

A New Model for the Organizational Structure of Medical Record Departments in Hospitals in Iran

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Abstract

The organizational structure of medical record departments in Iran is not appropriate for the efficient management of healthcare information. In addition, there is no strong information management division to provide comprehensive information management services in hospitals in Iran. Therefore, a suggested model was designed based on four main axes: 1) specifications of a Health Information Management Division, 2) specifications of a Healthcare Information Management Department, 3) the functions of the Healthcare Information Management Department, and 4) the units of the Healthcare Information Management Department. The validity of the model was determined through use of the Delphi technique. The results of the validation process show that the majority of experts agree with the model and consider it to be appropriate and applicable for hospitals in Iran. The model is therefore recommended for hospitals in Iran.

Key words: Medical Record Department, Health Information Management Department, Organizational Structure, Restructuring

Introduction

Given the importance of the organizational structure of a medical record department (MRD) in ensuring that the department meets its objectives, this study aimed to provide a new model for the organizational structure of MRDs in Iranian hospitals through a comparative study with developed countries.

Background

Because hospitals are information-intensive enterprises, hospital managers must understand that only with a strong information management function can they successfully integrate information systems and information management capabilities with business strategies.¹

In healthcare organizations, the medical record is the principal repository of a patient's healthcare information, so every healthcare organization needs a medical record department that is organized and staffed to provide adequate record (information) management.²⁻³ Since the medical record department (or health information management [HIM] department) is responsible for quality information throughout the healthcare organization, effective organizational structure of this department to best meet this objective is a necessary professional goal of the healthcare organization.⁴

Healthcare organizations, however, are changing, and the roles of health information professionals are expanding.⁵ Technology is transforming the way healthcare is delivered, managed, and assessed, with a continued shift from record management to data management, so MRDs are moving from surveillance and archival functions to prospective functions and process intervention.^{6, 7} Technological changes will redefine the medical record service and challenge HIM professionals to rethink and reconceptualize their traditional work and take on newly influential roles.⁸ Redefining of roles and processes poses many new challenges to HIM professionals.⁹ HIM professionals must be ready for their new roles. They cannot return to the comfortable environment of the old medical record department.¹⁰⁻¹⁴ Thus, enhanced health information management processes and new roles are important to the future of the HIM profession, and HIM organizational structures continue to change as responsibilities evolve.¹⁵⁻¹⁷

In Iran, however, studies conducted by researchers have revealed the weaknesses of the current organizational structure of hospitals' MRDs and the necessity of restructuring those departments. In comparison with MRDs in developed countries, MRDs in Iran often use various inappropriate names for the department and lack some functions, units, or positions that are important in an MRD. In addition, MRDs in Iran face problems with the organizational position of the MRD within the hospital's reporting structure, the absence of organizational relationships between the MRDs and other departments related to information functions, and also the lack of a top manager for information functions in the typical senior hospital management team.

Therefore, considering the importance of the organizational structure of a medical record department to meet the department's objectives, this study aimed to provide a new model for the organizational structure of MRDs in Iranian hospitals through a comparative study with developed countries.

Methods

To achieve the objectives of the study, several methods were used to collect data, including situational analysis, a literature review, and the Delphi technique.

Situational analysis

Situational analysis of the specifications of organizational structures pertaining to medical record departments in Iran was carried out in all 530 hospitals covered by 40 universities of medical sciences through a review of records and documents related to hospital organization at the Iranian Management and Planning Organization and the Iranian Management Development and Administrative Reform Center of the Ministry of Health and Medical Education.¹⁸⁻¹⁹

Literature review

In order to provide a good organizational structure model for medical record departments in hospitals in Iran, three developed countries, the United States, Australia, and England, were selected for comparison. The organizational structures pertaining to medical record departments, including the

department's name, the organizational position of the department in the hospital's reporting structure, the type of departmentalization, the department's organizational units, and the scope of functions of the Internet department at hospitals in these countries, were studied by means of published literature, resources, e-mail contacts, and the Web sites of the hospitals. To consider the actual and current organizational structure of MRDs in the selected countries, the specifications of the department at a convenience sample of hospitals were studied by means of the hospitals' Web sites. The hospitals were selected between November 2004 and March 2005. This portion of the study was necessarily limited to hospitals with a specific Web site and available information about the organizational structure of the hospital's MRD. In this way, the organizational structures of the MRDs at 15 hospitals in the United States, 11 hospitals in Australia, and eight Health Care Trusts in England were studied and compared.²⁰⁻⁵⁶

Designing and validating the suggested model

Taking into account the weaknesses of MRDs in Iran and also the similarities and differences in the organizational structures of MRDs in the selected countries, a suggested model was designed for MRDs in Iran, and its validity was evaluated using the Delphi technique by means of a questionnaire administered to experts. To this end, a two-part questionnaire was developed. In section A, the suggested model was described in detail. Section B of the questionnaire included 6 questions about the experts' demographic data and 21 questions about the suggested model. Reviews of the literature and of the content of the model were conducted to help create the questions. For 19 questions, responses were initially based on agreement and disagreement. Responses for two questions were elicited on a four-point scale ranging from "completely applicable" to "completely nonapplicable," and another question was open ended. After developing the questionnaire, we asked three experts on health information management with experience in the Delphi technique to help validate the content. Also, to determine the reliability, the questionnaires were sent to 10 experts, including HIM and health service management experts and physicians. A second copy of the questionnaire was also sent to each of these experts after an interval of 15 days. The test-retest reliability among the experts was 0.89. Finally, the model was handed and mailed to 32 experts, including faculty members in the fields of health information management and health service management, hospital managers and presidents, and physicians familiar with hospital organization. To select this group of experts, several criteria were considered, including familiarity with HIM, familiarity with hospital and MRD organizational structures, experience with HIM functions, and research background on MRDs. Respondents were asked to reply to section B of the questionnaire based on each of the axes of the suggested model, as described below. Finally, the 32 completed questionnaires were collected and analyzed. Standard descriptive statistics were used to analyze the closed-ended questions. Responses to open-ended questions were reviewed to identify and classify iterative responses based on their important themes.

Findings

The findings relating to organizational structure of MRDs in the selected countries are presented in the form of three comparative tables containing the specifications of the organizational structure and the units and functions of this department.

Table 1 shows the specifications of organizational structures pertaining to MRDs in the selected countries.

According to the study, two or three names are used for this department in the selected countries. In Iran, however, 27 different names, such as "Medical Records," "Admission and Medical Records," and "Admission, Statistics, and Medical Records," are used to designate this department.

As shown in Table 1, the position of the department in the hospital reporting structure is different in the selected countries. In hospitals in these countries, the MRD may be under the direction of the CEO,

the CFO, the department of administrative affairs, the executive director, the deputy executive director, the nursing director, or the chief information officer (CIO).

The study showed that in the Health Care Trusts in England, several departments are connected with information functions, including the medical (or health) record department, the information service department, the computer service department, the information technology department, the information management and technology (IM&T) department, and the hospital library. According to the literature, an organizational establishment consisting of the medical record department, the hospital library, the information service department, and the information technology department carries out the information activities of the Health Care Trusts in England.⁵⁷⁻⁵⁹

These establishments are known by various names, such as Health Informatics, Modernisation, and so forth. Because of these differences in terminology, in this article the term *health information organization* is used to refer to the organizational structure that supervises the work of the MRD.

In hospitals in Iran, the MRD is under the direction of the hospital manager (97.8 percent), the department of administrative affairs (0.4 percent), and the nursing manager (1.4 percent). In addition, in these hospitals there are no relationships among the MRD, the hospital library, and the computer service department.

According to the study, the functional structure seems to be the most common type of departmentalization of the units of the MRDs in the selected countries. In addition, the health information organization in Health Care Trusts is mostly organized based on the product (service) of the departments that exist in these establishments. Table 2 shows the organizational units of the MRDs in the selected countries.

As summarized in Table 2, hospitals in the United States have a larger number of units within this department, and the units are more diverse. For instance, there are units such as tumor registry, birth/death certificate issuance, utilization review, physician credentialing, and so forth in the MRDs of U.S. hospitals, while there are no such units in the MRDs in hospitals in Australia or England.

MRDs in England mainly consist of a health record library (filing area) and an admission unit. In England, the clinical coding unit is often a subset of the information service department (in the health information organization). Data quality and statistics (reporting) units are also part of the information service department. In addition, units such as user support, technical support, telecommunication, and so forth are organizational units within the information technology department (in the health information organization). There are such organizational units in the United States and Australia, but they are organized separately as an information systems department.

In hospitals in Iran, the medical record department mainly consists of a statistics unit (95.3 percent), a coding unit (0.8 percent), an admission unit (99 percent), an inquiry center (or an information center, in the admission unit) (71 percent), and a medical filing area (99.2 percent).

Table 3 shows the main functions of the MRDs in the selected countries.

The study of the activities of MRDs in the selected countries shows that in the United States, these departments have a larger number of and more diverse duties. Comparatively, functions such as patient admission and patient discharge, clerical affairs related to the emergency department and clinics, and functions related to medical secretaries and ward clerks are carried out by MRD staffs in Australia and England. In the United States, however, such activities are not carried out by this department.

In Iran, MRDs have functions such as compiling administrative and health statistics, coding, patient admission and related affairs (other than patient discharge), and storage and retrieval of medical records. Data organizing and quantitative analysis are usually performed by the filing area.

The Suggested Model

According to the findings, it seems that the current organizational structure of the MRDs in hospitals in Iran has not been designed according to the concepts of effective healthcare information management and does not lend itself to efficient management of healthcare information, acceptance of responsibility for quality information, and support of quality patient care. Moreover, in hospitals in Iran, there are no powerful divisions to provide comprehensive information management services. Therefore, a model was designed to improve the organizational structure of MRDs in hospitals in Iran. The suggested model was designed based on four main axes, which are briefly described below.

The First Axis: Specifications of a Health Information Management Division

The Health Information Management Division is responsible for integrating all hospital information resources and providing comprehensive, integrated health information management services in line with the goals of the hospital.

This division consists of three organizational departments:

1. a **medical library department**, mainly responsible for preserving, maintaining, and providing information services related to library information resources
2. an **information technology department**, mainly responsible for carrying out information and communication technology (ICT) affairs for hospitals
3. a **healthcare information management department**, mainly responsible for providing medical records and healthcare information management services

All these departments are to be organized under the direction of a new top manager known as the health information manager. The health information manager's activities include those related to information resource integration, information strategic planning, development and coordination of policies and procedures for information technology, and information management.

In order to coordinate the work of the Health Information Management Division with the appropriate establishments related to clinical and nonclinical hospital affairs, the health information manager will be under direct supervision of the hospital president with an indirect relationship with the hospital manager.

The organizational structure of the Health Information Management Division suggested for hospitals in Iran is shown in Figure 1.

The Second Axis: Specifications of a Healthcare Information Management Department

Since many inappropriate names are used to designate MRDs in Iran, and considering the goals and functions of this department as well as the philosophy of organizational restructuring, the name of this department in hospitals in Iran should be changed to Healthcare Information Management Department. In addition, according to the first axis, as described above, this department should be in the Health Information Management Division, under the direction of the health information manager.

The Third Axis: Functions of the Healthcare Information Management Department

According to the House of Delegates of AHIMA, HIM is a profession that focuses on healthcare data and the management of healthcare information resources. HIM professionals collect, integrate, and analyze primary and secondary healthcare data, and disseminate information and manage information

resources related to research, planning, provision, and evaluation of healthcare services.⁶⁰ The functions of the Healthcare Information Management Department therefore include those related to healthcare data/information gathering, processing, and distribution, as follows:

1. Healthcare data/information gathering
 - Cooperation with form designing committee for designing information form
 - Data/information quality analysis
2. Healthcare data/information processing
 - Data/information organizing
 - Data/information classifying (coding)
 - Extraction and classifying of information other than disease and operation data
 - Compiling administrative and health statistics
3. Healthcare data/information storage and distribution
 - Storage and retrieval of medical records
 - Maintenance of a variety of indices and registries (paper-based or electronic)
 - Release of information
 - Research coordination
 - Support for quality assurance, risk management, and utilization management

The Fourth Axis: Units of the Healthcare Information Management Department

The Healthcare Information Management Department should consist of three organizational units based on service line departmentalization as follows:

1. **A data gathering and maintenance services unit**, responsible for medical record storage, cooperation with form designing committee in form design/redesign, and analysis of data quality
2. **A data processing services unit**, responsible for organizing data, classifying (coding) data, and compiling administrative and health statistics
3. **An information distribution services unit**, responsible for release of information, research coordination, and cooperation in utilization review, risk management, and quality assurance

Figure 2 shows the organizational structure of the Healthcare Information Management Department.

Results of the Validation of the Model

As mentioned above, 32 experts were selected for validation of the suggested model. All of the experts participated in the Delphi technique. Table 4 shows the characteristics of the experts.

As summarized in Table 4, most of the experts were male and 30 to 50 years old. As for their areas of expertise, 37.5 percent were experts on HIM, 31.3 percent were experts on health service management, and 31.3 percent were physicians. The majority of them had a PhD degree. In addition, 68.7 percent of the experts were faculty members, 18.7 percent were hospital presidents or managers, and 15.6 percent had an executive position in the Ministry of Health (Management Development and Administrative Reform

Center). Some of the faculty members in HIM and health service management were also a director of an MRD or a president/manager of a hospital.

Table 5 shows the views of the experts on the proposed Health Information Management Division.

Analysis of the experts' views on the Health Information Management Division (the first axis) showed that the most of them agreed with the various dimensions of the proposed division, as summarized in Table 5. Overall, the first axis of the suggested model was approved with 84.8 percent agreement among the experts.

The experts' views on the specifications of the Healthcare Information Management Department (the second axis) of the suggested model are shown in Table 6.

Analysis of the experts' views showed that most of them agreed with the second axis, as shown in Table 6. Overall, the second axis was approved with 79.2 percent agreement.

It should be mentioned that disagreement of some experts with changing the name of the MRD did not affect on their views on the functions or the units of the Healthcare Information Management Department.

Table 7 shows the experts' views on the functions of the Healthcare Information Management Department.

According to Table 7, most of the experts (90.1 percent of total votes) said that the suggested functions of the Healthcare Information Management Department were appropriate. Therefore, the third axis of the suggested model was confirmed with a majority of votes as well.

Table 8 shows the experts' views on the organizational units of the Healthcare Information Management Department.

Analysis of the experts' views on the fourth axis of the suggested model showed that most of them agreed with this axis, as summarized in Table 8. Therefore, the fourth axis of the model was also approved, with 83.2 percent agreement among the experts.

In addition, the experts were asked about the applicability of the suggested model at hospitals in Iran. The study showed that 59.4 percent of the experts believed that the suggested model for the Healthcare Information Management Department could be applied in hospitals in Iran and that 62.4 percent of the experts stated that the suggested model for the Health Information Management Division could be implemented in Iran.

Discussion

A comparison of the current organizational structure of the MRDs of Iranian hospitals with those in certain developed countries revealed the weaknesses of the organizational structure of this department in hospitals in Iran. In addition, the documented advantages of the restructuring of MRDs, such as improved function, higher motivation, better communication, increased enthusiasm, and greater staff and user satisfaction, support the necessity of restructuring MRDs in Iranian hospitals.⁶¹⁻⁶⁷

In the model suggested in this study, we described a new division with three information-related departments and a new top position to manage the division.

In Iran, there is a hospital president and a hospital manager in the hospital organization. The manager of the hospital is under the hospital president. Clinical departments are under the president, and nonclinical departments are under the hospital manager. The MRD, whose main goal is to support providing quality care and treatment to patients, is under the hospital manager.⁶⁸ This may weaken the connection of this department with the clinical departments and may cause a deviation in the path of the MRD from its main goals.

In addition, departments such as the hospital library and computer services are under the president of the Iranian hospitals (directly or indirectly). Therefore, there is no organizational relationship between these departments and the MRDs, while such a relationship exists in England and many American experts have emphasized this as well.⁶⁹⁻⁷⁸ According to IHRIM, health record departments need to foster closer links with information management and technology (IM&T) departments in order to strengthen interdepartmental ties and work together toward a common aim.⁷⁹ Also, according to IHRIM and the NHS Careers Helpline, health informatics (IM&T) includes staff working in different fields including medical records, clinical coding, information and communication technology (ICT), clinical and medical informatics, and knowledge management.⁸⁰⁻⁸¹ Tegen also stresses the importance of good relationships and shared goals between the MRD and IT departments.⁸² According to Quinsey and also the AHIMA e-HIM Task Force, as healthcare organizations and vendors meet the challenges of developing and implementing information systems, they seek the integration of information technology and information management.⁸³⁻⁸⁴

The organizational relationship between medical library professionals and HIM professionals is less documented. However, it must be considered that medical literature is one of the most important health information resources that must be managed. According to Russell, "Health information includes a variety of types of information such as clinical data, epidemiological data, research data and reference data. Reference data provides current literatures and research outcomes to enhance clinical knowledge, and health information professionals must manage all of these information resources."⁸⁵

Increased consumer awareness is another factor that affects HIM. In addition, public reporting initiatives related to quality and pay for performance have become hot topics. Hospitals are on the hot seat to perform because consumers are gaining easy access to hospital performance data on the Web.⁸⁶ Relationships between MRD, IT, and medical library professionals seem necessary to provide information related to performance and health information for consumers on the Web. According to Greer, many American hospitals are now reorganizing their upper management positions and departments in ways that reflect changes in the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) philosophy about information management, so departments such as information systems, medical records, telecommunication, and the medical library are merging to form new comprehensive information management services led by a top information manager, such as a CIO.⁸⁷ In Iran, however, there is neither such an organizational relationship nor any top manager with information management functions.

Therefore, the Health Information Management Division was introduced in the model to solve problems including the lack of a senior manager such as a CIO, the lack of senior managers' commitment to information management, the lack of partnerships among the departments related to information functions, and finally the weak reporting structure. The Delphi technique showed that most of the Iranian experts surveyed, like experts from the developed countries, believed that this organizational relationship structure should be established among the MRDs and other information-related departments and that the position of health information manager should be considered for the senior management team of the hospitals to integrate all of the information functions.

Also, according to the literature, the HIM profession must be viewed as a bridge between the clinical and business functions of healthcare organizations, so the positioning of the HIM division manager between the hospital manager and the hospital president is an excellent opportunity for the HIM division to act as an information bridge.⁸⁸⁻⁹⁰

In addition, many inappropriate names, none of which reflects the main goals of the department, are used in Iran to designate the MRDs. In the selected developed countries, however, names such as Health Information, Health Information Management, or Health Information Service are mainly used to designate this department in a way that better reflects the extensive goals and roles of the department.

According to the literature, the previous role of the department as a safekeeper of records has grown to include a wide domain of clinical data management responsibilities, so it seems that the new, broader names are used to reflect this transition.⁹¹⁻⁹³ AHIMA also encourages members to ensure that information-related departments are aptly named. AHIMA advises members to base their departments' names on the

department's service philosophy, mission, and customers. The department should choose the name that best reflects its services. Department names such as patient data services, health information systems, patient or client record services, and clinical information services will likely be appropriate for MRDs.⁹⁴

A hospital, as a healthcare organization, is a multipart organization that includes clinical, nonclinical, and administrative units, so there are a variety of information resources that must be managed. Because a healthcare organization is one type of health organization and the term *health information* is broader than *healthcare information*, and because the focus of the MRD is to manage individual and aggregate patient and healthcare data and healthcare information resources, we selected the new name Healthcare Information Management Department for Iranian MRDs to reflect the philosophy of restructuring and the necessity of rethinking the department.⁹⁵⁻⁹⁷ In addition, we used the broader term *Health Information Management* to name the new, broader division whose focus is to manage all types of health information resources and media for the hospital.

Compared to developed countries, many important functions are not performed by the MRDs in Iran or they are carried out insufficiently. Moreover, the lack of some important organizational units or positions is tangible in the MRDs at Iranian hospitals. For instance, coding is carried out in the MRDs but there is no special organizational unit or position about coding in the official establishment of the MRDs.

According to the comparative study, it seems that the functional structure is the most common type of departmentalization of the MRDs in the selected countries. The suggested Healthcare Information Management Department, however, is organized based on service (product) line structure. According to Barnes, functional structure is suitable for organizing a medical record department, but Shortell states that "the functional structure is most appropriate when an organization (department) is in a relatively simple, stable environment in which few changes are taking place and there is a limited number of organizations with which the organization has contact."⁹⁸⁻⁹⁹ Clearly, a functional structure becomes unsuitable when an organization grows and begins to diversify its services, because interdepartmental coordination tends to be poor." In the suggested model, however, the Healthcare Information Management Department is not a simple department, in a stable environment, that has contact with a limited number of departments or organizations, so the functional structure is not suitable. In addition, the service (product) line structure can provide important advantages by increasing operational efficiencies and enhancing market share (meeting the user's needs). By grouping the services based on this kind of departmentalization, economies of scale and synergies ("2 + 1 = 5" solutions) can be generated.¹⁰⁰ In addition, by organizing a structure so that it focuses on the customer outcomes, we can remove obstacles to service and allow management to focus on optimizing service. By distinguishing the fundamental products or service outcomes, the department can provide customers with what they want, and the service line structure provides a framework for the systematic planning, managing, and marketing of the medical record services.¹⁰¹⁻¹⁰²

Today, healthcare organizations are structured as matrices, teams, and project-oriented work groups. Health information professionals increasingly are found in a variety of organizational units in a variety of roles as this department becomes less centralized and less compartmentalized.¹⁰³ In addition, the effect of electronic health records (EHRs) on the structure of HIM departments should not be neglected. Some administrators have stated that, in the future, the EHR will eliminate the need for the services and functions of the HIM department because paper records will be gone; but the reality is that maintenance of EHRs will change the HIM department and its functions. Every HIM function that supports paper records today is being reengineered, and many of them are being replaced by automated record management systems. Others have been modified, eliminated, or transferred to the electronic environment. Transcription and coding, for example, are often outsourced, home based, or automated. In addition, some new functions and new roles will emerge during the transition from paper records to EHRs, so the organizational structure of the HIM department will become more and more virtual.¹⁰⁴⁻¹⁰⁸ In spite of these realities, the transition to a virtual structure will not be achieved until the EHR becomes a reality. So, in countries such as Iran, with little use of IT in healthcare systems, an improved traditional structure, that is, a service line structure, will be useful to organize the MRD.

According to the above points, the suggested model is a suitable one for Iranian hospitals. Validation of the model with the Delphi technique showed that all four axes of the model were confirmed with a voting majority. Also, most responses to open-ended questions showed that most were related to barriers

to implementation of the model, not objections to the model itself (for example, time and resources needed for change management). On the other hand, most of the suggestions were stressed by only one expert; for instance, one expert suggested that the Healthcare Information Management Department should be organized in two units, and another expert suggested four organizational units, but 30 experts (87.5 percent) agreed with the three suggested units. Because we couldn't change the original model based on such suggestions, we didn't repeat the Delphi technique, and the original model was accepted as final.

In addition, the lack of quantitative evidence about the effectiveness and efficiency of the model was stated by one expert as a barrier to implementation. Some experts also emphasized the necessity of pilot implementation of the model at some hospitals before final implementation. Therefore, quantitative and qualitative studies on the efficiency and effectiveness of the model, and also on factors including motivation, communication, enthusiasm, and staff and user satisfaction with the new model, should be considered. In addition, other studies should be performed to support this study. Studies on the organizational structure of IT departments and medical library departments may also be necessary. No experts on medical libraries participated in the study to validate this model, so another study must be performed to evaluate the position of the medical library within the HIM division. Also, studies on new positions and roles needed, and their job descriptions, could be the focus of future work.

Conclusion

The current organizational structure of MRDs in Iran is not appropriate for the efficient management of healthcare information, and there is no powerful information management division to provide comprehensive information management services in hospitals in Iran. These problems may result in deficiencies and weaknesses of the MRD in the process of working toward its main goals. Therefore, in order to improve the current organizational structure of this department in Iran, a suggested model was designed and validated. The results of the validation of the suggested model show that the majority of experts agree with the model and consider it to be appropriate and applicable for hospitals in Iran. Therefore, implementation of the suggested model in the hospitals in Iran is strongly recommended.

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Figure 1

**Organizational Structure of the Health Information Management Division
Suggested for Hospitals in Iran**

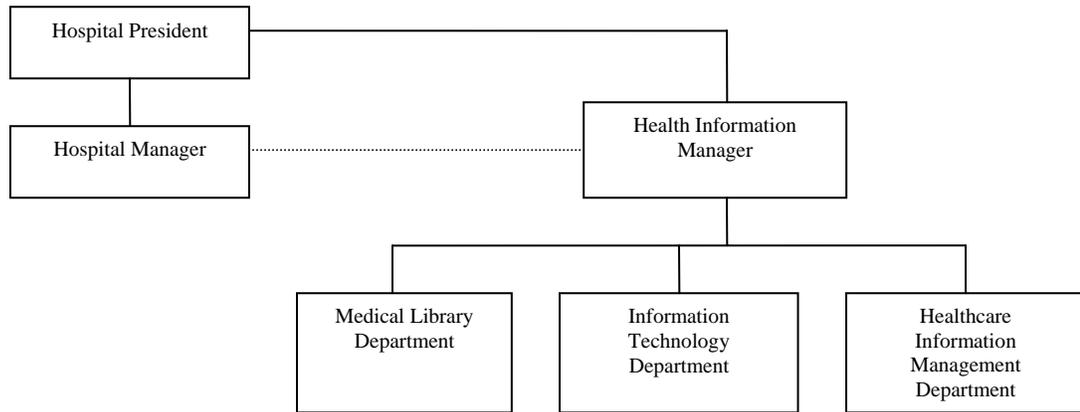


Figure 2

Organizational Structure of the Healthcare Information Management Department

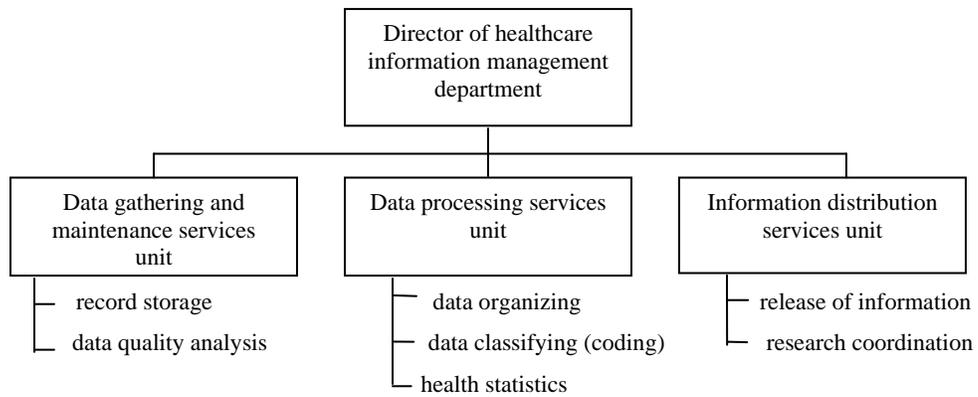


Table 1

Specifications of the Organizational Structure of MRDs in Selected Countries

Country	England		Australia	United States
Specification	Health Information Organization	MRD	MRD	MRD
Department name	Various, with emphasis on information technology, e.g., Health Informatics	- Health Records Dept. - Medical Records Dept.	- Health Information Services Dept. - Medical Records Dept.	- Health Information Management Dept. - Health Information Dept. - Medical Records Dept.
Organizational position in the hospital reporting structure	Various, e.g., under the direction of executive director, deputy of executive director, or director of finance	Supervised by the Health Information Organization	Various, e.g., under the direction of executive director, deputy executive director, or nursing director	Various, e.g., under the direction of CIO, CEO, CFO, or administrative affairs
Type of departmentalization	Service (Product) Line Structure	Functional Structure	Functional Structure	Functional Structure

Table 2

Organizational Units of Medical Record Departments in the Selected Countries

Organizational units	Countries			
	USA	Australia	England	
	MRD (n=15) Frequency (percent)	MRD (n=11) Frequency (percent)	MRD (n=8) Frequency (percent)	Health Information Organization (n=8) Frequency (percent)
- Coding (clinical coding)	13 (87)	11 (100)	3 (37.5)	5 (62.5)
- Filing area	8 (53)	10 (91)	8 (100)	7 (87.5)
- Transcription	13 (87)	4 (36)	-	-
- Release of information (or correspondence)	10 (67) -	4 (36) -	1 (12.5) -	1 (12.5) -
- Record analysis (or data quality)	6 (40)	2 (18)	1 (12.5)	4 (50)
- Record completion	7 (47)	-	-	-
- Statistics	4 (27)	9 (82)	-	3 (37.5)
- Tumor registry	7 (47)	1 (9)	-	1 (12.5)
- Data abstracting	6 (40)	-	-	-
- Birth/death certificate	5 (33)	-	-	-
- Record (data) organizing	4 (27)	1 (9)	-	-
- Utilization review	3 (20)	-	-	-
- MPI maintenance	3 (20)	-	-	-
- Physician credentialing	3 (20)	-	-	-
- Quality Assurance	1 (7)	-	-	-
- Admission	-	5 (45)	4 (50)	5 (62.5)
- Clinic clerical support	-	4 (36)	2 (25)	-
- DRG & Case mix analysis	-	4 (36)	-	-
- <i>Medical Records</i> *	-	4 (36)	-	-
- Patient discharge	-	3 (27)	-	-
- Information System	-	3 (27)	-	-
Administration	-	-	-	-
- Form design	-	1 (9)	-	-
- Training	-	-	2 (25)	5 (62.5)
- Medical secretary	-	-	2 (25)	-
- System security (or data protection)	-	-	-	6 (75)
- Technical support	-	-	-	5 (62.5)
- Telecommunication	-	-	-	3 (37.5)
- User support	-	-	-	3 (37.5)
- Website development	-	-	-	3 (37.5)
- Clinical IS development	-	-	-	2 (25)
- Performance management	-	-	-	2 (25)
- Risk management	-	-	-	1 (12.5)
- Medical library	1 (7)	-	-	1 (12.5)

* In Australia, medical records unit is a subset of health information service department and its functions are those related to maintenance, organizing and analyzing patients' records.

Table 3

Common Functions of Medical Record Departments in the Selected Countries

Functions	Countries	USA	Australia	England	
		MRD	MRD	MRD	Health Information Organization
- Storage & retrieval of medical records		√	√	√	√
- Clinical coding		√	√	√	√
- Compiling administrative and health statistics		√	√		√
- Release of information		√	√		
- Record (information) analysis		√			√
- Cooperative in data gathering		√			
- Special disease registry (e.g. tumor registry)		√			
- Record (data) organizing / assembly		√		√	
- Maintenance of variety indexes		√			
- Cooperation in form design		√			
- Quality care support (Q.A, U.R, R.M, and physician credentialing)		√			
- Clinical audit support					√
- Issuing of birth/death certificates		√			
- Transcription		√	√		
- DRG assignment			√		
- Case mix analysis			√		
- HIS administration			√		
- Patient admission			√	√	√
- Patient discharge			√		
- Clerical affairs related to emergency dept. & clinics			√	√	
- Functions related to medical secretaries and ward clerks			√	√	
- Applications & systems development					√
- Management of ICT infrastructure					√
-Information system (IS) security					√
- Functions related to medical library					√
- Functions related to Medical Records Dep.					√

Table 4

Description of Experts ($n = 32$)

Characteristics of Experts	Frequency (percent)
Sex:	
Male	18 (56.3)
Female	14 (43.8)
Age:	
<30	0 (0)
30–40	23 (71.9)
40–50	7 (21.9)
>50	2 (6.3)
Specialty:	
Health information management	12 (37.5)
Health service management	10 (31.3)
Physician	10 (31.3)
Last degree:	
PhD	22 (68.8)
Medicine	10 (31.3)
Current job title:	
Faculty member*	22 (68.8)
Hospital president/manager*	6 (18.8)
Director of MRD*	3 (9.4)
Other	5 (15.6)
Years in current position:	
<5	8 (25)
5–10	8 (25)
10–15	8 (25)
15–20	4 (12.5)
>20	4 (12.5)

** Some of the faculty members were also director of an MRD or president/manager of a hospital.*

Table 5

Expert Views on the Health Information Management Division (First Axis)

Specifications	Total	No Response	Disagreement	Agreement
	Frequency (percent)	Frequency (percent)	Frequency (percent)	Frequency (percent)
Establishment of the Health Information Management Division	32 (100)	1 (3.1)	1 (3.1)	30 (93.8)
Affiliated departments:				
- Medical Library Dept.	32 (100)	3 (9.4)	8 (25)	21 (65.6)
- Information Technology Dept.	32 (100)	3 (9.4)	2 (6.3)	27 (84.4)
- Healthcare Information Management Dept.	32 (100)	1 (3.1)	3 (9.4)	28 (87.5)
Existence of health information manager for managing the division	32 (100)	2 (6.3)	0 (0)	30 (93.8)
Organizational position of health information manager in the hospital reporting structure	32 (100)	2 (6.3)	2 (6.3)	28 (87.5)
Functions of the health information manager	32 (100)	3 (9.4)	3 (9.4)	26 (81.3)
Total	224 (100)	15 (6.7)	19 (8.5)	190 (84.8)

Table 6

Experts' Views on the Specifications of the
Healthcare Information Management Department (Second Axis)

Specifications	Total	No Response	Disagreement	Agreement
	Frequency (percent)	Frequency (percent)	Frequency (percent)	Frequency (percent)
Changing the name of the MRD	32 (100)	2 (6.3)	3 (9.4)	27 (84.4)
Changing the name of the MRD to Healthcare Information Management Department	32 (100)	5 (15.6)	6 (18.8)	21 (65.6)
Organizational position of the department within the hospital reporting structure	32 (100)	1 (3.1)	3 (9.4)	28 (87.5)
Total	96 (100)	8 (8.3)	12 (12.5)	76 (79.2)

Table 7

Experts' Views on the Functions of the
Healthcare Information Management Department (Third Axis)

Specifications	Total	No Response	Disagreement	Agreement
	Frequency (percent)	Frequency (percent)	Frequency (percent)	Frequency (percent)
Cooperation in form design	32 (100)	1 (3.1)	2 (6.3)	29 (90.6)
Data quality analysis	32 (100)	1 (3.1)	2 (6.3)	29 (90.6)
Data organizing	32 (100)	1 (3.1)	2 (6.3)	29 (90.6)
Data classifying (coding)	32 (100)	1 (3.1)	2 (6.3)	29 (90.6)
Extraction and classifying information other than disease and operation data	32 (100)	1 (3.1)	2 (6.3)	29 (90.6)
Compiling statistics	32 (100)	1 (3.1)	2 (6.3)	29 (90.6)
Research coordination	32 (100)	1 (3.1)	2 (6.3)	29 (90.6)
Support of quality assurance, risk management, and utilization review	32 (100)	1 (3.1)	2 (6.3)	29 (90.6)
Release of information	32 (100)	3 (9.4)	2 (6.3)	27 (84.4)
Storage and retrieval of medical records	32 (100)	1 (3.1)	2 (6.3)	29 (90.6)
Maintenance of indices and registers	32 (100)	1 (3.1)	2 (6.3)	29 (90.6)
Total	352 (100)	13 (3.7)	22 (6.3)	317 (90.1)

Table 8

**Experts' Views on the Organizational Units of the
Healthcare Information Management Department (Fourth Axis)**

Specifications	Total	No Response	Disagreement	Agreement
	Frequency (percent)	Frequency (percent)	Frequency (percent)	Frequency (percent)
Existence of the three suggested units	32 (100)	2 (6.3)	2 (6.3)	28 (87.5)
Functions of the data gathering and maintenance services unit:				
- record storage	32 (100)	3 (9.4)	2 (6.3)	27 (84.4)
- data quality analysis	32 (100)	1 (3.1)	4 (12.5)	27 (84.4)
Functions of the data processing services unit:				
- data organizing	32 (100)	1 (3.1)	5 (15.6)	26 (81.3)
- data classifying (coding)	32 (100)	2 (6.3)	5 (15.6)	25 (78.1)
- compiling statistics	32 (100)	2 (6.3)	3 (9.4)	27 (84.4)
Functions of the information distribution services unit:				
- release of information	32 (100)	2 (6.3)	3 (9.4)	27 (84.4)
- research coordination	32 (100)	1 (3.1)	5 (15.6)	26 (81.3)
Total	256 (100)	14 (5.5)	29 (11.3)	213 (83.2)