



Global Mobile Health Care

An Electronic Framework for Portability of Health Records

By KEVIN POWER

Global healthcare (also called medical tourism) is a rapidly growing practice of traveling across international borders to obtain quality medical treatment, often at significant savings, even after accounting for airfare and a short vacation. To date more than 50 countries have identified medical tourism as a national industry. The hospitals and clinics providing services to this market often are among the best in the world, and many are staffed by physicians trained at major medical centers in the United States and Europe.

While reliable statistics are difficult to obtain, a recent Deloitte survey of U.S. health consumers¹ yielded indicators of the potential demand from U.S. consumers:

- Almost 90% would consider leaving their community or local area to get care or treatment for a condition if they knew the outcomes were better and the costs were no higher.
- 3 % report having traveled outside the U.S. to consult with a doctor or to receive treatment, and 27% said they might do so in the future.
- Nearly 40% would consider having an elective procedure performed in a foreign country if they could save 50% or more and be assured that the quality was equal to or better than what they can have in the U.S.

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A large part of the decision to travel outside the consumer's local community is linked to a successful outcome. The travel involved in achieving better results or lower costs can be either international or domestic. The Census Bureau estimates that about 39 million Americans, or 14 percent of the population, change address every year. While most people rely on a primary care provider for their health needs, anything other than a routine examination may require the primary care provider to interact with a number of other providers or for the patient to visit a specialist care provider.

In any case, the records from the primary and other care providers usually reside in several places rather than with the patient. This is even more true when travelling abroad for care. Successful post-treatment care for many types of procedures depend in large part on providing the most complete medical information on the patient as well as the records from procedures not performed locally.

An examination of the potential impact of information technology (IT) on both the supply and demand sides of the healthcare industry illustrates the potential for development of a truly portable health record.

I. The Supply Side ~ IT in the Health Care Industry and Electronic Medical Records (EMR)

The health care industry is currently one of the lowest adopters of information technology with just one in four physicians use some type of electronic medical records (EMR), and fewer than one in 10 use a comprehensive EMR system (systems that collect patient information, display test results, allow physicians to order medications and assist providers in making treatment decisions).

The timeline to full adoption of the EMR model will be extended because of concerns about cost, liability in the event of software malfunction, changing standards, and full interoperability among different systems for healthcare providers.

The conversion from paper to electronic systems in the health care industry requires not only a massive investment, it will also require a long lead time to ensure that there are compatible and interoperable systems (i.e. that can exchange information in a compatible and

readable format), a necessary condition to develop a comprehensive individual medical history.

The Electronic Medical Record (EMR) Adoption Model, shown below, measures the compliance of more than 5,000 hospitals in the U.S. with a fully electronic medical record structure. As can be seen in the chart, full compliance is a long way from a reality, for all practical purposes virtually no providers have a complete electronic medical record system.

Stage	Cumulative Capabilities	2007 Final	2008 Final
Stage 7	Medical record fully electronic; HCO able to contribute CCD as byproduct of EMR; Data warehousing in use	0.0%	0.3%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	0.3%	0.5%
Stage 5	Closed loop medication administration	1.9%	2.5%
Stage 4	CPOE, CDSS (clinical protocols)	2.2%	2.5%
Stage 3	Clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	25.1%	35.7%
Stage 2	Clinical Data Repository, Controlled Medical Vocabulary, Clinical Decision Support, may have Document Imaging	37.2%	31.4%
Stage 1	Ancillaries – Lab, Rad, Pharmacy – All Installed	14.0%	11.5%
Stage 0	All Three Ancillaries Not Installed	19.3%	15.6%
Total Hospitals		n = 5073	n = 5166

Source: Healthcare Information and Management Systems Society (HIMSS)

While the adoption of EMRs should result in more efficiency in the provision of health care and make the sharing of information among clinicians easier, it is a long-term and highly complex initiative ultimately involving multiple levels of interoperability among different systems and standards. It also focuses on the delivery of service by providers.

II. The Demand Side ~ IT and the Consumer Personal Health Record (PHR)

The growing popularity of Consumer-Directed Health Plans (CDHPs) confirms that healthcare in the US is moving toward a more patient-centric delivery system. Personal Health Records (PHR) are developed from the perspective and needs of the health care consumer and allow them to play a more active role in the provision and quality of their healthcare experience.

A PHR system provides the consumers (patients) with the tools to create a personal health record that they initiate and maintain, with inputs collected from a variety of health care providers, and the individual's own health information. PHRs are not intended to replace supplier EMR systems, rather they are intended to complement and supplement information in those systems that is either not available because of scale and interoperability issues or captures only a portion of a consumer's health profile. PHRs could include data not found in an EMR such as:

- * Personal Medical History
- * Family Medical History
- * Dietary habits
- * Herbal or nonprescription medications
- * Results from home tests
- * Nominated Health care proxy or person to contact in case of emergency
- * Living wills and advance directives
- * Organ donor information and authorization
- * Eye and dental records

¹ Source: 2008 Survey of Health Care Consumers, Deloitte Center for Health Solutions

A model PHR consists of the individual's health history and copies of medical records generated by health service providers that is electronically maintained by the consumer. Permission to view any or all medical records resides with the patient (or the patient-designated health care proxy) who then grants consent to health care professionals, doctors, hospitals, family members, etc.

A consumer-directed PHR system places the responsibility and control of individual medical history (and privacy) in the hands of the consumer. It compliments rather than replaces EMR systems under development, interfaces with those already operational, and bridges between systems of different levels of sophistication.

Consumer Concerns

The key concerns that consumers have with regard to electronic health records (EMR or PHR) are listed below:

- Security ~ the records should be stored in a safe and highly secure environment.
- Privacy ~ the records should have strict privacy controls that would help prevent unauthorized access to the information to reduce the potential for abuse or fraud.
- Portability ~ the records should be available and accessible by the consumer and authorized parties across multiple healthcare providers.

III. An Electronic Framework for the Portability of Health Records ~The Medical Register Model

"Economic studies consistently suggest that one-fifth to one-third of all money spent on producing medical services is wasted. The same or better outcomes could be achieved for 20 percent to 33 percent less with a tool that eliminates medical errors, duplicated efforts, counterproductive haste and other inefficiencies permeating the production process of health care. Health Information Technology (HIT) is the best tool for the job."²

The key differentiator for any emerging electronic system of health records is the ability to have them all in a central location (a Medical Register) to provide a complete picture of the patient's health. This location is a repository for the patient's medical history, maintained and controlled by the patient, providing the patient with privacy, security, and the likelihood of an improved health care experience for any health care provider they may use. Review of an entire medical record prior to diagnosis may lead to more accurate diagnosis and appropriate treatment.

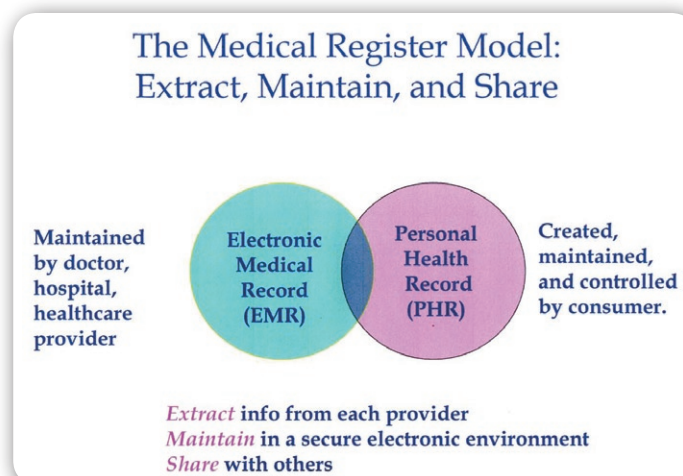
The Medical Register Model ~ Key Features

The Medical Register model is a framework of technical specifications and access rules for PHR systems.

Technically, a Medical Register system is accessible via a standard Internet web browser on a 24x7 basis. System security is obtained through highly secure and fully redundant central server with two or more mirrored hosting centers in separate geographic locations. In case of a failure at either server, the system automatically switches over to the backup server.

The identity of users on the system (consumers, doctors, health care professionals, family members) can be achieved through an initial vetting process by the operator of the Medical Register- medical qualifications/certifications can be verified through external means through publicly available databases and/or licensing authorities. Once vetted, these players can then be part of and interact with the system. Additionally, the placement of digital identity technology resident on the user terminal or device ensures that all transactions

are tied to specific users. Any user will simply require a PC, an up-to-date PC operating system, and an Internet connection. The diagram below shows how the model would interact with emerging EMR systems.



Authorization

A key feature of the system is that it allows the consumer to control access to the medical records in the system by authorizing another user to access all or part of their medical records file. This is accomplished through the use of an invitation sent by the owner to another potential user. Once the user receives an initial invitation, that user will go through a similar vetting process to register on the system. Thereafter, that user will be able to interact upon invitation.

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² The Mid-Term Political Outlook for HIT: The Best Way to Get Things Done, By Jeffrey C. Bauer, PhD, *The Journal of Healthcare Information Management*, Volume 21, Number 2, Spring 2007

Rules for Access Control

The consumer has the ability to specify the level of access granted to each user.

- **One-Time Access** ~ The user might choose this option for a visit to a health care specialist so that the specialist can obtain the medical history of the patient prior to treatment. Indeed, the consumer might require this!
- **Permanent Access** ~ No restrictions. The user may choose this option for his/her Primary Care doctor and/or for his/her Health Care Proxy.
- **Time Limited Access** ~ Upon request, the consumer may grant access for a defined time period (e.g. during the course of treatment) or by setting no time limit (indefinite).
- **Scope Limited Access** ~ The consumer can determine whether to grant access to the entire medical record or to specific areas of the record (e.g. a checklist approach).
- **Read and/or Write Access** ~ The consumer may grant access to another user to read (and download or print) the contents of the authorized records. However, the consumer may also allow write access which would allow the service provider to upload results of the current medical tests and diagnosis to the patient's file.

Integrity and Accuracy ~ The Electronic Trail

Doctors and other healthcare providers will naturally be reluctant to rely solely on information provided by the patient, especially where there may be serious and chronic health problems. Since the information provided in the PHR system will come from a variety of sources, it will be important to determine the author or originator of the information contained in the PHR.

A complete electronic trail of all transactions with the Medical Register is maintained by the Register operator. A healthcare provider viewing the patient's PHR would be able to see the source of data on each medical event and determine (based on who originated the information) their level of confidence in the information, e.g. a doctor may decide that he/she has a high degree of confidence in another recognized healthcare provider's information contained in the PHR

but take more caution if all of the information is provided solely by the consumer.

The Standards Road Map

Any initiative undertaken to develop a mobile PHR should include a road map to future standards compliance with both government regulations and evolving global standards which encompass best practice and/or safeguards consumer privacy. Privacy laws are one area where there are significant differences across the border and are the main concern of consumers with regard to medical records.

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The Health Insurance Portability & Accountability Act (HIPAA) of 1996 provides certain rights to privacy for a patient's protected health information. In addition, the CCHIT report containing recommendations on PHR Certification stated that “privacy should be the #1 goal of certification --the principal value certification can offer is to reduce concerns about privacy.”³ The ultimate goal, however, is to develop a road map towards compliance with emerging security, HIT, and international standards and to interface with EMR systems as they evolve.

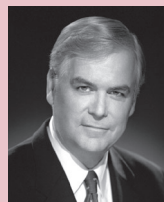
IV. Why Does It Matter?

Consumers have various reasons for obtaining their records from their doctors or hospital, including a change of doctors, a visit to a specialist health care provider, relocation, emergency medical treatment while traveling, and before and after seeking treatment abroad, to provide each health provider with a complete and accurate record. The main reason, however, is for the consumer to play a more active role in his/her own healthcare experience by taking responsibility for and control of their medical records.

So the modern choice for consumers of health care is to wait until all healthcare providers have fully interoperable electronic medical record systems in place or to become active players to push the industry in the direction of better, more comprehensive health care information. This is as true for the consumer travelling to a different part of their country for treatment as it is for the international medical tourist. In both cases, the quality of medical treatment and post treatment care will depend heavily on collecting and maintaining as much information as possible from a consumer's health care activity.

A truly global healthcare market will emerge when consumers drive the change needed to obtain better care and health care providers match that effort with the information infrastructure necessary to support it. An electronic framework for global healthcare must support truly portable personal health records. ■

About the Author



Mr. Kevin Power is Chairman of The Medical Register (www.themedicalregister.com), a development stage company involved in the creation and launch of a Personal Health Record (PHR) system. He has significant experience in the startup of large scale registry databases for both the aviation and rail industries and more than 30 years of operating and Board experience in the telecom industry for both public and private companies.

³ Certification Commission for Healthcare Information Technology, *Recommendations of the PHR Advisory Task Force: Certification of PHRs*, July 15, 2008

