

Ambria Tori Jennings

IT 104-001

Electronic Medical Records

February 26th, 2017

"By placing this statement on my webpage, I certify that I have read and understand the GMU Honor Code on <http://oai.gmu.edu/the-mason-honor-code-2/> and as stated, I as student member of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work. In addition, I have received permission from the copyright holder for any copyrighted material that is displayed on my site. This includes quoting extensive amounts of text, any material copied directly from a web page and graphics/pictures that are copyrighted. This project or subject material has not been used in another class by me or any other student. Finally, I certify that this site is not for commercial purposes, which is a violation of the George Mason Responsible Use of Computing (RUC) Policy posted on http://copyright.gmu.edu/?page_id=301 web site."

Introduction and Background:

Every day, there are multiple new inventions that are created. These creations range from new electronic devices, new automobiles, new surgical tactics, and even new ways of designing the structure, or framework, of academic buildings. Many professional disciplines bring into existence exciting breakthroughs and technological advances. These developments are vital for society in order to keep up with the fast-moving pace of the world. Perhaps, one of the most important successes of the past few decades has been the creation of Electronic Medical Records (EMR's). According to the National Alliance for Health Information Technology, the formal definition of an Electronic Medical Record is as follows: "An electronic record of health-related information on *an individual that can be created, gathered, managed, and consulted by authorized clinicians and staff within one health care organization (Capterra, 2012)*. In other words, an Electronic Medical Record is a digital copy of a patient's medical data. The main purpose of an EMR is to store a patient's information, but the list of uses continues past this. The many purposes of an EMR include storing diagnoses, body measurements, immunization records, family medical history, and prescription medications (Capterra, 2012). One of the first happenings that prompted the shift from paper to computer-based records, was in 1971 (National Institute of Health, 2013). According to the National Institute of Health (2013), The National Library of Medicine converted their most prestigious piece of biomedical database from paper to computer. In the 1970's, this database was referred to as Medicus, but was renamed to Medline.

The second event that further pushed the transition from paper to electronic medical information occurred in 2004. Former President George W. Bush appointed Dr. David J. Brailer as the first national coordinator for health information technology (Freudenheim, Milt). The drive to convert to electronic methods starts with the realization that there are limitations to

having paper documents. First, paper records can hardly ever be viewed by more than one person at a time (Harman et al., 2012). Second, paper records aren't always heavily secured. Access to paper records are controlled by locks and ID cards (Harman et al., 2012). As with other movements, the cooperation of everyone is needed in order for innovations to be triumphant. As medical care becomes more complex, physicians and other health care providers need the capacity to cope with growing trends in order to continue providing their patients the highest quality of care.

Current Use: Electronic Medical Records are used in a wide range of healthcare facilities. Hospitals, rehabilitation centers, emergency medical facilities, and doctors' offices all rely on the use of EMR's to store their patients' private information (HealthIT.gov, 2016). For example, EMR's can be used to store a patient's prescription medications. This makes it easier for primary, secondary, and tertiary physicians to access the same patient's records, without having to rely on mail, email, or faxing because the information is all within the same network. Further uses for electronic medical records include scheduling, documenting patient encounters, receiving diagnostic imaging reports, clinical billing, writing prescriptions, and patient registration (HealthIT.gov, 2016). EMR's are put into place to save healthcare workers time and allow for easier communication between physicians.

Security Concerns: While there are many benefits for an institution to rely on EMR's, as with many technological advances, there is a major security risk associated with using them. The biggest concern with EMR's is that anyone with access to the database, or even someone without access, can find a way to hack the information and use it for other purposes. Unfortunately, an event like this shows that inadequate security can have an impact on many people, and has happened before at Howard University Hospital (Ozair, Jamshed, Sharma & Aggarwal, 2015).

On May 14th, 2013, federal prosecutors charged one of Howard's medical technicians with being in violation of HIPAA, The Health Information Portability and Accountability Act (Ozair, Jamshed, Sharma, & Aggarwal, 2015). As stated in the article, prosecutors identified Laurie Napper as "using her position at the hospital to gain access to patient's names, addresses, and Medicare numbers in order to sell their information" (Ozair et al., 2015). Less than 2 months later, the hospital had to again notify patients that their information had been compromised. According to Ozair, Jamshed, Sharma, & Aggarwal (2015), a contractor that worked for Howard University Hospital had stored patient information on his laptop that got stolen out of his car. Although the patient files were password protected, they were encrypted. Encryption is a security measure of coding information, however, those with the knowledge of decoding the information can usually figure out what an encrypted message means (Ozair et al., 2015). Ozair, Jamshed, Sharma, & Aggarwal explain that a way to keep personnel in compliance with facility policies, there can be routine random audit trials. These trials give detailed information about who the user is, the time length in which they were browsing a network, and the content that they were viewing (Ozair et al., 2015). So, in the case of a security breach, a hospital can know if the incident was accidental or deliberate. With so many people using the same system simultaneously and the exchange of data constantly being sent out and brought in, EMR's are also more susceptible to crashing (Collier, 2014). A crash occurs when a software application stops functioning properly and closes out. A concern with EMR's is that data can be manipulated in any way by internal or external users (Harman, Flite, & Bond., 2012). Security measures such as antivirus software and intrusion detection must be put into place to decrease the chance of such situations from happening (Ozair et al, 2015).

Legal/Ethical Issues: Almost every topic in healthcare comes with an ethical view, or one that can be brought up in legal terms. It is important in healthcare that patients trust their physicians in order for the proper course of treatment to be taken. If patients feel as though their information will be shared with others, or that they cannot trust their providers, then it is almost impossible to have the proper doctor-patient relationship (Harman, Flite, Bond, 2012). Put into place to regulate patient privacy, The Health Insurance Portability and Accountability Act of 1996 (HIPAA) is the most important passing of law concerning ethics and healthcare. HIPAA “is a United States legislation that provides data privacy and security provisions for safeguarding medical information” (Rouse, 2015). HIPAA contains Titles that are specific to every issue that could occur in the medical field. The most important title pertaining to this paper is HIPAA Title II. Title II is also referred to as the Administrative Simplification Process, and is what people call “being in compliance with HIPAA” (Rouse, 2015). Title II is a provision under the United States Department of Health and Human Services that establishes national guidelines for processing electronic healthcare transactions (Rouse, 2015). According to Rouse (2015), HIPAA Title II can be broken down into other elements that make up the Title. First, is the National Provider Identifier Standard. This states that each healthcare facility must have a different 10-digit PIN from others that sets them apart (Rouse, 2015). Second, is the Transactions and Codes Sets Standards. This states that organizations must follow a specific guideline for “submitting and processing electronic data insurance claims” (Rouse, 2015). Third, is the HIPAA Privacy Rule. Formally known as the Standards for Privacy of Individually Identifiable Health Information, this clause protects patient’s health information (Rouse, 2015). Fourth, is the HIPAA Security Rule. The Security Standards for the Protection of Electronic Protected Health Information sets a standard for patient security measures (Rouse, 2015). Finally, is the HIPAA Enforcement Rule.

This component of Title II establishes rules for investigating HIPAA compliance complaints (Rouse, 2015). In the event that HIPAA regulations are broken, health care facilities and physicians can pay hefty fines (Rouse, 2015) and ultimately have the hard-earned accreditation taken away.

Future Use: Electronic Medical Records will be a critical tool in helping to shape the future of America's healthcare system, and possibly even in the entire world. EMR's may at first be disruptive in patient care with slight systematic hiccups, but it is the job of every physician, technician, and professional to stay ahead of successes and losses, readjust from opposition, and reapply effective tactics (Freudenheim, 2012). "Medical information is increasingly information-intensive" (Harman, Laurinda). Advances in medical technology are important for patients and an effort to make costs more affordable. In an interview done with CBS News, a patient tells the news source that EMR's saved her life (Andrews, 2009). She says that she got a call from the emergency room when lab results showed that her Potassium levels were too high. High potassium levels in kidney patients can result in death (Andrews, 2009). If it hadn't been for the hospital's EMR alert system, the patient could have been without a story to tell. Healthcare professionals are predicting that EMR's will soon not only be used for storing medical data, but, for also determining a patient's course of treatment (Harris, 2017). According to an article published in the National Public Radio (NPR), Kaiser Permanente, one of the most well-known health maintenance organizations (HMO), is working so that the concept of planning a patient's treatment through an EMR software comes to fruition (Harris, 2017). The doctor in the article, Tracy Lieu, explains to the reader that patient's almost always say "tell me what happened to others who look like me and made the same treatment decision as I did" (Lieu, 2017). Say for example, a patient has been diagnosed with End-Stage Liver Disease (ESLD). Dr. Lieu

envisions that soon, medical professionals will be able to answer this question and others alike, by simply typing in the system “ESLD”, and being presented with all of the organization’s history of handling this illness (Harris, 2017). Soon enough, EMR’s will guide the transition of the paper-filled world to one where practically everything is done digitally.

References:

1. Newhook, E. (2014). The Past, Present, and Future of Electronic Medical Records (EHRs). *Milken Institute of Public Health*.

Retrieved from: <https://mha.gwu.edu/ehr-past-present-future/>

I found this **blog** to be helpful because it talked about the future of electronic medical records. The author explains that professionals will need to be trained in order to be comfortable with EMR's and that their existence should be completely have been completely "functional and exchangeable by the year 2016". To get her readers to understand the significant conversion from paper records to electronic, Newhook provides us with a couple statistics. The most noteworthy, in my opinion, was when she writes that in 2008 only 9 percent of hospitals were using EMR's, but that quickly grew to over 80 percent in 2013. I rate this source a 4/5.

2. Freudenheim, M. (2012). The Ups and Downs of Electronic Medical Records. *The New York Times*.

Retrieved from: <http://www.nytimes.com/2012/10/09/health/the-ups-and-downs-of-electronic-medical-records-the-digital-doctor.html>

This **newspaper** article talked about the positive and negative of electronic medical records. The author says that one positive of EMR's is that they increase a patient's quality of care by providing their history whenever it is needed. One negative of EMR's is that since so much information is included in the system, it is more susceptible to crashing, and then everything must be converted to paper. I give this article a 3/5 because it was helpful, but the information was not of great use for my paper.

3. Rouse, Margaret. (2015). HIPAA (Health Insurance Portability and Accountability Act). *TechTarget*.

Retrieved from: <http://searchdatamanagement.techtarget.com/definition/HIPAA>

This **website** provided me with the definition of HIPAA, or the Health Insurance Portability and Accessibility Act. Per the article, HIPAA contains five main clauses that outline the act's main concerns. HIPAA was brought into law in 1996 under President Bill Clinton's administration. HIPAA is considered the most important passing of law when it comes to legal issues in healthcare. I give this article a 5/5 because of its validity and importance.

4. Ozair, F. F., Jamshed, N., Sharma, A., & Aggarwal, P. (2015). Ethical issues in electronic health records: A general overview. *Perspectives in Clinical Research*, 6(2), 73–76.

Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4394583/> Original:

National Center for Biotechnology Information

This **article** was very helpful in which it gave me a little information about almost everything that needs to be covered in my paper. The article gives an introduction, tells the reader about ethical issues, security concerns, and benefits. All pertaining to EMR's. Several advantages to having an EMR system that were discussed in the article are that

they increase access to healthcare, improve quality of healthcare, and cut costs. I rate this source a 5/5.

5. National Institute of Health. (2013). *National Library of Medicine*.

Retrieved from: <https://report.nih.gov/NIHfactsheets/ViewFactSheet.aspx?csid=49>

I consider this website very helpful. This webpage provided me with an important piece of my paper, which was to give a little insight regarding the history of my topic. This webpage was provided by one of the most respected healthcare institutions in the world. I give this source a 5/5. I give this website a 5 because the source is very credible, and the information was nothing short of reliable.

6. Capterra Incorporation. (2012). What is Electronic Medical Records (EMR) Software?

Capterra Medical Software Blog.

Retrieved from <http://blog.capterra.com/what-is-electronic-medical-records-emr-software/>

This blog was a big help in composing my paper. In this blog, Capterra talks about the components of an Electronic Medical Record. These components include medication tracking, appointment management, and chart management. I rate this blog a 5/5 because Capterra is a popular and trusted Incorporation located in Arlington, V.A. For that reason, the information is credible.

7. HealthIT.gov. (2016). What is an Electronic Medical Record? *National Learning Consortium*.

Retrieved from <https://www.healthit.gov/providers-professionals/electronic-medical-records-emr>

This source provided me with a few definitions of an EMR. One definition is “a digital version of a paper chart that contains all of a patient’s medical history from one practice”. Another definition is “the standard medical and clinical data gathered in one provider’s office”. The source also explains that benefits of an EMR are that it Tracks, Identifies, Monitors, and Improves (all pertaining to a patient’s health and health information). I would give this source a 2.5/5. Although it provided me with some information, I feel as though the information because redundant and non-useful in the already short article.

8. Harris, Richard. (2017). Electronic Health Records May Help Customize Medical Treatments. *National Public Radio*.

Retrieved from: <http://www.npr.org/sections/health-shots/2017/01/09/508241690/electronic-health-records-may-help-customize-medical-treatments>

I consider this source a valuable one. This source gives me a good insight on the future of EMR’s, and how they will continue to impact society. EMR’s will soon have many uses, beyond the storage aspect of them. EMR’s will soon be used as a collaborative method between patients and professionals to determine a patient’s course of action. I rate this course 5/5 because the example of future use that was provided is very useful.

9. Collier, R. (2014). Electronic medical records: preparing for the inevitable crash. *CMAJ: Canadian Medical Association Journal*, 186(7), 493.

Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3986310/>

This article was helpful because it talked about the downside to EMR's. This downside is the fact that EMR's are more susceptible to crashing because of how many people are using it at one time. When the system crashes, like it did in Boulder, Colorado, usually "server error" appears in a box-like text on the screen. Crashes can be prevented, but organizations should be prepared when it happens by having the means to convert everything to paper. I rate this article a 5/5.

10. Harman L.B., Flite, C.A., Bond, K. (2012). Electronic Health Records: Privacy, Security, and Confidentiality. *American Medical Association: Journal of Ethics*. Vol. 14, pp. 712-719.

Retrieved from: <http://journalofethics.ama-assn.org/2012/09/stas1-1209.html>

I consider this source to be very valid. This source, like some others, is from a highly-trusted institution, the American Medical Association. The article gives me information on the security, privacy & confidentiality, and future aspects of Electronic Medical Records. I give this source a 5/5.

