- Sindh Thatta district
- NWFP Swabi district
- Balochistan Quetta district

(3) Establishment of implementation structure for Pilot Test (Fig. 6.2)

Under the Steering Committee, Provincial Working Groups were established for implementation, management and evaluation of Pilot Test at each province. The members of Provincial Working Groups were DG Health, Provincial HMIS Coordinator, relevant members/officials of PHD, Provincial VP Coordinators, EDOH of the Pilot district, District HMIS Coordinator and MS of DHQH.

District governments were the actual implementing bodies of Pilot Test under the Provincial Working Groups, and their responsibilities for Pilot Test implementation was clarified at the 1st Provincial Working Groups meetings in January 2005. The members of District Implementation Bodies were HMIS Coordinator, member of District Health Committee and responsible officials/staff of Pilot Test implementation. The HMIS Coordinator was a contact person and had a key role of coordination of whole the Pilot Test implementation. The Study Team also appointed Liaison Office Managers for assisting Pilot Test implementation. The Liaison Office Managers worked in close collaboration with the HMIS Coordinators as well as the district members and Provincial Working Groups. As members of the Study Team, primary responsibility of Liaison Office Managers was to conduct day to day monitoring of DHIS implementation and take part in end-term evaluation of the Pilot Test.

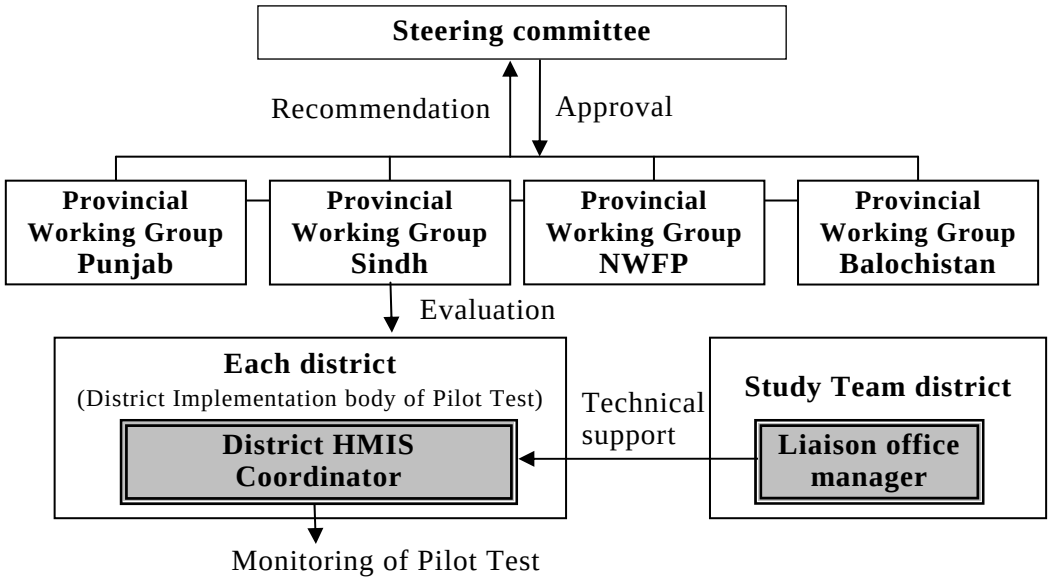


Figure 5.2 Implementation structure for Pilot Test

(4) Pre-test and finalization of DHIS tools/instruments for Pilot Test

In order to confirm the functioning of DHIS tools/instruments, pre-testing of the DHIS instruments was done in January 2006 in RHC, Ambar Kunda and Civil Hospital (CH) Topi, Swabi district, NWFP. After the two pre-tests a few modifications were made. Later, based

on further inputs received from the participants of Training of Trainers (TOT) for NWFP, Balochistan and Thatta, contents of tools/instruments were finalized at the end of March 2006. Similarly, the Procedure manual and training manuals (for trainers and participants) were improved based on the experiences of initial TOT. A whole set of tools/instruments were printed for the daily usage of all facilities in the target districts for Pilot Test period.

5.4 Implementation of Pilot Test

(1) Orientation workshops

The implementation of Pilot Test started with a series of orientation workshops organized in Pilot districts during February and March 2006 to share the Pilot Test concept with district managers/administration (District Nazim and DCO) of the target districts and to confirm the detailed schedule of facility staff training with the district health managers.

(2) Training of facility staff on data collection instruments and DQA job-aide

Training of district staff was implemented in two stages. The Study Team members facilitated TOT. The participants were from the PHDs and Pilot districts. The number of TOT participants from each province were as shown in Figure 5.3 below. The TOT for each province was organized separately as follows.

- Swabi/NWFP: 13th to 15th March 2006 held in Islamabad
- Quetta/Balochistan: 16th to 18th March 2006 held in Islamabad
- Thatta/Sindh: 29th to 31st March 2006 held in Karachi
- Khanewal/Punjab: 25th to 27th April 2006 held in Lahore

In the second stage the district/provincial trainers facilitated training of Pilot district staff in their respective districts. In general, the following standard plan for training of facility staff was implemented.

- BHU 1 doctor, 1 medical technician and 1 LHV (in total 3), for 2 days
- RHC: 2 doctors, 1 medical technician and 1 LHV (in total 4) for 3 days
- Hospitals: 3 doctors, 2 medical technicians and 2 nurses (in total 7) for 3 days

However, some modifications were made according to the regional characteristics of each district as described below.

- Swabi: All facility staff trainings were for 2 days. There were 6 batches of training held between 27th March to 18th April 2006
- Thatta: Training for BHU and RHC staff were for 2 days and hospital staff training was for 3 days. A total of 10 batches were trained between 17th

April to 4th May 2006

- Quetta: For FLCF, training was held for 2 days, but the target number of trainees from BHU was extended up to 4 to accommodate BHU medical doctors of both genders. 6 batches were trained during 28th April to 25th May 2006. Additional batches were trained later with the financial assistance from Mercy Corp
- Khanewal: Facility staff training was assisted by PAIMAN[15]. 14 batches were trained for 2 days each from 17th May to 1st June 2006.

The number of facilities covered through DHIS training and the number of staff trained are given in Figure 5.3 below.

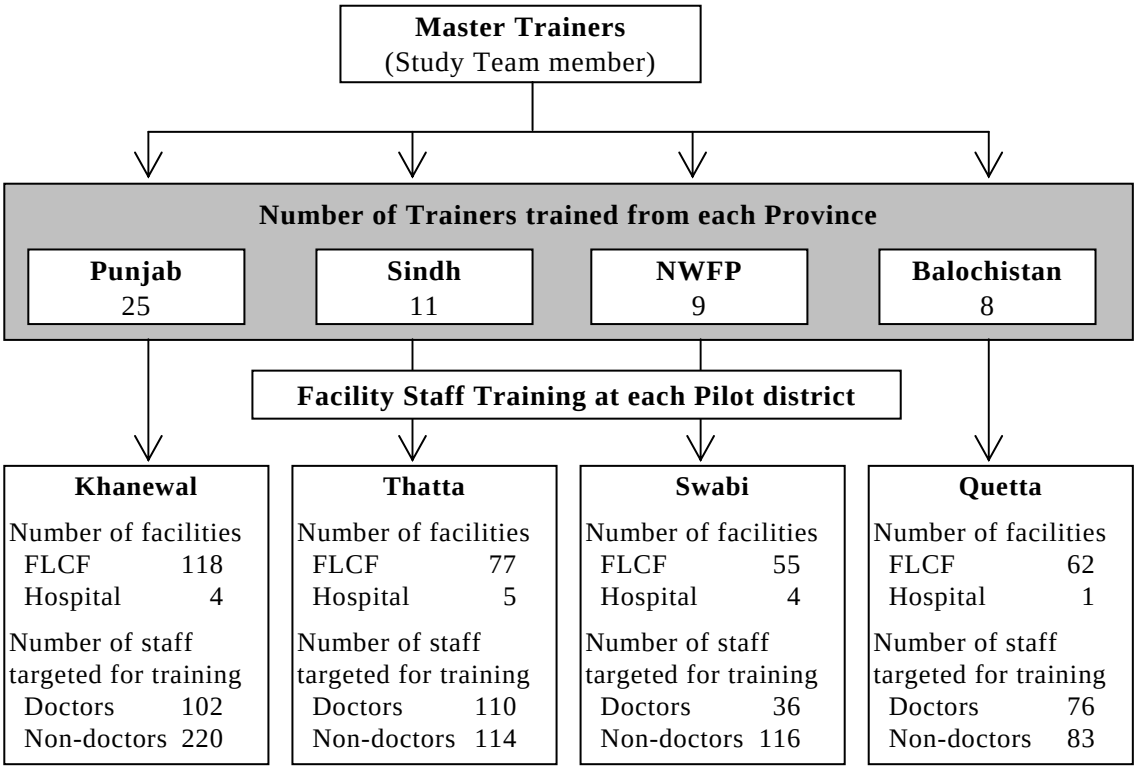


Figure 5.3 Mechanism of facility staff training

(3) Training on use of information

A meeting on the draft mechanism for use of information was held with EDOH, managers and facility in-charges in Thatta on 24th July 2006. Later on, another meeting participated by representatives from each Province (DG, HMIS Coordinator, Planning Officer, etc.) was held on 31st August 2006 in Islamabad to finalize the use of DHIS information mechanism.

The first training on use of information was implemented in Thatta on 2nd to 3rd August 2006. The participants of training were EDOH, district managers and representatives from 10

[15] PAIMAN: Pakistan Initiative for Mother and Newborns

facilities. Later, another On-the-Job training (OJT) was carried out in Thatta in collaboration with United Nations Population Fund (UNFPA).

The Main components of the training were as follws.

- To examine the achievement of target indicators in comparison with the indicators collected by DHIS.
- To identify problems as performance gaps
- To analyze causes of problems
- To find solutions and develop an action plan; and
- To monitor changes in performance

Similar training/orientations were held in Swabi, Khanewal and Quetta.

(4) Development and Pilot Test of DHIS software

DHIS software was developed by a local computer software company selected through open bidding. The design of the software is based on the design of DHIS monthly reports and data analysis (feedback) reports. The software was installed in all the four Pilot districts and the respective provinces. Relevant staff in the Provincial HMIS Cells and District HMIS Cells were trained on the use of the software. Regular monitoring visits were made by the sub-contractor and Study Team members to identify design problems and issues of staff skills in using the software, and to take remedial measures accordingly.

(5) Pilot Test supervision

Supervision of facilities was done with the following two purposes:

- To check the use of each DHIS tools/instruments at facilities in accordance with the standard method given in the procedure manual and provide technical guidance to the facility staff for rectification, as necessary.
- To collect user's opinion on DHIS tools/instruments for further improvement of their design.

These supervisory visits were made by district supervisory team which consisted of DHIS district trainers. The district supervisory team was responsible for visiting maximum number of health facilities during the period of Pilot Test. Nearly all Hospitals, RHCs and 40-70% of the BHUs were visited.

Supervision was done using a supervisory checklist which was used to collect information on number of staff in the facility and their training status, status of utilization or DHIS

instruments and supervisor's observations. The results of the supervisory visits were utilized for the evaluation of DHIS.

(6) Monitoring of Pilot Test

Monitoring of Pilot Test was done in order to manage the progress of Pilot Test plan from the viewpoint of time schedule and amount of input/output. Monitoring was done by the Study Team based on the data collected by Liaison Office Managers. NHIRC and PHD were also involved in the monitoring through direct observation and shared information. Targets of monitoring are shown below.

1) Training: schedule and number of trainers/trainees
2) DHIS tools/instruments: schedule of printing and distribution
3) DHIS software: schedule of development, installation and training

Target activities for monitoring and results of those are summarized into the table below.

Table 5.1 Summary of monitoring results

	Time schedule	Amount of input/output
1) Training	On schedule: 2 districts Delayed: 2 districts	As planned in all districts
i) TOT	Completed in the three districts on schedule. However, in Khanewal, it was held on June 2006, because of the arrangement for the coordination with PAIMAN.	Sufficient number of trainers were trained as planned in all districts.
ii) Facility staff training	In Swabi and Thatta, completed according to the schedule. In Quetta, schedule was delayed because of the strike. In Kanewal, schedule was slipped consequent upon the delay of TOT.	Sufficient numbers of trainees were trained as planned in all districts.
2) DHIS tools/instruments	On schedule in all districts	
i) Printing	Completed on schedule.	As planed for 3 districts. For Khanewal done through PAIMAN
ii) Distribution	In Swabi and Thatta, distributed on schedule. In other 2 districts, distributed according to the training schedule.	As planned in 3 districts. In Khanewal distributed by NHIRC to facilities.
3) DHIS software		
i) Development of DHIS software	Delayed 3 months.	Basic specifications were satisfied but still there were a lot of bugs.
ii) Installation and training	Delayed 3 months.	As planned in all districts.

5.5 Evaluation of Pilot Test

5.5.1 Objective

Evaluation of DHIS Pilot Test in the target districts was done in order to confirm the relevance of the design of DHIS identifying areas for further improvement to make it appropriate for its scaling up to the other districts in the future. Relevance of current design of DHIS was analyzed in view of the following aspects:

(1) Five major Pilot Test components, i.e. a) Tools/instruments, b) Training, c) Information use, d) DQA and e) DHIS software

(2) Contribution of DHIS to improve data quality from the aspect of a) timeliness, b) accuracy, c) completeness and d) relevance of indicators; and

(3) Contribution of DHIS to reduce workload for data collection

5.5.2 Method of evaluation

A cross-sectional survey of the 4 Pilot districts was carried out for the evaluation of DHIS Pilot Test.

Various sampling methodologies were used according to the target object of the evaluation. For facility level assessment, LQAS technique was applied and 12 facilities were randomly selected from each district. However, to ensure inclusion of DHQH/THQH and RHC, the health facilities were divided into 3 sub-groups, namely BHU/ Civil Dispensary /MCH, RHC and Hospitals. Considering the number of facilities in each subgroup, sample size for each of them was determined as: 8 BHU/ Civil Dispensary /MCH, 2RHC and 2 hospitals (1 CH/THQH and 1 DHQH). As an exception, hospital in Quetta was excluded since there is no secondary level hospital in the district (see Table 5.2). Basically sampling was done at random in each subgroup; however, facilities with serious difficulties in access or low performance in health services (i.e. absence of health staff) were excluded from the selection. From each selected facility, the facility in-charge and 2 to 7 (depend on the type of facility) staff using DHIS tools/instruments were interviewed. In addition, data cross-checking on the selected one data element between monthly report and OPD register was done by the members of evaluation team. PHD and DHD officials relevant to Pilot Test were also interviewed.

Data regarding timeliness of monthly report submission and data completeness was done at HMIS Cell.

Secondary data from supervisory visit checklists were also used.

Evaluation team consisting of NHIRC, PHD, district and Study Team members visited the target facilities and PHD and DHD offices in the 4 Pilot districts during 29th September to 18th October 2006. Breakdown of 12 target facilities in each Pilot district is shown in Table 5.2. Number of interviewees for data collection is shown in Table 5.5.

Table 5.2 Selected target facilities by facility type

Type of facility	Swabi	Thatta	Khanewal	Quetta
BHU	6	8	8	10
Civil Dispensary	1	N.A.	N.A.	N.A.
MCH	1	N.A.	N.A.	1
RHC	2	2	2	1
CH/THQH	1	1	1	(no secondary hospital)
DHQH	1	1	1	
Total	12	12	12	12

Table 5.3 Number of interviewees

Designation	Swabi	Thatta	Khanewal	Quetta
Facility staff	46	39	51	51
(in-charge)	(10)	(11)	(12)	(12)
(staff)	(36)	(28)	(39)	(39)
PHD	1	1	2	1
DHD	5	5	3	9

5.5.3 Evaluation results

Evaluation of DHIS Pilot Test in the target districts was done in order to confirm the relevance of the design of DHIS and identify areas for further improvement to make it appropriate for its scaling up to the other districts in the future. Relevance of current design of DHIS was analyzed in view of the aspects of:

(1) Five major DHIS components, i.e. a) Tools/instruments, b) Training, c) Information use, d) DQA and e) DHIS software
(2) Contribution of DHIS to improve data quality in view of the aspect of a) timeliness, b) accuracy, c) completeness and d) relevance of indicators; and
(3) Contribution of DHIS to reduce workload for data collection

(1) Relevance of five major Pilot Test components

1) Tools/instruments

Both of facility in-charge and staff showed a high percentage (91% and 98% respectively) of satisfaction with DHIS tools. In general design of DHIS itself was

highly appreciated by facility staff.

Table 5.4 Satisfaction with tools/instruments

	Swabi	Thatta	Khanewal	Quetta	Overall
Facility in-charge	80% (8/10)	91% (10/11)	100% (12/12)	92% (11/12)	91% (41/45)
Facility staff	97% (30/31)	96% (27/28)	97% (38/39)	100% (35/35)	98% (130/133

Note: Denominator with bracket does not include ineffective responses.

The main reasons mentioned for satisfaction with DHIS instruments were as follows. Simple and easy to fill in

- Number of registers, columns are reduced
- More systematic; and
- More informative

Negative comments regarding satisfaction with DHIS instruments were made by only 4% (7) respondents. The major reasons for dissatisfaction were:

- Extra burden for the respondents (because he/she was not engaged in data collection before); and
- Shortage of staff for data collection

2) Training

a) Facility staff training coverage

DHIS training was organized in cascade manner. TOT was held for provincial and district trainers. These trainers then trained 2-3 key staff from BHU/RHC and 7-10 from hospitals in each district. Later, the trained staff of the health facilities provided orientation to the remaining staff in the facility according to their job. During the evaluation it was found that about 75% of the facility staff had received official training and only 25% required informal orientation. The situation in each district is given in Table 5.5.

Table 5.5 Coverage of DHIS official training

Swabi	Thatta	Khanewal	Quetta	Overall
79% (33/42)	71% (25/35)	76% (37/49)	74% (36/49)	75% (131/175)

Note: Denominator with bracket does not include ineffective responses (5).

b) Satisfaction with official DHIS training for facility staff

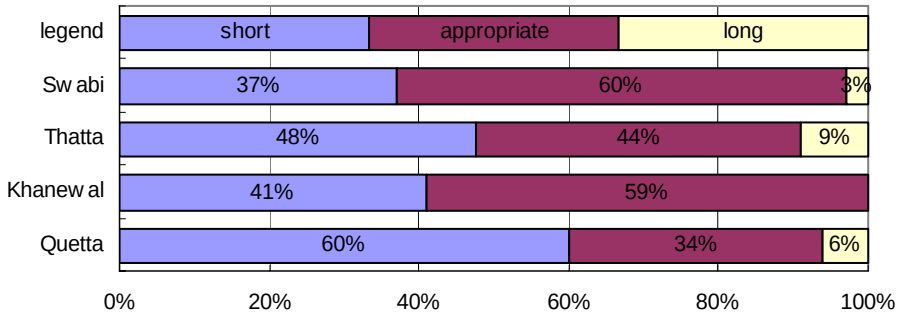
Satisfaction with DHIS official training for facility staff was high. More than 96% of participants answered that they were satisfied with training in general.

Table 5.6 Satisfaction with DHIS training by the participants

Swabi	Thatta	Khanewal	Quetta	Overall
93% (28/30)	92% (23/25)	100% (36/36)	97% (34/35)	96% (121/126)

Note: Denominator with bracket does not include ineffective responses

Training curriculum, method, material were positively evaluated by more than 80-90% of respondents, however, satisfaction regarding duration was relatively low. As shown in Graph 5.1, 37-60% respondents answered that it was "short" and 34-60% respondents said it was "appropriate".



Graph 5.1 Perception of training duration

Interestingly, more than 80% of respondents who answered that duration of training was short viewed that they were satisfied with training in general, as shown in Graph 5.2.

Graph 5.2 Satisfaction with training in general among respondents who answered the duration was short

c) Difficulty with DHIS data collection

In general, 89% of the respondent expressed no difficulty in using DHIS instruments except in Swabi, where 80% said they did not have any difficulty in using DHIS instruments; in the 3 other districts more than 90% of respondents answered that they had no difficulty with DHIS data collection.

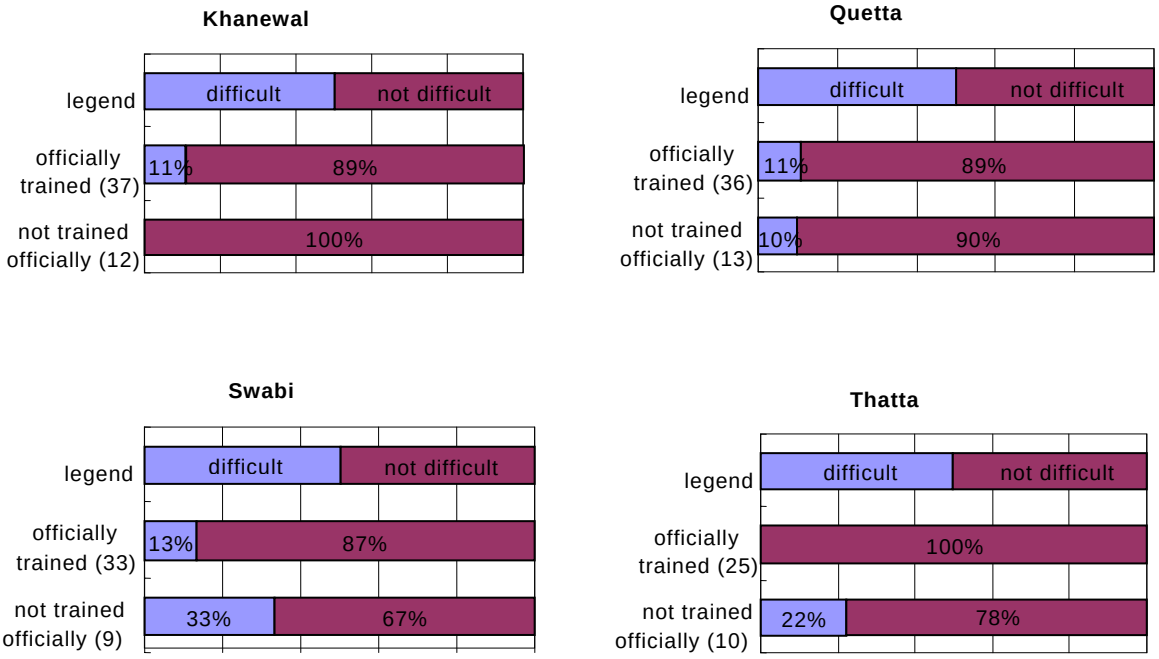
It may be noted that, among those respondents who had received official training, only

6% (8) respondents said that data collection was difficult. On the other hand, 15% (7/44) of those who did not receive any formal training said they had difficulty in data collection using DHIS instruments; this rate was more than two times than trained respondents.

Table 5.7 Percentage of respondents who had NO difficulty with DHIS data collection

Swabi	Thatta	Khanewal	Quetta	Overall
80% (35/44)	95% (35/37)	92% (47/51)	90% (43/48)	89% (160/180)

Note: Denominator with bracket does not include ineffective responses.



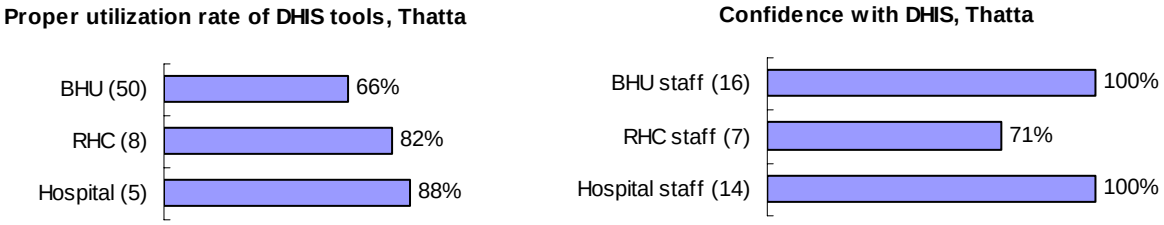
Graph 5.3 Perception of respondents about difficulty with DHIS

d) Performance of facility staff

As shown above, majority of facility staff answered that he/she had no difficulty with DHIS. However, Graph 5.4 shows the average utilization rate of DHIS in proper way, which was calculated by the number of properly used tools/instruments divided by the total number of tools/instruments supposedly used at the facility. The data on proper use of DHIS instruments were collected through the supervisory visits. Data only for Thatta was available because the other districts did not collect sufficient data set for analysis.

In Thatta, at RHC and hospitals, average utilization rate of DHIS instruments in proper way was more than 82%. However, at BHU, the rate went dropped to 66%.

At supervisory visit to facilities, many errors/mistakes regarding the usage of DHIS tools were found by the supervisors and on-the-job orientations were given accordingly. Among 63 facilities in total which received supervisory visit in Thatta, only one facility completed all tools/instrument in proper way. The rest of 62 facilities were given instructions to some extent. This result showed the importance of supervisory visit as a follow up of training.



Graph 5.4 Average utilization rate of DHIS tools in proper way and confidence

e) TOT

Satisfaction with TOT was as high as 88%. However, 63% (10/16) of the trainers expressed confidence with their performance as trainer. To enhance the effect of training, improvement of Urdu manual was strongly recommended by the trainers.

The respondents who answered that they were not satisfied explained the following reasons:

- Duration of training was not sufficient;
- Urdu training manual needs improvement;
- Refresher course should be arranged periodically and
- Meeting at district level should be held to address the problems regarding usage of DHIS tools [16].

3) Information use

Training of information use targeting PHD and DHD officers was held at each district in September 2006. Due to the delay of DHIS software development, feedback report was not produced at the time of evaluation. Therefore, questions for evaluation were limited to a) satisfaction with information use training and b) usage of HMIS-FLCF/DHIS monthly report data.

a) Satisfaction with information use training

Although there were not many respondents for this question, satisfaction with information use training in general was quite high. In total of all district, 91% of respondents said that they were satisfied with the training.

[16] In Thatta, DHD held meetings for this purpose twice with the financial assistance of UNFPA.

Table 5.8 Satisfaction with information use training

Swabi	Thatta	Khanewal	Quetta	All
100% (6/6)	100% (4/4)	66% (2/3)	90% (9/10)	91% (21/23)

b) Usage of HMIS-FLCF/DHIS monthly report data

This question was directed to the both of facility in-charge and PHD/DHD officers.

i. Information use by PHD/DHD

Although there were less many respondents for this question, the result showed clear variation by districts. In Thatta and Khanewal, all respondents answered that they had used HMIS-FLCF/DHIS monthly report data. In Swabi and Quetta, the rates of utilization were relatively low. However, in general, the result showed that nearly 70% of PHD/DHD officers utilized information of monthly report.

The purpose of utilization was quite diversified according to respondents' job description/ responsibility and level of government he/she belonged to (province or district). OPD turnover, Antenatal Care and EPI are commonly referred to indicators with the purpose of checking performance in the district/province for better planning.

Table 5.9 Percentage of PHD/DHD officers who use HMIS-FLCF/DHIS information

Swabi	Thatta	Khanewal	Quetta	All
33% (2/6)	100% (4/4)	100% (5/5)	60% (6/10)	68% (17/25)

Note: Denominator with bracket does not include ineffective responses.

ii. Information use by facility in-charge

The result was quite different by districts. In Thatta, 91% of facilities replied that they were using HMIS-FLCF/DHIS information. In Quetta, the percentage remained at 25%. Interestingly, the results were corresponded to the Table 5.9, information use by PHD/DHD. In Thatta and Khanewal percentages were relatively high, while in Swabi and Quetta it was relatively low.

The purposes of use of information were: 1) to know disease pattern in the catchment area for logistics arrangement and 2) to know the coverage of EPI, Antenatal Care service etc. In Thatta, some facility in-charges already started to use Section II of the DHIS Monthly Report to check their performance. (See Separate Volume - DHIS monthly report - in "DHIS manuals")

Table 5.10 Percentage of facility in-charge who use HMIS-FLCF/DHIS information

Swabi	Thatta	Khanewal	Quetta	All
60.0% (6/10)	91% (10/11)	75% (9/12)	25% (3/12)	62% (28/45)

Note: Denominator with bracket does not include ineffective responses

4) DQA

a) Knowledge of DQA

In Thatta and Khanewal, more than 90% of respondents who took official DHIS training answered that they knew about it while in Swabi and Quetta, the percentage was less than 44%.

Table 5.11 Percentage of facility in-charge who knew about DQA

	Swabi	Thatta	Khanewal	Quetta
All respondents	40% (4/10)	82% (9/11)	92% (11/12)	33% (4/12)
Respondents who took official DHIS training	44% (4/9)	90% (9/10)	92% (11/12)	40% (4/10)

b) Application of DQA

Application rates of DQA were quite low in all districts except in Thatta where the rate was 45%. About the reason of not applying the method, most respondents said that they did not receive training on the method (in spite of the fact that they were trained for that). Also, they said that material of DQA was not supplied (although actually there is no individual material for DQA, but the check sheet for DQA was included in the training manual).

c) Satisfaction with DQA method

Although sample size was limited, all respondents who applied DQA method answered that they were satisfied with the method. This means the method itself was appreciated by the person who actually used it.

Table 5.12 Percentage of facility in-charge who applied DQA and satisfied with DQA method

	Swabi	Thatta	Khanewal	Quetta
Application of DQA	10% (1/10)	45% (5/11)	12% (2/12)	0% (0/12)
Satisfaction with DQA method	100% (1/1)	100% (5/5)	100% (2/2)	Not applicable

5) DHIS software

DHIS software was expected to be available by the end of May 2006; however, its development schedule was delayed and in July 2006, DHIS software was installed in July 2006 and it started working in each district. However, due to many bugs left in the DHIS software, the level of satisfaction with it was not high. In fact, it took many months to debug the software. Training of the computer operators was also a problem that led to improper use of the computers/software.

(2) Contribution of DHIS to improve data quality

1) Timeliness

Timeliness was supposed to be checked by the number of monthly report which arrived on time at DHD office on time. However, data was available only in the 2 districts, namely Thatta and Khanwal. In Swabi, the date of receipt was not recorded. In Quetta, DHD did not record the date of monthly report receipt as they just transferred the collected monthly report to PHD every 3 months.

Table 5.13 Percentage of facilities which submit their monthly report on time

Swabi	Thatta	Khanewal	Quetta
Data was not available	HMIS-FLCF: 60% DHIS: 80%	HMIS-FLCF: 20% DHIS: 40%	Data was not available

2) Accuracy

Data accuracy was estimated by the result of cross-checking of selected one-data element (total OPD number) in OPD register and monthly report with LQAS method. Cross-checking was done by the members of Pilot Test evaluation team in all of 12 targeted facilities. As shown in Table 5.14, the estimated data accuracy was above 80% in 3 districts. In Swabi, it was relatively low (60%). However, with sample size of 12 data elements, the data accuracy was in the range of $\pm$15%; that means, if the data accuracy is 60%, the range is between 45% and 75%.

According to the results of Situation Analysis conducted by the Study Team in February 2004, data accuracy at that time was 20-70%.

Table 5.14 Data accuracy estimated by data cross-checking

Swabi	Thatta	Khanewal	Quetta
60% (6/12)	85% (9/12)	85% (9/12)	80% (8/12)

3) Completeness

Completeness was calculated by the percentage of filled cells against total cells in the monthly report. Data was collected at District HMIS Cell by randomly selected 12 facilities' monthly reports in February (under HMIS-FLCF) and July (DHIS) 2006.

It should be noted that data regarding this part was available only for Swabi and Quetta. In Swabi, data completeness with DHIS increased to 62% from 44% with HMIS-FLCF. However, in Quetta, on the contrary it decreased to 64% with DHIS from 72% with HMIS-FLCF.

Table 5.15 Data completeness of monthly report

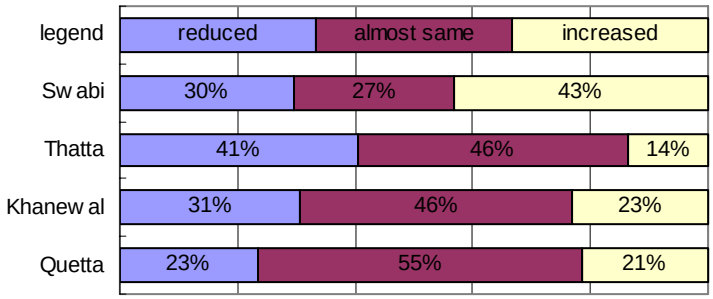
	Swabi	Thatta	Khanewal	Quetta
HMIS-FLCF	44% (198/446)	Data was not available	Data was not available	72% (321/446)
DHIS	62% (81/131)			64% (182/284)

4) Relevance of indicators

All EDOHs of 4 Pilot districts satisfied with the set of 79 indicators. Nobody felt the necessity of lessening the indicators, rather 2 indicators were requested as additional ones.

(3) Contribution of DHIS to reduce workload for data collection

As shown in Graph 5.5, the results were different by districts. In Swabi, 43% of respondents answered that their workload had increased while in Thatta, 41% of respondents said it had reduced. In Khaneal and Thatta, majority's answer was "almost same".



Graph 5.5 Perception about workload after the introduction of DHIS

Table 5.16 Summary sheet of evaluation result

Evaluation indicators	Swabi	Thatta	Khanewal	Quetta
1. Relevance of key components of Pilot Test				
1) Tools/instruments				
- Percentage of facility in-charges who were satisfied with tools/instruments	80% (8/10)	91% (10/11)	100% (12/12)	92% (11/12)
- Percentage of facility staffs who were using DHIS tools/instruments satisfied with design of each tool/instrument	97% (30/31)	96% (27/28)	97% (38/39)	100% (35/35)
2) Training				
- Percentage of trainees who were satisfied with training curriculum, duration and teaching methods	93% (28/30)	92% (23/25)	100% (36/36)	97% (34/35)
- Percentage of facility staff who had no difficulty with DHIS data collection	80% (35/44)	95% (35/37)	92% (47/51)	90% (43/48)
3) Information use				
- Percentage of facility in-charges which used DHIS/HMIS-FLCF information	60% (6/10)	91% (10/11)	75% (9/12)	25% (3/12)
- Percentage of DHD officers who used DHIS / HMIS-FLCS information	33% (2/6)	100% (4/4)	100% (5/5)	60% (6/10)
4) DQA				
- Percentage of facility in-charges who knew about DQA	40% (4/10)	82% (9/11)	92% (11/12)	33% (4/12)
- Percentage of facility in-charge who applied DQA	10% (1/10)	45% (5/11)	12% (2/12)	0% (0/12)
- Percentage of facility in -charges who applied DQA and were satisfied with DQA method	100% (1/1)	100% (5/5)	100% (2/2)	Not applicable
5) DHIS software				
- Satisfaction with DHIS software	“yes, rather”	N.A	“no, rather”	“yes, rather”
2. Contribution of DHIS for the improvement of data quality				
1) Timeliness				
- Percentage of facilities which submitted their monthly report on time	N.A	HMIS-FLCF:60% DHIS:80%	HMIS-FLCF:20% DHIS:40%	Data was not available
2) Accuracy:				
- Data accuracy estimated by data cross-checking between tools/instruments and monthly report	60% (6/12)	85% (9/12)	85% (9/12)	80% (8/12)
3) Completeness:				
- Data completeness of monthly report per facility	HMIS-FLCF:44% (198/446) DHIS:62% (81/131)	Data was not available	Data was not available	HMIS-FLCF:72% (321/446) DHIS:64% (182/284)
4) Relevance:				
- Satisfaction with DHIS indicators	100% (All EDOHs were satisfied.)			
3. Contribution of DHIS for the reduction of workload with data collection				
- Percentage of facility staffs who regarded their workload were reduced	30% (11/41)	41% (15/37)	31% (16/52)	23% (11/47)

Table 5.17 Suggestions for each tool/register

1. Central Registration Point Register		
	Design	• Address column should be added (2) • CRP[21] register No. should be written • No need of column 15 "referred from" but column of Nutrition and EPI should be added • Addition of age column • There is no column for user for EPI vaccination which is issued for purchase and off month fail to show
	Format	• Format of laboratory register and CRP register should be the same (date etc.) • Medicine column is very narrow
	Printing	• Quality of paper should be improved (2)
	Other	• Work load increased because of this • No need at BHU
2. OPD Ticket		
	Design	• Address to be included (6) • Size of ticket should be increased (4) • Add Health Problem column • Add column for CRP No. • Father/Husband name may be excluded
	Format	• Space of column should be widened.
	Printing	• Paper quality should be improved (3)
	Other	• OPD ticket was not provided, so Medicine slip is used • Not in use due to staff shortage (2) • 2 copies needed, one for patient, the other for facility record • It is difficult to keep record of treatment of a patient • Problem in the column "Sent to" • If fee is charged then it will be better
3. Outpatient Department Register (medicine)		
	Design	• Add column for CRP No. • Column 17 (special remark) should be used as Action Taken (2) • Add Referred to, reference No. and Date for Follow up • Column of Treatment should be added (2) • Add Health Problem/ Diagnosis column • There is no column for Medicine if should be reported • No need of yearly No.
	Format	• Not enough space for name (2) • Size of register should be bigger (2) • Column 17 should be wider (11) • Space for Medicine should be wider
	Printing	• Quality of paper is poor (2) • Need more pages (2)
	Other	• Need Medicine slip
4. Outpatient Department Register (OBGY)		
	Design	• Add column for CRP • Central point for all laboratory documents. Where LHV fill the register • Nutrition and EPI column should be added • Special Remarks column should be changed as Action Taken • Nutrition EPI column should be added
	Printing	• Binding should be better • Improve paper quality
5. OPD Abstract Form		
	Design	• Problems like menstrual disorder should be included • Row 17, RTI/STI[21] in female should be separated • Delete malnutrition < 5 year from diseases list • Some more diseases should be added • List of diseases is not exhaustive
	Format	• Increase space, add column for total other diseases
	Printing	• Bind like register • Paper quality should be improved

6. Family Planning Register		
	Design	• Column of Children should be added • Column of No. of child should be in this register for family planning • Daily column is needed • Add column for No. of Children & Age of Last Child
7. Family Planning Card		
	Design	• Need detailed information used to be available in DHIS • Add EDD[21] column
	Format	• Size should be reduced • Size should be bigger
8. Maternal Health Register		
	Design	• Column of EDD should be included (2) • Expected Date of Delivery column may be included • LMP[21] column should be added
9. Antenatal Card		
	Design	• Yearly No. is more useful. • Ultrasonography part should be filled by Ultrasongrapher
	Format	• Rows for No. of Delivery to be widen
	Other	• Card should be in local language • Take too much time
10. Obstetric Register		
	Design	• Add Breech Twins delivery (2) • Add column for dreech delivery • Date/Time of delivery
	Format	• Increase the col. Size
11. Daily Medicine Expense Register		
	Format	• No. of lines on each pages may be increased • Name of Medicine column should be wider • Index page should be increased • Page number should be printed
12. Stock Register (Medicine/Supplies)		
	Format	• Space deficient • Column space should be widened
	Printing	• Paper quality should be improved
13. Stock Register (Equipment/Furniture/Linen)		
	Design	• Each register should be separated • No column for Price, page marking should be printed • Column for Cost of Item should be added
	Format	• more paper for index
	Other	• Need training for this
14. Community Meeting Register		
		No comments
15. Facility Staff Meeting Register		
		No comments
16. Facility Monthly Report Form		
	Design	• There is no space for whole male and female and children patients • Except two indicators CYP[18], data quality are not used
	Other	• Performance indicator/ targets calculation is dependent, need further training • Should be reported bimonthly • Indicator section is difficult to fill in. Needs training for it.
17. Laboratory Register		
	Design	• There should be column for Age • All laboratory test should be printed on one page CR/ DR/S.DR[18] etc.
	Format	• Increase number of pages in register(for all register)
18. Radiology/Ultrasonography Register		
	Design	• There should be column of Age and Daily Serial No.
	Format	• Name column should be widen

19. Indoor Patient Register		
	Design	• Column for Signature should be added • Yearly No.should be added • Add Total column in Register • Monthly Summary may be added in register • Add column for Deaths • Date of Admission can be included
20. Indoor Abstract Form		
		No comments
21. Daily Bed Statement Register		
		No comments
22. Operation Theater (OT) Register		
	Design	• Add column for Name of Anesthetist (2) • Column for Staff Nurse and column for Anesthetic should be added
	Printing	• Paper quality should be improved
23. Monthly report form		
	Design	• Space for other Priority Diseases should be same the 5-10 diseases
	Other	• Work load is increased for this

[21] CRP: Central Registration Point, RTI: Respiratory Tract Infection, STI: Sexually Transmitted Infection, EDD: Expected Data of Delivery, CYP: Couple Years of Protection, CR/DR/S. Dr.: Chief Representative/ Doctor/ Senior Doctor

CHAPTER 6 NATIONAL ACTION PLAN (NAP)

6. NATIONAL ACTION PLAN (NAP)

6.1 Outline of NAP

The overall purpose of HIS is to provide continuous information support to decision-making processes at each decision-making levels of the health system. Improving HIS in Pakistan is seen as an important investment towards improving the health care services. The guiding principle for the improvement of HIS in Pakistan is that the HIS should contribute to the continuous performance improvement of the health system in Pakistan with a vision of improving the overall health status of the population. After devolution in 2001, the districts are responsible for decision-making for health resource management and improving health services, particularly preventive, promotive and curative health services provided from primary and secondary level care facilities and outreach. A major objective of the management of the district health system is to improve its performance in order to contribute to the improvement of the health status of the population. Regular monitoring of the performance of health care services and their supporting sub-systems (e.g., logistics, financial, human resource management systems) is the first step in the performance improvement function of the district. No single data source can provide all the information required for planning and monitoring the health services. Nonetheless, information for ongoing health programs/activities is easier and more efficiently obtained through routine data collection, i.e. routine HIS. Therefore, improving routine HIS that caters mostly to the district's management needs as well as related provincial/national information needs for policy, planning and monitoring has emerged as a priority for Pakistan.

In addition to its responsibility to manage the district health system, the government is also responsible for managing the tertiary hospitals in the public sector. Though some of the tertiary hospitals in the public sector are semi-autonomous institutions, MOH or PHD is responsible for the overall management/financing and quality assurance of these institutions in their jurisdiction and there is a need for a uniform tertiary hospital information system and regular reporting to the government.

Similarly, as a constitutional responsibility of protecting public interest and preventing harm to the population, government has a duty to oversee and ensure that the private health sector is providing quality care to the population. Information system to support that function of the government is a felt-need in Pakistan.

The NAP for the improvement of HIS in Pakistan lays down the roadmap towards addressing the above stated needs. NAP takes into account technical, organizational and behavioral factors that influence the performance of HIS and addresses the causes of low performance of HIS in terms of production of quality data (measured by the relevance, coverage, completeness, accuracy and timely availability of data) and continuous use of information

generated by the HIS. The main causes of low performance of HIS, particularly HMIS-FLCF in Pakistan were that the HMIS-FLCF design did not meeting existing information needs and failed to self-evolve to absorb meet changing needs. There were resources constraints, lack of DQA mechanism, low capacity and motivation for HIS tasks and weak institutional mechanism for HIS tasks, including use of information for performance improvement. These resulted from inadequate or absent implementation framework and organizational support for HIS, lack of ownership and accountability of HIS at provincial/district levels, weak linkages between information and planning, management and health system not being managed in performance-based (output oriented) manner.

Thus, the overall goal of NAP is "to reform and create an enabling environment for the HISs in Pakistan to continuously evolve and improve to respond to the information needs of the health sector in Pakistan and thereby be able to contribute to achieving the vision of improving the overall health status of the population".

Given that the major thrust of the government is towards enhancement of district health system (providing primary and secondary care) and tertiary care (provided by tertiary hospitals) and protection of public interest through ensuring quality care provided by private health sector, that routine HIS caters to most of the health system's performance monitoring and management information needs, and that the DHIS has been designed to that end for the district health system, the scope of NAP is deliberately kept confined to the followings:

(1) Implementation and continuous improvement of DHIS
(2) Development, implementation and continuous improvement of public health sector TH-IS; and
(3) Development, implementation and continuous improvement of PvtHS-IS

Within the ambit of each of these three scopes, the major areas that the NAP addresses are:

F. Formulation and implementation of strategic / administrative decisions on routine HIS and related organizational issues
G. Establishing leadership, coordination and management mechanisms at MOH, provincial and district levels for routine HIS, including data management, DQA, data processing, analysis, interpretation, feedback and use for evidence-based decisions, and establishment and improvement of ICT support for HIS
H. Mechanisms for development/continuous improvement and implementation/ expansion of HIS design.
I. Mechanisms for provision of sustainable financial resources for HIS; and
J. Mechanisms for HIS capacity building, including institutionalization of capacity building mechanisms

It may be noted that DHIS was developed based on the existing HISs in Pakistan and as an outcome of a development Study carried out between 2004-2006 in close coordination with and collaboration of MOH and PHDs. The Study Team commissioned the Study with the support of JICA based on the Scope of Works signed between GOP and GOJ. The design of DHIS takes into account the Situation Analysis findings and the results of a series of extensive consultative meetings with national, provincial and district stakeholders. It was successfully pilot tested in 2006 in four districts of four provinces of Pakistan. DHIS is designed to ensure ownership and augment continuous use of information at all levels by strengthening of feedback loops within the districts and supporting problem identification and solving them for performance improvement. DHIS caters to management needs of devolved district health system. It enhances coverage of FLCF, secondary hospitals, VPs, and HIS sub-systems, viz. logistics, financial, human resource, capital assets HISs for self-regulation and performance monitoring at facility/district/province levels. Improved DQA procedures at all levels are in-built within the design. Also, there is flexibility in the design to evolve for accommodating future information needs.

The designs of TH-IS and PvtHS-IS are yet to be developed. Nevertheless, there is consensus on the broad conceptual designs of these information systems. The overall objective of TH-IS is to provide information for management and performance improvement of the tertiary hospital and thus contribute to the improvement of quality of patient care services in the hospitals, improvement of planning and management of services and resources, meeting the information needs of public health importance, and improvement of performance monitoring and accountability through feedback. On the other hand, the primary objectives of the PvtHS-IS are to contribute to (1) improving quality of services through health regulation and accreditation, (2) disease surveillance, (3) mapping/ database of private health providers for purposes of equity, helping private sector in identifying gaps and improving services, and awareness of the community about availability of services, and (4) improving management of Public-Private Partnership.

Details of NAP are shown in Separate Volume of "National Action Plan".

Table 6.1 Key areas of action

Key action area	Action item	Actions
1. Strategic/ administrative decisions	1. Decisions for introduction of DHIS in all districts 1) Mandatory for all districts to implement DHIS 2) DHIS will replace existing HMIS-FLCF 3) Gradually, other routine HISs (e.g. VP-IS) will become integrated / complementary to DHIS	1. Constituting Provincial Working Group for developing HIS strategy paper 2. Broad-based participation and consultation on HIS strategy matters 3. Vetting by MOH, PHD 4. Approval of HIS strategy/administrative decisions by competent authority
	2. Decisions for DHIS management 1) Ownership with districts d. Providing budget and other logistics for DHIS e. District budget to have line-item for DHIS printing and procurement f. Managing data, ensuring data quality, doing analysis, generating feedback reports and using DHIS information 2) Province providing technical guidance and stewardship c. Organizing trainings d. Compiling districts data, generating analysis/ feedback reports, helping in software maintenance, and promoting use of DHIS information 3) NHIRC providing overall coordination and technical assistance. (Financial/logistic support only in the very beginning of DHIS implementation.)	
	3. Decisions for improving health system management practices that are directly influenced by DHIS 1) Regular performance review meeting utilizing DHIS information for performance monitoring and problem solving by: d. EDOH, district managers e. Facility in-charges f. Secretary Health of PHD	

Key action area	Action item	Actions
	2) Supporting regular holding of these meetings a. Reflection in manager/in-charge's performance evaluation b. Availability of budget to implement decisions 3) Regular "News Letter" containing analysis of DHIS data, success stories of lessons learned on using DHIS information	
	4. Decision on PHD's role in TH-IS management 1) Provincial HIS Unit, under DG (Health), to collect and compile data from tertiary hospitals 2) HIS and Tertiary Hospital Management (H&THM) Unit in PHD to review TH-IS data d. Organize quarterly performance review meetings e. Assist Budget and Accounts Dept. to review financial management vis-à-vis performance f. Recommend development projects based on performance of tertiary hospitals	
	5. Strategy/decisions on PvtHS-IS 1) Formulation of Legislation or Health Regulation Ordinance that provides legal support for establishing PvtHS-IS.	1. PHDs constitute Working Groups on Private Health Sector Regulation 2. Broad-based participation and consultation on HIS strategic matters 3. Vetting by MOH, PHD 4. Approval of HIS strategy/administrative decisions by competent authority 5. Establish/Strengthen Health Regulation Authorities

Key action area	Action item	Actions
2. Coordination & management	1. DHIS organizational structure at districts 1) District HIS unit at EDOH Office 2) Headed by Grade 17/18 Officer 3) Assisted by statistical officer/statistician and computer operator/data entry staff 4) Equipped with 2 computers – server and work station and 24 hrs telephone line 5) Responsible for data management, DQA, analysis and feedback reports, staff training, DHIS logistics management	1. Executive/Administrative decisions at provincial level 2. Develop/approve Provincial PC-Is/ regular budget/ Schedule for New Expenditures (SNEs) 3. Recruit/depute appropriate staff 4. Human resources for DHIS deputed or appointed/recruited under initial PC-I or regular budget or through SNE 5. Procurement of equipment 6. Printing of DHIS instruments, manuals 7. Carryout respective unit's functions/ responsibilities
	2. DHIS management at facility 1) At BHU/ RHC, DHIS Focal person assigned 2) At hospitals, Medical office as DHIS focal person with statistical assistant recruited/appointed 3) DHMT/ DHT already in place, made responsible for using DHIS information for self-assessment and developing and implementing action plans for continuous performance improvement 4) Facility in-charge responsible for conducting monthly staff meetings	
	3. Provision of sustainable financial human and logistic resources for DHIS	
	4. HIS management by PHD 1) Provincial HIS unit under DG (Health) d. Headed by Director e. HIS focal person of Grade 18/19 f. Computer experts and data analysts 2) HIS and H&THM Unit under Secretary Health/PHD d. Responsible for districts' performance review based on DHIS	

Key action area	Action item	Actions
	e. Holding districts' performance review meetings with Secretary Health in chair f. Management of Tertiary hospitals	
	5. Coordination and technical assistance by NHIRC 6. Management & supervision of NHIRC activities - especially stewardship of DHIS implementation, by Board of Governor (BOG)/Steering Committee 7. Support continuous improvement of DHIS design	1. Notification of HIS Steering Committee by MOH 2. Further strengthening of NHIRC 3. M&E activities and consultations with PHD/Districts for continuous improvement of DHIS
3. Provision of sustainable financial resources for routine HIS	1. Provision of sustainable financial, human and logistic resources for DHIS	1. Initially NHIRC, afterwards PHD provide finances for DHIS implementation 2. Ultimately districts take responsibility 3. Develop proposal for DHIS expenses in District's health budget 4. Approval by District Assembly 5. Exemption of No-Objection-Certificate (NOC) from governmental printing press 7. Drawing Disbursing Officers: (District Health Officer/Director of Health (DHO)/DOH), MS) exercise full sanctioning and procurement powers under financial rule for DHIS implementation
4. DHIS capacity building, institutionalization of capacity building mechanism	1. Strengthening of Provincial Health Development Center (PHDC)/ Provincial Health Services Academy as center for HIS training 2. Strengthening of District Health Development Center (DHDC) 3. Training of master trainers, district trainers, district staff/managers, and orientation of facility staff	1. Training of master trainers/district trainers from PHDC/DHDC on DHIS, software application, DQA and use of DHIS information 2. Provision of financial resources to PHDC/DHDC for training 3. Regular holding of training activities for initial launching, refreshers and new/re-training of staff

Key action area	Action item	Actions
5. Development and implementation of TH-IS	1. NHIRC, in collaboration with PHDs/tertiary hospitals, will design TH-IS 2. PHD/NHIRC introducing and maintaining the TH-IS	1. Further need assessment 2. Finalization of and consensus building on conceptual design 3. Development of generic computer software with provision for customization 4. Gradual introduction of TH-IS in public sector Tertiary hospitals 5. Establish Provincial HIS Unit, under DG (Health), to collect and compile data from tertiary hospitals 6. Establish H&THM Unit in PHD to review TH-IS data 7. Regular holding of review meetings by PHD
6. Development and implementation of PvtHS-IS	1. Consensus among government departments on the conceptual design 2. Legislation or Health Regulation Ordinance for establishing any form of PvtHS-IS 3. Gradual incremental implementation of PvtHS-IS	1. Hiring/appointing consultant/expert group on developing PvtHS-IS 2. Promulgating/amending Health Regulation to incorporate clause on information sharing/reporting – PHDs 3. Pilot testing PvtHS-IS 4. Gradual incremental implementation of PvtHS-IS by PHDs in collaboration/ cooperation with private health sector

6.2 Stages of DHIS implementation

Implementation of DHIS can be visualized happening in three stages[18]. The initial year or two is the stage of DHIS expansion throughout country. Once, DHIS is established and there is considerable experience gained on DHIS, there might be some areas that would require further improvement or modification based on the changing situation or growing interest in better use of DHIS information for better management of the health system. This improvement of the design is an on-going process that overlaps from one stage of DHIS implementation to the next. One important area for DHIS improvement is the incorporation of information on various sub-systems of the health system, i.e. logistics, financial and human resource management systems. Once DHIS has evolved as a comprehensive routine HIS for Pakistan over a period of 3 to 5 years, the next stage will be to integrate the VP-ISs into DHIS. This process can start early, but given the current organizational environment and VP mindset, concomitant work on transforming the VPs as regular activities of the health system has to be carried out. This will require a strong leadership/stewardship role from MOH and consensus building among various stakeholders. Once such a move is initiated, the process of VP-ISs can start. These various stages of DHIS implementation are shown below in an itemized manner.

(1) Initial stage (Year 1 and 2)

1) DHIS owned by PHD/districts
2) Expansion of DHIS in all districts

◆ Provincial PC-Is developed and approved or, PHD makes DHIS implementation part of its regular budget	February 2007
◆ Provincial/District HIS Units strengthened: Staff appointed/deputed; hardware, software installed	September - December 2007
◆ Printing of DHIS instruments	November 2007 – onwards
◆ Training of master trainers	March 2007
◆ TOT and training of district staffs	September - November 2007
◆ Use of DHIS instruments	January 2008 onwards
◆ Use of DHIS information	January. 2008 onwards
◆ Provision of DHIS cost	January 2008 onwards

[18] Interventions of short-term stage in "3.4 Suggested stages of implementation" were carried out during the Study period. Therefore, in this section, Mid-term and Long-term stages were reconsidered and re-separated 3 stages (Initial, Mid, Final).

(2) Mid stage (Year 3 to 5)

1) DHIS self-improvement mechanism established
2) DHIS incorporating logistic, financial and human resource management information developed and implemented

(3) Final stage (Year 6 to 10)

1) Continuous improvement
2) DHIS integrates VP-ISs

6.3 Stages of tertiary hospital information system development

The main thrust of TH-IS development revolves around computerization of the information system for tertiary hospitals. Thus, the stages of development of TH-IS commensurate with the gradual and incremental development of a computerized TH-IS that has a basic/core component that is common for all tertiary hospitals and a customized component that varies according complexity, specialization and capacity of various tertiary hospitals. These stages of TH-IS development are given below.

(1) Initial stage

1) Basic data collection method
2) Mostly paper-based system
3) Stand-alone computers at a few specific work-stations: Statistical room, Matron's office and Record room

(2) Mid stage

1) Advanced data collection method
2) Computers at a few workstations linked via main server: Statistical room, Matron's office, Record room, CRP, Diagnostic units, Medical store, Finance department and Complaint cell

(3) Final stage

1) Fully computerized data collection
2) Computers in all workstations linked via server: Statistical room, Matron's office, Record room, CRP, Diagnostic units, OPDs, Indoor wards, Medical store, Finance department, Complaints cell and Administration office.

6.4 Stages of private health sector information system development

During the Study consensus on the broad concept of PvtHS-IS was achieved and based on the consensual framework, the stages of development of PvtHS-IS is laid down.

(1) Initial Stage

1) Design of PvtHS-IS
2) Promulgating legislation for implementing PvtHS-IS
3) Making Health Regulation Authorities fully functional in all provinces

(2) Mid-stage

1) Pilot test of PvtHS-IS
2) Mapping, developing/maintaining a database of private health facilities
3) Gradual introduction of PvtHS-IS in private sector hospitals and large clinics
4) Implementing PvtHS-IS in facilities under public-private partnerships

(3) Final stage

1) Mapping and developing/maintaining database of private health facilities and practitioners
2) Maintaining PvtHS-IS in private sector hospitals and large clinics

CHAPTER 7 TECHNOLOGY TRANSFER

7. TECHNOLOGY TRANSFER

Transfer of relevant technology in the form of training to the concerned persons was made under the Study. The Study Team organized and facilitated a series of meetings and collaborative activities with federal, provincial and district authorities including administrative and professional staff. Through these meetings and activities, technology was transferred to Pakistani relevant persons and the NAP was developed. It may be noted that DHIS and NAP were developed as an outcome of the Study carried out from 2004 to 2006 in close collaboration of MOH, PHDs, DHDs and the Study Team.

7.1 Components of technology transfer

Components of technology transfer through the Study are shown below.

(1) Situation analysis and development of conceptual framework

- Situation analysis methodology for existing HISs in Pakistan
- Analysis of results of field investigations
- Problem and objective analysis
- SWOT[19] analysis
- Development of solutions/interventions
- Development of conceptual framework for improvement of HISs

(2) Development of design of DHIS

- Selection of DHIS indicators
- Procedure of DHIS data collection and transmission
- DQA mechanism
- Use of information
- Training system/curriculum
- DHIS software

(3) Pilot Test

- Development of DHIS tools/instruments
- Development of manuals (DHIS data collection, DQA, use of information, DHIS software)
- Development of training module/curriculum
- Development of Pilot Test implementation plan

[19] SWOT: Strength, Weakness, Opportunity and Threat

- Formation of Pilot Test implementation bodies (Federal, Provincial and District level)
- Conduct training (TOT, facility staff training, etc.)
- Implementation of DHIS model (data collection, data transmission, data entry, LQAS, use of information, etc.)
- Monitoring and supervision of DHIS during Pilot Test
- Evaluation of the DHIS

(4) Development of NAP

- Situation analysis for existing HISs and development of solutions/interventions
- Development of conceptual framework (concept and vision) for NAP
- Development of NAP
  - Implementation and continuous improvement of DHIS
  - Development, implementation and continuous improvement of TH-IS
  - Development, implementation and continuous improvement of PvtHS-IS

7.2 Method of technology transfer

Technology transfer to Pakistani relevant persons/officials was made through the following three methods.

1) Consultative meetings
2) OJT
3) Third country training
4) Direct participation in implementation of DHIS and Pilot Test M&E activities

(1) Consultative meetings

The consultative meetings/working group mechanism was a useful avenue for the transfer of knowledge. The Study Team organized and facilitated; i) Counterpart meetings, Provincial meetings, Technical Advisory Group meetings and Core Group meetings for development of conceptual framework and DHIS design; ii) Provincial Working Groups and District Implementation Bodies (district members) for the implementation of Pilot Test; and iii) Thematic Groups meetings and Core Group meetings for NAP development. Each group comprised representatives from MOH, provincial government, district governments, relevant persons from other ministries and hospitals. Details of each meeting are shown in Annex, Part II "Activities for intervention design and development of NAP".

(2) OJT

In the case of OJT, technology transfer was achieved through the above mentioned consultative meetings during implementation of the entire range of the Study activities including situation analysis, designing of DHIS, implementation of Pilot Test and development of NAP. OJT was given to the member of MOH/NHIRC, PHDs, DHDs and facility staff from the beginning of 2004 to the end of 2006.

Particularly, during Pilot Test, the training curriculum/module and training methodology were transferred to Pakistani trainers through the TOT. Later, these trainers carried out facility staff training activities. Trained facility staff also conducted the internal training or orientation at each facility. OJT for DQA, use of information and DHIS software was also done.

Pilot Test was implemented by Provincial Working Groups and district members supported by Study Team. Monitoring and supervision were also done by district members. Evaluation teams for the Pilot Test were organized in collaboration with NHIRC, PHDs and Pilot districts. Evaluation teams were also formed for final evaluation from September to October 2006.

The Thematic groups and Core group for NAP development were organized with representatives of MOH/NHIRC, PHDs, Pilot districts, tertiary hospital, Health Regulation Authorities and private sector. NAP was developed by members through the meetings facilitated by the Study Team from September to November 2006.

(3) Third country training

Study of the advanced case of the HIS at other countries before the implementation of Pilot Test makes implementation of Pilot Test effective and efficient Therefore, third country training was arranged in South Africa on “Improving RHIS performance and use of information for health system management" which was an international course on comprehensive assessment of information use with emphasis on problem-solving. The course was organized by MEASURE Evaluation project with the collaboration of Faculty of Health Sciences, School of Health Systems and Public Health, University of Pretoria, South Africa. It was a two week full time course and about 30 participants from 13 countries of Africa and Asia participated in the course. The purpose of the training was to provide rapid transfer of knowledge and skills in routine HIS performance strengthening at both the national and sub-national levels.

1) Contents of the course:

- Roles of routine HIS in health services management
- Determinants of performance of routine HIS
- Skills to carry out improvement of routine HIS performance, including assessment, analysis, and problem-solving

2) Duration and venue of the course

- Duration: 29th July to 15th August 2005
- Venue: University of Pretoria, South Africa

3) Participants

- There were two participants from Pakistan namely:

- Dr. Riaz Ahmad Memon	Additional Secretary (Administration), Health Department, Sindh
- Dr. Muhammad Amjad Ansari	Chief Planning Officer, Health Department, Balochistan

(4) Direct participation in implementation of DHIS and Pilot Test M&E activities

Federal, provincial and district managers and staff were directly involved in the implementation of DHIS; they achieved experience and skill in the implementation of DHIS, analysis and use of DHIS data/information.

NHIRC staffs and provincial/district managers were the key members of teams conducted Pilot Test M&E. They were trained in /oriented to M&E methodology and provided field experience. As a result, this all, the GOP officials are now capable of implementing DHIS and M&E activities independently and confidently.

CHAPTER 8 RECOMMENDATIONS

8. RECOMMENDATIONS

8.1 For Government of Pakistan implementation

(1) Strategic/policy decisions to be taken by MOH/PHDs

4) Making it mandatory for all the districts (including DHQH/THQH) to implement DHIS
5) DHIS to replace HMIS-FLCF gradually by December 2007. (i.e. as soon as a district has its staff training on DHIS completed, software installed and received all the required printed materials, that district will switch to DHIS)
6) Integration of VP-ISs and channeling all health information through a single organization of MOH (e.g. NHIRC)

(2) Administrative decisions by PHDs/Districts

5) Making it a rule to hold regular Districts' performance review meetings by PHD (Secretary Health) using DHIS information
6) Administrative directive for holding monthly meetings by EDOH (or DHMT) to review performance of the district health system using DHIS information
7) Administrative directive for holding monthly facility staff meetings using DHIS information for reviewing performance of health services provided in the catchment population of the facility
8) Establishing regular HIS units at Districts and PHD with full-time staff

(3) Developing and implementing Provincial PC-Is or provision of funds from regular budget for establishing DHIS in all districts by January 2008

4) Initial DHIS establishment/implementation budget provided by provincial governments (and donor agencies)
5) Subsequent maintenance cost borne by district governments from their regular budget
6) Main budgetary items
   i. Training of master trainers, district trainers, facility managers and staffs
   ii. Printing and distribution of DHIS instruments/tools
   iii. Procurement/provision of Information Technology (IT) hardware and installation of DHIS software (IT Ministry/Department can help)
   iv. Strengthening HIS Units at districts and PHDs
      - Recruitment/appointment of staff
      - Headed by Director at PHD, and Grade 17/18 Officer in the districts

(4) Strengthening of NHIRC

2) Strengthening HIS leadership capacity of NHIRC

i. Policy decision to make NHIRC as the competent authority of MOH to receive and analyze data from provinces/districts (DHIS data, tertiary hospital data, surveillance data, survey data etc.)

ii. Enhancing the HIS leadership capacity of Executive Director-NHIRC

iii. Appointment/recruitment of full-time technical staff

- Epidemiologist, Statistician, staff experienced in surveillance system
- IT experts – expert in software design, maintenance, trouble shooting
- HIS experts/consultants
- M&E staff for regular field visits and support to PHDs/districts on DHIS, tertiary hospital HIS
- Training experts – experienced in developing training curriculum, training methodology, conducting trainings

v. Provision of budget for organizing trainings, seminars, workshops, supervision and monitoring visits

vi. Increasing collaboration with National Institute of Population Studies (NIPS) for conducting surveys on health issues and analyzing survey data

vii. Regular reporting by NHIRC to MOH of its activities and achievements

(5) Establishing HIS Forum for overseeing, guiding, coordinating HIS activities in the country

1) Composition of the HIS Forum

The composition of the HIS Forum is as following:

• Secretary Health	Chairman
• DG Health/MOH	Deputy Chairman
• Executive Director NHIRC	Member Secretary
• Secretary Health, all PHDs	Members
• Executive Director National Institute of Health (NIH)	Member
• All DGs /PHD	Members
• National Program Managers	Members
• Representative, Ministry of Planning and Development	Member
• Representative, Ministry of Finance	Member
• Representative, Statistical Division	Member
• Representative, Partner Agencies	Member

2) Role of HIS Forum

One of the most immediate tasks of the HIS Forum will be to bring MOH, PHDs and the donors together for coordinating and monitoring the implementation of DHIS throughout the country, including the final fine-tuning of the DHIS software and its installation in all the districts where DHIS is introduced.

The HIS Forum should ensure uniform and proper implementation of all the components of DHIS throughout the country; this includes implementation of DHIS instruments for both FLCFs and secondary hospitals, DHIS software, DQA mechanism and use of DHIS mechanism.

The HIS Forum will also provide necessary policy guidance for the development of TH-IS and PvtHS-IS.

The HIS Forum will monitor the changing information needs of the health system. Any future modification of the HIS design will be discussed in the Forum and changes in the HIS will be carried out only through national consensus. Provincial government can make some modifications in the HIS design based on their needs, but these should be duly communicated to NHIRC and the HIS Forum. Similarly, districts may suggest some modifications to suit their needs; however, districts must consult PHD before making any modification.

Similarly, modifications in the software will also be agreed upon by the Forum.

The HIS Forum will maintain liaison with Health Metrics Network and work towards the improvement of HIS in Pakistan. One of the pending areas for HIS improvement is the integration of various VP-ISs. This can be achieved in various ways. One option is to upgrade the DHIS software so that it can accommodate entry/integration of data from VP-ISs at district level. Such an initiative will require national consensus and coordination/collaboration. The HIS Forum will provide the necessary platform for such consensus building.

The HIS Forum will assist the government in taking important HIS policy decisions; it will also promote organizational changes towards the use of information for evidence-based decision making for the management of health system. The HIS Forum will provide the platform for discussion on provision of HIS resources through donor coordination.

8.2 For JICA's considerations

(1) JICA may continue taking leading role in providing technical support for the improvement of HIS in Pakistan, including support to HIS Forum and developing the TH-IS and PvtHS-IS.

(2) Provision of technical assistance by JICA at initial stage of implementation of DHIS and the maintenance of DHIS software would provide the necessary impetus to the MOH/PHDs to carry forward the implementation of NAP/DHIS.

CHAPTER 9 CONSENSUS BUILDING AND OWNERSHIP BY GOVERNMENT OF PAKISTAN

9. CONSENSUS BUILDING AND OWNERSHIP BY GOVERNMENT OF PAKISTAN

The Study was carried out in a consultative and collaborative manner with the GOP. The MOH and PHDs were involved in all the stages of its implementation and contributed towards the development/finalization of the design of DHIS and NAP. In addition to that, regular Steering Committee meetings were held to ensure that the Study is on track and geared towards meeting the expectations of the Pakistani side and that there is consensus among all the stakeholders. This assisted in building the ownership of DHIS/NAP by the MOH and PHDs. The reflection of the success of this process is seen in the outcomes of the meetings of JICA Officials with MOH/PHDs, the final Steering Committee meeting and DHIS Seminar.

(1) Meetings with federal and provincial authorities for the implementation of NAP

Meetings of federal and provincial decision makers were held from 14th to 20th December 2006 headed by Mr. Yojiro Ishii, Mission leader, Director of Health Division, JICA Tokyo. Objective of the meeting and mission was to exchange views on the implementation of NAP with federal and provincial authorities. Following meetings were held.

- Federal Secretary Health/DG meeting — 14th December, 2006
- Punjab meeting — 15th December, 2006
- Balochistan meeting — 16th December, 2006
- Sindh meeting — 16th December, 2006
- NWFP meeting — 18th December, 2006
- Federal DG meeting — 20th December, 2006

Remarks by Pakistani authorities and JICA mission were as follows:

1) Remarks by Pakistani authorities

- Federal authorities committed to implement DHIS in the whole country and to avoid the duplication of HIS (i.e. HMIS-FLCF, Health Metrics Network, and Integrated Disease Surveillance. NHIRC is only the coordinating, monitoring, and technical support body for HIS at Federal level.
- HIS forum will be established for improvement of HIS.
- Each provincial government fully owned the DHIS as its system and committed to implement DHIS in the whole province.
- Each provincial government has initiated the preparation of financial arrangement (provincial PC-I or provincial regular budget from 2007/8) for the implementation of DHIS or will prepare the PC-I by the end of February 2007.

- Some provinces welcomed continuous assistance from JICA for implementation of DHIS and improvement of HIS.

2) Remarks by JICA

- JICA highly appreciated the initiative and ownership of DHIS implementation taken by each tier.
- JICA would consider further technical assistance to improve the HIS, including TH-IS and PvtHS-IS.

(2) Final Steering Committee meeting

Final Steering Committee meeting was held in NHIRC on 26th January, 2007. The meeting was chaired by DG Health, MOH with participation from provinces and other federal organizations/programs. Main features of the Study and software were presented. Official procedure for requesting JICA's technical assistance for TH-IS and PvtHS-IS was explained by JICA. Following decisions were made.

- AJK and FATA/FANA [20] will be included in NAP for implementation of DHIS. NHIRC may initiate action accordingly with AJK and FATA/FANA.
- Commitment from MOH and PHDs was reassured for DHIS implementation.
- NHIRC may provide support for gradual implementation of DHIS throughout the country including AJK and FATA/FANA.
- NHIRC and AZM will be in contact for training and maintenance of DHIS Software during replication of DHIS.
- NAP was approved as way forward for implantation of DHIS and development of tertiary care hospitals and private health sector HISs.

(3) DHIS seminar

A seminar on DHIS was held on 27th January, 2007. The objective of the seminar was primarily to brief and disseminate the DHIS model to the development partners and international agencies as well as to seek reassurance /commitment of the government for its replication. The seminar was able to achieve the commitment of government for DHIS replication. International partners appreciated the DHIS model and wished its implementation throughout the country. They expressed pleasure over the commitment of the government in this regard.

[20] AJK: Azad Jammu and Kashmir, FATA: Federally Administered Tribal Areas, FANA: Federally Administered Northern Areas

APPENDIX 1

LIST OF THE STUDY TEAM

Appendix 1 List of the Study Team

Inter national member

1. Mr. Hiroshi Abo, Team Leader / health administration
2. Dr. Tariq Azim, Information system (Design) / Deputy Team Leader
3. Dr. Hirothugu Aiga, Epidemiologist Survey
4. Dr. Anwar Aqil, Epidemiologist Survey (2) / organization and behavioral
5. Ms. Mary Church, Information system (indicators, variables)
6. Mr. Sadatoshi Matsuoka, Coordinator
7. Ms. Yoshiko Akiyama, Drug Logistics Control
8. Ms. Chiaki Kido, Health finance / project monitoring and evaluation
9. Mr. Masashi Akiho, Information system (Development)
10. Dr. Ghayur Ahmad, Extension Planner

National member

1. Dr. Ahmad Afifi, Consultant
2. Dr. Iqbal Memon, Consultant
3. Dr. Shahib Saqib Consultant
4. Dr. Sohail Amjad, Epidemiologist
5. Mr. Muhammad Jamil Arshad, Office Manager & Technical Advisor
6. Mr. Shafat Sharif, Computer development assistant

Staff

1. Mr. Muhammad Ali Butt, Admin/ Finance Manager
2. Ms. Sabeen Gul, Assistant
3. Mr. Asim Saqlain, Assistant
4. Mr. Shuja ul Islam, Assistant
5. Mr. Majid Hussain, Assistant
6. Mr. Syed Mosin, Assistant

APPENDIX 2

LIST OF MEETINGS

Appendix 2 List of Meetings

Name of Meeting	Place	Date
1. Scope of Work	Islamabad	7 August, 2003
2. Minutes of Meeting on Preparatory Study	Islamabad	7 August, 2003
3. Inception Report	Islamabad	24 January, 2004
4. Steering Committee Meeting	Islamabad	14 October, 2004
5. Provincial TAG Meeting in Sindh	Karachi	2 December, 2004
6. Provincial TAG Meeting in Balochistan	Quetta	4 December, 2004
7. Provincial TAG Meeting in Punjab	Lahore	7 December, 2004
8. Provincial TAG Meeting in NWFP	Peshawar	8 December, 2004
9. Steering Committee Meeting	Islamabad	17 December, 2004
10. Provincial Meeting in NWFP	Islamabad	24 August, 2005
11. Provincial Meeting in Punjab	Lahore	26 August, 2005
12. Provincial Meeting in Sindh and Balochistan	Karachi	27 August, 2005
13. Steering Committee Meeting	Islamabad	29 August, 2005
14. Provincial Meeting in Sindh and Balochistan	Karachi	9-10 December, 2005
15. Provincial Meeting in NWFP	Peshawar	12-13 December, 2005
16. Provincial Meeting in Punjab	Lahore	14-15 December, 2005
17. Steering Committee Meeting	Islamabad	20 December, 2005
18. Provincial Working group Meeting in NWFP	Peshawar	6 February, 2006
19. Provincial Working group Meeting in Balochistan	Quetta	13 February, 2006
20. Provincial Working group Meeting in Sindh	Karachi	15 February, 2006
21. Provincial Working group Meeting in Punjab	Lahore	17 February, 2006
22. Orientation Workshop in Swabi	Swabi	22 February, 2006
23. Orientation Workshop in Thatta	Thatta	22 March, 2006
24. Orientation Workshop in Quetta	Quetta	24 March, 2006
25. Steering Committee Meeting	Islamabad	26 August, 2006
26. Core Group Meeting for NAP formulation	Islamabad	18 September, 2006
27. Core Group Meeting for NAP formulation	Islamabad	21 November, 2006
28. JICA Mission Meeting	Islamabad	14, 20 December, 2006
29. JICA Mission Meeting in Punjab	Lahore	15 December, 2006
30. JICA Mission Meeting in Sindh and Balochistan	Karachi	16 December, 2006
31. JICA Mission Meeting in NWFP	Peshawar	18 December, 2006
32. Steering Committee Meeting	Islamabad	26 January, 2007
33. Seminar	Islamabad	27 January, 2007

APPENDIX 3

LIST OF THE PARTICIPANTS

Appendix 3 List of the Participants

Inception Report

Date: 24 January, 2004
Place: Ministry of Health

Pakistan Side

Ministry of Health

Mr. Matiullah Khan	Senior Joint Secretary
Dr. Abdul Majid Rajput	ED-NHIRC
Dr. Fahim Arshad Malik	Deputy Director General (P&D)
Dr. Syed. M. Mursalin	National HMIS Officer, National HMIS Cell.
Mr. Muhammad Aslam	Directorate of Malaria Control Program
Dr. S. Raza Zaidi	National Program for PHC & FP
Dr. Altaf Bosan	National EPI Program, NIH
Dr. Hasan Sadiq	National TB Control Program
Dr. Muhammad Imran	National AIDs Control Program

Planning and Development Division

Dr. G. A. Abbassi	Deputy Chief (Health), P&G Division

Provincial Health Departments

Mr. Anwar Latif	Asst. Chief (Health) P&D Department, Punjab
Dr. Shahid Amin	Provincial HMIS Coordinator, Punjab
Dr. Farooq Azam Jan	Provincial HMIS Coordinator, Balochistan

International Donors

Dr. Faizullah Kakar	World Health Organization, Islamabad
Dr. Rafah Aziz	UNICEF, Islamabad

Japanese Side

JICA Pakistan Office

Mr. Hidekazu Tanemura	Assistant Resident Representative
Mr. Sohail Ahmad	Senior Programme Officer

JICA Advisory Committee

Dr. Hidechika Akashi	Member of JICA Advisory Committee
Dr. Dairiku Hozumi	Member of JICA Advisory Committee

JICA Headquarters

Mr. Tatsuya Ashida	Member of JICA Headquarters

Study Team

Mr. Hiroshi Abo	Team Leader
Prof. Toshimasa Nishiyama	Member
Mr. Hirotsugu Aiga	Member
Mr. Masashi Akiho	Member
Dr. Ghayur Ahmad	Member
Mr. Sadatoshi Matsuoka	Member

Steering Committee Meeting

Date: 14 October, 2004
Place: Ministry of Health

Pakistan Side

Ministry of Health

Mr. Matiullah Khan	Senior Joint Secretary
Dr. Fahim Arshad Malik	Deputy DG Health
Dr. Fazle Hadi	Executive Director, PIMS
Dr. Jalil Kamran	In charge Epidemic Investigation Cell, NIH
Dr. Naqeebullah	Epidemiologist, GIDSAS, NIH
Dr. Haroon Rashid Khan	Head of HMIS, PIMS
Dr. S. M. Mursalin	NHMIS Coordinator
Mr. Jamil Arshad	Research Officer
Mr. Sharif Ahmad Khan	Consultant Epidemiologist, Malaria Control Program

Ministry of Planning

Dr. Shaifquddin	Chief (Health), Planning & Development Division

PMDC

Dr. Sohail Kareem Hashmi	Secretary, PMDC

Ministry of Population & Welfare

Mr. Saeed A. Khan	Director General, (M&E)
Dr. Razaq Rukanuddin	Free-lancer consultant, Population Council

Donor

Dr. Faizullah Kakar	WHO Epidemiologist

Provincial Health Department

Dr. Noshad A. Sheikh	Secretary Sindh
Dr. Shafi Mohammad Zari	Secretary Balochistan
Mr. Ahmad kamal Khan	Additional Secretary Health, Punjab
Dr. Hussain Bux Memon	Director General Health Service, Sindh
Dr. Pir Mohammad Khawaja Khail	Director General Health Service, Balochistan
Dr. Ahmad Afifi	Director General (Admin), Punjab
Dr. Mohammad Aftab Khan	Director Legislation, Punjab
Dr. Iqbal Memon	Provincial HMIS Coordinator, DGHS, Sindh
Dr. Mohammad Zaheen	Deputy Director, Public Health, NWFP
Dr. Farooq Azam Jan	Provincial HMIS Coordinator, Quetta
Dr. Pervaiz Akhtar	Economist Health Department, NWFP
Dr. Basit Saleem	Assistant Director Public Health, NWFP

Japanese Side

JICA Advisory Committee

Dr. Dairiku Hozumi	Member of JICA Advisory Committee

JICA Headquarters

Ms. Katsura Miyazaki	Team Director, JICA Headquarters
Mr. Tatsuya Ashida	Member of JICA Headquarters

JICA Pakistan Office

Mr. Mitsunobu Inaba	Deputy Resident Representative
Dr. Akihiro Yomo	Project formulation Advisor, Health
Mr. Sohail Ahmad	Senior program officer
Dr. Ajimal Hamid	Advisor on Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Anwar Aqil	Member
Dr. Tariq Azim	Member
Mr. Masashi Akiho	Member
Dr. Ghayur Ahmad	Member
Mr. Sadatoshi Matsuoka	Member
Ms. Mary Church	Staff
Dr. Sohail Amjad	Staff

Provincial TAG Meeting in Sindh

Date: 2 December, 2004
Place: Shindh Health Department at Karachi

Pakistan Side

Provincial Health Department

Dr. Noshad A. Sheikh	Secretary Health
Mr. Manzoor Ahmad Memon	Additional Secretary Health
Dr. M. Umer Abro	Additional director, P & D, Karachi
Dr. Rasheed Ahmad	Deputy Director P & D, Karachi
Dr. M. Iqbal Memon	HMIS Coordinator

Ministry Health

Mr. Mohammad Jamil Arshad	Research Officer

Japanese Side

JICA Pakistan Office

Dr. Ajimal Hamid	Advisor on Health

JICA Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Dr. Anwer Aqil	Member
Mr. Sadatoshi Matsuoka	Member
Dr. Sohail Amjad	Staff

Provincial TAG Meeting in Balochistan

Date: 4 December, 2004
Place: Balochistan Health Department at Quetta

Pakistan Side

Provincial Health Department

Dr. Shafi Mohammad Zehri	Secretary Health
Dr. Munir Ahmad Khawaja Khail	Director General Health
Dr. M. Amjad Ansari	Chief Planning Officer, Health
Dr. Farooq Azam Jan	Provincial HMIS Coordinator

Ministry Health

Mr. Mohammad Jamil Arshad	Research Officer

Japanese Side

JICA Pakistan Office

Dr. Akihiro Yomo	Project Formulation Advisor, Health

JICA Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Ms. Mary Church	Staff
Mr. Sadatoshi Matsuoka	Member
Dr. Sohail Amjad	Staff

Provincial TAG Meeting in Punjab

Date: 7 December, 2004
Place: Punjab Health Department at Lahore

Pakistan Side

Provincial Health Department

Mr. Sohail Ahmad	Secretary Health
Mr. Ahmad Kamal	Additional Secretary Health
Dr. Ahmad Afifi	Director (Admin)
Mr. Akran Rana	Senior Planning Officer
Mr. Muhammad Ali Ahsan	Regional HMIS Coordinator, Rawalpindi

Ministry Health

Mr. Mohammad Jamil Arshad	Research Officer

Japanese Side

JICA Pakistan Office

Dr. Akihiro Yomo	Project Formulation Advisory, Health
Dr. Ajimal Hamid	Advisory on Health
Mr. Sohail Ahmad	Senior Programmer Officer

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Ms. Mary Church	Staff
Mr. Sadatoshi Matsuoka	Member
Dr. Sohail Amjad	Staff

Provincial TAG Meeting in NWFP

Date: 8 December, 2004
Place: NWFP Health Department at Peshawar

Pakistan Side

Provincial Health Department

Mr. Atta-ur-Rehman Lodhi	Acting Secretary Health
Dr. Jalil-ur-Rehman	Director General Health Serices
Dr. Mohammad Rafiq	Chief Health Sector Research & Reforms Unit
Dr. Mosim Khan	EDOH, Peshawar
Mr. Rahim Zada	Chief Planning Officer
Dr. Muhammad Zaheen	Deputy Director, PHC, Peshawar
Dr. Sameer Mahmood	HMIS Coordinator, Peshawar
Mr. Pervaiz Akhter	Economist, Health Dept.

Ministry Health

Mr. Mohammad Jamil Arshad	Research Officer

Japanese Side

JICA Pakistan Office

Dr. Akihiko Yomo	Project Formulation Advisor, Health

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Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Dr. Anwer Aqil	Member
Dr. Ghayur Ahmad	Member
Mr. Sadatoshi Matsuoka	Member
Dr. Sohail Amjad	Staff

Steering Committee Meeting

Date: 17 December, 2004
Place: Ministry of Health

Pakistan Side

Ministry of Health

Mr. Matiullah Khan	Senior Joint Secretary
Dr. Abdul Majid Rajput	Director General Health
Dr. Syed Fazli Hadi	ED-PIMS, Islamabad
Dr. Fahim A. Malik	Deputy Director General (P&D) health
Dr. Qazi Abdus Saboor	Executive Director, NHIRC
Dr. Jehanzeb K. Aurakzai	Director NIH
Dr. Haroon Khan	Head of HMIS, PIMS
Dr. Sher Baz Khan	DNC (National Program for FP & PHC)
Dr. S. M. Mursalin	NHMIS Coordinator
Mr. Muhammad Jamil Arshad	Research Officer

Ministry of Planning

Dr. M. Shaifquddin	Chief Health, Planning & Development Division

Provincial Health Department

Dr. Shafi Muhammad Zehri	Secretary Health, Balochistan
Dr. Ahmad Kamal Khan	Additional Secretary (Dev), Punjab
Mr. Manzoor Hussain Memon	Additional Secretary (Dev), Sindh
Dr. M. Rafiq	Chief S.H.R.U, NWFP
Dr. Shareef Ahmad Lodhi	Director Health Services, Balochistan
Dr. M. Aftab Khan	Director Legal/ HMIS Coordinator, Punjab
Dr. Muhammad Zaheen	Deputy Director, PHC, DGHS, NWFP
Dr. Sameer Mahmood	Provincial HMIS Coordinator, NWFP
Mr. Ali Ahsan	Regional HMIS Coordinator, Rawalpindi

CRPRID

Mr. Nisar Ahmad	M&E Specialist, CRPRID/ UNDP.
Mr. Iftikhar Ahmad	Senior Poverty Specialist, CRPRID/ UNDP.

Japanese Side

JICA Pakistan Office

Ms. Sachiko Misumi	Sr. Deputy Resident Representative
Mr. Mitsunobu Inaba	Deputy Resident Representative
Dr. Akihiro Yomo	Project formulation Advisor, Health
Mr. Sohail Ahmad	Senior program officer
Dr. Ajimal Hamid	Advisor on Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Dr. Anwar Aqil	Member
Ms. Mary Church	Staff
Mr. Masashi Akiho	Member
Dr. Ghayur Ahmad	Member
Mr. Sadatoshi Matsuoka	Member
Dr, Sohail Amjad	Staff

Provincial Meeting in NWFP

Date: 24 August, 2005
Place: Islamabad

Pakistan Side

Provincial Health Department

Mr. Abdus Samad Khan	Secretary Health
Dr. Jalil-ur-Rahman	Director General Health Serices

Japanese Side

JICA Pakistan Office

Mr. Mitsunobu Inaba	Deputy Resident Representative
Dr. Akihiko Yomo	Project Formulation Advisor, Health
Mr. Sohail Ahmad	Senior Program Officer

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Mr. Sadatoshi Matsuoka	Member
Ms. Chiaki Kido	Member
Dr. Sohail Amjad	Stuff
Dr. Ghayur Ahmad	Stuff
Mr. Muhammad Jamil Arshad	Stuff

Provincial Meeting in Punjab

Date: 26 August, 2005
Place: Office of Secretary Health in Lahore

Pakistan Side

Provincial Health Department

Ms. Rashida Malik	Secretary Health
Mr. Jawad Rafiq Malik	Additional Secretary (Development)
Dr. Lhalid Mehmood Rana	Director General Health Services
Mr. Nasim Khan	Senior Planning Officer
Mr. Akram Rana	Senior Planning Officer
Dr. M. Amjad	Provincial HMIS Coordinator

Japanese Side

JICA Pakistan Office

Dr. Ajimal Hamid	Advisor on Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Mr. Sadatoshi Matsuoka	Member
Dr. Sohail Amjad	Stuff
Mr. Muhammad Jamil Arshad	Stuff

Provincial Meeting in Shindh and Balochistan

Date: 27 August, 2005
Place: Karachi

Pakistan Side

Provincial Health Department Sindh

Prof. Dr. Noshad A. Shaikh	Secretary Health
Mr. Manzoor Ahmad Memon	Additional Secretary (Development)
Mr. Riaz Memon	Additional Secretary (Admin)
Mr. M. Umer Abro	Additional Director, P&D

Provincial Health Department Balochistan

Dr. Munir Ahmad Khawaja Khail	Director General Health Services
Mr. Manzoor Hussain	Additional Secretary Health
Dr. Amjad Ansari	Senior Planning Officer

Japanese Side

JICA Pakistan Office

Mr. Hiroshi Inaba	Deputy Resident Representative
Dr. Akihiro Yomo	Project Formulation Advisor, Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Dr. Sohail Amjad	Stuff
Mr. Muhammad Jamil Arshad	Stuff

Steering Committee Meeting

Date: 29 August, 2005
Place: Islamabad

Pakistan Side

Ministry of Health

Dr. Qazi Abdus Sabool	Executive Director, NHIRC
Dr. Fazle Hadi	Executive Director, PIMS
Mr. Matiullah Khan	Technical Advisor, Ministry of Health
Dr. M. Rashid Anjum	Acting Secretary, Pakistan Medical and Dental Council, Islamabad
Dr. S. Mursalin	HMIS Officer
Dr. Haroon Khan	Pathologist, PIMS
Dr. Qudsia Uzma	Programme Officer, AIDS Control Programme, Islamabad
Dr. Thamas J Chiang	TB Control Programme

Ministry of Planning

Dr. M. Shaifquddin	Chief Health, Planning & Development Division

Ministry of Population Welfare

Mr. Hamid Khalil	Director (SS&DP)

Federal Bureau of Statistics

Mr. Munir Ahmad Aslam	Director

Provincial Health Department NWFP

Mr. Abdus Samad Khan	Secretary Health
Dr. Jalil Ur Rehman	Director General Health Services
Dr. Muhammad Zaheen	Deputy Ditrctor, PHC, DGHS

Provincial Health Department Sindh

Mr. Manzoor Memon	Additional Secretary (Development)

Provincial Health Department Balochistan

Dr. Munir Ahmad Khawaja Khail	Director General Health Services
Dr. Manzoor Hussain	Additional Secretary
Dr. Amjad Ansari	Senior Planning Officer
Dr. Farooq Azam Jan	Provincial HMIS Coordinator

Provincial Health Department Punjab

Mr. Naseem Ahmad Khan	Senior Planning Officer
Dr. Muhammad Amjad	Provincial HMIS Coordinator

Japanese Side

JICA Pakistan Office

Ms. Sachiko Misumi	Sr. Deputy Resident Representative
Mr. Mitsunobu Inaba	Deputy Resident Representative
Dr. Akihiro Yomo	Project formulation Advisor, Health
Mr. Sohail Ahmad	Senior program officer
Dr. Ajimal Hamid	Advisor on Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Ms. Chiaki Kido	Member
Mr. Sadatoshi Matsuoka	Member
Dr. Ghayur Ahmad	Staff
Mr. Sadatoshi Matsuoka	Staff
Mr. Muhammad Jamil Arshad	Staff

Provincial Meeting in NWFP

Date: 12-13 December, 2005
Place: Peshawar

Pakistan Side

Provincial Health Department

Dr. Jalil Ur Rahman	Director General Health Services
Dr. Muhammad Zaheen	Deouty Director (Public Health)
Dr. Khalid Iqbal	Program Manager, Malaria Control, DGHS Office
Dr. Basit Saleem	Assistant Director, Public Health, DGHS Office
Dr. MA Majid Qureshi	Incharge RHC, Nahaqai
Dr. M Khalid	HMIS Coordinator, Swabi
Dr. Mosam Khan	EDO (Health), Peshawar
Dr. Muhammad Jamil	MS, DHQ Hospital, Peshawar
Dr. Rab Nawaz	Medical Offcer, Government Civil Dispensary, Sheikhabad
Dr. A Sabooh Badshah	Director Health Services, DGHS Office

Japanese Side

JICA Pakistan Office

Dr. Akihiro Yomo	Project Formulation Advisor, Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Mr. Tateo Kusano	Member
Ms. Chiaki Kido	Member
Dr. Sohail Amjad	Staff
Mr. Muhammad Jamil Arshad	Staff

Provincial Meeting in Punjab

Date: 14-15 December, 2005
Place: Lahore

Pakistan Side

Provincial Health Department

Dr. Mohammad Aslam Chaudhary	Director General Health Services
Dr. Mohammad Amjad Shazad	Provincial HMIS Coordinator
Dr. Darakhshan Badar	Provincial Manager, TB Control Program
Dr. Nadeem Zaka	NGO Coordinator, Pinjab AIDS Control Program
Dr. Irshad Ahmad	MS THQ Hospital, Depalpur
Dr. Arshad Shariq	MS DHQ Hospital, Kasur
Dr. M Ishaq	DOH (HQ), Lahore
Mr. Farooq Ahmad	CPO, Lahore
Dr. Mohammad Imran	Medical Officer, BHU 39/2L, Okara
Dr. Arshad Usmani	ADHS, Lahore
Dr. Abdul Qayyum	EDU (Health), Lahore

Japanese Side

JICA Pakistan Office

Dr. Mir Ajimal Hamid	Advisor on Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Mr. Tateo Kusano	Member
Dr. Sohail Amjad	Staff
Dr. Ghayoor Ahmad	Staff
Mr. Muhammad Jamil Arshad	Staff

Steering Committee Meeting

Date: 20 December, 2005
Place: NHIRC Committee Room

Pakistan Side

Ministry of Health

Dr. Abdul Majid Rajput	Director General (In Chair)
Dr. Qazi Abdus Sabool	Executive Director, NHIRC
Mr. Sheikh Insar Ahmad	Deputy Director General
Dr. Haroon Khan	Pathogistm PIMS
Syed Anwar Hussain	MIS Advisor
Dr. Ahmad Nadeem Akbar	Deputy Secretary

Planning & Development Division, Islamabad

Dr. Muhammad Shafiquddin	Chief (Health)
Mr. Sohail Rehan	Chief (Poverty)

Federal Bureau of Statistics

Mr. Munir Ahmad Aslam	Director

Provincial Health Department NWFP

Dr. Jalil Ur Rehman	Director General Health Services
Dr. Sabooh Bacha	Director Health Services
Dr. Muhammad Zaheen	Deputy Director (public Health)

Provincial Health Department Sindh

Mr. Manzoor Memon	Additional Secretary (Development)

Provincial Health Department Balochistan

Dr. Munir Ahmad Khawaja Khail	Director General Health Services
Dr. Farooq Azam Jan	Provincial HMIS Coordinator

Provincial Health Department Punjab

Dr. Muhammad Amjad	Provincial HMIS Coordinator

Provincial Planning & Development Department

Mr. Anwar Latif	Assistant Chief (Health), Punjab, Lahore
Mr. Altaf Hussain Bhatti	Chief (Health), Balochistan, Quetta

Japanese Side

JICA Pakistan Office

Mr. Mitsunobu Inaba	Deputy Resident Representative
Dr. Akihiro Yomo	Project formulation Advisor, Health
Mr. Sohail Ahmad	Senior program officer
Dr. Ajimal Hamid	Advisor on Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Ms. Chiaki Kido	Member
Mr. Masashi Akiho	Member
Mr. Sadatoshi Matsuoka	Member
Dr. Tauseef Ahmad	Staff
Dr. Sohail Amjad	Staff
Dr. Ghayur Ahmad	Staff
Mr. Muhammad Jamil Arshad	Staff
Mr. Shafat Sharif	Staff

Steering Committee Meeting

Date: 26 August, 2006
Place: NHIRC Committee Room

Pakistan Side

Ministry of Health

Maj. Gen. (R) Dr. Shahida Malik	DG Health (Inchair)
Mrs. Saira Karim	Senior Joint Secretary (F&D)
Dr. Fahim Arshad Malik	DDG (P&D-I)
Dr. Ashfaq Ahmed	DDG (IH)

National Health Information Resource Center (NHIRC)

Dr. Qazi Abdus Sabool	Executive Director
Dr. Ali Akbar Khan	Assistant HMIS Coordinator
Dr. Zafar Hayat	Assistant HMIS Coordinator
Mr. Ashfaq Ahmad	Data Analyst
Mr. Alam Zeb Bangash	Data Analyst
Mr. Muhammad Hakim Khan Khattak	Data Analyst

Pakistan Medical and Dental Council

Mr. M. Sohail Karim Hashmi	Secretary PMDC

National Programme Manager

Dr. Shareef Ahmed Khan	NPM Hepatitis Prevention & Control Program
Dr. Asma Bukhari	NPM AIDS Control Program
Dr. Mehboob Ahmad Agha	ADG Nutrition Program
Muhammad Saleem Ansari	Expanded Program of Immunization (EPI)
Ms. Sadia Riaz	Scientific Officer, Malaroia Control Program
Mr. Muhammad Ahmed	Statistical Officer, Malaria Control Program

Planning & Development Division

Dr. M. Shafiquddin	Chief (Health)

Federal Bureau of Statistics

Mr. Raishad	Chief Statistical Officer

Provincial Health Department Punjab

Dr. Muhammad Amlad	Provincial HMIS Coordinator
Dr. S. Anwar Bugvi	Advisor Technical
Mr. Nasim Ahmad Khan	Senior Planning Officer
Dr. Muhammad Amjad	Provincial Focal Person DHIS, Punjab
Dr. Mubashir Ahmad Malik	Provincial HMIS Coordinator

Provincial Health Department NWFP

Mr. Muhammad Younis Javed	Additional Secretary Health
Dr. Muhammad Zaheen	Deputy Director Public Health
Dr. Rab Nawaz	Provincial HMIS Coordinator

Provincial Health Department Sindh

Mr. Muhammad Umar Abro	Additional Director Development

Provincial Health Department Balochistan

Dr. Abdur Rashid Baloch	DG Health Services
Dr. Farooq Azam Jan	Provincial HMIS Cooedinator

Japanese Side

Embassy of Japan

Mr. Hironobu Tashiro	Second Secretary

JICA Pakistan Office

Mr. Takao Kaibara	Resident Representative
Mr. Mitsunobu Inaba	Deputy Resident Representative
Dr. Akihiro Yomo	Project formulation Advisor, Health
Mr. Sohail Ahmad	Senior program officer
Dr. Ajimal Hamid	Advisor on Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Dr. Ahmad Afifi	Staff
Dr. M. Iqbal Memon	Staff
Dr. Shahab Saqib Hashim	Staff

Core Group Meeting

Date: 18 September, 2006
Place: Islamabad

Pakistan Side

Ministry of Health

Dr. Qazi Abdus Sabool	Executive Director NHIRC
Dr. Nadeem Hussain	ADG.PH,
Dr. Ali Akbar Khan	HMIS Coordinator

Provincial Health Department Punjab

Dr. Arshad Usmani	Additional Director Health Services
Dr. Mubashir Ahmad Malik	Provincial HMIS Coordinator

Provincial Health Department Balochistan

Dr. Manzoor Hussain	Additional Secretary Health
Dr. Farooq Azam Jan	Provincial HMIS Cooedinator

Provincial Health Department Sindh

Mr. M. Umar Abro	Additional Director (Dev.)
Dr. Capt. M. Suleman	Provincial HMIS Personal, SMO, PHD

Provincial Health Department NWFP

Mr. Abdus Samad Khan	Secretary Health
Dr. Jalil Ur Rahman	Director General Health Services
Dr. Rab Nawaz	Provincial HMIS Coordinator

Japanese Side

JICA Pakistan Office

Dr. Akihiro Yomo	Project formulation Advisor, Health
Dr. Ajimal Hamid	Advisor on Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Dr. Ahmad Afifi	Staff
Dr. M. Iqbal Memon	Staff

Core Group Meeting

Date: 21 November, 2006
Place: NHIRC Committee Room

Pakistan Side

Ministry of Health

Dr. Qazi Abdus Sabool	Executive Director NHIRC
Dr. Abdul Bari	Consultant NHIRC
Dr. Ali Akbar Khan	HMIS Coordinator
Mr. Ashfaq Ahmad	Data Analyst
Mr. Muhammad Hakim K. Khattak	Data Analyst
Mr. Alam Zeb Bangush	Data Analyst

Provincial Health Department Punjab

Mr. Nasim Ahmad Khan	Senior Planning Officer
Dr. Mubashir Ahmad Malik	Provincial HMIS Coordinator

Provincial Health Department Balochistan

Mr. Khudac Rahim Ejbani	Additional Secretary (Dev.)
Dr. Farooq Azam Jan	Provincial HMIS Cooedinator

Provincial Health Department Sindh

Dr. Muhammad Ali Laghari	Provincial HMIS Person

Provincial Health Department NWFP

Mr. Muhammad Younis Javed	Additional Secretary
Dr. Jalil Ur Rahman	Director General Health Services
Dr. Rab Nawaz	Provincial HMIS Coordinator

Japanese Side

JICA Pakistan Office

Dr. Akihiro Yomo	Project formulation Advisor, Health
Dr. Ajimal Hamid	Advisor on Health

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Dr. Ahmad Afifi	Staff
Dr. M. Iqbal Memon	Staff

Steering Committee Meeting

Date: 26 January, 2007
Place: NHIRC Committee Room

Pakistan Side

Ministry of Health

Maj. Gen. (R) Dr. Shahida Malik	DG Health (in-chair)
Dr. Qazi Abdus Sabool	Executive Director NHIRC
Dr. Ashfaq Ahmed	DDG (H)
Dr. Nadeem Hassan	ADG (H)
Mr. Ali Akbar Khan	Assistant HMIS Coordinator
Dr. Zafar Hayat	Assistant HMIS Coordinator
Mr. Ashfaq Ahmad	Data Analyst
Mr. Alam Zeb Bangash	Data Analyst
Mr. Muhammad Hakim Khan Khattak	Data Analyst

National Institute of Health

Maj. Gen. (R) Dr. Masood Anwar	ED, NIH

Pakistan Medical Research Council

Dr. Huma Qureshi	ED, PMRC
Dr. Mubashar A. Khan	Principal Research Officer, PMRC

National Programme Manager

Dr. Nasir Sarfraz	Deputy Program Manager, National AIDS Control Programme
Dr. Altaf Bosan	Deputy National Manager, Expanded Programme of Immunization (EPI)

Planning & Development Division

Mr. Shahid Naeem	Assistant Chief. Poverty Section

Provincial Health Department Punjab

Dr. Mubashir Ahmad Malik	Provincial HMIS Coordinator

Provincial Health Department NWFP

Dr. Jalil Ur Rahman	Director General Health Services
Dr. Ikramullah Khan	Provincial HMIS Coordinator

Provincial Health Department Sindh

Dr. M. Ali Leghari	Provincial HMIS Coordinator

Provincial Health Department Balochistan

Dr. Shafi Mohammad Zehri	Secretary Health
Dr. Abdur Rashid Baloch	DG Health Services
Dr. Farooq Azam Jan	Provincial HMIS Cooedinator

Japanese Side

JICA Pakistan Office

Mr. Tsutomu Shimizu	Senior Deputy Resident Representative
Mr. Mitsunobu Inaba	Deputy Resident Representative
Dr. Akihiro Yomo	Project Formulation Advisor
Dr. Hirotsugu Aiga	Senior Advisor
Dr. Ajmal Hamid	Health Advisor
Mr. Sohail Ahmed	Senior Programme Officer

Study Team

Mr. Hiroshi Abo	Team Leader
Dr. Tariq Azim	Member
Mr. Masashi Akiho	Member
Mr. Shafat Sharif	Staff
Mr. Muhammad Jamil Arshad	Staff

AZM

Mr. Noman Jamil	Director
Mr. Anwar Hussain	Project Manager

APPENDIX 4

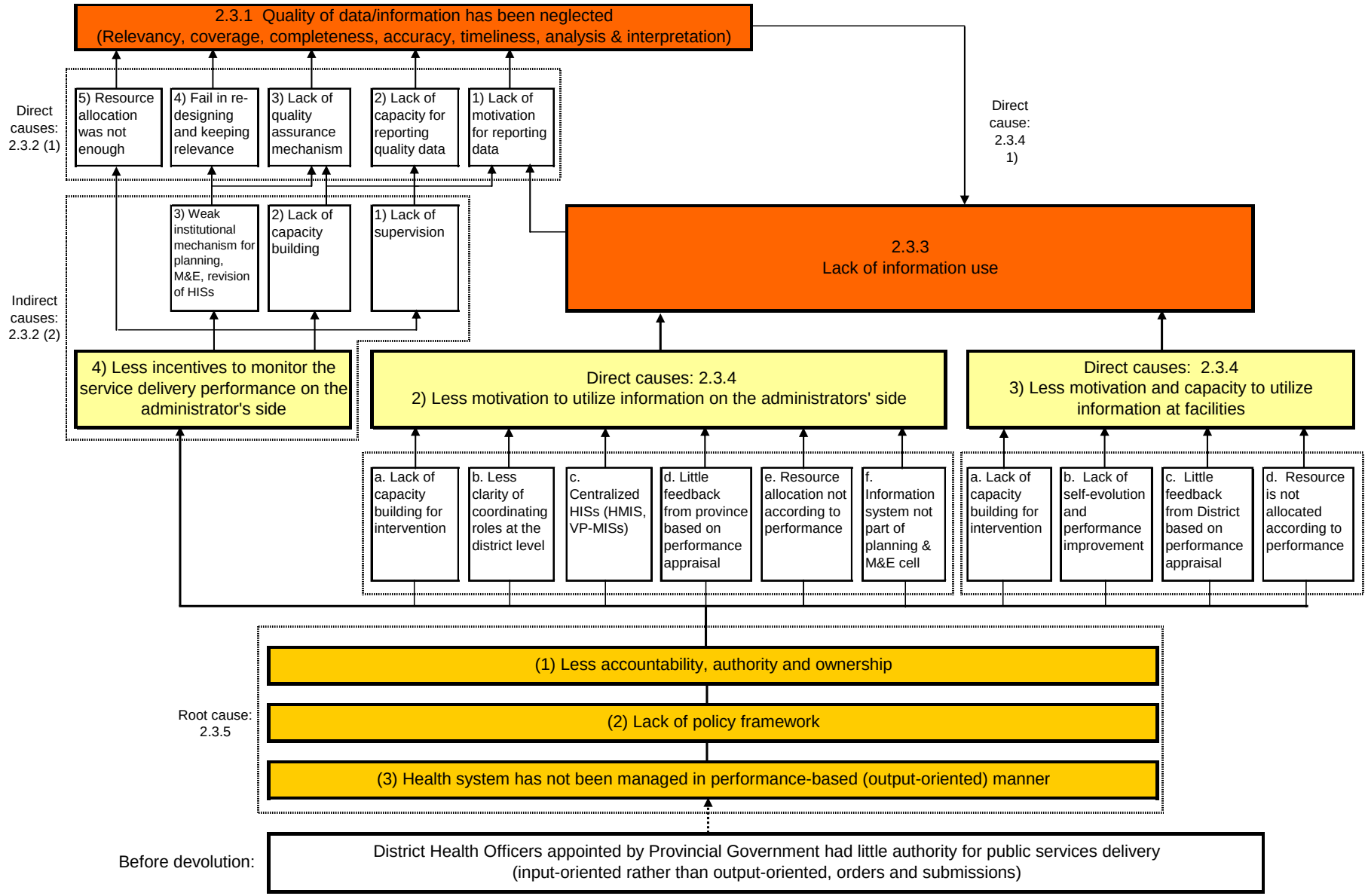
LIST OF MANUALS

Appendix 4 List of Manuals

1. Procedure Manual For District Health Information system
2. DHIS Training Manual for Trainers
3. DHIS Training Manual for Participants
4. Use of DHIS Information for Continuous Improvement of Health System Performance Trainer’s Manual
5. Use of DHIS Information for Continuous Improvement of Health System Performance Participant’s Manual
6. Software Manual

APPENDIX 5

FIGURE 2.1 PROBLEM TREE

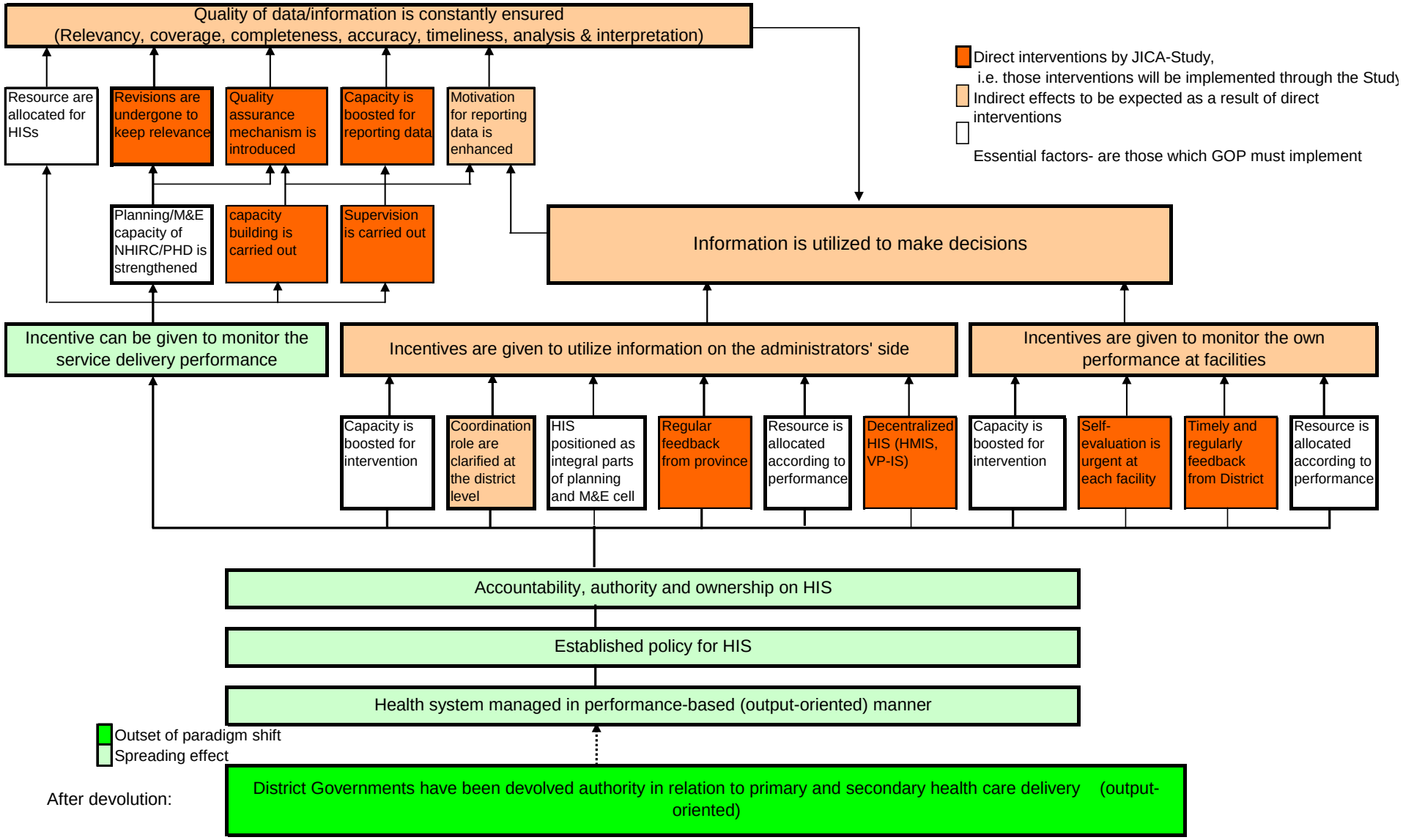


Remark: Numbers refer to the section of the text

Appendix 5 Figure 2.1 Problem tree

APPENDIX 6

FIGURE 2.2 OBJECTIVES TREE



Appendix 6 Figure 2.2 Objective tree

APPENDIX 7

MINUTES OF MEETINGS

SCOPE OF WORK

FOR

THE STUDY

ON

IMPROVEMENT

OF

MANAGEMENT INFORMATION SYSTEMS IN HEALTH SECTOR

IN

THE ISLAMIC REPUBLIC OF PAKISTAN

AGREED UPON BETWEEN

THE MINISTRY OF HEALTH

AND

THE JAPAN INTERNATIONAL COOPERATION AGENCY

Islamabad, August 7,2003

Mr. Matiullah Khan
Senior Joint Secretary
Ministry of Health
The Islamic Republic of Pakistan

Mr. Adachi Itsu
Leader of the Preparatory Study Team
Japan International Cooperation Agency
(JICA)

Mr. Muhammad Ashraf Khan
Joint Secretary
(Economic Affairs Division)
The Islamic Republic of Pakistan

I. INTRODUCTION

In response to the official request of the Government of Islamic Republic of Pakistan (herein after referred to as "the Government of Pakistan"), the Government of Japan decided to conduct the Study on Improvement of Health Management System (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan, will jointly undertake the Study with the authorities concerned of the Government of Pakistan.

The present document sets forth the Scope of Work with regard to the Study.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. to formulate a national action plan for the improvement of information systems to respond the information needs at the each level of the public health service management.
   and
2. to transfer relevant skills and technologies to personnel concerned with the Study

III. STUDY AREA

The Study will cover entire area of Pakistan.

IV. SCOPE OF THE STUDY

In order to achieve the objectives mentioned above, the Scope of Work for the Study shall cover the following items:

Phase 1: Review of the Present Condition

1. Situation analysis

(1) Situation analysis of health sector

a. Government administrative structure
b. Government policy relevant to health sector
c. Macroeconomics status of health sector
d. Current projects and programs in health sector
e. Disease patterns
f. Educational system of medical/non-medical personnel

(2) Situation analysis of health service management

a. Situation of health human resources
b. Situation of health facilities
c. Situation of budget allocation
d. Job description of related personnel
e. Supply of medicine and vaccine
f. Decision making and authorization flow of health sector

(3) Situation analysis of information systems in health sector

a. Identification of existing information systems in the health sector
b. Review of the identified information systems including indicators, management structure, government expenditure, data collection tools and feedback reports
c. Review of data quality
d. Linkage between information generated through information systems and management decision making
e. User perception on information systems
f. Review of data processing mechanism including computer applications
g. Capacity building of health workers on the identified information systems including review of training manuals and training status of health workers
h. Review of workload spent in information systems by various health staff

2. Development conceptual framework for information systems

(1) Development of conceptual framework

a. Management Needs assessment of indicators/variables
b. Identification of users of information systems
c. Determination extent of information systems to be covered in the Study

(2) Endorsement of the conceptual framework among organizations concerned

3. Basic design of a model information system for health sector

(1) Formulation of basic design

a. Identification of indicators
b. Defining of protocols/procedures
c. Designing of data collection tools
d. Designing of data transmission and reporting tools
e. Development of training manual
f. Formulation of a draft national action plan
g. Formulation of a plan of operational research

(2) Endorsement of the basic design among organizations concerned

Phase 2: Operational research of a model information system

1. Detail design of a model information system for health sector

2. Implementation of the operational research of the model information system

(1) Preparation of required materials
(2) Installation of the model information system including capacity building
(3) Monitoring and evaluation

3. Finalization of the national action plan based on results of the operational research

V. SCHEDULE OF THE STUDY

The Study will be carried out in accordance with the tentative schedule as attached in the Appendix. The schedule is tentative and subject to be modified when both parties agree upon any necessity that will arise during the course of the Study.

VI. REPORTS

JICA shall prepare and submit following reports in English to the Government of Pakistan.

1. Inception Report:

Thirty (30) copies will be submitted to at the commencement of the first work period in Pakistan. This report will contain the schedule and methodology of the Study as well.

2. Progress Report I:

Thirty (30) copies will be submitted at the time of sixth (6^{th}) months after the commencement of the first work period in Pakistan.

3. Progress Report II:

Thirty (30) copies will be submitted at the time of tenth (10^{th}) months after the commencement of the first work period in Pakistan.

4. Progress Report III:

Thirty (30) copies will be submitted at the time of thirteenth (13^{th}) months after the commencement of the first work period in Pakistan.

5. Interim Report I:

Thirty (30) copies will be submitted at the time of about sixteenth (16^{th}) months after the commencement of the first work period in Pakistan. This report will summarize the findings of the first stage of the Study and include the draft of the action plan and the guideline.

6. Progress Report IV:

Thirty (30) copies will be submitted at the time of about nineteenth (19^{th}) months after the commencement of the first work period in Pakistan.

7. Progress Report V

Thirty (30) copies will be submitted at the time of twenty third (23^{rd}) months after the commencement of the first work period in Pakistan.

8. Draft Final Report:

Forty (40) copies will be submitted at the end of the last work period in Pakistan. The Government of Pakistan shall submit its comments within one (1) month after the receipt of the Draft Final Report.

9. Final Report:

Fifty (50) copies will be submitted within one (1) month after the receipt of the comments on the

Ⅶ. UNDERTAKINGS OF THE GOVERNMENT OF PAKISTAN

1. To facilitate the smooth conduct of the Study; the Government of Pakistan shall take necessary measures:

(1) To permit the members of the Team to enter, leave and sojourn in Pakistan for the duration of their assignments therein and exempt them from foreign registration requirements and consular fees;
(2) To exempt the members of the Team from taxes, duties and any other charges on equipment, machinery and other material brought into Pakistan for the implementation of the Study;
(3) To exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the team for their services in connection with the implementation of the Study;
(4) To provide necessary facilities to the Team for the remittance as well as utilization of the funds introduced into Pakistan from Japan in connection with the implementation of the study;

2. The Government of Pakistan shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the team.

3. Ministry of Health, Government of Pakistan shall act as a counterpart agency to the Team and also as a coordinating body with other relevant organizations for the smooth implementation of the Study, on behalf of the Government of Pakistan

4. Ministry of Health, Government of Pakistan shall, at its own expense, provide the Team with the following, in cooperation with other organizations concerned:

(1) Security-related information on as well as measures to ensure the safety of the Team;
(2) Information on as well as support in obtaining medical service;
(3) Available data (including maps and photographs) and information related to the Study;
(4) Counterpart personnel;
(5) Suitable office space with necessary equipment; and
(6) Credentials or identification cards.

Ⅷ. CONSULTATION

JICA and the Ministry of Health shall consult with each other in respect of any matter that may arise from or in connection with the Study.

Tentative Schedule

Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Schedule	Δ IC/R					Δ PR/R				Δ PR/R			Δ PR/R			Δ IT/R

Months	17	18	19	20	21	22	23	24	25	26	27
Schedule			Δ PR/R				Δ PR/R			Δ DF/R	Δ F/R

IC/R: Inception Report
PR/R: Progress Report
IT/R: Interim Report
DF/R: Draft Final Report
F/R: Final Report

MINUTES OF MEETING
ON
SCOPE OF WORK
FOR
THE STUDY
ON
IMPROVEMENT
OF
MANAGEMENT INFORMATION SYSTEMS
IN
HEALTH SECTOR
IN
THE ISLAMIC REPUBLIC OF PAKISTAN

AGREED UPON BETWEEN

THE MINISTRY OF HEALTH

AND

THE JAPAN INTERNATIONAL COOPERATION AGENCY

Islamabad, August 7,2003

Mr. Matiullah Khan
Senior Joint Secretary
Ministry of Health
The Islamic Republic of Pakistan

Mr. Adachi Itsu
Leader of the Preparatory Study Team
Japan International Cooperation Agency
(JICA)

Mr. Muhammad Ashraf Khan
Joint Secretary
(Economic Affairs Division)
The Islamic Republic of Pakistan

In response to the request of the Government of Islamic Republic of Pakistan (hereinafter referred to as 'the Government of Pakistan'), Japan International Cooperation Agency (hereinafter referred to as 'JICA') dispatched a Preparatory Study Team (hereinafter referred to as 'the Team') headed by Mr.Adachi Itsu from 27 July to 16 August to discuss and determine the Scope of Work (hereinafter referred to as 'S/W') for the Study on Improvement of Management Information Systems in Health Sector in the Islamic Republic of Pakistan (hereinafter referred to as 'the Study').

During the stay in Pakistan, the Team visited several sites and related organizations, and had a series of discussions with the Ministry of Health and other authorities concerned about the Study.

As a result of the discussion, the JICA and Ministry of Health authorities concerned agreed to recommend to their respective Governments the matters referred to in the S/W. It was explained on behalf of the Ministry of Health that the approval of Economic Affairs Division, Government of Pakistan is essential for implementation of such programmes.

As a result of the discussions, both sides came to an agreement on the S/W, which was signed on August 7, 2003 (the list of officials attending the discussion is attached as Appendix).

In the course of finalizing the S/W, both sides agreed and confirmed the following points for the smooth implementation of the study.

1. Title of the study

Both sides agreed that the Study title should be "The Study on Improvement of Management Information Systems in Health Sector in the Islamic Republic of Pakistan."

2. Clarification of management information systems covered in this Study

The Study covers not only the National Health Management Information System but also other information systems related to the health sector.

3. Study period

Both sides agreed that the study period would be 27 months.

4. Management structure

Both sides agreed the importance of setting up the following management units for the smooth implementation of the Study.

(1) Counterpart team

Counterpart team will jointly work at all times with the Study team as core facilitators and focal points.

Senior Joint Secretary of the Ministry of Health is nominated as the head of counterparts. Other counterpart members of the team are required to be assigned from departments/units in the Ministry of Health and other organizations related to the Study, in advance of the commencement of the Study.

(2) Steering committee

Steering committee functions as an authority for determinations regarding prominent subjects. The committee is required to be organized in advance of the commencement of the Study.

The Senior Joint Secretary in the Ministry of Health is nominated as a chairperson of the committee and other members of the committee proposed to be from organizations as follows:-

i. Chief (Health) Planning and Development Division.

ii. The National Health Programme Managers under the Ministry of Health.

iii. DDG (P&D) Ministry of Health - Member/Secretary.

iv. Representative of Federal Bureau of Statistics.

v. Representative of Ministry of Population Welfare.

vi. Representative of Provincial P&D Departments/P&D Board.

vii. Programme Managers/Coordinator HMIS.

viii. Any co-opted members as desired by the Chairperson.

(3) Working groups

Working groups should function as a ground of discussions and making recommendations to the steering committee, regarding issues to be tackled in the course of the Study.

The members of the working groups are required to be nominated by the steering committee in adequate timing after the commencement of the Study.

5. Necessity of endorsement

Both sides agreed that the endorsements among organizations concerned the Study on the conceptual framework and the basic design of the model information systems should be assured as prerequisites to proceed to next stages of the Study.

6. Supporting to the National Health Information Resource Center

Both sides agreed that the expenses for logistic support to the project "National Health Information Resource Center," which is one of the National Projects, should not be borne in the Study.

7. Support to revision process of current NHMIS indicators

Both sides agreed that the revising process, to which National HMIS Cell in the Ministry of Health is currently making efforts, should be exceeded in parallel with the Study.

8. Counterpart training

Pakistani side requested that Pakistani counterpart personnel took advantage of training in other countries related to the Study to promote an effective technology transfer. Japanese side promised to convey the request to the JICA Headquarters.

9. Reports

(1) Both sides agreed that the Study reports should be made open to the public in order to achieve maximum use of the Study.

(2) Both sides agreed that all the Study reports should be principally prepared in English as indicated in S/W.

Attendance List

Pakistani side

Ministry of Health	
Mr. Ejaz Rahim	Secretary,
Mr. Matiullah Khan	Senior Joint Secretary
Dr.Fahim Arshad Malik	Deputy Director General
Dr.Zahid Larik	Deputy Director General (PHC)
Dr. Syed.M.Mursalin	Officer, National HMIS Cell
Dr. Muhammad Jamil Arshad	Research Officer
Ministry of Economic Affairs & Statistics	
Mr. Muhammad Ashraf Khan	Joint Secretary

Japanese Side

JICA Pakistan Office	
Mr. Hidekazu Tanemura	Assistant Resident Representative
Mr. Sohail Ahmad	Senior Programme Officer
JICA Preparatory Study Team	
Mr. Itsu Adachi	Mission: Leader
Dr. Youichi Horikoshi	Member: Disease Surveillance
Dr. Tairiku Hozumi	Member: GIS
Ms. Yutori Sadamoto	Member: Medical cooperation
Mr. Tomoya Yoshida	Member: US-Japan Collaboration
Mr. Tatsuya Ashida	Member: Study Planning/Project evaluation
Mr. Masami Watanabe	Member: Health and Medical Information System
Dr. Shigemi Tokeshi	Member: Medical System

MINUTES OF MEETING
ON
INCEPTION REPORT
FOR
THE STUDY
ON
IMPROVEMENT
OF
MANAGEMENT INFORMATION SYSTEMS
IN
HEALTH SECTOR
IN
THE ISLAMIC REPUBLIC OF PAKISTAN

AGREED UPON BETWEEN

THE MINISTRY OF HEALTH

AND

THE JAPAN INTERNATIONAL COOPERATION AGENCY STUDY TEAM

Islamabad, January 27,2004

Mr. Matiullah Khan
Senior Joint Secretary
Ministry of Health
The Islamic Republic of Pakistan

Mr. Hiroshi Abo
Team Leader
JICA Study Team

Mr. Muhammad Ashraf Khan
Joint Secretary
(Economic Affairs Division)
The Islamic Republic of Pakistan

Dr. Hidechika Akashi
Member of JICA Advisory Committee

In accordance with the Scope of Work (hereinafter referred to as 'S/W') as well as the Minutes of Meeting on the S/W signed between the Government of Islamic Republic of Pakistan (hereinafter referred to as 'the Government of Pakistan') and Japan International Cooperation Agency (hereinafter referred to as 'JICA') on 7 August 2003, for the Study on Improvement of Management Information Systems in Health Sector in the Islamic Republic of Pakistan (hereinafter referred to as 'the Study'), JICA dispatched a study team (hereinafter referred to as 'JICA Study Team') to Pakistan on 21 January 2004.

The JICA Study Team submitted the Inception Report (hereinafter referred to as 'IC/R') for the Study to the Government of Pakistan represented by Mr. Matiullah Khan, Senior Joint Secretary, Ministry of Health.

During the stay in Pakistan, the JICA Study Team had a series of discussions with the Ministry of Health and other authorities concerned about the Study, specifically the organization of a steering committee meeting on January 24, 2004 at Committee Room, Ministry of Health. Following points was concluded during these meetings. The list of officials attending the steering committee meeting is attached as Appendix I.

1. Inception Report

The JICA Study Team submitted 30 copies of IC/R and explained its contents. The Government of Pakistan has in principle accepted the IC/R.

2. Management Structure

Both sides confirmed and agreed to the setup of the following management structure for the smooth implementation of the Study.

(1) Steering Committee

The Government of Pakistan organized the Steering Committee, which will be responsible for authorization and determination regarding prominent subjects of the Study.

The Steering Committee will be chaired by Mr. Matiullah Khan, the Senior Joint Secretary of the Ministry of Health .

The nominated member list of the Steering Committee is shown in Appendix II.

(2) Counterpart Team

The Government of Pakistan organized the counterpart team, which will jointly work at all times with the Study Team.

The main counterpart will be chaired by Dr. Majeed Rajput, the Executive Director, the National Health Information Resource Center, the Ministry of Health,

The nominated member list of the Counterpart Team is shown in Appendix II.

(3) Working groups

Working groups should function as a ground for discussions and making recommendations to the Steering Committee, regarding issues to be tackled in the course of the Study.

Members of the working groups will be nominated by the Steering Committee as required by the Study.

3. Decisions of Steering Committee Meeting.

Pakistani side thanked for the commencement of the Study and following points were mutually agreed by both sides. .

1. Inception Report prepared by the JICA Study Team should be circulated to stakeholders for the study. Feedback comment should be submitted to the Study Team within ten days after the circulation of the Inception Report

2. Following relevant organizations will be considered for additional Committee Members to reflect the scope of the Study.
   - Ministry of Education (EMIS)
   - UNAIDS
   - UNFPA
   - Representatives from National Programs like TBCP, HIV/AIDS
   - Pakistan Medical Association
   - Provincial Health Departments
   - Narcotics Control Department
   - Vital Registration/National Database and registration Authority (NADRA)

3. Pakistani side submitted the member list of the counterpart team, which is referred to the Appendix II
   Both sides confirmed the active participation of the members in the Study. If it is difficult for the appropriate participation, the member is required to depute relevant personnel.

4. Situation analysis must be designed to provide sufficient information for development of new health management information system. The Study Team and Pakistani side agreed to determine details of situation analysis at the early stage of the Study.

5. Close collaboration among stakeholders is required and must be established.

6. Efforts would be made to obtain the ownership of the Provincial Health Department during the launch of the development study and subsequent implementation of Master Plan.

7. A detailed action plan alongwith costs availability of funding needs to be developed as early as possible to enable Pakistani side to take further course of action.

8. Information of the private sector and hospitals will be considered to be included in the situation analysis of the Study.
   The extent of the model HMIS and tasks of the study will be determined based on the results of the situation analysis by the Steering Committee.

9. The design and structure of the new HMIS should consider the recent changes in the government system, such as the decentralization and formation of district governments as well as the devolution process.

10. The current fragmented and vertically operated Health Information Systems should be considered to be integrated in the new HMIS.

11. Further discussion about the utilization of the product of the Study should be made in the process of the Study.

The Study Team agreed to engage in further discussion during the study and thanked the Ministry of Health for their efforts for providing enabling environment for the smooth start of the Study.

Appendix I

List of Participants of the Steering Committee Meeting.

Pakistani Side

Ministry of Health

1. Mr. Matiullah Khan	Senior Joint Secretary
2. Dr. Abdul Majid Rajput	ED-NHIRC
3. Dr. Fahim Arshad Malik	Deputy Director General (P&D)
4. Dr. Syed.M.Mursalin	National HMIS Officer, National HMIS Cell.
5. Mr. Muhammad Aslam	Directorate of Malaria Control Program
6. Dr. S. Raza Zaidi	National Program for PHC & FP
7. Dr. Altaf Bosan	National EPI Program, NIH
8. Dr. Hasan Sadiq	National TB Control Program
9. Dr. Muhammad Imran	National AIDs Control Program

Planning and Development Division

10. Dr. G. A. Abbassi	Deputy Chief (Health). P&D Division,

Provincial Health Departments

11. Mr. Anwar Latif	Asst. Chief (Health) P&D Department, Punjab
12. Dr. Shahid Amin	Provincial HMIS Coordinator, Punjab
13. Dr. Farooq Azam Jan	Provincial HMIS Coordinator, Balochistan

International Donors

14. Dr. Faizullah Kakar	World Health Organization, Islamabad
15. Dr. Rafah Aziz	UNICEF, Islamabad

Japanese Side

JICA Pakistan Office

16.Mr. Hidekazu Tanemura	Assistant Resident Representative
17.Mr. Sohail Ahmad	Senior Programme Officer

JICA Advisory Committee

18.Dr. Hidechika Akashi	Member of JICA Advisory Committee
19.Dr. Dairiku Hozumi	Member of JICA Advisory Committee

JICA Headquarters

20.Mr. Tatsuya Ashida	Member of JICA Headquarters

JICA Study Team

21.Mr. Hiroshi Abo	Team Leader, JICA Study Team
22.Prof. Toshimasa Nishiyama	Member of JICA Study Team
23.Mr. Hirotsugu Aiga	Member of JICA Study Team
24.Mr. Masashi Akiho	Member of JICA Study Team
25.Dr. Ghayur Ahmad	Member of JICA Study Team
26.Mr. Sadatoshi Matsuoka	Member of JICA Study Team

Appendix - II

List of Steering Committee Members
(Nominated by Ministry of Health)

Senior Joint Secretary (F&D), Ministry of Health
ED, National Health Information Resource Center, (NHIRC)
Chief (Health) Planning and Development Division
The National Health Programme Managers under the Ministry of Health
Deputy Director General (P&D), Ministry of Health - Member/Secretary
Representative of Federal Bureau of Statistics
Representative of Ministry of Population Welfare
Representative of Provincial P&D Departments/P&D Board
Programme Managers/Coordinator HMIS
Any co-opted members as desired by the Chairperson

List of Counterpart Team
(Nominated by Ministry of Health)

Federal Government

Dr. Abdul Majid Rajput	ED, National Health Information Resource Centre
Dr. S. M. Mursalin	National HMIS Officer
Dr. Fahim Arshad Malik	Dy. Director General (Plg & Dev), MOH
Dr. Zahid Larik	National Programme Manager, NP for FP & PHC
Dr. Faizullah Kakar	Medical Officer/ Epidemiology, WHO
Dr. Shafiquddin,	Chief (Health) Planning & Dev Div.
Mr. Arshad Jamil	Research Officer, MOH

Provincial Government

Dr. Shahid Amin	Provincial HMIS Coordinator, Punjab
Dr. M. Iqbal Memon	Provincial HMIS Coordinator, Sindh
Dr. Shaheen Afridi	Provincial HMIS Coordinator, NWFP
Dr. Farooq Azam Jan	Provincial HMIS Coordinator, Balochistan