



# Assessment of Technological Trends in New York City Health Clinic

(Evaluation of HIV/AIDS Prevention Program)  
Technological Trends in Health Care

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## Abstract:

*Technology has changed the face of Human Resources (HR) through the increasing impact of Human Resources Information System (HRIS). Since HR affects the entire workforce, the impact of HRIS can be dramatic in terms of lowering administrative costs, increasing productivity, speeding up response times, enhancing decision making, and improving customer service. This explorative study examines major advances in communication technologies relevant to health care that are changing the ways patients' access information; how clinicians are interacting with patient records, and how hospital staffs are managing patient tracking.*

**Keywords:** *Data Access, Electronic Health Record, Information Health Technology, Patient Record, Quality Care Delivery*

## 1. Introduction

Among industries in the United States, the healthcare industry can easily be considered the most dynamic and, at least in some respects, the most unpredictable. According to Fried & Fottler (2008), this unpredictability is natural in that healthcare is about people and hence absorbs the changes that happen in all areas of society, including politics, the economy, immigration, and popular culture. Further, healthcare technology continues to advance at remarkable rates in both the United States and Europe. For example, around the world today, healthcare professionals, and the architects and designers that serve them, are grappling with the best ways to keep pace with the rapid development and rising costs of new technologies designed to improve the safety and quality of care delivery.

Continuous aging of the U.S. population, coupled with growing health consciousness and continuous technological advances have fuelled rapid rise in healthcare costs in the U.S. and Europe for the past decades (Goyen & Debatin, 2009). Consequently, new technologies together with demographic changes have been one of the main drivers behind the continuous rise in medical expenditures in nearly

all developed countries and have become the focus of attempts to forecast and control future health budgets.

## 2. Technological Trends

According to Jelen (2009), technology is playing a central role in the future of healthcare, and central to the effort to improve financial and clinical outcomes is better integration of technology across the entire industry. Advances in technology are rapidly changing how clinicians are using and thinking about diagnostic imaging devices like CT angiography, high intensity focused ultrasound, and mobile imaging. Further, major advances are also occurring in communication technologies, especially those that focused on telemedicine, virtual consultations, and staff-to-staff communication. These advances are changing the ways patients' access information and how clinicians are interacting with patient records, and how hospital staffs are managing patient tracking (Jelen, 2009).

Furthermore, Fried & Fottler (2008) said, "information technology has changed the face of human resources (HR) through the increasing impact of human resources information systems (HRIS)" (p. 481). Further, since HR affects the entire workforce, the impact of HRIS can be dramatic in terms of lowering administrative costs, increasing productivity, speeding up response times, enhancing decision making, and improving customer service (Fried & Fottler, 2008)

## 3. Definition of Healthcare Technology

At this juncture, it is pertinent to provide a brief definition of technology in healthcare setting before proceeding with the issue of technological trends in health care. Therefore, the purpose of this paper is to identify the most relevant technological trends affecting many organizations. Consequently, authors have decided to highlight the purchase, introduction, and implementation of electronic medical record systems (EMRS) technology as the most relevant technological trend affecting my organization. Please note that authors will use both electronic health record systems (EHRS) and EMRS interchangeably.

Herndon, Hwang & Bozic (2007) stated, "healthcare technology can be defined as all drugs, devices, and medical and surgical procedures used in medical care as well as the organizational and supporting systems within which such care is provided" (p. 1293). Further, healthcare technology is any device that can cure or prevent a central disease agent, such as simple and inexpensive as vaccines, and others more expensive as Magnetic Resonance Imaging (MRI) machine (Longest, Rakich & Darr, 2000). The main reasons why healthcare organizations invest so much money on technology are: (a) to improve quality of care, (b) ensure patient safety, (3) lower costs of delivering healthcare, and (4) stay competitive in business.

### 3.1 Electronic Medical Record Systems (EMRS)

With debate on health care reform over in Washington, the American Recovery and Reinvestment Act (ARRA) signed by President Obama in February, included in the legislation could transform how clinical information is accessed, communicated, and stored-and in the process change medical practice in essential ways. The Health Information Technology for Economic and Clinical Health (HITECH) Act promotes the idea that technology, such as EMRS can make healthcare more evidence-based and efficient and less error-prone. Wilson (2009) stated, "The HITECH Act allocates approximately \$19 billion to guide and promote widespread adoption of EHRS, \$17 billion of which is available for physicians and hospitals" (P. 293).

Further, advocates of EMRS have described the advantages they offer with respect to quality of health care, largely because they can reduce medical recording errors, improve efficiency, and promote patient safety. Despite these advantages, however, healthcare organizations have been slow to adopt EMRS, and estimates of their prevalence vary widely. According to Paneth-Pollak, Schillinger, Borrelli, Handel, Pathela, & Blank (2010), electronic medical records can house patient information gathered

over time and at multiple sites, thus they have the potential to increase continuity of care and improve service delivery in multi-clinic system (p. 586).

The New York City Department of Health and Mental Hygiene (NYCDOHMH) implemented an EMRS in its 10 sexually transmitted disease (STD) clinics during 2004 and 2005, replacing all paper charts. The STD EMRS is a Web-based interface accessible from NYCDOHMH network computers to authorized individuals with a unique user login and secure passwords in order to protect patients' confidentiality (Paneth-Polak et al. 2010). Further, various security features, such as automatic logout of inactive sessions and agency-wide network security systems protect sensitive medical data from access by unauthorized individuals.

### 3. Factors Responsible for the Trend

Persistent and untreated sexually transmitted infections (STIs) can lead to adverse health outcomes such as infertility, ectopic pregnancy, and inflammatory pelvic disease (PID), timely identification and treatment of STDs is important with respect to interrupting disease transmission and sequelae in population (Paneth-Pollak et al. 2010, p. 586). Further, in the past in New York City clinics majority of clients/patients had multiple infections such as Chlamydia, gonorrhoea, syphilis HIV or herpes, and were low-income earners with no medical insurance, these patients often chose to access care through any of the 10 clinic sites. Therefore, there was no mechanism in place to transfer patients' charts from one clinic to another during each clinic visit. Consequently, it was difficult to coordinate treatment for such people through paper charts. With EMRS, staff (physicians, nurses, public health advisors and other allied workers) can view and edit patient charts from multiple work locations, potentially leading to improved information sharing and continuity of care both across and within clinics.

Furthermore, senior management realized that paper charts are prone to destruction through fire, flood, and wear and tear through repetitive handling by staffs; they believed that EMRS would withstand any of these hazardous conditions. There was also the problem of lack of space to store bulky patient medical records. Furthermore, information in paper charts are not always legible for medical and clinical staff when such information are needed; hence; the need for EMRS. The STD EMRS improves the legibility of charts, as well as the completeness and uniformity of medical record information, via drop-down options which paper charts did not have.

Another factor that responsible for the trend is that recommended and alternate treatments appear when a physician selects a given diagnosis from a menu on the screen, and these treatments can be selected with an appropriate dosage and frequency, which paper charts did not have. Further, while the old paper chart system did not have provision for referral links, the EMRS has a link to the Center for Disease Control's (CDC) STD treatment guidelines, as well as a list of referral services in New York City.

### 4. Financial and Service Effects

Experts in medical informatics have estimated that purchasing, and implementing EMRS costs between \$50,000 and \$80,000 per physician. However, since the organization (NYCDOHMH), has 10 clinic sites, plus the central office, installation and implementation of EMRS was estimated to have cost about \$2 million. Part of funds came from grants from the CDC and New York State government. Therefore, small organizations such as physician offices may have difficulty paying for, and installing EMRS due to financial constraints. In fact, physicians and hospitals have ranked financial barriers as the greatest deterrent to the adoption and implementation of EMRS (Jelen, 2009).

Webster (2010) said, "Electronic health records (EHRs) can dramatically improve quality of care and patient outcomes. According to Webster, (2010), 44% of Kaiser's 7.2 million adult patients can now assess their health records via secure online system that allow them to book appointments and directly consult with care providers (p. E193). At the NYCDOHMH, the effects of implementing EMRS were

tremendous. For example, from September to December, 2005, the percentage of clinic visits by symptomatic patients rose to 86% after the implementation of EMRS versus 74% during the same period in 2004 before the introduction of EMRS (Paneth-Pollak et al. 2010, p.588).

The introduction and implementation of EMRS by NYCDOHMH has facilitated access to patient medical records across and within its clinics. Further, EMRS has provided readily analyzable data that have led to changes in clinical practices, including more effective staff use, increased disease detection, and increased clinic capacity. EMRS has also led to a dramatic reduction in patients' waiting time as well as saving the costs of purchasing paper charts. The implications of information technology for managing human resources are enormous because: it allows coordination of activities with individuals and groups outside the organization.

Furthermore, EMRS technology can lower administrative costs, increase productivity, speed response times, improve decision making, enhance service, and employee empowerment through remote access of patient medical information.

### **5. Strategy to Address Opportunities**

Continually monitoring and evaluating the effectiveness of EMRS is critical to the realization of organizational objectives. Webster (2010) said, "with proper and effective monitoring, the implementation of EMRS has yielded dramatically more effective nursing and physician care, a 57% reduction in medical errors and 31% reduction in pharmaceutical usage considered drug-drug interactions"(p. 193). In fact, physicians can instantly review errors to identify causes and make corrections immediately.

Furthermore, education and training opportunities would be provided to every staff on how to protect the confidentiality of patients' information. Each staff would be provided with password in order to prevent outsiders or intruders have access to patients' information. Further, the management would provide decent compensation and incentives to the technical IT personnel who will be available on site from 7 am to 7 pm to ensure hitch-free operation of the system.

### **6. How to Mitigate the Associated Threats**

While, there has been a tremendous improvement in the quality of care provided to patients in the last five years, implementation of EMRS is not without its setbacks. As stated above, the stumbling block why many health care organizations have not implemented EMRS is costs. As Dr. Ferguson (medical director of Virginia Health Quality Center, Glen Allen, Va.) said, "a significant investment is required and it takes time to recover that investment through efficiency gained-as much as 18 to 24 months (Weber, 2003, p. 7). Therefore, in spite of its benefits, it is best for healthcare organizations to take costs into consideration before investing in EMRS. However, most healthcare organizations can offset the costs of implementing EMRS by taking advantage of the \$20 billion earmarked for EMRS implementation from the American Recovery and Reinvestment Act of 2009.

Further, in order to militate against potential threats, the organization would have a backup mechanism for times of system or network interruption, with a contingency plan for entering any handwritten charts into the system. Every medical and clinical staff would be trained on how to enter, and transfer patient information from paper charts to EMRS when there is system interruption. Therefore, the writer would train employees to make them more efficient and productive as well as structure work to reduce time and resources needed to deliver quality services. Furthermore, special attention would be focused on cultural values that emphasize service and efficiency, while economic incentives would be created for employees to enhance their health status.

Further, concerns over the security and privacy of medical records of patients as medical records become accessible, and shareable through electronic means would be given top priority by the organization. However, NYCDOHMH has put in place security systems that protect the unauthorized use of patients' information. Every medical and clinical staff has a password which allows such employee access to patient information. Therefore, without a password, no access is allowed. Consequently, the organization has written privacy policies that safeguard patient medical records. Any breach of patients' confidentiality by any employee is met with severe disciplinary action. The organization is able to mitigate associated threats by providing education and training to all employees on how to protect and safeguard patients' medical records in accordance with Health Insurance Portability Accountability Act (HIPAA) of 1996.

## 7. Conclusion

Technology has changed the face of HR through the increasing impact of HRIS. Since HR affects the entire workforce, the impact of HRIS can be dramatic in terms of lowering administrative costs, increasing productivity, speeding up response times, enhancing decision making, and improving customer service. Finally, the implications of information technology for managing human resources are enormous, because it allows coordination of activities with individuals and groups outside the organization. This is evident in many healthcare industries and other organizations. Therefore, we recommend that ideas from this article can also be explored by many healthcare organizations as well as other organizations in Nigeria and other parts of the world that aspire efficiency of health care or service delivery to their clients worldwide.

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