

# Medical Records Role in Healthcare Delivery in 21<sup>st</sup> Century

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**SUMMARY.** In the growth of scientific medicine, medical records have played an important role as a tool and basis for planning patient care besides medical education, research and legal protection. The author wish to share with congress participants, the experience gained in eight nations, having served at the national level as Senior Medical Record Consultant Adviser and visiting WHO Consultant, in Kuwait, Saudi Arabia, Bahrain, Qatar, UAE, Oman, Afghanistan and India. The blueprint for development of medical records included three phases. The first phase surveyed the existing status of medical records. The second phase suggested appropriate systems, policies and procedures, trained personnel, and organized the medical record departments. The third phase implementation of EHR, education, training, and monitoring. During this phase, the author undertook the study of importance of medical records. Problems of Medical Records, there was no clear concept of Medical Record System earlier. In some hospitals MRD's were so poorly organized, missing records, non-availability of laboratory and radiology reports resulted in creation of new records and new investigation orders, on each visit by the patient and there was no continuity in patient care. There was repetition of doctor's work like history documentation, physical examination, investigations and prescribing drugs, the hospital patient care services were chaotic with much confusion and duplication of work. While developing software, most important aspect is meticulous preparation of domain of all functions, EHR related interoperable and accreditation standards, classification of diseases list, alerts, reminders, and clinical decision support systems for quality

improvement, have to be incorporated. The theme "What are the Medical Records for?" have to examined 360 degrees to incorporate all required characteristics stated above in the EHR that would meet the need of 21st Century. Keywords: medical records, role, EHR, healthcare delivery, 21st century

## 1. INTRODUCTION

In the growth of scientific medicine, medical records have played an important role as a tool and basis for planning patient care besides medical education, research and legal protection. Manual medical records have undergone tremendous transformation since the world wars. , particularly from second one as the healthcare policy makers and healthcare providers have realized that good healthcare could be possible only when scientific comprehensive and integrated medical records are maintained from birth to death including birth information, immunizations, child growth and periodic health problems and remedies provided. This has lead many nations in improving the medical record system by developing international and accreditation standards, disease classifications to improve the quality of medical records to provide best possible healthcare to entire community and population as a whole.

Many nations although have embraced the computerization for quite some time, could not attain required

results despite spending huge amount due to certain drawbacks.

## 2. MATERIALS AND METHODS

The author wish to share with congress participants, the experience gained in eight nations by serving in the Ministries of Health at national level as Senior Medical Record Consultant Adviser and visiting WHO Consultant from 1981-2008, in all the six Gulf Cooperative Council (GCC) Countries (Kuwait, Saudi Arabia, Bahrain, Qatar, UAE and Oman). Apart from this, he also served in India and Afghanistan from 1966 to 1980. During the course of four decades, as a consultant, he has overseen the development of most neglected medical records, moving from virtually no systematic medical record services to the foundations of national Electronic Health Record (EHR) system in less than 20 years leading to paperless records.

The GCC countries had mixed progress; a few hospitals (5-10%) had a reputation of maintaining high standards, while in majority of the hospitals, health record management was absent at the fundamental planning and budgeting levels of health services.

### 2.1. Blueprint to develop good Medical Record System

The blueprint for development of medical records included three phas-

Country	GDP	MR Consultant Year served	No. of Hosp. (Government)
Kuwait	\$21,600	1981-1986	13
Saudi Arabia	\$13,800	1986-1993	250
Bahrain	\$25,300	1993	3
Qatar	\$29,400	1997/2003	5
UAE(Abu-Dhabi)	\$49,700	2004-2005	7
Sultanate of Oman	\$14,100	1993-2004	41

**Table 2.** GDP, Consultant served and Number of Hospitals in GCC Countries

es. The first phase surveyed the existing status of medical records. The second phase suggested appropriate systems and procedures, trained personnel, and organized the medical record departments. The third phase was dedicated to implementation of electronic health records, continuous education, training, and monitoring to ensure the medical record departments rendered good service for patient care, medical education and research.

### 3. RESULTS

#### 3.1. The Medical Record

##### 3.1.1. Definition of Medical Record.

The medical record is an orderly written report of the patient, contains identification data, history, physical, progress notes, lab, radiology findings, treatment including medical and surgical and course, when complete it should contain sufficient data to justify the investigations, diagnosis, treatment, length of stay, and end result. Each medical record reveals information, always centered on a patient (who may be a man, woman, or a child). In other words, the medical record can be defined as What, Where, When, Who, How and Why of patient care.

##### 3.1.2. The purposes of the EHR should be.

- To provide a means of communication among all authorized healthcare providers
- To serve as an easy reference for providing continuity in patient care
- To furnish documentary evidence of care provided in the health care facility
- To serve as an informational doc-

ument to assist in the quality review of patient care

- To protect the patient, physician, hospital and others in the event of litigation
- To render clinical and administrative data for administrative, financial and other purposes
- To supply pertinent patient care information to authorized organizations and third party payers.

- To protect and ensure security of information, confidentiality, privacy of patient information

##### 3.1.3. The Importance of Medical records.

The records are valuable to many individuals and groups: patients; physicians; health care; institutions; research teams; the teaching program; national health agencies; and international health organizations. The EHR developed should address these issues.

##### 3.1.4. The Patient.

- Present and past state of health
- Analysis of present illness in terms of diagnosis and prognosis
- Consultation opinion
- Serve as reference
- Accessibility of old record for physician to review and analyze previous illness
- Quick treatment- reducing the length of stay
- Allergies and drug reactions are noted
- Previous surgical procedures are recorded and patient education is noted
- Protect from over prescription, unnecessary surgical exploration, and repetition of investigations
- Protect from legal action
- Assist kith and kin in settling property litigation
- Obtaining blood group
- Obtaining medical certificates, such as birth, death, insurance, and so forth

##### 3.1.5. The Physician.

- Yields information about previous treatment, reactions, allergies, drugs, investigations, meth-

ods of treatment, and results of care

- Suggests newer lines of investigations and treatment
  - Evaluation of drugs for their clinical effect
  - Information about availability of newer drugs for patients
  - Comparative studies
  - Medico legal concerns
  - Teaching and research
- ##### 3.1.6. The Healthcare Institution.
- Evaluation the competency of the medical, nursing, and ancillary

Country	MRD* Well-equipped Adequate staff (un-trained)	MRD* Lack Policies & Proc. Poor Manage-ment	EHR Vendor Developed	EHR In- House Developed
Kuwait	Yes	Yes	Yes	Partially
S.Arabia	No	Yes	Yes	-
Bahrain	Yes	Yes	Part.	Yes
Qatar	Yes	Yes	Yes	-
UAE -A. -Dhabi	Yes	Yes	Yes	-
Sultanate of Oman	No	Yes	-	Yes

**Table 3.** EHR implementation in the GCC Countries

staff (Quality Assurance)

- Justifying the investigations, diagnosis, results of treatment
  - Medico legal purpose and defense in malpractice suits
  - Basis for preparing operating budgets
  - Administrative control over functional activities
  - Basis for distribution of expenses when computing costs of operation
  - Statistical data for controlling bed allocation, infection, mortality rates, and length of stay
  - Planning-additional facilities, staff, equipment, improving medical education and patient care
- ##### 3.1.7. The Research Team.
- Medical Science is dynamic, new techniques, new methods, , and new medications
  - Conduct research to meet own country's needs
  - Research results are shared by others
  - Each country has its own health problems
  - Medical records of present and past help in concurrent, prospective, and retrospective research
  - Learns simple and better ways to

deal with problems

- Control health care costs
- Find better drugs and techniques for swift, safe, and improved quality care
- Improve quality of services

### 3.1.8. The Teaching Program.

- Essential for medical education
- Medical students require lot of practical training besides theoretical classes
- Art of history taking, physical examination, writing treatment notes as clinical practice
- Teacher is able to teach and guide better with better teaching methods
- Students learn techniques and methods of teacher in his /her absence

- Learn traits of teacher through well documented record
- Care providers, teachers, and students learn from record their mistakes

- Records are full of documented facts of live cases, which are better than a written textbook

- Undergraduates and postgraduates benefit

### 3.1.9. National Health Agencies.

- Depend on the information for prevention and control of diseases
- Allocate budget, staff, and equipment
- Plan and construct hospitals and health centers in required locations
- Determine the type of health services required to control morbidity & mortality
- Monitor all hospitals and health institutions
- Exchange expertise from other nations
- Collaborate with international organizations
- Develop medical and allied health service education

### 3.1.10. International Health Organizations.

- Responsible for assisting and guiding nations
- Control infectious diseases and epidemics
- Provide assistance to needy nations by accepting from surplus states.
- Exchange experts and specialists
- Send medical supplies and other

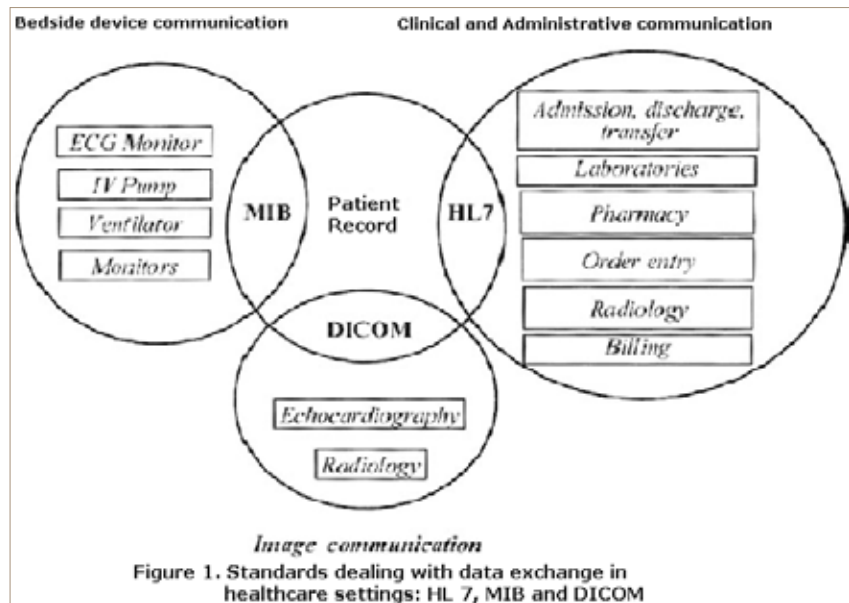


Figure 1. Standards dealing with data exchange in healthcare settings: HL 7, MIB and DICOM

- items to needy countries
- Need reliable information from all countries to achieve global healthier living

## 4. DISCUSSION AND CONCLUSION

### 4.1. Development of Electronic Health Records

The major value of EHR is the availability of electronically stored information online for access to the network to authorize at any station. Besides this, the characteristics of the system should secure the information, real-time, point of care, patient centric, information source for clinician, evidence based decision support, automate and streamline the clinician's workflow, support the collection of data for users other than direct clinical care, such as billing, quality management, disease surveillance and reporting. Further it should be capable of reduction of errors, duplication, time saving, easy accessibility, convenience, accuracy and completeness, cost reduction and research and education.

While developing software, most important aspect is meticulous preparation of domain of all functions related to physician's office, outpatient, ER., inpatient, O.T., ICU, CCU, Lab, Radiology, other imaging sections, medication; e-prescription nursing, clinical reminders, medical specialties, documentation, flow-chart and screen by database administrators and web designers prior to

technical involvement, such as research and development, coding by programmers, incorporating EHR-related standards for example; HL7, ASTM, PACS, DICOM, NCPDP, SNOMED, ICD, CPT, HIPAA and JCAHO recommended accreditation standards, testing and re-testing, mock and live operation by varied users before the software finally released for live.

### 4.1.1. Expectations from implementation of electronic health records.

The core capabilities that EHRs should possess are as follows:

- **Health information and data.** Having immediate access to key information—such as patients' diagnoses, allergies, lab test results, and medications—would improve caregivers' ability to make sound clinical decisions in a timely manner.
- **Result management.** The ability for all providers participating in the care of a patient in multiple settings to quickly access new and past test results would increase patient safety and the effectiveness of care.
- **Order management.** The ability to enter and store orders for prescriptions, tests, and other services in a computer-based system should enhance legibility, reduce duplication, and improve the speed with which orders are executed.
- **Decision support.** Using re-

minders prompts, and alerts, computerized decision-support systems would help improve compliance with best evidence based clinical practices, ensure regular screenings and other preventive practices, identify possible drug interactions, and facilitate diagnoses and treatments.

- **Electronic communication and connectivity.** Efficient, secure, and readily accessible communication among providers and patients would improve the continuity of care, increase the timeliness of diagnoses and treatments, and reduce the frequency of adverse events.
- **Patient support.** Tools that give patients access to their health records, provide interactive patient education, and help them carry out home-monitoring and self-testing can improve control of chronic conditions, such as diabetes.
- **Administrative processes.** Computerized administrative tools, such as scheduling systems, would greatly improve hospitals' and clinics' efficiency and provide more timely service to patients.
- **Reporting.** Electronic data storage that employs uniform data standards will enable health care organizations to respond more quickly to federal, state, and private reporting requirements, including those that support patient safety and disease surveillance."
- **Alignment of Templates.** Methodical arrangement of templates and buttons should facilitate the users with much ease and as a normal flow that make user favorite.
- **Significant Templates in one screen (area).** Facilitate busy physician to scan quickly to have comprehensive picture of past and present; investigation results, medications and care status in one screen will help in making convincing decision quickly.

The use of an EHR and its carefully incorporated International interoperable standards, accreditation standards and classification of disease list, alerts, reminders, clinical decision support systems as essen-

tial to improve quality of care. And patient safety through the reduction of medical errors coupled with more structured data capture can positively affect insurance and reimbursement by collecting all necessary accurate data elements could improve immensely the quality of health of human being dramatically in 21<sup>st</sup> century.

## 5. CONCLUSION

The adopted EHR to be successful, one has to ensure that the theme "What are the Medical Records for?" have to be examined 360 degrees to understand clearly to meet the set goal. The electronic health record should meet aforesaid characteristics scrupulously, and then only, one can be sure that overwhelmingly and comprehensively the expected results could be accomplished. Furthermore, if EHR to occur in any institution, local, or state, or federal level, there is a need of fundamental shift in "attitude", awareness, habits, and capabilities in the area privacy and security." Despite of advantages, many haven't adopted mainly due to high expenses, medical errors, lack of interoperability, old record incorporation, privacy, social and organizational barriers, technology limitations, preservation; protection legislation and legal status. The Organizing Committee of APAMI 2009 to be congratulated for having selected the right theme at right time. Without understanding clearly the concept of the theme, no institution or vendor would be able to develop proper EHR software whether it is in-house (tailor made) or vendor developed ready-made that would fulfill the need of 21<sup>st</sup> century.

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