

HIO



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MAXIMUS·CHEMONICS·ARABSOFT

COST RECOVERY IN HEALTH PROJECT (CRHP)

مشروع إسترداد نفقات العلاج

Prepared for:

U S Agency for International Development
Health Insurance Organization, Egypt

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INPATIENT PATIENT RECORDS APPLICATION

FUNCTIONAL DESIGN

USAID Project Number: 263-0170

[Develop a Detailed and Updated Management Information System for the
Egyptian Health Insurance Organization, Cost Recovery Program]

Prepared by:

The MAXIMUS, Chemonics, Arabsoft Project Team

Draft Date:

May 21, 1995

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May 21, 1995

Mr Carl Abdou Rahmaan
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Ref Project Number 263-0170

Dear Mr Abdou Rahmaan

MAXIMUS is pleased to submit this draft functional design document for the Inpatient Patient Records Application. This functional design was developed based on numerous site visits to HIO Headquarters, branch offices, and hospitals, and through consultation with key personnel related to those sites. The functional design for the Outpatient Patient Records Application was presented in an earlier document.

You may note that "Patient Records" is a new name. A decision was made to rename the Medical Records Module and its applications to better reflect its function, and to help prevent confusion over expectations.

This document outlines a system to track diagnoses and treatment of HIO beneficiaries at hospitals. The system also provides powerful tools for analysis and reporting. We ask that you review this document 1) to verify that the design reflects what was discussed during site visits and walk-throughs, 2) to validate that, when seen as a whole, the automated process will enhance the effectiveness of each operational area, 3) to confirm that assumptions are valid, and 4) to identify any organizational, policy and procedural changes which may be necessary for the success of the project.

We welcome a discussion of any questions or concerns you may have regarding this document. Work on the application's detailed design is now underway. To avoid expending additional level of effort reworking the design, we request you provide any comments within four weeks of our submission of this document. If you have any questions, please do not hesitate to contact me.

Sincerely,

Leslie Graham
Chief of Party



May 21, 1995

Dr Nabil El Mehairy
Chairman
Health Insurance Organization
Heliopolis
Cairo, Egypt

Dear Dr El Mehairy

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This document outlines a system to track diagnoses and treatment of HIO beneficiaries at hospitals. The system also provides powerful tools for analysis and reporting. We ask that the HIO review this document 1) to verify that the design reflects what was discussed during site visits and walk-throughs, and 2) to validate that, when seen as a whole, the automated process will enhance the effectiveness of each operational area. Please pay close attention to Section 3, General Assumptions. The application's success depends on these assumptions being true, or the HIO's ability to accomplish them. Also please read the document to identify any organizational, policy and procedural changes which may be necessary for the success of the project.

We look forward to your comments and suggestions. If you have any questions about this functional design document, please do not hesitate to contact me.

Sincerely,

Leslie Graham
Chief of Party

cc General Faisal Taie, HIO
Mr Carl Abdou Rahmaan

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1 INTRODUCTION

This document presents the functional design for the Inpatient Patient Records Application. The Inpatient Patient Records Application is designed for use in hospitals owned and operated by the HIO. Inpatient Patient Records is a second phase application of the automated Management Information System being developed for the Egyptian Health Insurance Organization (HIO). This system is being developed in conjunction with the HIO and the U S Agency for International Development (USAID).

1.1 Purpose of the Document

This functional design document is intended to serve essentially the same function as a blueprint for a building, to provide a design for technicians to follow in creating the project, and to provide a document for review and change before the design is put into place.

At a high level, this document describes the following:

- o who, organizationally, are the users who directly interact with the system,
- o what functions the system provides to those users,
- o what organizational, policy, and procedural changes must be implemented along with the system for it to be effective, and
- o any assumptions upon which the design is based.

This document intends to serve as a baseline for review and comment. It documents discussions held to date, and information gathered during site visits. It lays out a design that, given the information known, appears useful and realistic.

1.2 Process Used to Develop Design

The design portrayed in this document was created after much input from the HIO. A system design cannot be created without an understanding of the existing operational processes. To understand these, the Patient Records Team conducted numerous visits to HIO hospitals across the branches. Appendix D is a summary of site visits.

Before beginning the design, it was important that the Patient Records Team understand current operations, and the range of procedures that are followed throughout the HIO. By talking with the people who currently perform or manage the performance of the manual hospital medical records processes, the team created a picture of the existing system. An overview of the existing process is given in Section 2 of this document.

1.3 Intended Audience

This document represents a high-level, but technical, specification of the discussions held thus far with the HIO. There should be nothing in this document that is a surprise to those who participated in the design process. It is merely a structured method of recording the design discussed and documenting the alternatives selected.

It is expected that the audience of this document is the managers of the organizational areas affected by the design, as well as HIO senior management. This document should be reviewed:

- o to verify that it represents what was discussed during the walkthroughs,
- o to validate that, when seen as a whole, the automated process described will enhance the functioning of each operational area,
- o to agree that the assumptions used are valid, and
- o to commit to the organizational, policy, and procedural changes outlined as necessary for success.

In addition, senior managers should review this document to ensure that the information collected by the system will assist in making more accurate management decisions.

2 GENERAL OVERVIEW OF THE SYSTEM

The development of a Management Information System (MIS) for the Health Insurance Organization is a large undertaking, of which Inpatient Patient Records is one piece. Exhibit 2-1 is a logframe illustrating overall project activities. Exhibit 2-2 is a logframe illustrating activities related specifically to the three (Outpatient, Inpatient, and Branch) Patient Records Applications. Together, these three applications make up the Patient Records Module.

This section provides a high-level overview of the modules to be included in the HIO MIS, and the interaction between these modules. This section also includes a description of the existing operational processes associated with medical records. After a review of the current practices, the proposed process is described. This section presents a high-level view only. A technical functional design description is provided in Section 4.

2.1 Overview of the HIO MIS

The HIO MIS system is being developed in phases. During the first phase, software applicable to clinics and branches is being developed. In the second phase, inpatient hospital software is being developed.

None of the software modules stands alone. Each contributes information to the database, and uses information provided by other modules. The purpose of all modules, in addition to supporting operational areas, is to collect and provide, to management, detailed information about the HIO. With this improved level of information, HIO management can make well-informed and timely decisions regarding cost containment and service provision, a decision making capacity that is essential as the organization continues to grow and evolve.

All applications for a branch, clinic, or hospital reside on the machine at that facility. Therefore, within a facility all applications have access to the database on that facility's machine. For example, visit information already entered through beneficiary registration does not need to be reentered for patient records. In addition, data can be shared between facilities.

This data sharing is transparent to the user. The applications are designed to share data, and the user does not need to do anything to have this happen. On the other hand, the fact that data is shared between applications does not mean that the database is open to all. Operational areas that have no need to view certain data are not given the opportunity to do so.

Exhibit 2-3 depicts data being shared among applications. For an operational overview of the interrelationship between the Beneficiary Registration, Drug Control, Cost Accounting, and Patient Records Modules, actual scenarios of daily activities have been developed. These scenarios are available in printed form for review.

Exhibit 2-1 (page 1 of 2)
DRAFT LOGICAL FRAMEWORK
OVERALL PROJECT

PROJECT NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Project Goal Improve HIO ability to raise treatment quality and contain costs	End of Project Status Lower costs for drugs per patient Shorter lengths of stay in hospitals Reduced number of patient visits per episode of illness Lower cost of treatment per patient Higher proportion of favorable outcomes per patient	Statistical data from HIO Statistical data from MIS	HIO supports a MIS HIO involved in MIS design HIO provides resources HIO adopts policies and procedures to maximize use of system
Project Purpose Build and implement a MIS throughout the HIO	Measures of Achievement Number of HIO sites automated and using MIS Number of S/W application modules running	Site visits End of Project Status Evaluation	HIO managers involved in system implementation
Outputs MIS systems in use in facilities System generated reports Trained HIO staff	Magnitude of Outputs 160+ systems installed in Egypt Electronic and hardcopy reports for every HIO function 2000+ staff trained	Site visits Project reports End of Project Status Evaluation	Staff available for training Enough qualified staff found for each job HIO purchases needed equipment HIO obtain telecom lines

2-2

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Exhibit 2-1 (page 2 of 2)
DRAFT LOGICAL FRAMEWORK
OVERALL PROJECT

PROJECT NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>Inputs USAID Funding - Training - Technical Assistance - Commodities</p> <p>HIO Project Resources - Vehicles - Office Space - Furniture - Electronic Power - Telecom Lines</p> <p>HIO Regular Resources - Facilities - Clinical - Administrative</p>	<p>Magnitude of Inputs \$21M+</p> <p>8 Project vehicles Al Ahram Building Furnish each clinic computer room 250 KV Transformer</p> <p>8 computer centers Medical Practice Committee Drug Formulary Committee Management Analysis Office Computer supplies budget Telecom cost budget Hardware maintenance budget</p>	<p>Financial records</p> <p>Status reports End of Project Evaluation Site visits</p>	<p>MIS remains a priority of the HIO Resource support from HIO continues</p>

2-3

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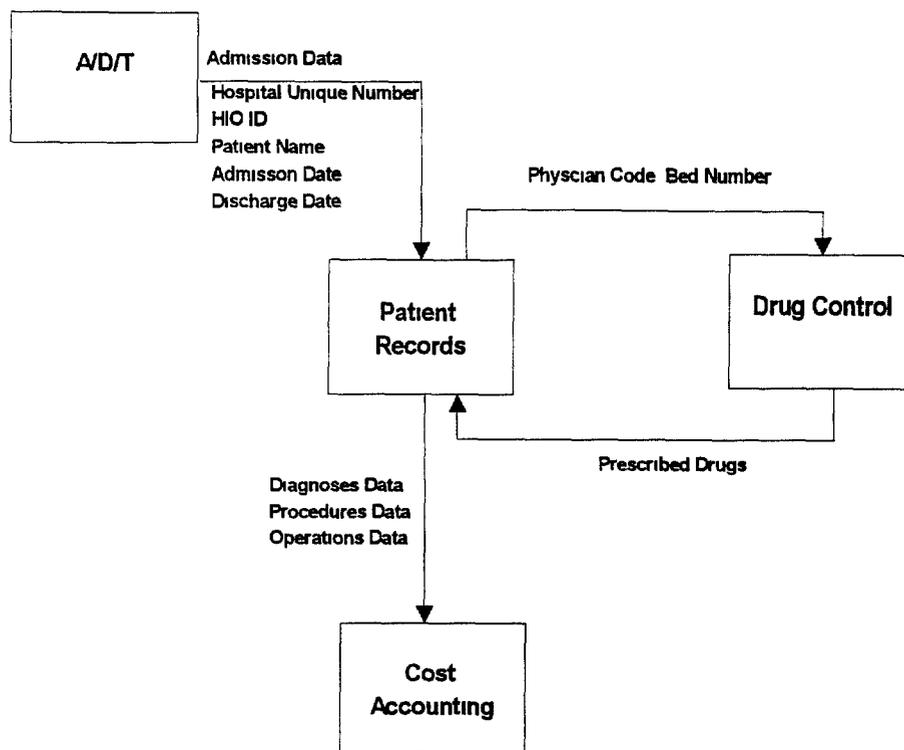
**Exhibit 2-2
DRAFT LOGICAL FRAMEWORK
PATIENT RECORDS MODULE**

PROJECT NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Module Goal Improve HIO ability to manage medical records, thereby improving the quality of service given	End of Project Status Better service per patient Provide more accurate information for the different HIO levels	Medical Record Reports	HIO uses module data HIO adopts policies & procedures to maximize use of system
Module Purpose Automate the medical records process	Measures of Achievement Number of HIO sites using Patient Records Module	Site visits End of Project Status Evaluation	HIO managers involved in system implementation
Outputs Patient Records Module in use in facilities System generated reports Trained HIO staff	Magnitude of Outputs 150+ systems installed in Egypt Electronic & hardcopy reports for medical records functions	Site visits Project reports End of Project Status Evaluation	Staff available for training Enough qualified staff found for each job
Inputs HIO decision-making resources	Magnitude of Inputs Patient Records Committee	Status Reports End of Project Status Evaluation Site Visits	Resource support from HIO continues

2-4

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**Exhibit 2-3
INTERFACES WITH OTHER SYSTEMS**



2.2 The Current Inpatient Patient Records System

In HIO hospitals, a patient is either treated in the Observation Department for a maximum of 24 hours, or is admitted to any of the medical treatment departments in the hospital. This decision is made by a physician in the reception area who determines a patient's admission diagnoses.

In the Observation Department

The examining physician may decide that, through treatment, a case can be cured or that a patient will be ready for discharge within the following 24 hours. In this case a patient stays in the Observation Department, and no file is opened for the patient.

In the Treatment Department

There are several steps to admitting a new patient to the Treatment Department:

- o If the patient has no previous record at the hospital, he must be assigned a Hospital Unique Number (HUN). If the patient has previously been admitted to the hospital, the patient's existing HUN must be retrieved from the card file.

- o The required forms must be filled (e.g., some sections of the Admission/Discharge Form described below)
- o The availability of an empty bed in the required department must be checked

When these steps have been completed, the patient goes (with his patient medical file) to the specified medical department in order to receive treatment

At this stage the patient medical file includes the following

- o **The Admission/Discharge (A/D) Form** (Exhibit 2-4) records a summary of a patient's stay at the hospital. At the time of a patient's admission, the following sections of the form are completed

patient's HIO ID data,

admission date and time,

HUN,

names of the admitting and the deputy department physicians, and

the admissions diagnoses

- o **The Clinical Examination Form** includes the patient's HIO ID data, visit date, the results of the treatment department medical examination, as well as information on the patient's medical history. The form is completed by a specialized physician in the Treatment Department

- o **The Physician Order Form** (Exhibit 2-5) is filled in day-by-day by the specialist. It can include

Medical procedures required (a request is completed by the physician for lab or radiology checks)

Instructions for preparation for surgery

Drugs required with dosage and types

Other physicians' recommendations or follow-up treatment

- o **The Treatment Execution Form** is completed by the nurses to record what is actually done to a patient, in accordance with the Physician Order Form. In the case of surgery or anesthetic procedure, this form is completed by the physician or nurse who performed the procedure. In medical procedure centers (lab, radiology, dialysis section, etc.), the form is completed to register any procedures performed for the patient

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**Exhibit 2-4
ADMISSION/DISCHARGE FORM**

**Health Insurance Organization
Northwest Delta Branch
Gamal Abdel Nasser Hospital**

Admission/Discharge Form

Full Name of the Patient	Age	Male	Egyptian	Single Married Divorced Widower	Hospital Code Number		
		Female	Foreigner				
Physician Name							
Health Insurance Number	Health Insurance Type			Patient's Assigned Clinic Patient's Assigned Hospital			
Place of Work		Occupation		Employee Number			
Work Address				Police Station			
Home Address				Police Station			
Patient Relative's Name Patient Relative's Address					Police Case Yes () No (Work Injury) ()		
Admission Date Time	Discharge Date Time		Period		Case Accidents () Clinic () Hospital ()		
Department	Room No	Bed No	Previous Admission		Department Head		
First Diagnosis							
Admission Officer	Nurse	Department Deputy		Admission Permission Hospital Manager			
Final Diagnosis Operations				Code			
Discharge Case Recovered Getting Better Hasn t Changed Died before 48 hours Died after 48 hours				Discharge Permission Department Specialist Department Head Hospital Manager			

Exhibit 2-5
ADMISSION/DISCHARGE FORM (Arabic)

الهيئة العامة للتأمين الصحي

سجل الدخول والخروج

فروع شمال الدلتا

مستشفى جمال عبد الناصر

رقم المستشفى الموحد		اعدت () مروح () مطلق () ارمل ()	مصري	ذكر	السن	اسم المريض بالنا
			اجسي	اسي		الطب المسم بالاستقبال
العاده المربوط عليها المريض المستشفى المربوط عليها المريض			نوع التأمين الصحي		رقم التأمين الصحي	
رقم العامل في العمل			المهنة		جهة العمل	
قسم السرطه التابع له					عنوان العمل	
مفرع من سارع			سارع		عنوان المريض منزل رقم	
			تابع قسم سرطه		اسم الخي	
حاله بولس () نعم () لا (اصابه عمل)			سارع		اسم فرب المريض عنوان فرب المريض منزل رقم مفرع من سارع	
طريقه الدخول () حوادث () عناده () محول من مستشفى			مدة الاقامه		تاريخ الخروج الساعة	
قسم قسم		دخول سابق		السرير		الحجره
السحب الاول						
اعتماد الدخول مدير المستشفى		نائب القسم		الممرضه		صايط الدخول
الروم				التشخيص الهائي		
				العمليات		
اعتماد الخروج احصائي القسم رئيس القسم مدير المستشفى				الحاله عند الخروج () سعي () محس () لم يحس بومي قبل ٤٨ ساعه بومي بعد ٤٨ ساعه		

As a back-up to and summary of Treatment Execution Forms, a register is maintained in the nursing area to record what is done to a patient. This register records the execution of what is written in the Physician Order Form and the Treatment Execution Form.

- o **The Discharge Summary Report** is completed by the resident physician in the treatment department at the end of a patient's stay. It can include

details on surgery performed,

treatment given,

significant findings of medical procedures performed on the patient, and

the final (discharge) diagnoses

When the patient is discharged, the remaining sections of the A/D Form are also completed. The sections completed at this time include

- o final (discharge) diagnoses,
- o discharge date and time,
- o surgery performed (if any), and
- o discharge status (cured/death after 48 hours/death before 48 hours/etc)

Over the course of a patient's stay, additional forms may be added to the patient medical file (records of surgery or other procedures)

When discharge procedures are finished, the patient medical file is sent to the Medical Records Department where surgery and diagnoses are recorded. Two cards are filled out with relevant data and filed for research and statistical purposes. At the Medical Records Department at Gamal Abdel Nasser Hospital, surgery and diagnoses are coded according to the International Classification of Diseases 9 (ICD-9). The use of these international codes is not common, however, in other HIO hospitals. ICD-9 is published by the World Health Organization.

Each department of the hospital provides the Statistical Department with a monthly activity report. The Statistical Department prepares a monthly report to reflect overall hospital activity in terms of occupancies, death cases, medical procedures activities, and so forth.

2.3 Analysis of the Current System

This section provides an analytical overview of the manual system. The manual system includes

- o admission registration (the Clinical Examination Form and part of the A/D form),
- o discharge registration (the Discharge Summary Report and parts of the A/D Form)
- o treatment procedures registration through the Physician Order Form and the Treatment Execution Form,
- o medical procedure registration, and
- o the patient medical file (the treatment and investigation reports)

In some cases, the Admissions Office has to open more than one file for the patient due to the difficulty of finding records, or because there is no cardex system for retrieving the ID card of the patient

Most HIO hospitals assign the patient a unique number called the Hospital Unique Number (HUN) This number is used to reference any records for the patient In some hospitals, the HUN corresponds to the location of a patient's file (cupboard, shelf, sequence) Other hospitals use a sequential number to assign HUNs to new patients

As mentioned above in Section 2 2, the Medical Records Department at the Gamal Abdel Nasser Hospital codes diseases according to WHO's ICD-9 However, most other HIO hospitals do not use this coding scheme

2 4 The Proposed Inpatient Patient Records System

The proposed Inpatient Patient Records Application needs to capture data on what has been done to the patient during his stay in the hospital These data need to be inclusive of all medical procedures, diagnoses, and operations

The HIO MIS Admissions/Discharge/Transfer Module (A/D/T) will record the admission and discharge information for cold cases as well as for emergency cases These data will include the patient identification information, dates and times of stay, as well as other relevant data The proposed Inpatient Patient Records Application will pick up where the A/D/T stops It will record the data captured in the Treatment Department through the Physician Order Form and the Treatment Execution Form, as well as data on the activities in any of the medical procedure centers that perform the medical procedures required for a patient

After the registration at the Admissions Office, a record will be opened for the patient using the HUN The patient's SIO/PIO number will also be recorded to retrieve data concerning the patient's status as an HIO beneficiary When a patient is discharged, the patient medical file will include new data on the beneficiary The file will be sent to the Medical Records Department for coding and filing At this stage, the patient visit data will be captured and entered in the system Other than medical procedures done for a patient and

recorded through procedure centers, no entries are made in the automated patient records system while a patient is still in the hospital

During the day, any medical procedure or surgery performed is recorded in a manual register at the performing medical procedure center. The record includes the patient's HUN. At the end of each day, these manual registers will be entered, by the technicians, into the system.

- o For surgery, the data will include the patient name, HUN, department, date, diagnoses, operation type, surgeon name, anesthetic type, anesthesiologist, and the supervising nurses
- o For any other medical procedure the data will include the HUN, date, Current Procedural Terminology (CPT) code, and the films used (in case of radiology). In case of blood transfer, the blood type and quantity will be entered.
- o For transferred cases, HIO number, served facility, served specialty, and treatment type will be entered to help in transferring the data back to the served facility through the network.

The data concerning drugs dispensed for a patient will be captured daily through the Hospital Drug Control Application. The patient data can be linked together using the HUN and the admission date through all the modules.

This data will be useful in

- o inquiring about the previous medical treatment of hospital patients,
- o providing the Statistical Department with information on activities in the medical procedure centers,
- o inquiring about the medical history of a beneficiary,
- o posting information on surgery performed for an HIO beneficiary to the patient's assigned clinic in order to complete his medical history,
- o providing the cost accounting system with the statistical data needed to allocate costs, and
- o providing the Quality Assurance System with the data required to assess the work of physicians and services at the hospital.

3 GENERAL ASSUMPTIONS

This section contains the assumptions that are required for the system to work successfully and efficiently. It is important for the reviewers of this document to read this section carefully. If there are any assumptions made that appear unfeasible, it must be noted at this stage. All future iterations of the design are predicated on these assumptions being a reality.

3.1 Assumptions Related to Work Flow

- o The A/D/T module will keep the visit data, assign the HUN for the patient, check the eligibility of the patient, and keep the schedule for the operation theater. Other than the admission and discharge diagnoses, the Inpatient Patient Records Application deals with the activities in the hospital sections.
- o All patient data will be captured from the patient medical file. The file will be sent to the computer room after being reviewed by the Medical Records Department.
- o All surgery, kidney dialysis, lab tests, radiology work, or any other medical procedures performed will be recorded from the registers kept at medical procedure centers. The registers should be entered at the end of each day.

3.2 Assumption Related to Location and Transfer of Patient Records

Major medical records will be sent through the network to the primary assigned clinic. As a result, queries can be made about an HIO beneficiary through the HIO telecommunications network.

3.3 Assumption Related to Hardware Configuration

Terminals will be installed in the computer room where all the medical records data will be entered.

3.4 Assumptions Related to Human Resources and Training

To ensure the effectiveness of the Inpatient Patient Records Application, proper training for different user classes is essential.

- o HIO top-level and branch management are to be trained on the basic aspects of the proposed Inpatient Patient Records Application. Management should

be acquainted with how to interpret the generated reports, and how to use the reports in planning and decision making

- o Data entry clerks and hospital physicians need to be trained on the efficient use of the standard coding system (ICD-9)
- o Data entry staff members need to be trained on entering the different medical record entries into the computer
- o Hospital Statistical Department clerks need to be trained on producing the aggregated reports
- o Medical procedure center technicians need to be trained on entering the different medical procedures records

All training will be developed by project resources except training related to the use of ICD-9, the standard coding system. The introduction of this coding system is a larger issue to be taken on by the HIO

4 FUNCTIONAL DESIGN

This section describes the functional design of the Inpatient Patient Records Application. The Patient Records Module is made up of two major subsystems: the Outpatient (polyclinic) Patient Records Application and the Inpatient (hospital) Patient Records Application. Each of these applications is comprised of a series of related functions. This document is a detailed description of only the Inpatient Patient Records Application. Only a brief description of the Branch and Clinic applications is given in this section.

4.1 Inpatient Patient Records Application

This application will be used to record basic medical record information for a beneficiary during his stay in the hospital. It will record the admission and discharge diagnoses as well as any other diagnoses that may occur for the patient during his stay in any of the hospital sections. It will record any procedures or operations performed on the beneficiary. If surgery has been performed on the patient, the surgeon's name will also be entered into the system.

By sending the patient medical file to the hospital Medical Records Department, a brief summary of the diagnoses for the patient will be entered into the system, as will information on the treating physician. Medical procedure activities will be recorded by entering a center's manual register into the system on a daily basis. Records will be kept only of procedures performed, results of procedures will not be recorded.

Other modules, such as Cost Accounting and the Medical Quality Assurance will look at patients' stays from another perspective to satisfy their input requirements.

The Inpatient Patient Records Application is made up of four main functions:

- 1 The **Diagnoses Registration** function includes
 - o recording a patient's admission diagnoses,
 - o recording additional diagnoses made during the treatment procedures, and
 - o recording the patient final (discharge) diagnoses.
- 2 The **Medical Procedure Registration** function includes
 - o surgical operation registration,
 - o blood transfusion registration,

- o kidney dialysis registration, and
 - o other procedures
- 3 The **Process Historical Patient Records** function includes
- o producing a detailed patient medical history,
 - o producing a summary patient medical history, and
 - o posting the current diagnoses and procedures to the patient's medical records at the beneficiary's assigned clinic
- 4 The **Produce Statistical Reports** function includes
- o producing the Lab Activity Report,
 - o producing the Operation Theater Activity Report, and
 - o producing the Hospital Sections Activity Report

Following is a detailed description of each of the above functions

4 1 1 Diagnoses Registration

This function will be used to register the different diagnoses which are mentioned in the A/D Form and the Physician Order Form. Those forms include the admissions diagnoses which are specified by the physician at the reception when the patient arrives for admission. During a patient's stay in the hospital, a physician may, as part of day-by-day treatment, specify other diagnoses. These are recorded in the Physician Order Form. Final diagnoses are written in the A/D Form and the Discharge Summary Form, when the patient is discharged from the hospital for any reason. These diagnoses are called Discharge Diagnoses.

At the end of a patient's stay, the patient medical file will be sent to the Medical Records Department where the file will be reviewed before being passed on to the computer room. In the computer room, diagnoses and treating physician data will be entered into the system.

In the observation section, only the medical procedures done for a patient will be registered through the medical procedure centers. In addition to this, some other data (e.g., patient status and examining physician) will be registered through the Admission, Discharge and Transfer Module.

4 1 2 Medical Procedure Registration

The medical procedure registration function records procedures conducted in procedure centers. The Inpatient Patient Records Application will record procedures done for patients at the hospital, as well as procedures done at the hospital center for individuals referred or transferred from other HIO polyclinics or hospitals. Monitoring medical procedure services provided to both inpatients and to individuals from other HIO facilities will allow medical records monitoring from two perspectives. First, it will contribute to a patient's complete medical record for his stay at the hospital. Second, it will provide data on a medical procedure center's overall activity and performance. Medical procedures data will be collected, as they currently are, in the manual registers at the medical procedure centers. From those registers, procedure center technicians will enter data into the system at the end of each day.

4 1 3 Produce Historical Patient Records

The purpose of this function is to maintain the patient medical history through data gathered from the patient medical file and the manual registers at medical procedure centers. This function will allow an authorized user to make diverse and specialized inquiries about a patient visit to the hospital. By posting the major operations that were performed for an HIO beneficiary during his stay in the hospital, a complete medical history for the beneficiary will be available at his assigned clinic, or at any other HIO facility that may sometime need to access the beneficiary's medical records.

4 1 4 Produce Statistical Reports

This function will be used to produce statistical reports. These reports will be generated in the computer room in the hospital, and will cover

- o medical procedure service centers activity,
- o operation theater activity, and
- o hospital sections activity

These reports will be submitted to the Statistical Department in the hospital as well as to the branch on a monthly basis.

4 2 Outpatient Patient Records Application

This application is described in separate design documents. It will be used to record patient record information for activity in HIO polyclinics. When compiled and processed, the data will be used by clinic management, as well as branch management. The patient record at a beneficiary's assigned polyclinic remains that beneficiary's primary record. Major

procedure data collected by the Inpatient Patient Records Application will be transferred electronically to the primary polyclinic (outpatient) record

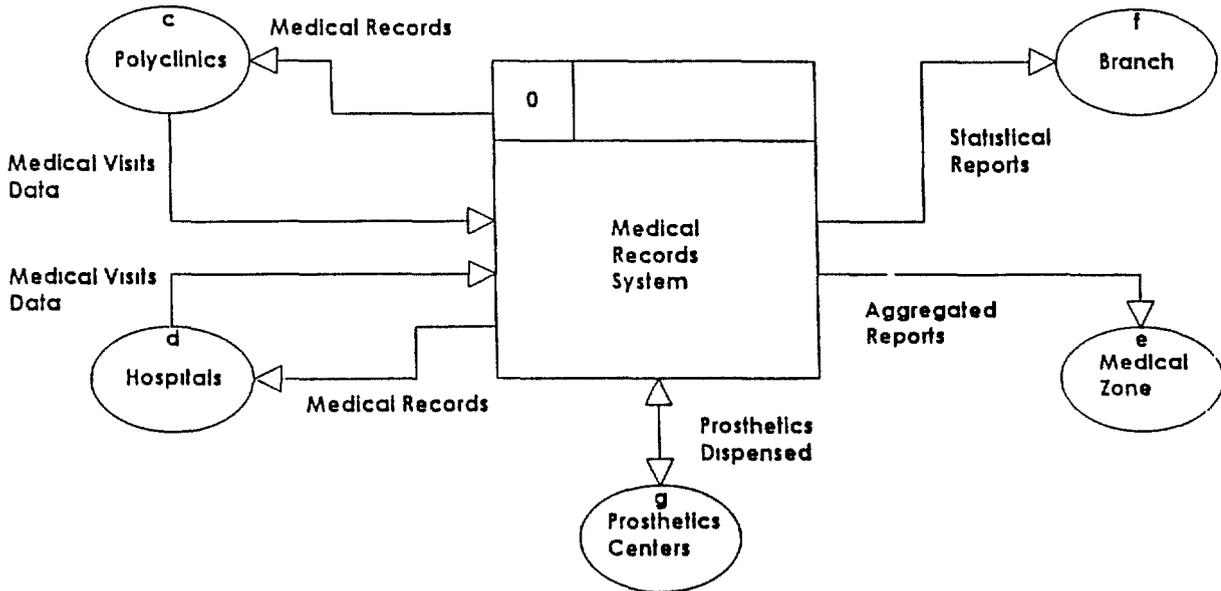
4 3 Branch Patient Records Application

The Branch Patient Records Application will be used to compile data from both the Inpatient and Outpatient Patient Records Applications, and to produce detailed reports based on that data

APPENDIX A

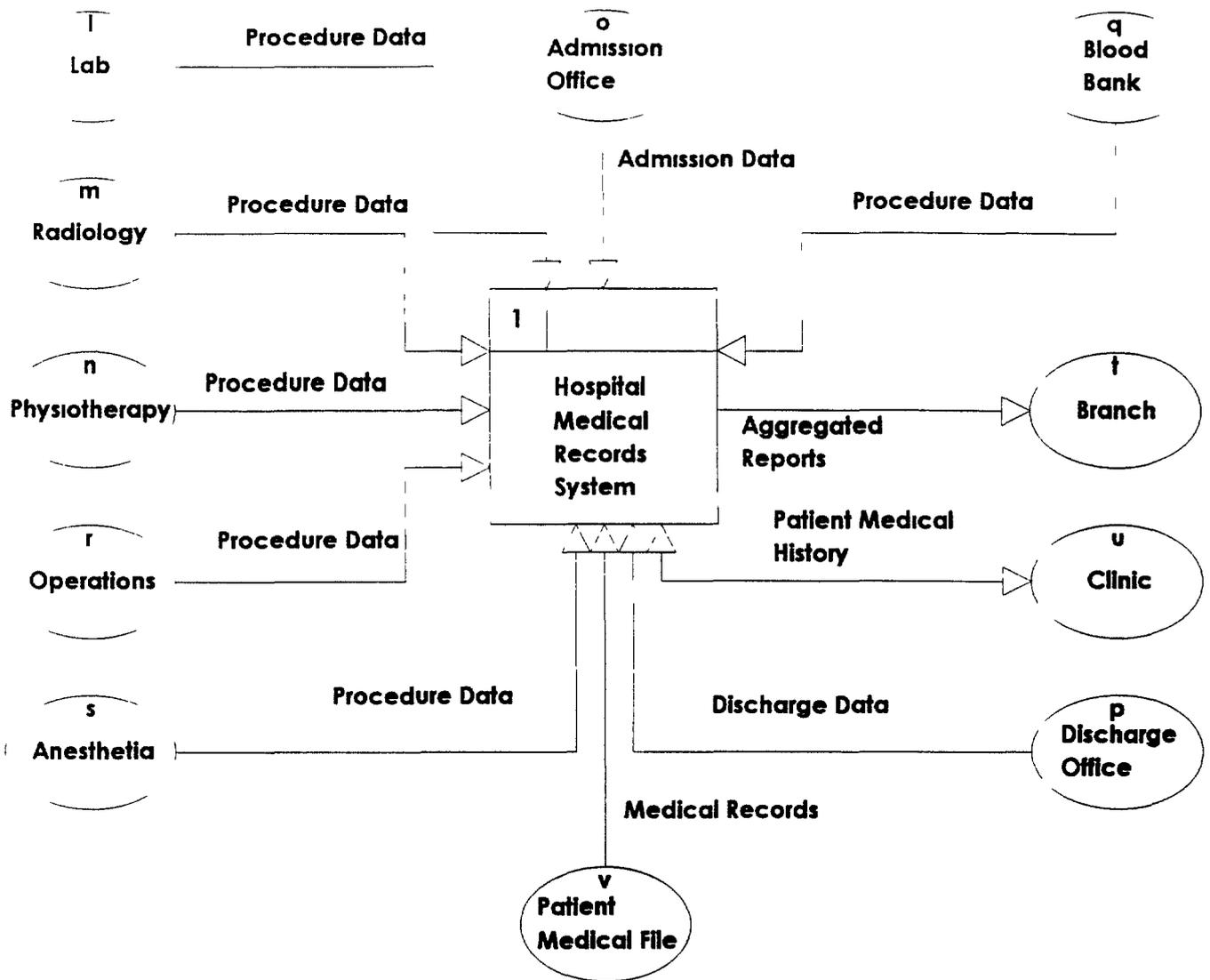
DATA FLOW DIAGRAMS

DFD-1
PATIENT RECORDS MODULE



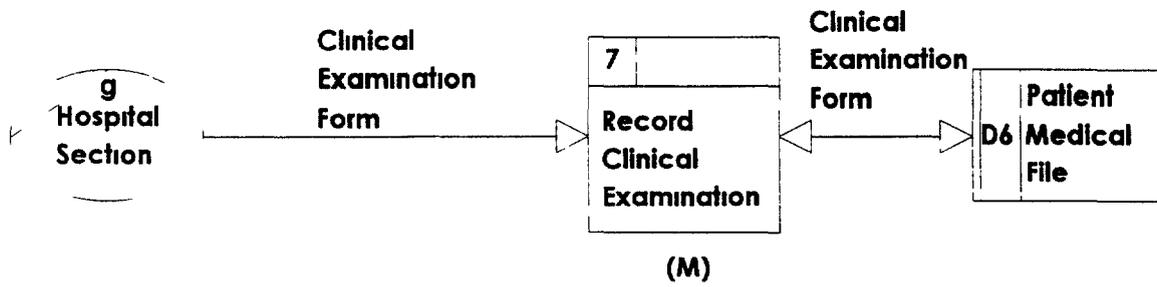
This is the highest level medical records function, dealing with the medical records and medical history of the beneficiary

DFD-2
INPATIENT PATIENT RECORDS APPLICATION



This application is used to record the different activities of most sections in HIO hospitals

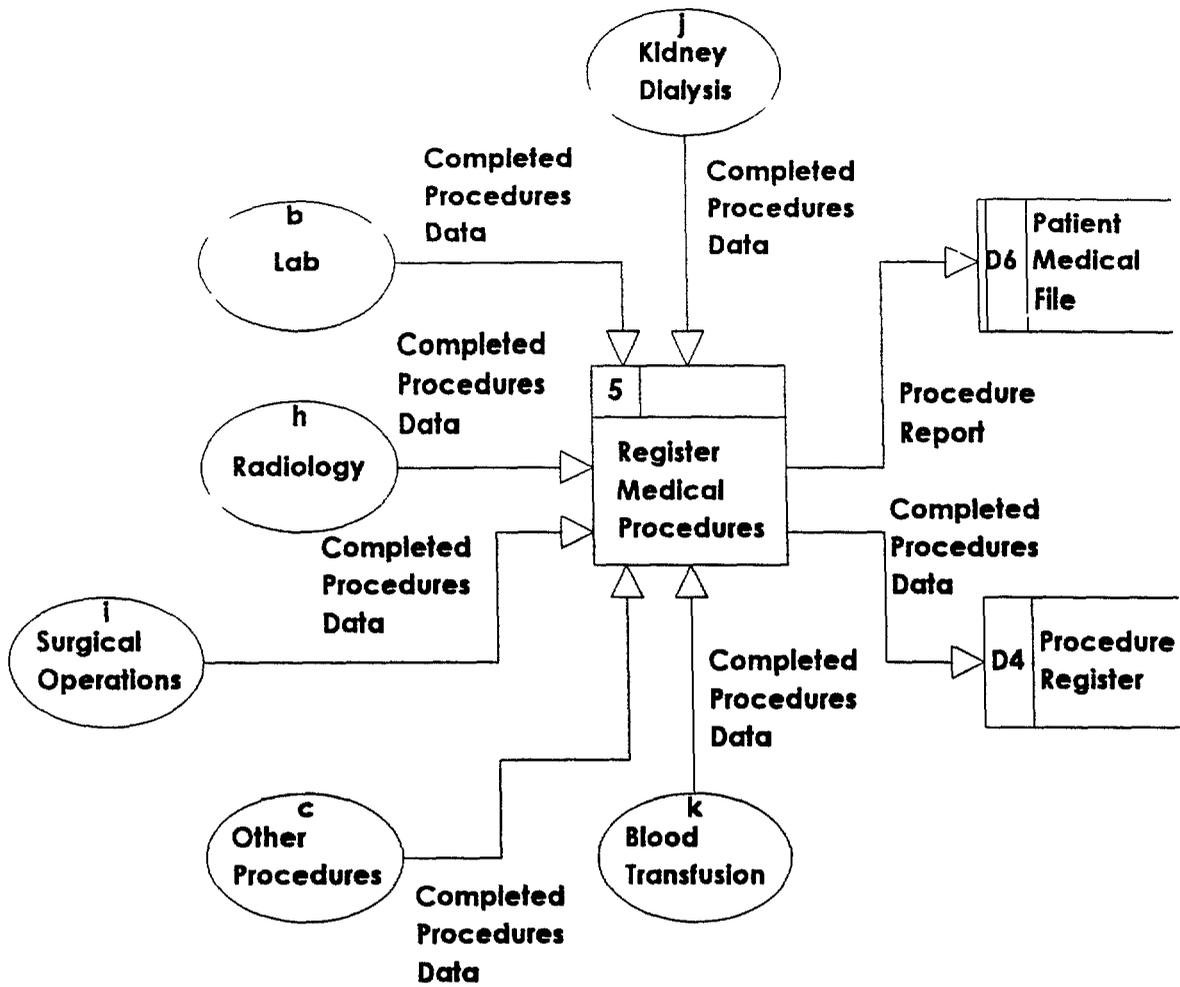
DFD-3
RECORD CLINICAL EXAMINATION FUNCTION



This function is used to register the Clinical Examination Form which is filled by a physician in the treatment section

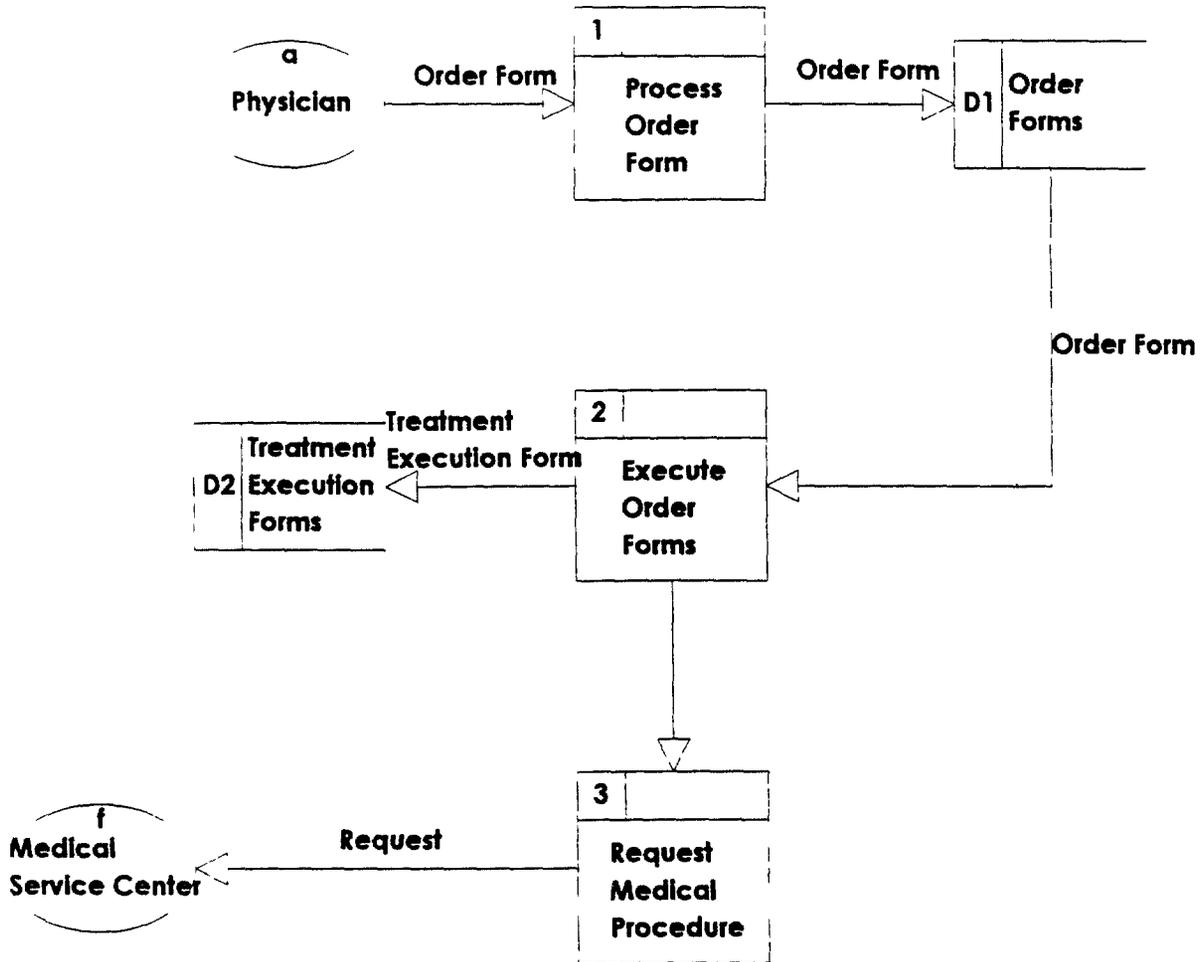
23

DFD-4
 MEDICAL PROCEDURE REGISTRATION FUNCTION



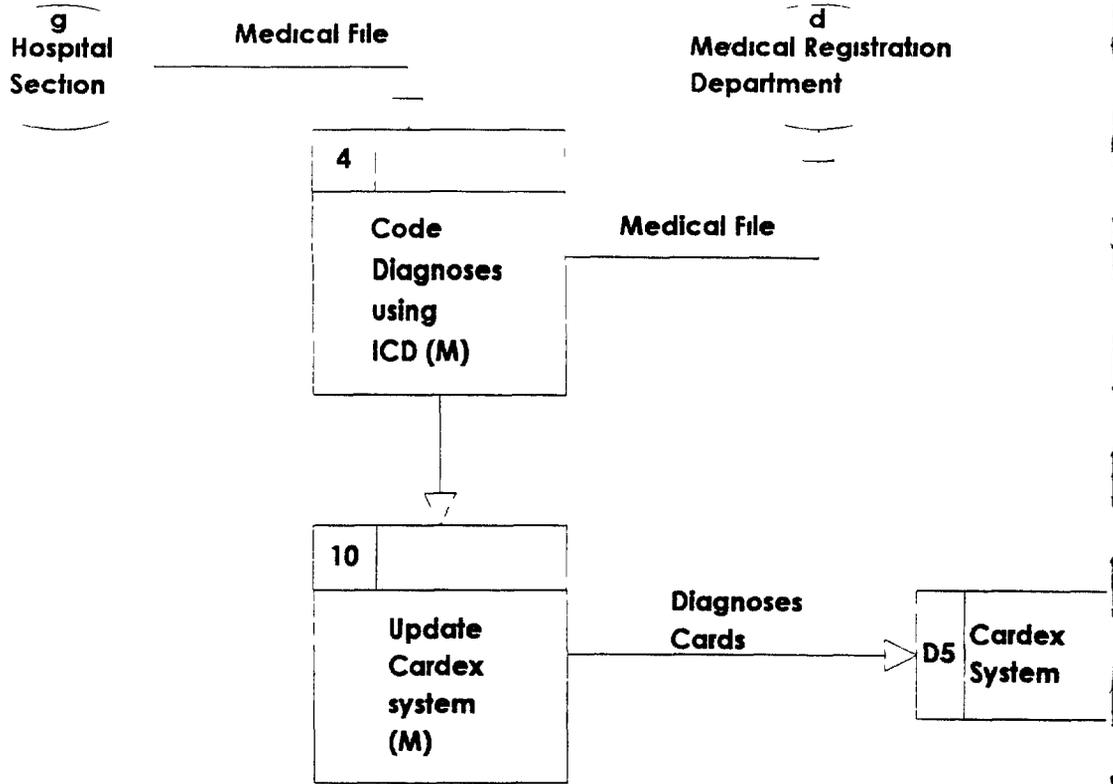
This function is used to register the occurrence of a medical procedure performed for a patient. Procedure outcomes are not registered.

**DFD-5
PROCESS PHYSICIAN ORDER FUNCTION**



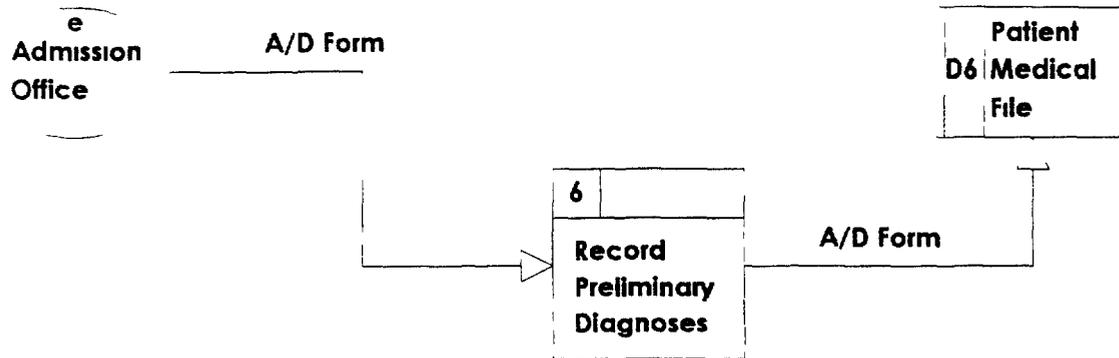
This function is used to register the orders specified by physicians and executed by the nurses in the treatment sections

DFD-6
 PATIENT RECORDS REGISTRATION FUNCTION



This function is used to manually code and update the diagnoses cards

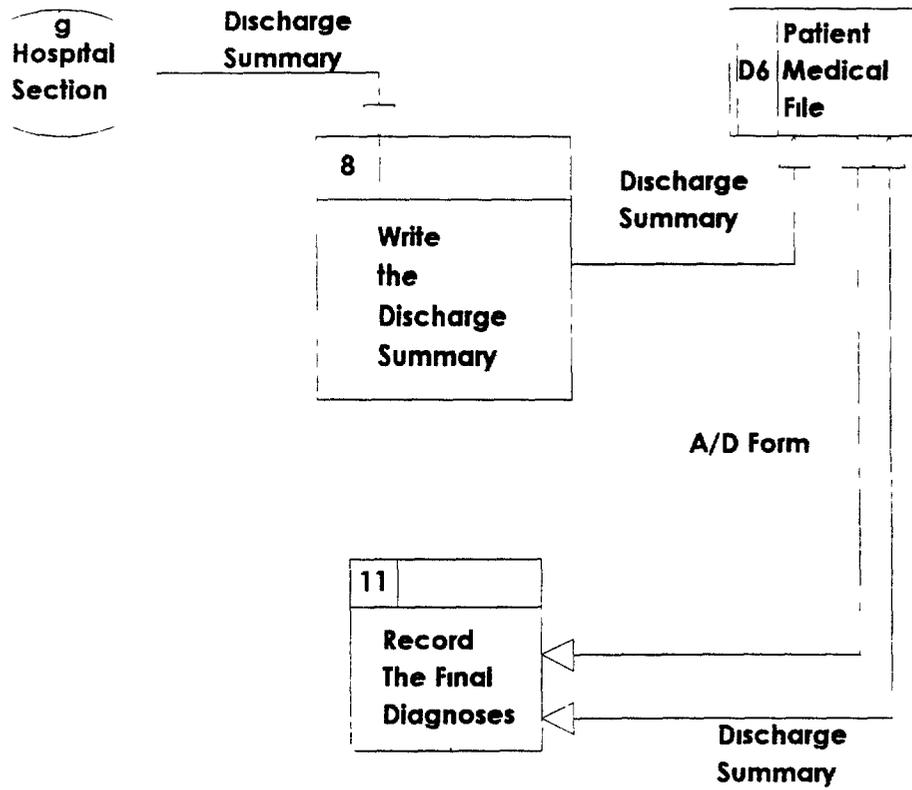
DFD-7
RECORD ADMISSION DIAGNOSES



This process is used to record the admission diagnoses

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**DFD-8
DISCHARGE DIAGNOSES REGISTRATION**

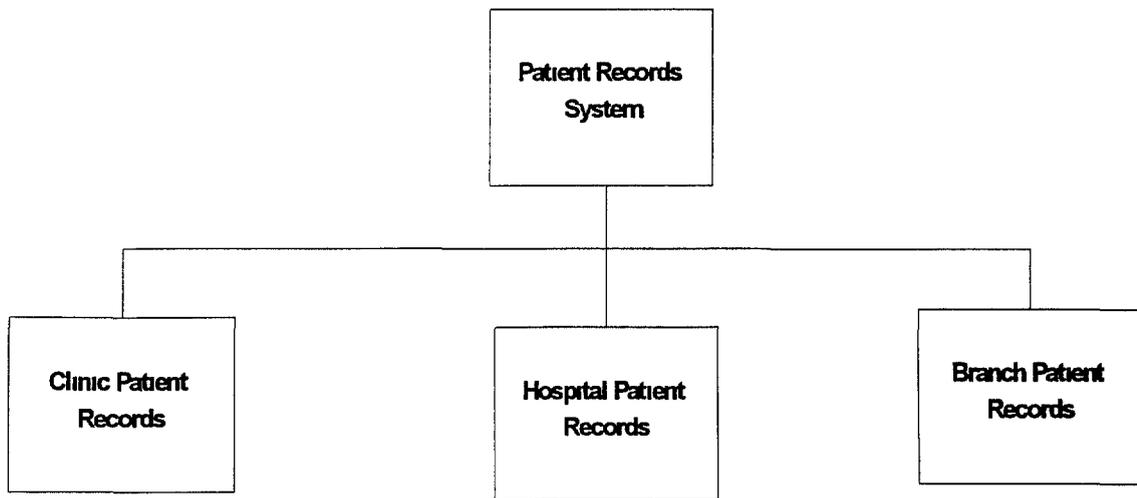


This function is used to record a patient's discharge diagnoses

APPENDIX B

FUNCTIONAL DECOMPOSITIONS

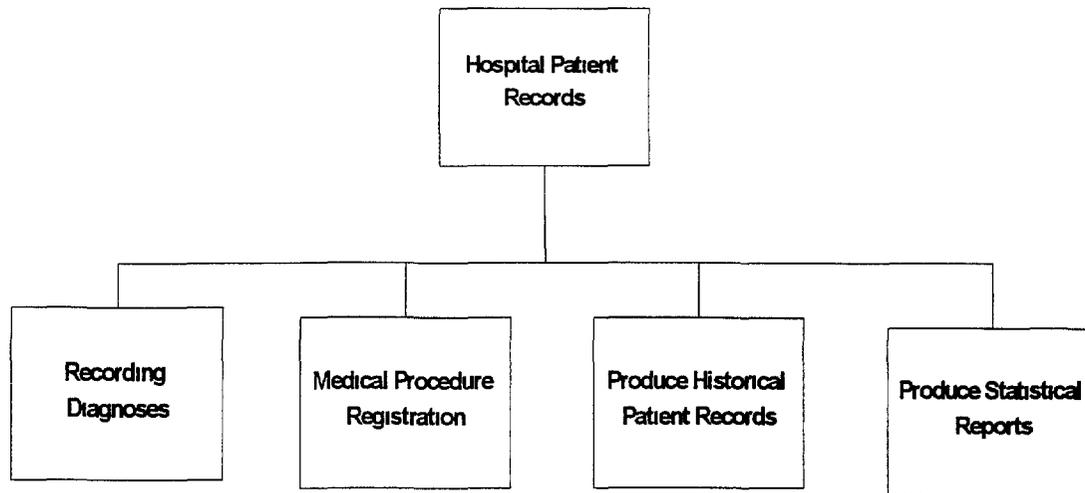
**FD-1
PATIENT RECORDS MODULE**



The Patient Records Module covers three major areas

- o The Clinic Patient Records Applications covers the activities by General Practitioners, Specialists, and procedure centers during visits to HIO polyclinics. It also produces statistical and analytical reports for the polyclinic.
- o The Hospital Patient Records Application covers the registration of hospital visits, procedures done, and the discharge diagnoses for every inpatient. It also produces statistical and analytical reports for the hospital.
- o The Branch Patient Records Application produces statistical and analytical reports for both clinics and hospitals.

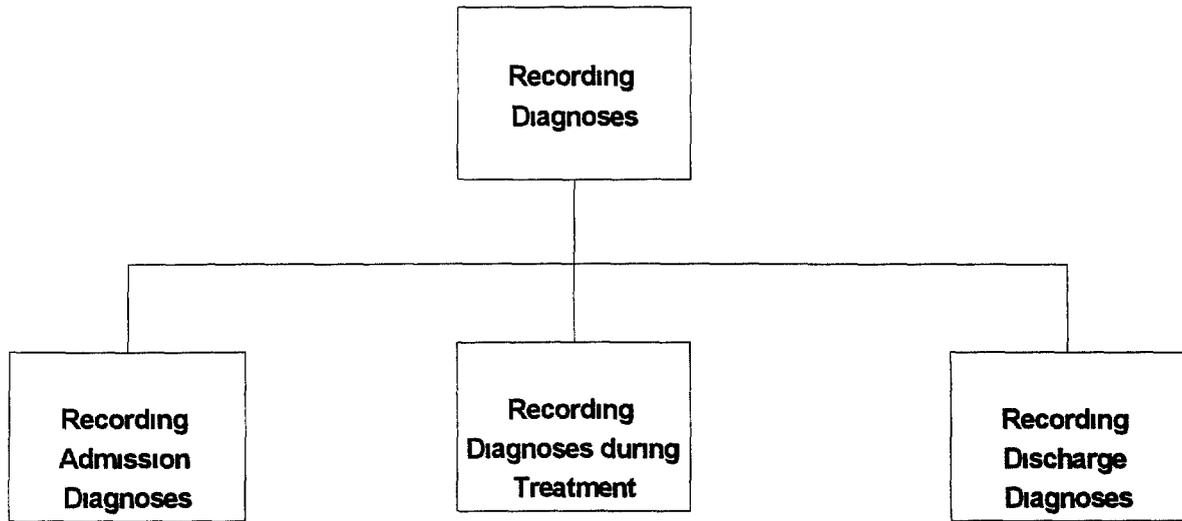
**FD-2
INPATIENT PATIENT RECORDS APPLICATION**



In a hospital, the Inpatient Patient Records Application will cover the following

- o It will record the different diagnoses, including admission and discharge diagnoses
- o It will record the occurrence of medical procedures/operations performed by physicians
- o It will maintain and produce Historical Patient Records
- o It will produce aggregated monthly statistical reports for the hospital's Statistical Department

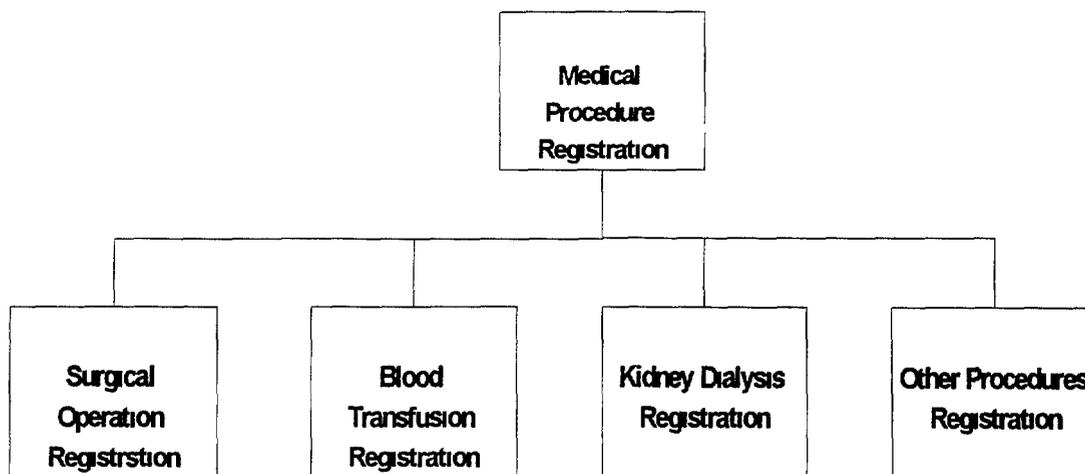
**FD-3
DIAGNOSES REGISTRATION**



The Diagnoses Registration Subfunction records

- o the admission diagnoses and diagnosing physician's name,
- o the diagnoses during treatment in the hospital section, and
- o the discharge diagnoses and diagnosing physician's name

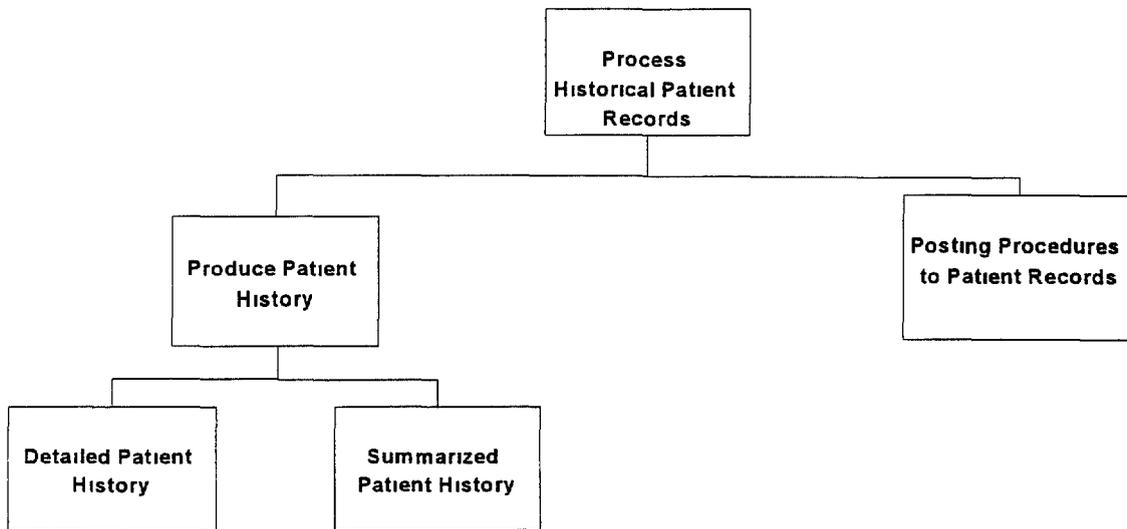
**FD-4
MEDICAL PROCEDURE REGISTRATION**



The Medical Procedure Registration Subfunction includes

- o Registration of the surgical operational, blood transfusion, and kidney dialysis cases, and
- o Registration of any other medical procedures such as lab, radiology, and so forth

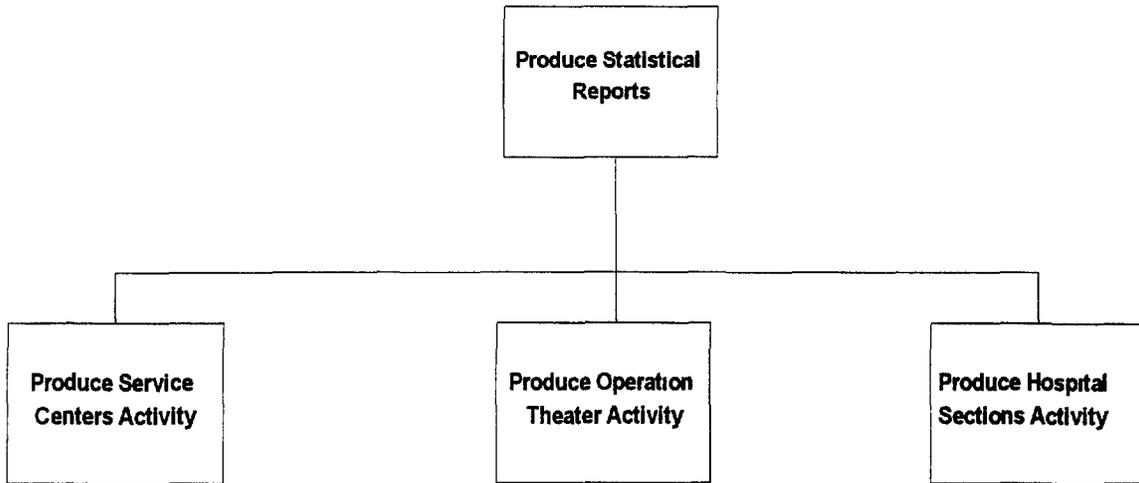
**FD-5
PROCESS HISTORICAL PATIENT RECORDS**



The medical records process will be used for maintaining patient records through

- o production of detailed and summarized patient medical records upon a physician's request, and
- o posting of the procedures and operations that have been performed for a patient to the polyclinic patient record

**FD-6
PRODUCE STATISTICAL REPORTS**



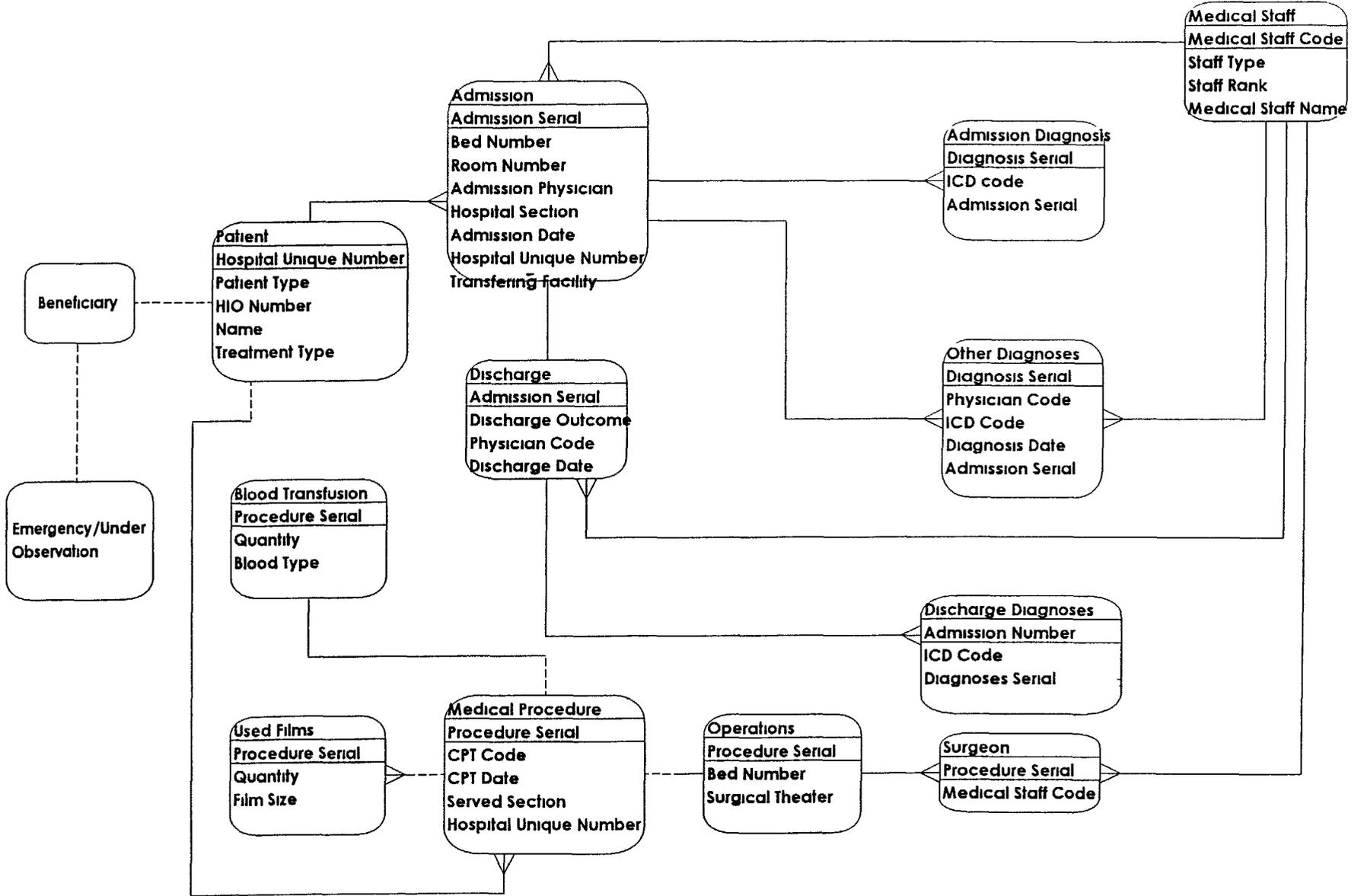
To reflect the services provided by each section, the following set of reports will be produced at the end of each month

- o the Medical Procedure Centers Activities Report,
- o the Operation Theater Activity Report, and
- o reports on the activities of each hospital section

APPENDIX C

ENTITY RELATIONSHIP DIAGRAM

**ERD-1
INPATIENT PATIENT RECORDS APPLICATION**



C-1

DRAFT

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APPENDIX D

REFERENCES

SITE VISIT OF 24 DECEMBER, 1995

Location Nasr City Hospital

- Subject
- 1 Manual workflow for medical records in hospital sections
 - 2 Admission and discharge procedures and forms used
 - 3 ICD and CPT application in the Medical Records Department
 - 4 Periodic reports produced by the Statistical Department

Attendee	Title
Dr Abdel Monem Nour el Deen	Hospital Manager
Dr Mahmoud Borhan	Treatment Manager
Dr Mahmoud Abdel Wahab	Medical Records Manager

SITE VISIT OF 15 JANUARY, 1995

Location Helwan Hospital

- Subject
- 1 Manual workflow for medical records in hospital sections
 - 2 Admission and discharge procedures and forms used
 - 3 ICD and CPT application in the Medical Records Department
 - 4 Periodic reports produced by the Statistical Department

Attendee	Title
Dr Shawki Sehyoun	Hospital Manager
Mr Mostafa Ibrahim	Administration Manager

SITE VISIT OF 16 JANUARY, 1995

Location Gamal Abdel Nasser Hospital

- Subject
- 1 Manual workflow for medical records in hospital sections
 - 2 Admission and discharge procedures and forms used
 - 3 ICD and CPT application in the Medical Records Department
 - 4 Periodic reports produced by the Statistical Department

Attendee	Title
Dr Mostafa Abdel Atee	Hospital Manager
Dr Galaa El Hawari	Medical Records Manager
Mrs Sohair Hosni	Head of Nurses

SITE VISIT OF 17 JANUARY, 1995

Location Karmouz Hospital

- Subject
- 1 Manual workflow for medical records in hospital sections
 - 2 Admission and discharge procedures and forms used
 - 3 ICD and CPT application in the Medical Records Department
 - 4 Periodic reports produced by the Statistical Department

Attendee	Title
Dr Abdel Khalek Dewidar	Hospital Manager
Dr Abdel Monem Hassan	Medical Records Manager