

A Glimpse at EHR Implementation Around the World: The Lessons the US Can Learn

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“The opinions in this paper are those of the author and not HIMSS or the Institute for e-Health Policy/HIMSS Foundation.”

Introduction

The development of health information technology has been a major project around the globe. Though there has been some recent collaboration among countries and their progress concerning electronic health technology, there has been a lack of focus on the approaches that each country has taken in order to successfully achieve [electronic health record](#) models that help alleviate medical costs and improve patient care through this technological innovation. This paper will focus on four countries and their methods of EHR development thus far and their successes and failures in their attempts to implement this technology. Countries have made a huge investment in resources and time in order to develop EHR technology because health IT adoption is extremely important for healthcare systems around the globe. Electronic health records offer the promise of systemwide quality improvement, cost containment, and overall improved access to care.

The United States

On February 17, 2009, the [HITECH Act](#), part of the [American Recovery and Reinvestment Act](#), was signed into law and gave health care providers and hospitals further incentive to adopt EHR technology that would not only enhance their hospitals and private practices, but also allow for better quality care and reduced healthcare costs in the long term. Though the [Patient Protection and Affordable Care Act](#) (ACA) has expanded health insurance to millions of previously uninsured Americans and further increased the push for EHR technology, adoption of EHRs has been slow due to various issues with [implementation](#), [optimization](#), [interoperability](#), and [cyber security](#). Due to these issues and the increasing \$32 billion¹ government investment, the United States must look outward at the methods of EHR adoption in other countries and the lessons learned through each tactic that various governments have pursued. Though the US has the most rigorous and costly EHR implementation program, its healthcare system lags far behind other developed nations with an adoption rate of 69% as of July 2013.²

The United Kingdom

The United Kingdom has a single payer tax supported system called the National Health Service, but it also allows for a pay-as-you go care for people who are able to afford to pay for their own care to exist in parallel to the NHS. In order to begin the process of creating a system that supports health information technology for the entire nation, the United Kingdom with the help of four companies including the US based company, the [Computer Sciences Corporation](#) (CSC), began one of the largest and ambitious health IT projects that the world had ever seen in

¹ Butterfield, Blair, "Overview of global ehealth initiatives," eHealth Initiative. HIMSS, 2011, http://www.himssme.org/11/programme/documents/TR5_BlairButterfield.pdf. (accessed March 21, 2014).

² Greg, Helen, "Top 10 Countries for EHR Adoption," Becker's Healthcare. June 27, 2013, <http://www.beckershospitalreview.com/healthcare-information-technology/top-10-countries-for-ehr-adoption.html> (accessed February 29, 2014).

early 2002. [The National Programme for IT](#) (NPfIT) attempted to create a national electronic health record system for the entire UK. It was a project that it would eliminate the challenges of interoperability between various competitive EHR systems around the UK. The lofty goal of launching a national EHR system in four years was idealistic and proved to be too much for both the [National Health Service](#) (NHS) and its EHR vendors. The main problem was that project was taking too long and it was costing the government too much money. In addition, there was far less progress in developing this complicated national EHR system than the companies assigned projected during the early stages of development. The UK, which has only twenty percent of the entire US population, wasted nine years and lost 12.7 billion pounds trying to complete the project.³ They sued CSC and the company was forced to pay the NHS \$97.5 million.⁴

This failed operation proposes a strong message to the U.S. that it is important to continue to develop a competitive model that encourages multiple EHR systems to facilitate innovation and continuous improvement. In addition, the model needs be able to accommodate the large US population, its immense diversity, and the complex state laws and overall complicate infrastructure. The UK was unable to create a system that seamlessly integrated and connected the entire population under one healthcare IT domain. However, the attempt to centralize authority among the myriad of local health organizations was simply too difficult. The UK tried to implement this complex system too quickly and relied on four companies that were unable to make their deadlines or create a system large enough to encompass the country's entire population.⁵ Though establishing a national system would allow countries to achieve the final stage of interoperability, a country's size, diversity and current health system can determine if this type of implementation is possible.

France

The healthcare system in France has both public and private insurance for their citizens. Similar to the United States, most French citizens are medically insured by their employer, but everyone has access to healthcare through the [Universal Health Coverage Act](#) established in 2000. In addition, though France also has a competitive system of providers, the [statutory health insurance](#) (SHI) ensures that health care coverage is universal.⁶ In 2000, the state established the [Universal Health Coverage Act](#) which extended coverage to residents that did not qualify for SHI

³ Bowers, Simon, "Computer systems contractor CSC set to pay shareholders \$97.5m," *The Guardian*. September 17, 2013, <http://www.theguardian.com/society/2013/sep/18/csc-courts-sign-off-payment-shareholders> (accessed March 5, 2014).

⁴ Soumerai, Stephen and Avery, Tony, "Don't Repeat the UK's Electronic Health Records Failure," *The Huffington Post*. December 1, 2010, http://www.huffingtonpost.com/stephen-soumerai/dont-repeat-the-uks-elect_b_790470.html (accessed March 5, 2014).

⁵ Charette, Robert, "UK National EHR System in Trouble: A Warning for US," *Spectrum*. January 28, 2009. <http://spectrum.ieee.org/riskfactor/computing/it/uk-national-ehr-system-in-trou>. (accessed March 17, 2014).

⁶ "International Profiles of Health Care System," *The Commonwealth Fund*. November 2013, http://www.commonwealthfund.org/~media/Files/Publications/Fund%20Report/2013/Nov/1717_Thomson_intl_profiles_hlt_care_sys_2013_v2.pdf. (accessed March 7, 2014).

coverage.⁷ The program is covered by mainly by income taxes and the government is able to work with health providers and help monitor fees and keep medical costs low. Overall, the national program covers about 70 percent of a citizen's medical bill and the remaining 30 percent is paid by the person's additional insurance plan, which is often paid by their employer. There is also a key difference in France's health care system, the sicker that you are the less you pay for your medical fees, which means that French pay higher taxes because of the way the country's healthcare system is designed.⁸

Though France has long been praised for its quality of healthcare services and is currently ahead of the United States in successfully implementing its EHR system, the project has run into a number of problems.⁹ In 1998, the [Carte Vitale](#) launched the beginnings of computer based medical information. In 2004, the [Dossier Medical Personnel](#) (DMP) expanded the country's medical computer based efforts.¹⁰ Similar to the United States, France hoped that their EHR system would help increase communication and transparency and improve overall quality of care. France first ran into problems when the government stated that the DMP would fully operational by 2007.¹¹ Progress was hindered by concerns with patient security.¹² Hospitals were wary to implement this EHR system because of past difficulties with [longitudinal paper records](#) (LMRs). In 2011, the Ministry of Health relaunched the project and made its primary focus helping vendors become "DMP-compatible."

Currently, EHR adoption rates in France are at 67% while US adoption rates are at 69% for physicians.¹³ Though the US has been more successful in implementing EHR systems with [multifunctional capabilities](#) and certified EHR adoption in US hospitals is up to 85%, France has a stronger hold on privacy laws, HIE, and interoperability, which will create a better framework for future EHR systems to successfully connect and operate with advanced capabilities. Unlike the US, France only adheres to national medical privacy laws of the European Union. France does not have a federal system with states that make their own laws, so it is easier to have harmonious rules and regulations. The country has a centralized top down driven system that

⁷Rodwin, Victo, "The Health Care System Under French national Health Insurance: Lessons for Health Reform in the United States," *The American Journal of Public Health* (2003):93, accessed March 10, 2014, PMID: PMC1447687. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1447687/>

⁸ Shapiro, Joseph. "Health Care Lessons From France." *NPR*. <http://www.npr.org/templates/story/story.php?storyId=92419273> (accessed April 22, 2014).

⁹ Blackstone, Samuel and Taylor, Adam, "These Are The 36 Countries That Have Better Healthcare Systems Than The US" *Business Insider*. June 29, 2012. <http://www.businessinsider.com/best-healthcare-systems-in-the-world-2012-6?op=1records?page=2> (accessed March 17, 2014).

¹⁰ "With the DMP, patients take control of their healthcare, *Asip Sante*. July 23, 2012. <http://esante.gouv.fr/en/the-mag-issue-3/the-dmp-patients-take-control-their-healthcare> (accessed March 26, 2014).

¹¹ Grady, Amanda, "Electronic Health Records How the United States Can Learn From the French Dossier Medical Personal," law school diss., University of Wisconsin Law School, December 2012, <http://hosted.law.wisc.edu/wordpress/wilj/files/2013/01/Grady.pdf>

¹² "IHE Implementation Case Study: French Electronic Health Record Program," Integrating the Healthcare Enterprise. http://www.ihe.net/uploadedFiles/Content/case_study_france_ehr.pdf (accessed March 26, 2014).

¹³ "Top 10 Countries for EHR Adoption."

makes it easier to create and adhere to privacy and security laws and regulations. Various state privacy laws have and will continue to hinder the efficiency and development of [health information exchange](#) (HIE) in the US especially data exchange between states. Though the [Health Insurance Portability & Accountability Act of 1996](#) (HIPAA) nationally addressed patient cyber security, “state laws are inconsistent and may conflict with each other and HIPAA.”¹⁴ Interoperability is hindered by these state laws because many of them were created much earlier than the federal HIPAA Privacy Rule. This has created major problems with the development of EHR data exchange. France can serve as an example in the development of interoperability, which has been one of the biggest problems with the development of computerized medical records in the US. The government needs to begin planning and collaborating with U.S. state and government officials now, so that the final stages of interoperability will be easier and well-planned. The high influx of newly insured U.S. citizens may overload our EHR systems and make it difficult for interoperability to occur while the government is attempting to get the population of 40 million uninsured Americans to register for insurance and gain access to healthcare. Patient security is also another huge problem when accounting for this newly insured population.

The DMP further allows the successful exchange of information in a competitive market with many vendors. Though the U.S. has addressed many guidelines with its [Meaningful Use Program](#), the DMP creates a system where competing systems can follow established guidelines that allow these technologies to work together.¹⁵ In addition to creating a more solid foundation that accounts for newly insured individuals, the U.S. government needs to work with all of its officials to help adapt to both state and federal privacy laws in order to allow further collaboration between EHR systems. In order to do this, the government needs to begin planning now and promote cooperation and teamwork between the states to allow the final stages of interoperability to go smoothly in the final stage of implementation between 2015-2017. This should include holding meetings with state officials and going over state privacy laws and how they may contradict and hinder EHR interoperability. Planning for difficulties with privacy laws now will prevent future delays and ensure that all officials are prepared and work together with each other and health care providers to reach the final 2017 meaningful use deadline.

India

The healthcare system in India is comprised of both private and public hospitals and providers. Though public hospitals are available many people opt for private hospitals because

¹⁴Dempster, Barbara, “Managing Information Privacy & Security in Healthcare HIPAA Preemption of State Laws,” HIMSS. January 2013. http://himss.files.cms-plus.com/HIMSSorg/content/files/CPRIToolkit/version6/v7/D28_Preemption_of_Laws.pdf (accessed March 24, 2014).

¹⁵“Connected Health, The Drive to Integrated Healthcare Delivery,” Accenture Connected Health Services. <http://www.himss.eu/sites/default/files/Accenture-Connected-Health-Global-Report-Final-Web.pdf>. (accessed March 7, 2014).

they often provide better care, have better infrastructure, shorter wait times, and more supplies.¹⁶ Most people pay out-of-pocket for their medical costs. In 2011, The Integrated National Health System was created and the government of India hopes to provide universal health care to all of its citizens by 2020. They want to achieve this goal by increasing its public spending from its current 1% to over 6% of its gross domestic product meaning that more taxes (about 15% of revenue) would be enforced and allocated towards healthcare.¹⁷

India, similar to the U.S., is a country with a very large and diverse population. Unlike France and the UK, India has a population of 1.2 billion people,¹⁸ which is far more than the U.S. population of 311 million. Though India is classified as a “developing nation” it is important to¹⁹ study the approaches the country has advanced so far in terms of EHR development. India is not only focusing on technology as a way to achieve successful HIE, but also the important policy decisions based around standard management in the current healthcare system that is crucial to daily operations.²⁰ They need to ensure the trust of vendors, citizens, and stakeholders in order to successfully create an electronic system that can transmit and receive information.²¹ In addition, the [National Knowledge Commission](#) (NKC) hopes to establish national standards and a common and national EHR for India and have additional IT tools created by private vendors.²² Similar to the U.S., India hopes to create a system of standards that help promote interoperability and bolster the national system. Currently, India is only in the process of creating those standards, but it is important to note the lack of security measures in place in EHR systems in India.

[The Centre for Development of Advanced Computing](#) (C-DAC) which is considered the most comprehensive EHR system in India does not have strong security and privacy capabilities functioning. This makes the system extremely vulnerable to breaches. Though the U.S. has put in place strong privacy laws with HIPAA, there have recently been some very serious security breaches. In October 2013, over the medical information of over 90,000 patients was compromised at [UW Medicine and Harborview Medical Center](#). This is just one example of how easily medical electronic data can be breached. India with an even larger population will face serious issues if they do not put more security measures in place. The idea of creating a national EHR system in such a big country is a lofty goal. The failure of the UK to develop this

¹⁶ “Healthcare System in India,” Anglinfo, <http://india.anglinfo.com/healthcare/health-system/> (accessed April 22, 2014).

¹⁷ “Healthcare System in India.”

¹⁸ “Country Comparison,” Index Mundi, <http://www.indexmundi.com/g/r.aspx>. (accessed March 25, 2014).

¹⁹ Kulkarni, Nisha, “Universal Healthcare in India,” Searchlight. <http://urbanpoverty.intellecap.com/?p=106> (accessed April 22, 2014).

²⁰ “UK National EHR System in Trouble: A Warning for US.”

²¹ Mehndiratta, Pulkit and Sachdeva, Shelly, “Current Status of Information Security for Electronic Health Record Services in India,” Jaypee Institute of Information Technology.

http://precog.iitd.edu.in/events/spsymposium13/SPSymposium_files/SPSymposium-papers/SPSymposium-paper26.pdf (accessed March 25, 2014).

²² “Health Information Network,” National Knowledge Commission Government of India. <http://knowledgecommission.gov.in/recommendations/hin1.asp> (accessed April 1, 2014).

kind of system makes this idea unrealistic for such a competitive country like the U.S. It will be important for the U.S. to watch the developments, failures, and success that India achieves with its EHR development approach.²³

Conclusions

In 2009 it was estimated that 73% of EHR implementations are, “not using the system as intended 12 months after implementation.”²⁴ This means that health care providers are not using this technology to its full capabilities. Statistics in 2013 reveal a similar struggle of EHR implementation. With the case studies above, there are many recommendations for U.S. healthcare services and domestic EHR vendors that potentially could help ensure implementation success and the return on investment that patients, healthcare practices, and the U.S. government are seeking. Though it is a big concern for the U.S., it must take the front seat in regards to privacy policies and overall implementation. As we have started to do, continue to focus on patient privacy.²⁵

In addition, now that national policy and guidelines have been developed for EHR vendors and medical facilities, the initial stages of EHR implementation and optimization should be focused on single medical facilities and hospitals. In order to successfully optimize this complex technology and eventually address the difficult task of interoperability across the country, individual systems must be fully operational and all medical professionals need to have a firm understanding of how this technology works. While hospitals and health care providers are focusing on fully optimizing this technology internally, the government and state officials should begin collaborating on how to make interoperability successful and allow this technology to abide by all state privacy laws.

The creation of the [Health Information Security and Privacy Collaboration](#) (HISPC) in 2006 was the first step in successful collaboration between states and planning the final stage of interoperability between different EHR systems amidst a myriad of privacy laws. Though the creation of this group is a step in the right direction, it still only includes 42 of the 50 states. In order for the government and states to begin working together and accomplish the difficult task of establishing interoperability amid the many different privacy laws, all states need to be members of the HISPC in order to achieve full interoperability. In addition, the government and

²³ EMR Standards Committee. “Recommendations On Electronic Medical Records Standards In India,” Ministry of Health & Family Welfare, Government of India and FICCI. April 2013.
<http://clinicaestablishments.nic.in/WriteReadData/107.pdf> (accessed March 24, 2014).

²⁴ Renner, Patti, “Why Most EMR Implementations Fail: How to Protect Your Practice and Enjoy Successful Implementation,” Patti Renner & Co. LLC. 2009.
http://www.streamlinemd.com/Data/Sites/58/assets/StreamlineMD_WhitePaper_1B.pdf (accessed April 1, 2014).

²⁵ “Why Most EMR Implementations Fail: How to Protect Your Practice and Enjoy Successful Implementation.”

state officials may need to reexamine HIPAA if certain federal privacy laws hinder the overall process of EHR interoperability.²⁶

Once healthcare facilities have implemented their EHR system to their full capabilities, interoperability between systems across state lines will roll out much more efficiently because the government and states officials planned and ensure that this technology adhered to both federal and state privacy laws. In order for these systems to work, the government needs to stress that in order for health professionals and hospitals to receive the full benefits of this technology, they must be involved in the implementation process. Many EHR implementations have failed due to lack of involvement and leadership. This process should not just involve the IT team. All medical professionals need to learn and understand the EHR system that has been implemented in their medical facility. It should also be stressed that adapting to a new EHR system is not easy and it requires patience and extra time in the initial learning stages, but there are many long term rewards after successful implementation and optimization.

Final Recommendations

Reviewing three nations at various stages of EHR implementation enables multiple recommendations and considerations for the U.S. and its quest for successful EHR implementation and optimization.

1. Health care providers and hospitals must focus on successful internal implementation and ensure that their EHR technology works to its fullest capability.
2. Successful implementation and optimization of EHR technology in medical facilities requires the strong leadership and the involvement of the entire hospital staff.
3. The government needs to focus more on planning how to successfully protect patients' privacy and transmit EHR information between states while abiding by all federal and state privacy laws.
4. All states and territories must join the [Health Information Security and Privacy Collaboration](#) (HISPC) and work with each other and the government to ensure that EHR technologies around the country are able to successfully transmit information within and between states.

These recommendations will help make implementation and optimization a more successful process for medical facilities and providers in the U.S. Reviewing the various strategies that other nations are pursuing in terms of nationwide EHR development allows the U.S. to learn from past mistakes and successes.

²⁶ "Federal State Privacy & Security Collaboration (HISPC)," Health IT. <http://www.healthit.gov/policy-researchers-implementers/federal-state-privacy-security-collaboration-hispc>, (accessed April 1, 2014).

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