

# Reorganization Plan for the Egyptian National Information Center for Health and Population

*June 1998*

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Partnerships  
for Health  
Reform



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- ▲ *improved incentives within health systems to encourage agents to use and deliver efficient and quality health services; and*
- ▲ *enhanced organization and management of health care systems and institutions to support specific health sector reforms.*

*PHR advances knowledge and methodologies to develop, implement, and monitor health reforms and their impact, and promotes the exchange of information on critical health reform issues.*

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# Abstract

With the objective of creating a national information center that serves the data collection, production, and dissemination needs of the Egyptian Ministry of Health and Population, in January 1998 the Minister of Health and Population mandated the reorganization plan described herein. Design of the plan was the work of the director general of the existing Information and Documentation Center and the Partnerships for Health Reform, a United States Agency for International Development project. The plan employs conventional tools of organizational analysis to produce a new National Information Center for Health and Population (NICHP) with clearly defined objectives, structure, staffing and position descriptions, space requirements, and relationships between the NICHP and the governorate health directorates. All components are designed so as to improve the quality, timeliness, and access of health care system data that will support informed decision making within the Ministry.

The contents of this technical report were also published in the form of a Ministerial Decree from His Excellency, Professor Ismail Sallam, as the initiation of the reorganization management process.

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# Acronyms

<b>DHIC</b>	District Health Information Center
<b>HDIC</b>	Health Directorate Information Center
<b>HIS</b>	Health Information Services
<b>HRD</b>	Human Resources Development
<b>IDC</b>	Information and Documentation Center
<b>IM</b>	Information Management
<b>IT</b>	Information Technology
<b>ITS</b>	Information Technology Services
<b>MOHP</b>	Ministry of Health and Population
<b>NICHP</b>	National Information Center for Health and Population
<b>NHIRC</b>	National Health Information Resource Center
<b>PHR</b>	Partnerships for Health Reform Project



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# Acknowledgments

The design of a reorganization of the existing Information Center into a customer-oriented National Information Center for Health and Population required collaboration with many talented staff and review of material produced prior to this report. The success of this analysis owes a debt of thanks to those who have gone before on the road to improving health information in Egypt. Specific thanks are due to counterparts in the Ministry of Health and Population who were generous with their time and dedicated to the cause of quality improvement: Dr. Sohier Botrous and Dr. Hala Safwat. Thanks also are due to Dr. David Larson from the U.S. National Center for Health Statistics; Dr. A.K. Nandakumar, senior technical advisor, Harvard School of Public Health; and Dr. Gary Gaumer, vice president for health and technology, Abt Associates Inc. Patient administrative support and coordination were provided by Kathleen Poer and Julie Urban.

Special thanks are also due to His Excellency Professor Ismail Sallam, Minister of Health and Population, for taking on the role of agent of change in support of data quality improvement.



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# Executive Summary

In early 1998, the Egyptian Minister of Health and Population appointed a new director general to the Information and Documentation Center (IDC) of the Ministry of Health and Population (MOHP) and created a working committee to assess the existing center and make recommendations for its future operation. The intention was to integrate a variety of information systems and information technology that had been introduced into the MOHP and governorate health directorates into a significantly improved, centrally coordinated information system based on appropriate information technology and capable of supporting major health sector reform initiatives.

In conjunction with the assessment, the Minister asked the Health Information Systems advisor of the United States Agency for International Development-sponsored Partnerships for Health Reform (PHR) to contribute to an overall plan to reorganize the IDC and expand its role within the Ministry. There was agreement to establish a new identity for the center by creating a new name, the National Information Center for Health and Population (NICHP). The NICHP will have four departments: Information Technology Services, Health Information Services, Human Resources Development, and the new National Health Information Resource Center (NHIRC). The NHIRC will house health data that will be produced for use by MOHP departments, outside health projects, other ministries, and the general public. The NICHP will be the launch platform to improve the quality, timeliness, and access of data from the health care delivery system of Egypt. This report describes the proposed restructuring of the NICHP.

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## NICHP Mission

The National Information Center for Health and Population now is the primary information services unit in the Ministry of Health and Population. It is responsible for the development and maintenance of a national MOHP information management and information technology system. The authority of the NICHP includes national initiatives related to information management systems, information technology, and consolidated data reporting services within the scope of the MOHP. All other units of the MOHP must inform, coordinate, and cooperate with the NICHP on all matters concerning information management systems and information technology.

The primary objectives of the NICHP in constructing a MOHP national standard structure for an information management and information technology system are as follows:

To be the integration point within MOHP for health and health-related data and to be the central repository, or point of access, for all national health and health-related data;

To coordinate the design and development of integrated, effective, and appropriate information systems across the MOHP;

To promote the ready availability of and access to health information to support all of the organizational divisions of MOHP and the new health care reform initiatives;

To support the information technology planning functions of the MOHP; and

To establish cooperative relationships and information sharing with the governorate health directorates to improve their usable health information.

To achieve its mission, the NICHP is responsible for the following activities:

Planning, designing, implementing, and supporting data standards and appropriate information technology;

Establishing data management and information technology standards for the MOHP information system;

Training representatives from governorate health information centers including representatives from the district levels;

Designing, developing, and maintaining an executive information system that will be used by MOHP managers;

Collecting, processing, validating, and analyzing necessary data;

Creating and maintaining cost-effective data- and results-sharing mechanisms for decision makers;

Creating cost-effective and appropriate training mechanisms in the MOHP and the governorates;

Supporting the top-level ministerial network;

Coordinating and supporting health information centers in governorate health directorates down to the district level;

Organizing, building, and maintaining a national library of public health information resources; and

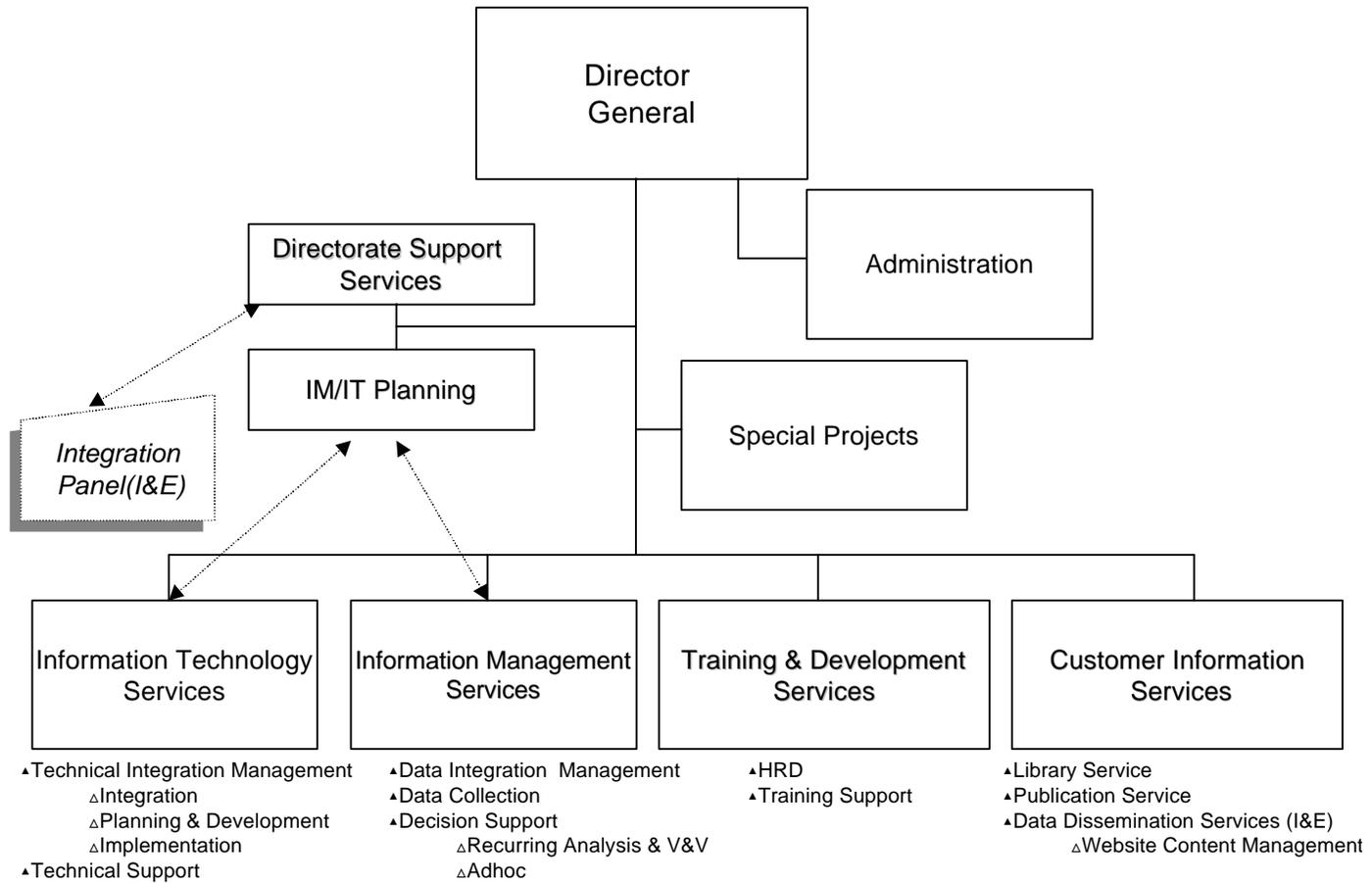
Providing public access to relevant public health information through several modalities including printed publications, Internet Web site, and other media.

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## **NICHP Organizational Structure**

The NICHP will be composed of the following four major departments to support its various missions: Information Technology Services, Health Information Services, Human Resources Development, and a National Health Information Resource Center. The summary-level organizational chart is presented below.

# NICHP





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# 1. Introduction

During the first quarter of 1998, significant efforts occurred within the area of health information systems in the Egyptian Ministry of Health and Population (MOHP). In January, His Excellency Dr. Ismail Sallam, Minister of Health and Population, appointed a new director general for the Information and Documentation Center (IDC) and issued a ministerial decree to establish a working committee to work with the director general. The Minister's first request to the committee was to conduct an assessment of the IDC and make recommendations on the future role of this directorate.

The MOHP seeks to transform the IDC into an information system organization capable of supporting major health sector reform initiatives and a significantly improved information system based on appropriate information technology. To date, information systems and information technology have been introduced into the MOHP and governorate health directorates by a variety of donor-funded projects and by the independent initiative of various directors. However, these activities remain fragmented and lack coordination at the central level. Many useful information system components have been produced using a variety of conflicting technical standards including differences in operating systems, software platforms, technical programming specifications, hardware, and telecommunications standards. Considering this current situation, it is difficult to integrate systems into an uniformed structure and to provide cost-effective technical support. The MOHP plans to increase its use of information technology and construct an integrated information system drawing much of its data from governorate health directorates.

In conjunction with the assessment process, the Minister requested the director general and the Health Information Systems advisor of the United States Agency for International Development-sponsored Partnerships for Health Reform (PHR) to work on an overall plan to reorganize the IDC and expand its role within the Ministry. There was agreement to establish a new identity for the center by creating a new name, the National Information Center for Health and Population (NICHP). The NICHP will have four departments—Information Technology Services (ITS), Health Information Services (HIS), Human Resources Development (HRD), and the new National Health Information Resource Center (NHIRC)—to standardize, collect, analyze, and disseminate health data for use by MOHP departments, outside health projects, other ministries, and the general public. The NICHP will be the launch platform for the director general's major initiative to improve the quality, timeliness, and access of data from within the Ministry.

The following sections of this paper discuss at greater length the NICHP mission and the organizational structure and responsibilities of its four departments. It goes on to detail minimal staffing needs as well as responsibilities of each position, and illustrates floor plans for the space that will house the NICHP. It concludes by looking at the relationship between the central and district (governorate) levels of this new health information system.

As this report is written, some of the NICHP design is already in place. Others elements are still to be implemented.

The contents of this technical report were also published in the form of a Ministerial Decree from His Excellency, Professor Ismail Sallam, as the initiation of the reorganization management process.



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## 2. NICHP Mission

As the primary information services unit in the Ministry of Health and Population, the new National Information Center for Health and Population is responsible for the development and maintenance of a national MOHP information management (IM) and information technology (IT) system. Its authority includes national initiatives related to IM systems and technology, as well as consolidated data reporting services within the scope of the MOHP. All other MOHP units must inform, coordinate, and cooperate with the NICHP on matters concerning information management systems and information technology.

The primary objectives of the NICHP in constructing a MOHP national standard structure for information management and information technology system are as follows:

To be the integration point within MOHP for health and health-related data and to be the central repository, or point of access, for all national health and health-related data;

To coordinate the design and development of integrated, effective, and appropriate information systems across the MOHP;

To promote the ready availability of and access to health information to support all of the organizational divisions of MOHP and the new health care reform initiatives;

To support the information management technology planning functions for the MOHP;

To establish cooperative relationships and information sharing with the governorate health directorates to improve their usable health information.

To achieve its mission, the NICHP is responsible for the following activities:

Planning, designing, implementing, and supporting information management and appropriate information technology;

Establishing data management and IT standards for the MOHP information system;

Collecting, processing, validating, and analyzing health information data;

Creating and maintaining cost-effective data- and results-sharing mechanisms for decision makers;

Designing, developing, and maintaining an Executive Information System that will be used by MOHP managers;

Supporting the top-level ministerial network;

Coordinating and supporting health information centers in governorate health directorates down to the district level;

Creating cost-effective and appropriate training mechanisms in the MOHP and the governorates;

Organizing, building, and maintaining a national library of public health information resources; and

Providing public access to relevant public health information through several modalities including printed publications, Internet website, and other media.

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## 3. NICHP Organizational Structure

The NICHP comprises the following four major departments:

Information Technology Services (ITS)

Health Information Services (HIS)

Human Resources Development (HRD)

National Health Information Resource Center (NHIRC)

Figures 1 and 2 depict the organizational chart and the functional responsibilities of the NICHP. The following sections describe the responsibilities of each department.

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### 3.1 Information Technology Services Department

The Information Technology Services department supports the use of information technology in the Ministry by coordinating and operating the computing and communications infrastructure, including all elements of an integrated health information system. Information technology includes computers, printers, other peripheral devices, software, network wiring, network devices, and all other hardware and software components that are part of the MOHP computing platform.

The ITS department's primary responsibilities are as follows:

Set IT standards;

Plan, build, operate, and maintain the computing infrastructure;

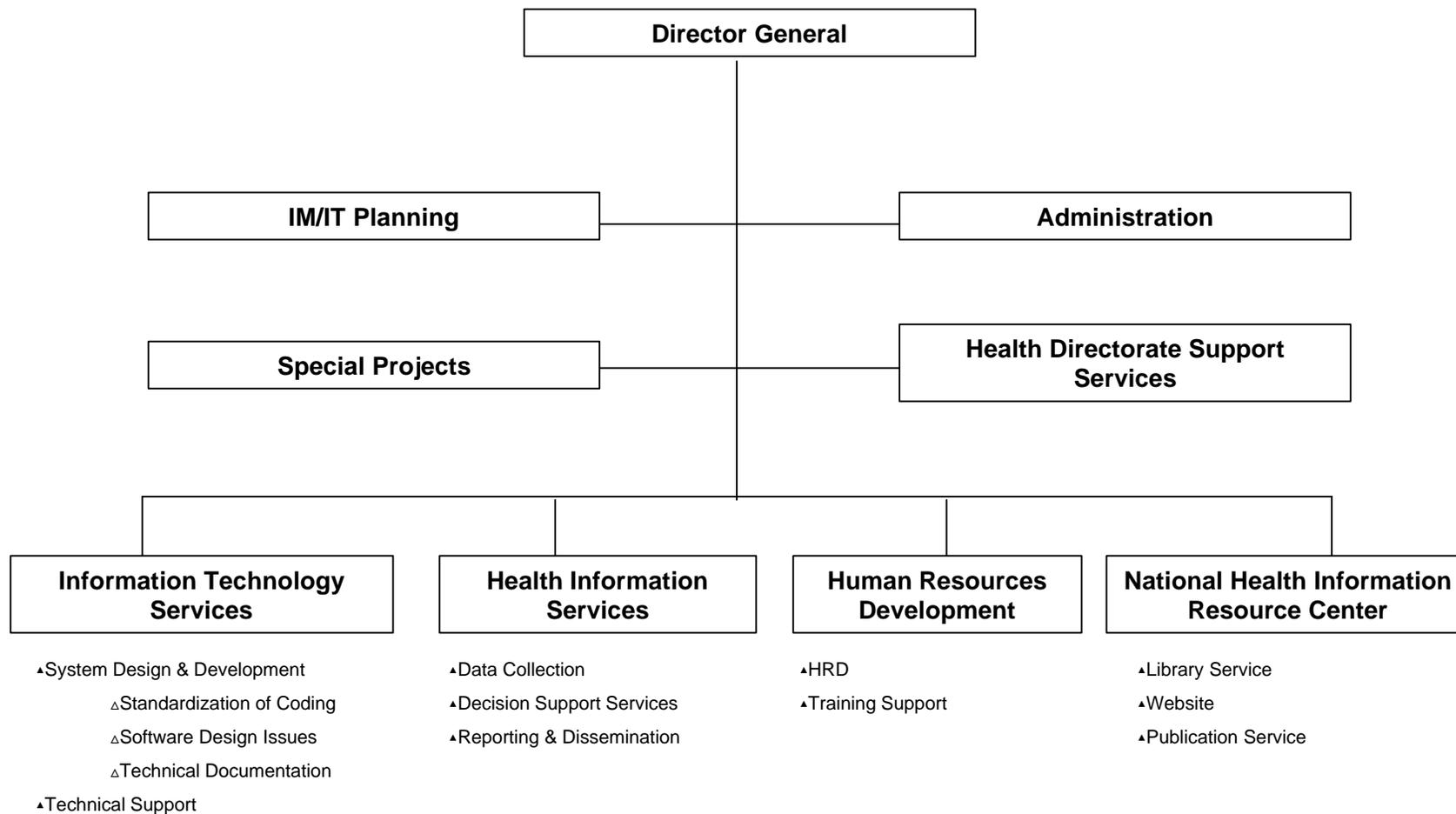
Provide or arrange for IT technical support for the MOHP headquarters;

Establish and maintain electronic communication links with the governorates and the Internet;

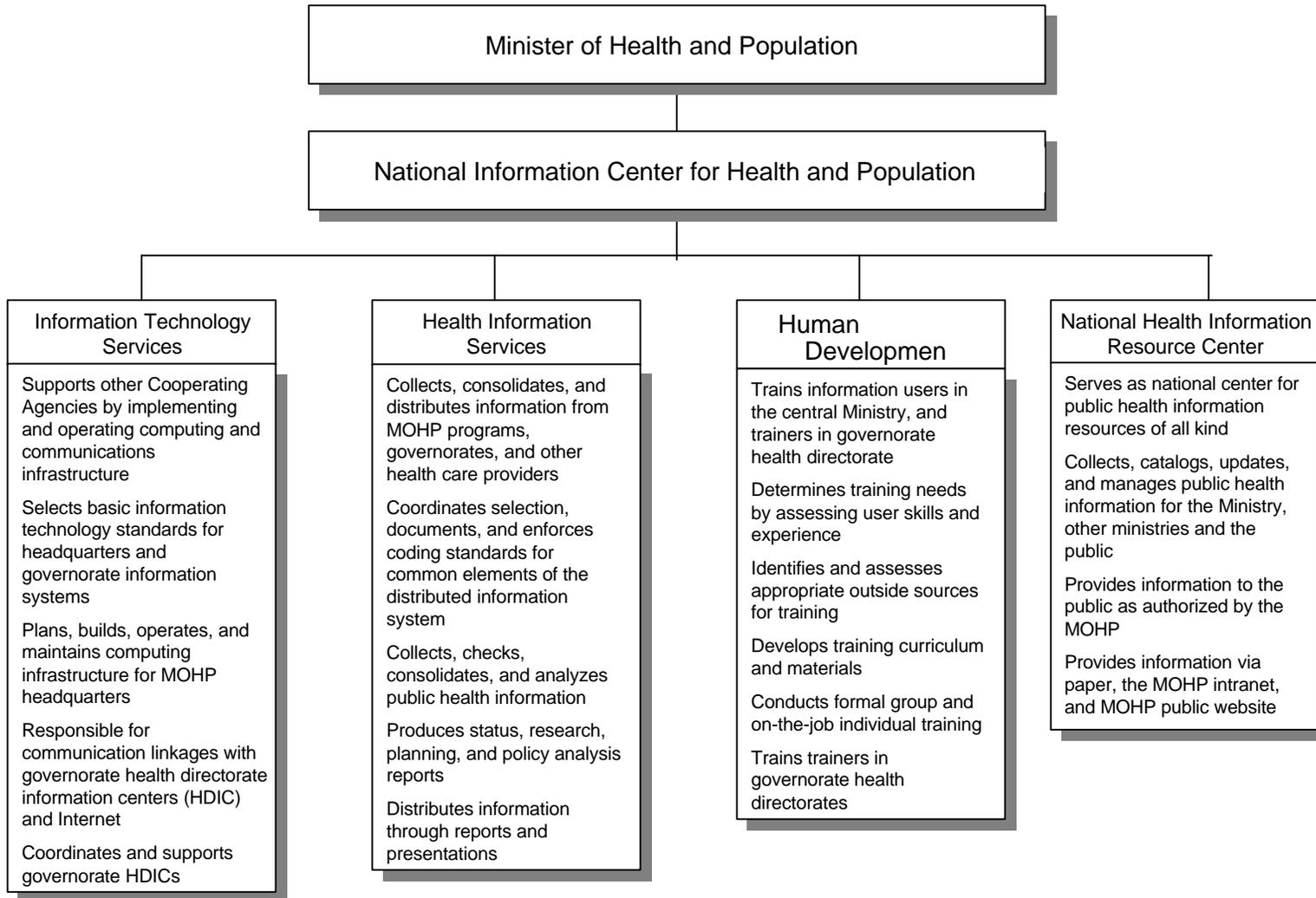
Coordinate with and integrate relevant information technology components of donor-funded projects; and

Coordinate with and indirectly support computing in governorate health directorates.

**Figure 1. Organizational Structure of the NICHP**



**Figure 2. Functional Responsibilities of the NICHP**



### **3.1.1 Information Technology Standards**

Good, well-documented and well-maintained standards reduce costs and make it possible to integrate information system components. The role of the ITS is to set basic information technology standards for MOHP headquarters and integrated governorate information system components.

ITS is responsible for developing, documenting, and maintaining IT standards in the following areas:

ITS technical documentation

Computer and network hardware and software

Communication protocols

Database platform

Network security

### **3.1.2 Computing Infrastructure**

#### **3.1.2.1 Hardware**

ITS is responsible for designing, building, operating, and maintaining all computer and networking hardware in the MOHP headquarters. Computer and networking hardware includes:

Personal computers

Printers

Scanners and other peripherals

Network servers

Network communications equipment

Network wiring plant

UPS (uninterruptible power supply) and other power protection equipment

All other equipment directly related to the computing platform

ITS is responsible for the following:

Designing an integrated system of compatible components meeting the needs of the Ministry;

Advising the Ministry on procurement needs and specifications;

Performing routine operations, including backing up information on network servers;

Performing routine equipment maintenance;

Planning for equipment upgrades and replacements;

Doing disaster recovery planning and implementation;

Doing data security planning and implementation; and

Monitoring the work of companies contracted for hardware installation, configuration, maintenance, operation, and other tasks.

### **3.1.2.2 Software**

ITS is responsible for meeting the software needs of the MOHP, whether through commercially packaged software or custom-developed software.

Software includes the following:

Personal computer system software;

Office automation software;

Other personal computer applications;

Networking software;

Network server software, including database, electronic mail, Web, communications, and others;

Administrative software, including personnel, payroll, accounting, and others; and

Health information system software, including the Budget Tracking System, Executive Information System, and other components of an integrated system.

ITS is responsible for the following:

Assessing the software requirements of the MOHP;

Evaluating and selecting commercial software packages that may meet MOHP requirements;

Installing and configuring software;

Identifying and resolving software problems;

Helping the MOHP select and monitor commercial software developers as required to meet MOHP requirements;

Designing and constructing custom software applications as required to meet MOHP requirements; and

Advising the Ministry on the need for software upgrades and new software.

ITS will work closely with the Information Services department to develop and maintain an Intranet Web site for the MOHP, Executive Information System, and HIS systems.

### **3.1.3 Technical Support Section**

ITS will directly support information technology in the MOHP headquarters. This means diagnosing and resolving problems with all computer hardware and software used in the MOHP headquarters. The ITS staff may provide these services directly, or may monitor and manage the work of vendors and service companies contracted to provide these services.

ITS will develop, document, and implement a comprehensive plan for maintaining all computer and networking equipment used in the MOHP headquarters.

ITS will establish and operate a “Help Desk” to provide support to users in the central MOHP headquarters. Users will be encouraged to request technical assistance from the Help Desk by telephone or electronic mail with any hardware or software problems. ITS personnel will rotate responsibility for the Help Desk so that all ITS personnel have experience helping users to resolve technical problems.

ITS will work with governorate health directorates to develop and document effective arrangements for maintaining computer and networking equipment used in governorate health directorates. ITS will advise the Information Services and Human Resources Development departments concerning related training needs in governorate health directorates.

### **3.1.4 Communication Links**

ITS will design, establish, and maintain electronic communication links with governorate health directorates. These links will be used to transfer information between the governorates and MOHP headquarters. ITS will determine available telecommunications links and select from among the alternatives based on the size and frequency of data transfers. Data may be collected by transferring data on diskettes, dial-up telephone connections, leased dedicated telephone lines, VSAT stations, or other methods.

### **3.1.5 Coordination**

ITS coordinates its work closely with the other three departments of the NICHP and is directly responsible for supporting the use of information technology by all other departments of the central Ministry.

ITS is responsible for coordinating the use of information technology by all projects in the MOHP to ensure that results can be integrated into the Ministry’s information system architecture.

ITS is responsible for coordinating the use of information technology by governorate health directorates to ensure they are an integral part of the national health information system. ITS will work with governorate health directorates to establish technical support arrangements to keep information technology running smoothly in the governorates.

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## **3.2 Health Information Services Department**

The Health Information Services department supports the management and use of national health care information within the Ministry by coordinating and managing a standard information lexicon, data collection verification and analysis, and presentation and dissemination of data and results. HIS is responsible for the following activities:

Creating and managing a standard health care data structure as an integrated standard across the MOHP;

Collecting, validating, consolidating, and processing data needed for routine reporting and analysis;

Analyzing data statistically to produce information useful in evaluating MOHP programs and policies;

Using information from data analysis to produce routine reports, special issue briefs, presentations, and other paper and electronic publications; and,

Distributing routine reports, special issue briefs, and other publications physically or electronically to MOHP decision makers, including those in governorate health directorates.

### **3.2.1 Standardized Structure for Health Care Information**

HIS is responsible for coordinating and managing the creation of a standardized structure for health care information. The standard structure for health care information is the mechanism by which the definition, usage, and construction of health care information are integrated across the users of MOHP data. It is by this activity that consensus is developed that creates a common language for the discussion and analysis of health care information. This activity impacts both manual and automated data processes. These standards should make it easier to consolidate and cross-reference data from different sources. HIS should coordinate the selection of standards with relevant departments, projects, and external organizations.

HIS will encourage use of a common coding standard for Arabic characters throughout the health information system.

The ITS department will directly support HIS with respect to issues of design and implementation of appropriate data reporting mechanisms. HIS will also coordinate with the Resource Center with respect to creating access to HIS products.

### **3.2.2 Data Collection**

HIS is responsible for coordinating collection of data from governorate health directorates. It will work with governorate health directorates to establish effective and reliable data collection, processing, and transmission procedures. HIS is responsible for ensuring that governorate health directorates have the hardware, software, and training necessary to provide data required for analysis. HIS will advise the ITS department concerning related information technology needs, and the Human Resources Development department concerning related training needs.

HIS is also responsible for collecting data from other parts of the public health system, including the Health Insurance Organization, Curative Care Organization, Family Planning Project, and other

sources. HIS may undertake special surveys to collect data necessary to produce information required by MOHP decision makers.

HIS will design and test forms and will work to gain official acceptance for changes in forms related to other government ministries. It will make arrangements with governorate health directorates for printing and distributing forms, and will work with the HRD department to make sure providers know how to use the forms.

HIS will work with governorate health directorates and the ITS department to implement effective form collection, data entry, and data transmission systems.

HIS will work with the ITS department and external software providers to ensure data produced by commercial software packages can be integrated into the health information system. It also will work with software providers and HRD to make sure users know how to operate these software packages.

### **3.2.3 Data Quality Assurance**

HIS will design and implement a multilevel data quality assurance system for the health information system. This should include use of multiple data sources where practical, field-level, form-level, and dataset validation, logic, and consistency checks, and periodic sample data verification at the source.

### **3.2.4 Data Analysis**

HIS will conduct statistical analyses of data to produce routine indicators and reports. HIS will conduct special analyses to help decision makers answer questions not addressed by routine reporting. Analyses conducted by HIS will use scientific methods widely accepted by the public health profession to extract the most useful and revealing information from data. These analyses will use data collected by the health information system, from special surveys, and from other related government agencies.

### **3.2.5 Information Reporting and Dissemination**

HIS will work with decision makers in governorate health directorates and MOHP headquarters to design routine reports presenting the most useful data in the most useful form for decision makers.

HIS will work with decision makers in seminars and individually to interpret the results of HIS analyses. In these exercises HIS will explain the methods used for collecting and analyzing data, the degree of uncertainty in the results, and alternative ways to depict and interpret them.

HIS will distribute updated routine reports according to the schedule established by the MOHP. It will distribute routine reports and special issue briefs to all relevant decision makers in governorate health directorates and MOHP headquarters. This may be done by distributing printed documents and by publishing information on an MOHP Intranet Web site.

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### **3.3 Human Resources Development Department**

The Human Resources Development department is responsible for training data providers, data processors, system designers, and end-users of the National Information Center information system. In this context, providers are persons who provide data by filling out forms or entering data into computers. Data processors are persons who consolidate, manipulate, and analyze data after it has been entered into a computer. System designers are persons who coordinate the creation of standards and integration of the NICHP information system. End-users are persons who use information from the system for managing the system or evaluating policies.

HRD will work with the ITS and the HIS departments to periodically assess training needs and to design training activities in health directorates and MOHP headquarters. HRD is responsible for developing and implementing a comprehensive training program to support the operation and use of the health information system.

HRD will directly provide or arrange for training of information system users in MOHP headquarters. It will evaluate locally available sources of training services and use them as appropriate for training MOHP headquarters and governorate health directorate personnel.

The effectiveness of the functional activity of the HRD is crucial to the success of the NICHP information system. Therefore, various approaches to training content design and modalities of delivering training will be considered. It is expected that initial training will need to focus on train-the-trainer activities both within the MOHP headquarters and in the governorate health directorates. It may also be possible to develop training mentor cells for various topics related to the effective functioning of the information system. These cells would be dedicated training resources on specific issues that have been identified as high-need across the MOHP. Training may also be provided formally in classroom setting, or individually on-the-job.

HRD is responsible for developing exercises and documentation for use in training courses and approving training material provided by outside sources.

The ITS department directly supports HRD's use of information technology. HRD will work closely with ITS to determine the most effective uses of resources of information technology for training activities.

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### **3.4 National Health Information Resource Center**

The National Health Information Resource Center is responsible for collecting, organizing, and maintaining current and historical information related to the public health care system of Egypt.

NHIRC will conduct an initial inventory to identify and catalog information resources in MOHP headquarters, in MOHP projects, and in related government organizations, including the Health Insurance Organization, the Curative Care Organization, and the Central Agency for Public Mobilization and Statistics.

NHIRC will collect, classify, catalog, and organize as much information on public health and health care in Egypt as it is cost-effective to do. NHIRC will arrange this collection to make it as accessible as possible to MOHP decision-makers.

NHIRC will encourage decision makers to use this facility by using the MOHP Internet Web site as well as other media to publicize what information products are available. As a vehicle of information exchange, NHIRC will be responsible for managing and coordinating update of content on the MOHP Internet Web site.

NHIRC is responsible for drafting memoranda of agreement with other government agencies for exchanging or providing information related to public health. NHIRC will work with other departments in MOHP headquarters to design, prepare, and disseminate information for the public about the health care system of Egypt.

NHIRC will work closely with the HIS department to add to its collection of useful information and to determine deficiencies that need to be addressed. NHIRC will work closely with ITS to determine appropriate and effective uses of information technology for the Resource Center.

## 4. NICHP Staffing

This section presents preliminary minimum staffing requirements for the NICHP; they total 92 positions. These estimates are based on the observation of the level of effort required to support similar national organizations and rough assessments of the workload of the NICHP over the next few years. These staffing estimates, therefore, are equivalent to rough order of magnitude of staff requirements. As the work of the NICHP progresses, it will be possible to re-calibrate these preliminary staffing estimates.

**Table 4.1. Staffing for NICHP Administration**

Staff Position	Needs
Director General	1
Administrative Support to Director General	1
Office Administrative Support	2
Administrative Support to Departments	3
Minimum Total	7

**Table 4-2. Staffing for IM/IT Planning/Health Directorate Support Services/Special Projects**

Staff Position	Needs
Information Management Planning	2
Information Technology Planning	2
Health Directorate Support Services	8
Minimum Total	12

**Table 4-3. Staffing for Information Technology Services Department**

Staff Position	Needs
Department Head	1
Network System Administrator	2
Hardware Technician	10
Graphic User Interface Design Specialist	1
Database Programmer	5
User Support Coordinator	1
Minimum Total	20

**Table 4-4. Staffing for Health Information Services Department**

<b>Staff Position</b>	<b>Needs</b>
Department Head	1
Information Standards Manager	1
Information Standards Assistant	5
Data Analysis Manager	1
Data Analysis Assistants	10
Data Collection Manager	1
Data Collection Assistants	5
Minimum Total	24

**Table 4.5 Staffing for Human Resources Development Department**

<b>Staff Position</b>	<b>Needs</b>
Department Head	1
Training Coordinator	1
Training Needs Assessor	3
Staff Trainer	5
Training Assistant	5
Minimum Total	15

**Table 4-6. Staffing for National Health Information Resource Center**

<b>Staff Position</b>	<b>Needs</b>
Department Head	1
Resource Center Coordinator	2
Editorial /Documentation Assistants	5
Web site Coordinator	1
Resource Center Assistants	5
Minimum Total	14

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## 5. NICHP Position Descriptions

The following job descriptions distinguish between two distinct kinds of authority: supervisory authority and functional authority. Supervisory authority refers to official supervision, accountability, and reporting authority. It is the authority of supervisors over subordinates with respect to evaluation and discipline. Functional authority refers to the authority to establish technical and procedural standards. This authority is assigned to individuals and groups with technical expertise in specific areas.

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### 5.1 Director General

The NICHP will be the launch platform for the director general's major initiative to improve the quality, timeliness, and access of data from the health care delivery system of Egypt. The director general will function as the chief information officer of the MOHP. The director general is responsible for achieving the overall mission of the NICHP and has supervisory authority for all personnel within the center. More specifically, the director general will carry out the following duties:

Meet the information requirements of the administration

Coordinate the production, management, and distribution of information

Coordinate with the executive leadership of the Ministry

Supervise main functions of the department

Proactively participate in liaison and marketing activities furthering the goals of IM/IT standards

Measure the performance of personnel, software, and hardware

Supervise duties of subordinates

Approve plans draft by subordinates

Approve new installations

Develop and execute long-term strategic information system plans

Evaluate new technical developments in relation to information needs and goals

Project data processing resource requirements and costs

Ensure successful completion of projects within budget

Ensure the physical security of the NICHP

Develop and execute an information systems disaster recovery plan

Develop a policy and procedures manual for the NICHP

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## **5.2 Department Head**

Each NICHP department will have a manager appointed by the director general. The department manager is responsible for carrying out the mission of the department and has supervisory authority for all personnel within the department. Each department manager reports directly to the director general. Specific department manager duties include the following:

Supervise main functions of the department

Draft short-term work plans for the department

Construct and monitor the departmental budget

Establish policies and procedures for the department

Measure the performance of personnel, software, and hardware

Supervise duties of subordinates

Approve plans drafted by subordinates

Evaluate new technical developments in relation to information needs and goals

Advise the director general regarding information technology developments and needs

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## **5.3 Information Technology Services Department**

The Information Technology Services department requires technical specialists in the following areas:

Network system management

Desktop hardware support

Network and communications hardware support

Database and Web server support

Custom software development including Graphic User Interface design

End-user support

Some of these positions could be combined, given personnel with appropriate skills. Some technical support, such as hardware maintenance and repair and network technical support, may be provided by outside service contractors. In such a case, ITS personnel are responsible for

coordinating and monitoring the work of these contractors. All ITS personnel report to the ITS department manager.

### **5.3.1 Network System Administrator**

The system manager has functional authority over the operation of the MOHP headquarters computer network, and supervisory authority over the hardware technician. The manager's duties include the following:

- Ensure the proper operation of the computer network
- Manage regular system start-up and shutdown procedures
- Develop, document, and execute regular data backup procedures
- Develop written policies and procedures for system operation
- Train other members of the NICHP to perform critical procedures
- Establish and maintain user accounts
- Establish and maintain printer queues
- Manage server disk and memory space to maximize performance and reliability
- Establish and maintain proper protection levels for directories, files, and services
- Ensure regular maintenance, system, and network software upgrades
- Coordinate with outside materials and service providers
- Maintain and manage a library of system hardware and software documentation
- Ensure proper operation of all network components
- Ensure the availability of adequate quantities of consumable supplies
- Control a library of all original software
- Maintain knowledge of current computer technology

### **5.3.2 Hardware Technician**

The hardware technician is responsible for the proper installation and operation of computer hardware in the MOHP headquarters. Computer hardware includes server, network, desktop, and peripheral hardware. The hardware technician works closely with other ITS personnel to coordinate

changes in hardware with the rest of the system. More specifically, the hardware technician is responsible for the following tasks:

Install hardware

Develop and execute a routine hardware maintenance plan

Diagnose and resolve hardware problems

Coordinate hardware maintenance and repair with outside providers

Maintain skills in hardware problem diagnosis and repair

Assist the system manager and user support and training coordinator

### **5.3.3 Database Programmer**

The database programmer is responsible for the proper installation and operation of the central MOHP database. The programmer works closely with the system administrator to create a secure, reliable, and responsive database. The database programmer also has the following responsibilities:

Ensure that the current database software is correctly installed and operating

Document database software, data structure, data content, and data location

Adjust databases and database applications to achieve acceptable performance

Maintain database integrity and security

Maintain expert knowledge in principles of relational database operation and design

Maintain expert knowledge of current database software

Diagnose and resolve software problems

### **5.3.4 Graphic User Interface Specialist**

The graphic user interface specialist is responsible for the design of effective end-user screens and interfaces for the MOHP national information system and the MOHP Web site. The specialist works closely with the system administrator to create a secure, reliable, and responsive information system.

Ensure that the end-user interfaces are effective and efficient

Create standards for interface design

### **5.3.5 User Support Coordinator**

The user support coordinator is responsible for diagnosing and resolving software problems for users in MOHP headquarters. The coordinator will work closely with the training Coordinator to design and implement an effective user-training program. The user support coordinator reports directly to the chief information officer.

Staff an on-call helpdesk

Respond to requests for help from users

Resolve user problems

Coordinate problem resolution with the system manager and hardware technician

Maintain a record of requests for help, responses provided, and common solutions

Develop site-specific user manuals and other helpful information documents

Maintain a library of user software and related documentation

Advise the administration on problems affecting user productivity

Advise the administration on computer related staff skills and training needs

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## **5.4 Health Information Services Department**

### **5.4.1 Information Standards Manager**

The information standards manager is responsible for coordinating, managing, and implementing a standardized information structure for national health care data. The manager also has the following duties:

Lead efforts to develop a standardized information structure code book

Conduct working meetings with impacted stakeholders to resolve issues of non-standard information structures

Perform configuration management on the standardized structures

Produce reports on the status of the achievement and maintenance of a standardized information structure

Supervise information standards assistants

### **5.4.2 Information Standards Assistant**

Information standards assistants perform tasks as directed by the Information Standards and department managers, including:

Create and maintain information structure documentation

Identify structural differences and report to manager

Participate in configuration management activities

Participate in activities to resolve differences

### **5.4.3 Data Analysis Manager**

The data analysis manager has responsibility for activities related to verification and validation of data quality and for analysis activities using data of the health information system:

Develop data verification and validation procedures in coordination with the department manager and the ITS development team

Implement a data verification and validation process

Develop recurring analytic capabilities for decision-making support within the MOHP

Develop quick, responsive ad hoc capabilities for decision-making support within the MOHP

### **5.4.4 Data/Statistical assistant**

Perform tasks as directed by the manager

### **5.4.5 Data Collection Manager**

Design quality processes to collect and process data across the country

### **5.4.6 Data Collection Assistant**

Perform tasks as directed by the manager

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## **5.5 Human Resources Development Department**

### **5.5.1 Training Coordinator**

The training coordinator is responsible for designing and implementing an effective training program for users in MOHP headquarters and trainers in governorate health directorates. This includes the following:

Advise the administration on computer related staff skills and training needs

Develop and execute an annual staff training plan for packaged and custom software

Identify and evaluate outside training resources

Arrange and manage training by outside providers

Design and execute in-house training

Develop or acquire supporting training materials

Maintain a library of training and user support materials

Maintain a database of information on staff skills and training

### **5.5.2 Training Needs Assessor**

Support the coordinator by performing assessments of staff training needs to support the national information system.

### **5.5.3 Training Assistant**

Support the activities of the department as directed by the manager

### **5.5.4 Staff Trainer**

Deliver training programs to MOHP staff

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## **5.6 National Health Information Resource Center**

### **5.6.1 Resource Center Coordinator**

The resource center coordinator is responsible for the development of an appropriate collection of information resources and the provision of quality customer services to those requesting information from the Resource Center:

Coordinate requests for information

Manage MOHP Web site content

Coordinate internal publication cycles

### **5.6.2 Web Site Content Coordinator**

The Web site content coordinator is responsible for the management and upkeep of the content on the MOHP Web site. This position will require coordination with the sources of information on the MOHP to ensure content is meaningful and useful to the MOHP staff and other users of the Web site.

### **5.6.3 Editorial/Documentation Assistant**

This position is responsible for providing Arabic and English editorial and documentation development services to the various publications of the MOHP that are produced by the NICHHP and to other divisions of the MOHP on a time-available basis. The editing of the MOHP Web site content is included in these responsibilities.

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## 6. NICHP Space Requirements

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### 6.1 Space Plan Assessment

This section presents the NICHP space plan for the East building on the central campus at Ministry of Health and Population headquarters. The NICHP director general and the director general of the Department of Planning collaborated on an overall design for the renovation of the East Building. The plan took into account the mission of the NICHP, the organization structures proposed, and the determination of minimum staffing levels. The East building currently houses the director general's office. Planners determined that, to achieve functional efficiencies, all NICHP staff would also be located in the building; the NICHP therefore has need of three floors of the building. Figures 3-5 present the NICHP space plan for the three floors.

Figure 3. Ground Floor Plan

Information Technology Services

National Health Information Resource Center

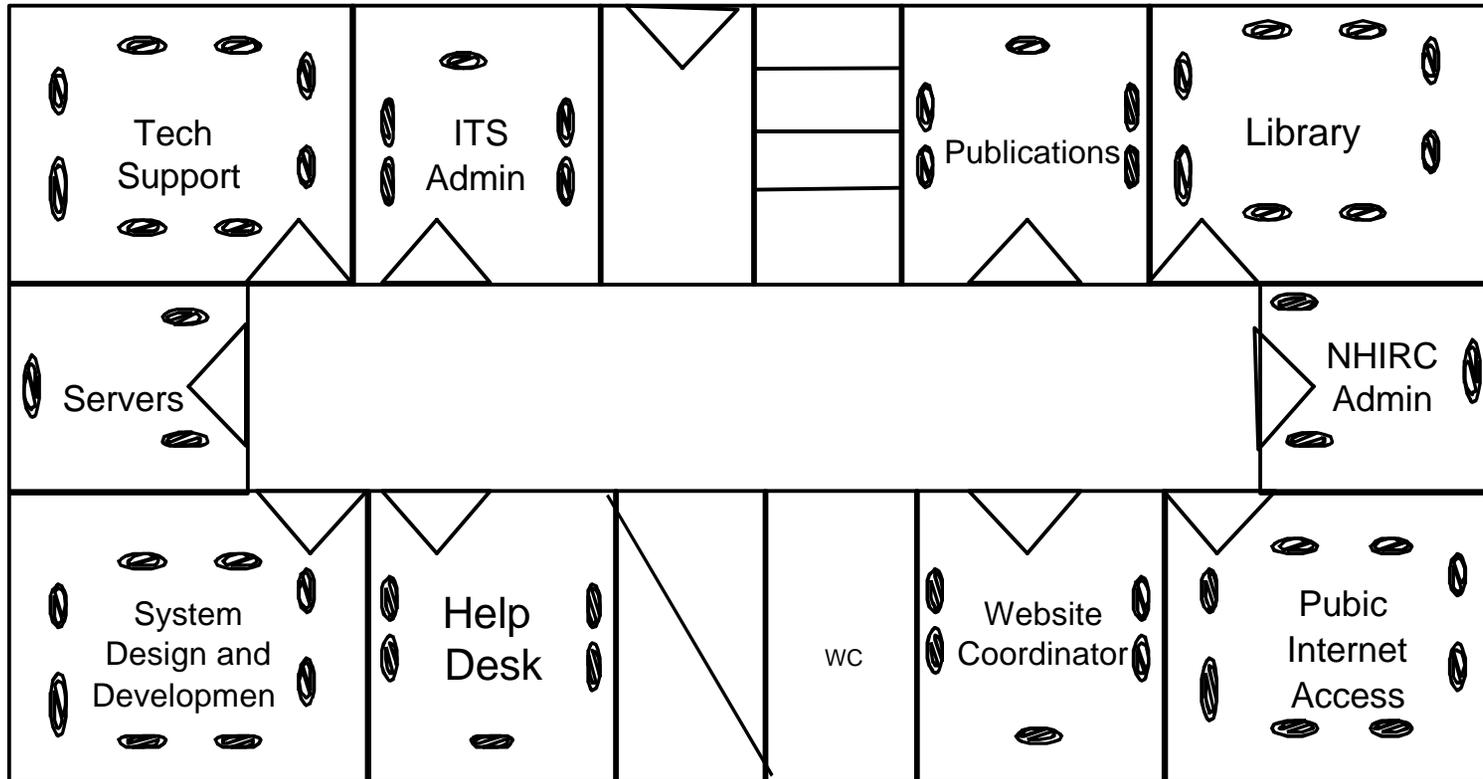


Figure 4. First Floor Plan

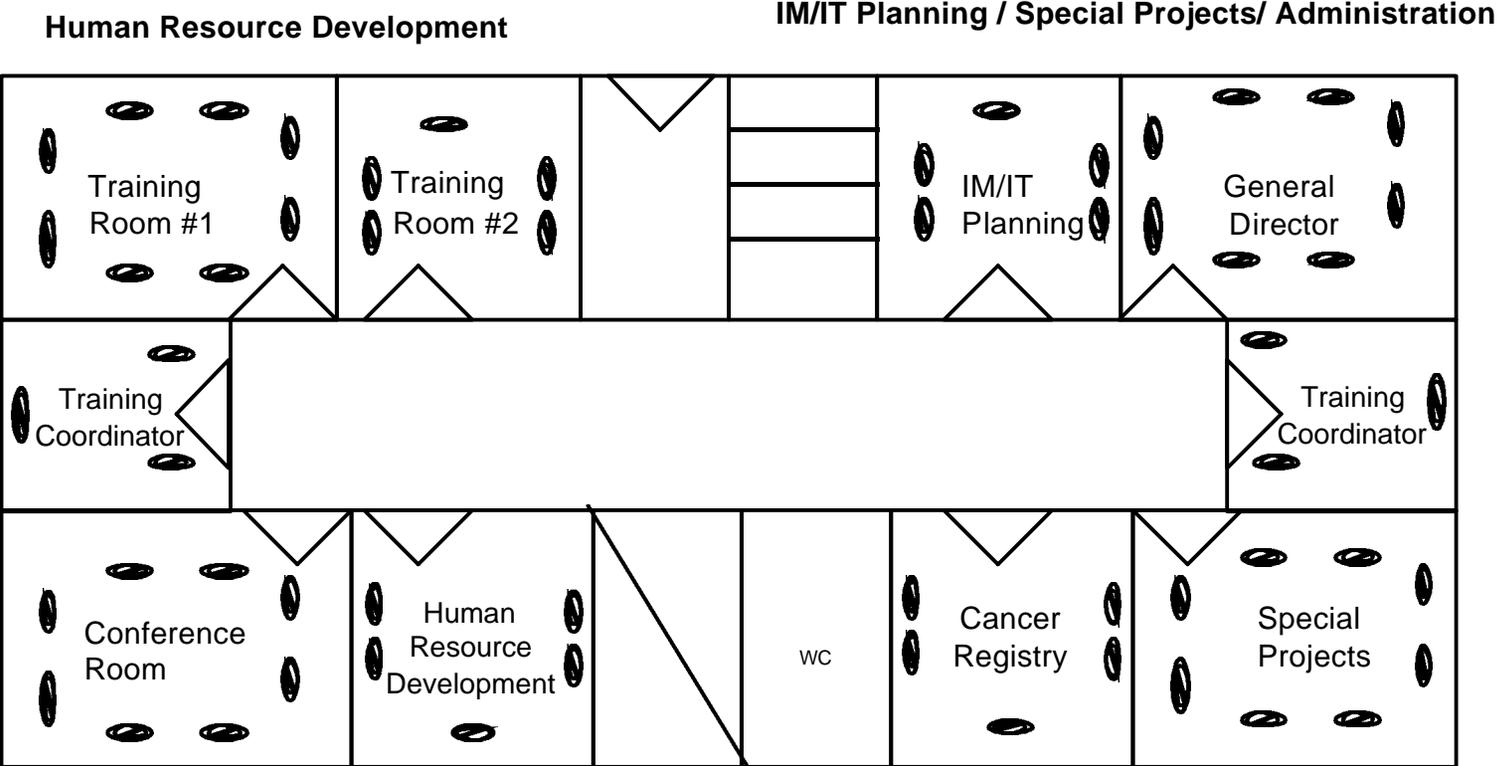
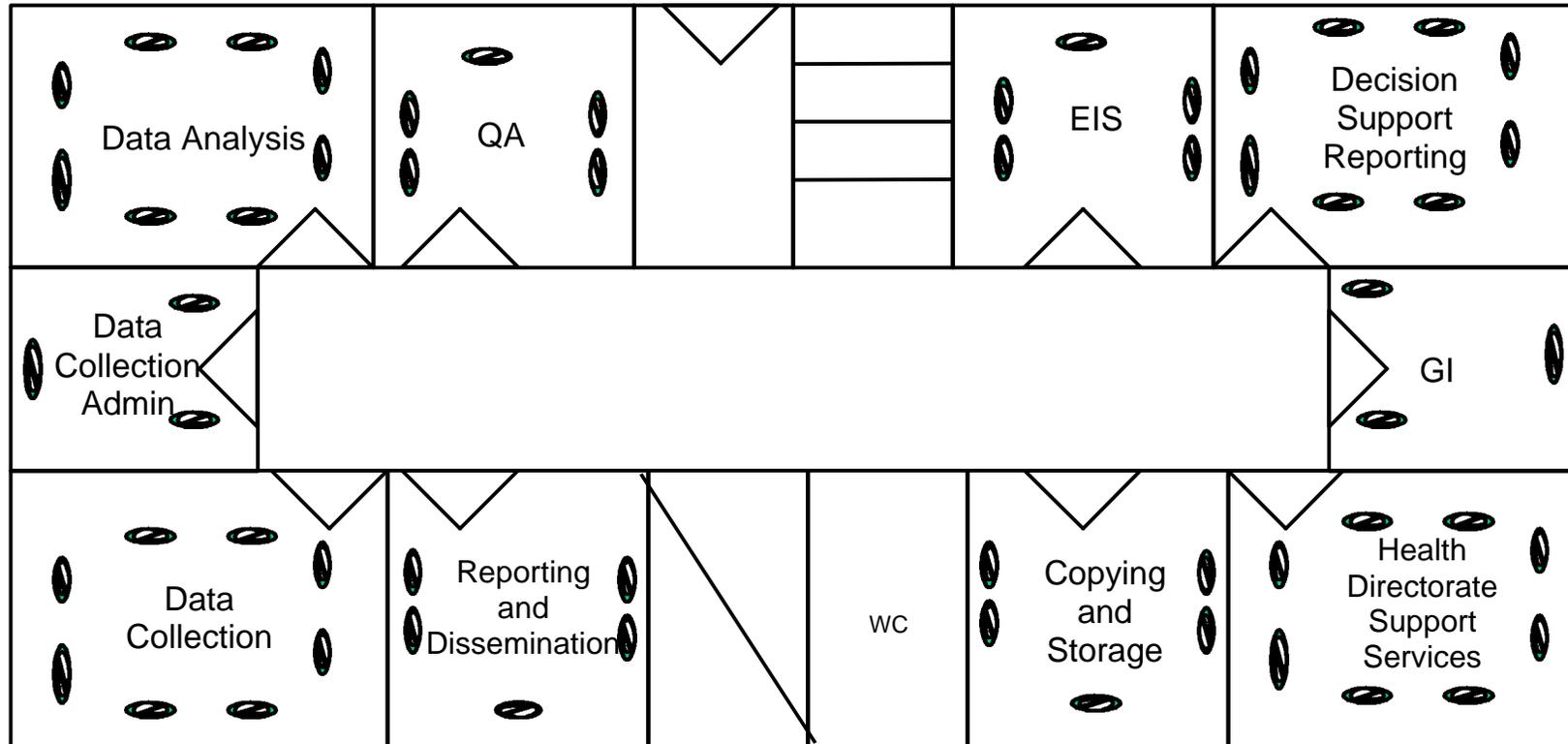


Figure 5. Second Floor Plan

## Health Information Services



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## 7. Relationship to Governorate Health Directorates

The NICHP is responsible for directly supporting information technology in MOHP headquarters. The Health Directorate Information Center (HDIC) in each health directorate is directly responsible for supporting information technology in that directorate. The NICHP will provide support for the use of information technology in governorate health directorates by working with governorate HDICs. In addition, the NICHP is directly responsible for creating and supporting a standardized information structure for national health care data.

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### 7.1 National Responsibilities of NICHP

The NICHP is responsible for the following with respect to governorate health directorates:

Setting information technology standards;

Setting information structure standards;

Selecting software and hardware;

Helping to establish effective technical support systems;

Providing technical support for software;

Helping to resolve hardware and software problems that cannot be resolved locally;

Setting standards for data structure and coding;

Helping to resolve information structure conflicts that may arise;

Developing a system for exchanging information with MOHP headquarters electronically;

Providing data collection forms and procedures;

Providing data entry and processing software;

Helping to monitor data collection, entry, and processing;

Providing a training program and materials; and

Training trainers in governorate health directorates, including district-level offices.

The NICHP is responsible for reporting results to governorate health directorates as well as to MOHP headquarters. The NICHP will work with decision makers in the health directorates to make sure they are provided the most useful information in the most useful form. As presented in Figure 6,

the NICHP's Health Directorate Support Services section will work with governorate decision makers to help them interpret and use this information.

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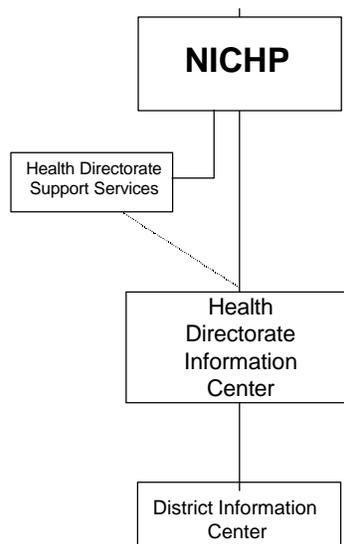
## 7.2 Responsibilities of Governorates

The Health Directorate Information Centers are responsible for technical support, management, operation, and training related to the health information system in each governorate. HDICs are responsible for the following:

- Maintaining computer, networking, and communications equipment in the health directorate;
- Distributing and collecting forms;
- Processing data entered at the district level;
- Receiving and processing data quality assurance exceptions from the governorate health sector;
- Training data providers and end-users in the governorate;
- Exchanging information electronically with MOHP headquarters;
- Disseminating results to decision makers in the governorate.

**Figure 6. National Information Center for Health and Population**

*NICHP Provides National Support through its Health Directorate Support Services Section*



The governorates health sectors are responsible for verifying and validating the data entered from their respective districts. They report errors and discrepancies to the HDIC for correction and update.

The NICHP and HDIC staff will need to collaborate on many issues in order to achieve the goal of a fully integrated health information system.

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### **7.3 Data Quality Process Certification**

A data quality process certification checklist will be designed into the information system processes that share responsibility for data quality between the functional owners of the data—the MOHP sectors—and the technical producers of the data. This has two purposes: The first will be to perform the process of identifying mechanisms and systems necessary at the implementation level to assure that consistent and replicable data processes are being employed. The second will be to provide incremental levels of accountability within the national information system from the point-of-data-generation to the national level. The role of the NICHP director general will be to create national standards for processing and to certify to performance to technical processing standards. One scheme of implementing process checklist is described below.

*Step 1:* A part of the IM activities of developing national standards will be processing standards for data collection, validation, and verification. This will involve representatives from MOHP sectors, governorates, and the NICHP. It will include gap-filling techniques, treatment of missing data, and responsibilities for validation of reported values.

*Step 2:* Once consensus is reached on a set of processes, the director general will be responsible for performing configuration management and publishing the process standards through the NICHP.

*Step 3:* As part of routine data processing, each participant identified in step 1 will sign off on the data to certify compliance with the national standards.

*Step 4:* The director general will review the lower-level technical checklists to confirm that all technical processes were performed as specified.

*Step 5:* When questions arise as to data quality, the director general will retrieve the certification checklist related to the questioned data and then audit their transactions.

*Step 6:* If it is found that the national standards are not producing adequate data, the director general will be responsible for convening the participants to update the national processing standards.

*Step 7:* The director general performs configuration management on national standards and publishes an updated set of standards.