

A POLICY ANALYSIS ON ELECTRONIC HEALTH RECORDS:  
MEANINGFUL USE INCENTIVE FOR ELIGIBLE PROFESSIONALS

By

Pritika Ram

A Thesis Submitted to the Department of Public Policy & Administration  
California State University Bakersfield  
In Partial Fulfillment for the Degree of  
Masters of Public Administration

Spring 2011

Copyright

By

Pritika Ram

2011

A POLICY ANALYSIS ON ELECTRONIC HEALTH RECORDS:  
MEANINGFUL USE INCENTIVE FOR ELIGIBLE PROFESSIONALS

By

Pritika Ram

This thesis has been accepted on behalf of the Department of Public Policy & Administration by the  
supervisory committee:

Jinping Sun

Jinping Sun Ph.D.

6/1/11

Date

R. Steven Daniels

R. Steven Daniels Ph.D.

6/1/11

Date

## EXECUTIVE SUMMARY

Electronic health care systems have mainly been utilized in professions other than health care such as customer relationship management and resource planning. However, up until recently more health care systems are exploring the pros and cons of an electronic record keeping system. The HITECH Act under the American Recovery and Reinvestment Act (ARRA) of 2009, led by the CMS and ONC, proposes meaningful use among users of EHR systems in the U.S. health care delivery system as a critical national goal. In 2010, the Center of Medicare and Medicaid Services (CMS) published its EHR final rule regarding the incentive program for providers and eligible professionals. The CMS incentive program will provide incentive payments to eligible professionals, eligible hospitals, and critical access hospital (CAHs) or acute care hospitals as they adopt, implement, upgrade, and demonstrate meaningful use of certified EHR technology.

Health information technology (health IT) will make it possible for health care providers to better manage patient care through secure use and sharing of health information including using EHR instead of paper based medical records (Centers for Medicare & Medicaid Services, 2011). The certification process also helps providers and patients be confident that the electronic health information technology products and systems they use are secure, can maintain data confidentially, and can work with other systems to share information.

This study intends to understand the significance of implementing health information technology and EHR systems policy in health care to further understand the basis of the CMS incentive programs for providers and groups. The goals of this policy analysis are to assess current status of information technology adoption, estimate EHR system market penetration, and evaluate the barriers to EHR implementation and the economic impacts of EHR implementation. The objective of this study is to improve quality of care and patient information sharing while lowering

long term costs and errors among providers and health care organizations. Additionally, this study will identify measures to determine if current or future policies are appropriate in the adoption and implementation of EHRs throughout health care delivery systems and among types of care settings.

## TABLE OF CONTENTS

<b>Chapter One: Introduction.....</b>	<b>1</b>
Background of the Problem.....	1
Introduction.....	2
Statement of the Problem.....	3
HITECH Act.....	4
Methodology.....	5
Importance of Study.....	6
<b>Chapter Two: Statement of the Problem.....</b>	<b>10</b>
Definition of the Problem.....	10
Major Stakeholders.....	12
Goals and Objectives.....	13
Measures of Effectiveness.....	14
Potential Solutions.....	15
<b>Chapter Three: Policy Alternatives.....</b>	<b>17</b>
Status Quo.....	17
Incentive payment criteria.....	17
Comparison of future consequences.....	18
Spillovers and externalities.....	19
Constraints and political feasibility.....	19
Hospital and ambulatory care settings.....	20
Incentive payment criteria.....	21
Comparison of future consequences.....	21
Spillovers and externalities.....	22
Constraints and political feasibility.....	22
Nursing home care setting.....	23
Incentive payment criteria.....	24
Comparison of future consequences.....	26
Spillovers and externalities.....	26
Constraints and political feasibility.....	27
<b>Chapter Four: Alternative Selection.....</b>	<b>28</b>
Criteria for Recommending Alternatives.....	28
Evaluation of Alternatives based on Criteria.....	28
Status Quo.....	29
Efficiency.....	29
Feasibility.....	30
Hospitals and ambulatory care settings.....	31
Efficiency.....	32
Feasibility.....	32
Nursing home and assisted living centers.....	33
Efficiency.....	33
Feasibility.....	34
Determination of Preferred Alternatives.....	35

Outline of Implementation Strategy.....	35
Provisions for Monitoring and Evaluation.....	35
Limitations and Unanticipated Consequences.....	37
<b>Chapter Five: Summary, Conclusions, and General Recommendations.....</b>	<b>37</b>
<b>References.....</b>	<b>39</b>
<b>Appendix</b>	
Letter of Approval from the Institutional Review for Human Subjects Research.....	43
Figure 1: CMS EHR Incentive Payment Timeline.....	44
Figure 2: EHR Implementation Process.....	45

## Chapter One

### INTRODUCTION

#### Background of the Problem

On February 17, 2009, President Obama signed into law a \$789 billion dollar economic stimulus package as part of the legislation of the Health Information Technology for Economic and Clinical Health Act (HITECH). Under HITECH, eligible professionals can begin receiving reimbursement payments through Medicare and Medicaid between \$44,000 and \$65,000 over five years for physicians and a minimum of \$2 million for hospitals if they demonstrate the “meaningful use” of an Electronic Health Record (EHR) system. Conversely, those who do not elect to use EHR systems or who cannot demonstrate meaningful use of certified EHR technology will be penalized beginning in 2015; initially a 1% Medicare reimbursement reduction, and, for those who do not adopt EHR by 2018, the penalty will jump up to 3% (Centers for Medicare & Medicaid Services, 2011).

Even in this electronic age, many health care professionals use a paper-based record keeping system to manage their information, still print all documents and records, and maintain the paper version as the official record. Although it requires a great amount of effort to retrieve information, this method can be seen as very flexible and a quick support to record information. This method also requires a great deal of planning and coordination in order to maintain the system, while finding some important limitations such as space and delivery of charts where they are needed. Paper-based recording keeping is also vulnerable to disaster recovery. If the record is destroyed there is no back-up whereas electronic records can be replicated and managed to ensure that if the primary copy becomes unavailable the replicated version can be accessed

(Aziz, 2008). When the primary copy of the record is destroyed at the end of its retention period, any back-ups are disposed of as part of the same process.

Paper-based record keeping can compromise patient protection, but with an EHR system, records can be protected through access rights and permission control, and records management functionality prevents users from amending records. In addition, rights management can be assigned to records to control what a person is able to do. For example, a user can be prevented from printing a record or forwarding it to a third person.

Electronic health care systems have mainly been utilized in professions other than health care such as customer relationship management and resource planning. However, up until recently more health care systems are exploring the pros and cons of an electronic record keeping system. The Institute of Medicine has identified the rapid advances in medical technology, the developing needs of patients who are living longer lives while trying to manage chronic disease, the growing proportion of the Gross Domestic Product dedicated to healthcare, increases in the uninsured population and a poorly-organized healthcare system as a result of the healthcare gap (Institute of Medicine, 2001). And so a consensus of national leadership representing virtually all sectors and political philosophies concluded that both the economy and the healthcare system would benefit from more coordination and exchange of information about patients through the use of health information technology (HIT) such as EHRs (Livingood, Coughlin, & Remo, 2009).

## **Introduction**

In 2010, the Center of Medicare and Medicaid Services (CMS) published its EHR final rule regarding the incentive program for providers and eligible professionals. The Medicaid

EHR incentive program will provide incentive payments to eligible professionals, eligible hospitals, and critical access hospital (CAHs) or acute care hospitals as they adopt, implement, upgrade, and demonstrate meaningful use of certified EHR technology in their first year of participation and demonstrate meaningful use for up to five remaining participation years. EHR Incentive Programs provide a financial incentive for the "meaningful use" of certified EHR technology to achieve health and efficiency goals. In addition to the financial incentives eligible professionals or providers will gain other benefits such as reduction in medical errors, availability of records and data, reminders and alerts, clinical decision support, and e-prescribing/refill automation (Centers for Medicare & Medicaid Services, 2011). The program is designed to help health providers as they transition from paper-based medical records to EHRs. Incentive payments totaling as much as \$27 billion may be made under the program.

### **Statement of the Problem**

Since its release, many questions have ascended from safety net providers seeking information and clarification on how to qualify as a meaningful user of HIT and how to qualify for the CMS incentive payments. This study intends to understand the significance of implementing health information technology and EHR systems policy in health care to further understand the basis of the CMS incentive programs for providers and groups. This study also intends to understand the relevance of the CMS incentive program and how this public policy impacts the public at large.

Certified EHR technology gives assurance to purchasers and other users that EHR systems offer the necessary technological capability, functionality, and security to help them meet the meaningful use criteria. Health information technology (health IT) will make it possible

for health care providers to better manage patient care through secure use and sharing of health information including using EHR instead of paper medical records (Centers for Medicare & Medicaid Services, 2011). The certification process also helps providers and patients be confident that the electronic health information technology products and systems they use are secure, can maintain data confidentially, and can work with other systems to share information.

Meaningful use of Certified EHR technology is a core requirement for eligible health care providers who seek to qualify to receive incentive payments under the CMS incentive program. The Office of the National Coordinator for Health Information Technology (ONC) issued a final rule to establish the permanent certification program for HIT to enhance certification, including increasing the comprehensiveness, transparency, reliability, and efficiency of the current processes used for certification (U.S. Department of Health & Human Services, 2011).

## **HITECH Act**

The ONC is located within the Office of the Secretary for the U.S. Department of Health and Human Services (HHS) and is at the forefront of the administration's health IT efforts. ONC is a resource to the entire health system to support the adoption of health information technology and the promotion of nationwide health information exchange and to improve patient care. The position of National Coordinator was created in 2004, through an Executive Order, and legislatively mandated in the Subtitle D, published in the Federal Register, of the HITECH Act under HIPAA. It addresses the privacy and security concerns associated with the electronic transmission of health information, in part, through several provisions that strengthen the civil and criminal enforcement of the HIPAA rules. This interim final rule amends the sections within

45 CFR part 160 that relate to the authority of the Secretary of the HHS to impose civil money penalties on entities that violate the HIPAA rules adopted under subtitle F of title II of HIPAA (Federal Register, 2009).

In a press release from the U.S. Department of Health and Human Services in late October 2009, the department announced the final rule pertaining to significant increases to penalty amounts for violations of the HIPAA rules and encourages prompt corrective action. “The Department’s implementation of these HITECH Act enforcement provisions will strengthen the HIPAA protections and rights related to an individual’s health information,” said Georgina Verdugo, the director of HHS Office for Civil Rights (OCR) (U.S. Department of Health & Human Services, 2009). OCR is responsible for administering and enforcing HIPAA’s privacy, security and breach notification rules. Prior to the HITECH Act, the Secretary could not impose a penalty of more than \$100 for each violation or \$25,000 for all identical violations of the same provision. However, since the implementation of the final rule Section D, there is now an established tier of ranges of increasing minimum penalty amounts, with a maximum penalty of \$1.5 million for all violations of an identical provision (U.S. Department of Health & Human Services). A covered entity can no longer bar the imposition of a civil money penalty for an unknown violation unless it corrects the violation within 30 days of discovery.

### **Methodology**

This policy analysis of the EHR Medicare and Medicaid incentive program for providers and groups collected and analyzed information and data to determine the impact of this public policy on current healthcare systems, providers, and patients. The policy analysis referred to the Centers of Medicare and Medicare Services, U.S. Department of Health and Human Services,

and the Office of the National Coordinator for Health Information Technology as its primary sources of information collection which was supplemented by the Institute of Medicine reports on health information technology. Additionally, special studies and research on the evolving EHR systems were also used to provide relevance and weight of the HITECH requirements and implementation.

### **Importance of Study**

By the early 1980's, new government health care regulations had been enacted to track the maximum number of minutes allowable for the type of procedure for each diagnosis (code) under the prospective payment system (Swayne, Duncan, & Ginter, 2008). Since then there has been a significant increase in the number of codes from approximately 17,000 to 140,000 and the focus on standard medical terminology, the use of an EHR will be required for hospitals and physicians. The use of an EHR will require a radical and far reaching change in clinical documentation. How well providers implement this technology will influence the quality of data sent to payers and the ability of payers to reconcile premiums and determine medical loss ratios using ICD-10 codes (Center of Disease Control and Prevention, 2011). This module will assist payers and providers in understanding how to collaborate in the selection and implementation of an EHR using best practices to minimize risk.

ICD means International Statistical Classifications of Diseases. ICD codes are alphanumeric designations given to every diagnosis, description of symptoms and cause of death attributed to human beings. These classifications are developed, monitored and copyrighted by the World Health Organization (WHO). In the United States, the National Center for Health

Statistics (NCHS), part of CMS oversees all changes and modifications to the ICD codes, in cooperation with WHO.

WHO describes the application of ICD system as “all general epidemiological, many health management purposes and clinical use. These include the analysis of the general health situation of population groups and monitoring of the incidence and prevalence of diseases and other health problems in relation to other variables such as the characteristics and circumstances of the individuals affected, reimbursement, resource allocation, quality and guidelines (Center of Disease Control and Prevention, 2011). For patients this means that each diagnosis a human being may be given has a code, a numbered designation, that goes with it. That code means that every medical professional in the United States and many other parts of the world will understand the diagnosis the same way. For example, if a patient who has been diagnosed with acid reflux and travels across the country and needs to see a doctor for their heartburn, the provider will be able to treat patient for their diagnosis by accessing the patients’ EHR (Center of Disease Control and Prevention, 2011).

A recent study published by Stanford University found that the value of EHR systems and the criticality of implementing them correctly, with an unyielding eye on workflow analysis across-the-board, can improve errors such as mortality rates, which dropped below rates in place prior to the CPOE implementation (Computerized Physician Order Entry) (Temple, 2011). Further, the study found EHR systems have the potential to reduce adverse medical errors in hospitals such as mortality rates which has historically killed nearly 100,000 patients per year (Institute of Medicine, 2001).

The National Ambulatory Medical Care Survey (NAMCS), conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics, is an annual nationally representative survey of patient visits that includes office-based physicians and collects information on the adoption and use of electronic medical records/electronic health records (EMRs/EHRs). The mail and in-person survey found that there has been an increasing trend in EMR/EHR use among office-based physicians from 2001 through the preliminary 2010 estimates. Additionally, the combined data from the 2009 surveys showed that 48.3% of physicians reported using all or partial EMR/EHR systems in their office-based practices, about 21.8% of physicians reported having systems that met the criteria of a basic system, and about 6.9% reported having systems that met the criteria of a fully functional system, a subset of a basic system (Centers for Disease Control and Prevention, 2011). The preliminary estimates from 2010, mail in survey only, demonstrate a wide range of stages users are in with EHR implementation. The estimates found that 38.1% to 80.2% of physicians are using all or partial EMR/EHR systems and 12.5% to 51.5% physicians have a system that meets the criteria of EHR basic systems. However, the percentage of physicians having systems that met the criteria of a fully functional system across the United States ranged from 9.7% to 27.2% (Center of Disease Control and Prevention, 2011).

Nationwide EHR adoption is part of the Recovery Act which is a federally funded initiative to help make the health care system more efficient and improve the quality of care. EHR systems are a comprehensive database system used to store and access patients' healthcare information. Performance improvement throughout the industry remains a primary focus to improve the quality of care and an organization performance. Further, the implementation of health information technology and EHR, health care providers will have accurate and complete

information about a patient's health records and have the ability to better coordinate the care they provide.

Providers will also be able to safely share information with patients and their families over the Internet, for patients who choose that route. Patients and their families will have the ability to take more of a part in decisions about their health care. Another significant aspect of EHR is that providers will have information to help doctors diagnose health problems sooner, reduce medical errors, and provide safer care at lower costs.

## Chapter Two

### STATEMENT OF THE PROBLEM

#### Definition of the Problem

Medical errors are one of the nation's leading causes of death and injury. A report by the Institute of Medicine estimates that as many as 44,000 to 98,000 people die in U.S. hospitals each year as the result of medical errors (2001). This means that more people die from medical errors than from motor vehicle accidents, breast cancer, or AIDS. Government agencies, purchasers of group health care, and health care providers are working together to make the U.S. health care system safer for patients and the public (Department of Health and Human Services, 2011). The system itself contributes to medical errors and the lack of response to them when patients see multiple providers in different settings, none of whom have access to complete information, it is easier for something to go wrong than when care is better coordinated or established within an organized system (SoRelle, 2000, pp. 30-40).

The implementation of an EHR system include a range of data in comprehensive or summary form, including demographics, medical history, medication and allergies, immunization status, laboratory test results, radiology images, vital signs, personal statistics like age and weight, including billing information. The purpose is to have a comprehensive record of patient encounters that allows the automation and streamlining of the workflow in health care settings and increases safety through evidence-based decision support, quality management, and outcomes" reporting. The primary focus in health care organizations is to improve the quality of care and organizational performance (Aziz, 2008). The development of an information technology infrastructure has enormous potential to improve the safety, quality, and efficiency of health care in the United States (Institute of Medicine, 2001).

Computer-assisted diagnosis and chronic care management programs can improve clinical decision making and adherence to clinical guidelines, and can provide focus on patients with those diseases (Viner & Parush, 2008). Computer-based reminder systems for patients and clinicians can improve compliance with preventive service protocols. More immediate access to computer-based clinical information, such as laboratory and radiology results, can reduce redundancy and improve quality. Likewise, the availability of complete patient health information at the point of care delivery, together with clinical decision support systems such as those for medication order entry, can prevent many errors and adverse events such as injuries caused by medical management rather than by the underlying disease or condition of the patient from occurring (Institute of Medicine, 2001).

The advantages of EHRs are the electronic storage, accessibility and availability of information to authorized practitioners including enhanced access to medical information, greater efficiency, allowing continuous data processing and up to date information (Aziz, 2008). EHRs have potential to improve quality of care and patient safety in healthcare organizations and integrate healthcare delivery to provide comprehensive, reliable, relevant, accessible, and timely patient information to each member of the healthcare team (Gurley & Rose, 2008). Other advantages over paper based health records are the cost savings and reduction to workplace inefficiencies, storage capabilities, accessibility and retrieval of records. Additionally, EHRs are able to provide a more accurate and complete documentation of patient's records and clinical details, however, this may cause significant damage if errors are made (Gurley & Rose, 2008).

Three major disadvantages of EHRs have been identified in the cost, errors, and security. The cost of EHRs especially during the initial stages of start up and training can be significant including the learning curve among providers, and the design of software that need to be user-

friendly. The other is the large scale impact across multiple users in incidents where an error is made or inputted incorrectly in the patients' record, which can lead to failures in hardware and software risking loss of information (Aziz, 2008). The disadvantages of EHRs also involve more technical and complex issues such as lack of standardized terminology, system architecture, and indexing (Gurley & Rose, 2008).

The research suggests that a standard EHR platform would allow clinicians to use the same format or applications where they all share a common standard EHR architecture which would create greater flexibility and capacity for the diverse requirements of the different healthcare disciplines. Further, the start-up cost, as mentioned above, associated with implementing EHRs especially for healthcare organizations need to reduce their costs, allocating capital to information systems is still a challenge. Another disadvantage is the obstacle of the learning curve and usability of providers for retrieval and data entry but that would be short term after providers realize the benefits of organized patient database, enhanced communication among staff, improved risk management, and instantaneous outcome tracking and reporting capabilities (Gurley & Rose, 2008). The HITECH program intends to use federal investments to stimulate the market of EHRs through incentives to providers who use information technology, strict and open standards to ensure users and sellers of EHRs work towards the same goal, and certification of software to provide assurance that the EHRs meet basic quality, safety, and efficiency standard (Centers for Medicare and Medicaid Services, 2010).

### **Major Stakeholders**

Stakeholders are people or groups interested in a project, program or company. Stakeholders have varying interests depending on their relationship with the project. In the case

of EHR systems there are primary and secondary stakeholder groups. The primary stakeholders are the people and groups most affected by the outcome of the project and the outcome may be positive or negative. The secondary stakeholders are individuals or groups may not directly be affected by the outcome of the project, but still have an interest in it and often help provide aid to the primary stakeholders.

The needs of all stakeholders must be carefully considered in the design of electronic medical record-keeping systems. The EHR represents the ability to easily share medical information among stakeholders and have patient's information follow through the health care delivery system within a care delivery organization. In order for EHRs to be relevant and useful to clinicians and their patients who are the primary stakeholders, electronic health records need to be used at the point of care (Viner & Parush, 2008). In addition to patients or consumers and health care providers other primary stakeholders are employers and payers/insurers including government (Garets and Davis, 2006). Policy-makers in the health care system are important secondary stakeholders because data from electronic records can be collated for use in managing the health care system (Viner & Parush, 2008).

### **Goals and Objectives**

The goals of this policy analysis are to assess current status of information technology adoption, estimate EHR system market penetration, and evaluate the barriers to EHR implementation and the economic impacts of EHR implementation. The objective of this study is to improve quality of care and patient information sharing while lowering long term costs and errors among providers and health care organizations. The study will identify potential solutions to the issue taking into account the views of all stakeholders. Several documents such as articles,

journals, and government websites will be studied to understand the purpose of each policy in favor of EHRs and incentives programs designed to focus on the large-scale adoption of EHR systems among providers and health care organizations. Finally, the study will identify an alternative that will maximize the benefits among the stakeholders.

### **Measures of Effectiveness**

This study will identify measures to determine if current or future policies are appropriate in the adoption and implementation of EHRs throughout health care delivery systems. For EHRs to support care of the “whole patient” it will need to be measured by a set of criteria that can be universally shared among all stakeholders which can be measured by the following:

- ***Safety.*** Improve patient safety to prevent harm to patients. Each year in the United States, tens of thousands of people die as a result of preventable adverse events due to health care (Institute of Medicine, 2001).
- ***Improve efficiency.*** Efficiency is the avoidance of waste, in particular, waste of equipment, supplies, ideas, and energy. Methods must be found to enhance the efficiency of health care professionals and reduce the administrative and labor costs associated with health care delivery and financing.
- ***Effectiveness.*** Effectiveness is providing services based on scientific knowledge to those who could benefit and at the same time refraining from providing services to those not likely to benefit.
- ***Feasibility of implementation.*** The Centers of Medicare and Medicaid developed criterion in determining the time frames within which it is reasonable to expect providers to adopt and implement an EHR system. EHR systems will be capable of demonstrating

the key functionalities. In assessing feasibility, considerations of existing and future software; the time period necessary for vendors to develop, produce, and market new software to achieve certain functionalities; and the willingness of users to purchase and implement such systems are all taken into account. It would be advisable to reassess the feasibility of implementing certain EHR functionalities and modify expectations regarding timing, as appropriate.

### **Potential Solutions**

The advantages of EHRs are significant in the progress and improvement of today's health care environment. The potential of health care organizations to have a comprehensive electronic patient record system and improve the quality of care and organizational performance are far reaching and meaningful. However, barriers such as lack of capital resources to invest in an EHR system, the inability to easily input historical medical record data into the EHR system, and concerns about loss of productivity during transition to the EHR system and insufficient return on investment (ROI) all pose a challenge for providers and groups to fully benefit from EHR (American Osteopathic Association, 2007).

The HHS is the principal Federal agency in charge of improving Americans' health and implementing the Affordable Care Act (ACA) and has developed strategic initiatives to drive down costs and ensure all Americans receive the health care services they need and deserve (U.S. Department of Health & Human Services, 2011). This is an endeavor by HHS to increase transparency, eliminate waste, and put Americans back in charge of their health care. Under the ACA and HITECH, HHS ensures reaching its strategic initiatives by reducing health care costs while promoting high-value, effective care through encouraging the widespread adoption and

meaningful use of health information technology while ensuring the privacy and security of electronic health records (2011).

In his address to the Address to Joint Session of Congress in February 2009 President Obama spoke about ACA goals of EHR systems under HITECH stating, “our recovery plan will invest in electronic health records and new technology that will reduce errors, bring down costs, ensure privacy and save lives” (Centers for Medicare and Medicaid Services, 2010). The Federal EHR incentive payments were developed for eligible professionals and CAH/hospitals to adopt EHRs and demonstrate use in ways that can improve quality, safety and effectiveness of care.

Although it may be the intent of CMS and other organizations to have all health care organizations fully adopt, implement, and utilize an EHR system it is unlikely that the transition from a paper based record keeping system to an electronic health record system will be quick and without difficulty. The migration from paper records to a comprehensive EHR system will take several years and depending on the care setting or type of organization the migration may involve different time frames and capabilities. Therefore the following are potential solutions to the current challenges of an EHR system that focuses on a particular care setting: (1) maintain the status quo; (2) hospitals and ambulatory care settings, including small practice settings, community health centers, and group practices ; and (3) nursing homes. Chapter three will discuss more in detail about the comparison of future consequences, spillovers and externalities, and feasibility.

## **Chapter Three**

### **POLICY ALTERNATIVES**

The chapter will describe policy alternatives, comparison of future consequences, spillovers and externalities, and constraints and political feasibility. The first alternative is to describe the status quo. The second alternative is to adopt and implement an EHR system in a hospital and ambulatory care setting. The last alternative is move an EHR system into a more specialized care setting for the elderly such as nursing homes and assisted living centers.

#### **Status Quo**

This alternative is to maintain the current situation, change nothing. With this alternative the adoption and implementation of EHR systems will be utilized by various types of care settings, all of who are eligible professionals who treat outpatient Medicare patients. The HITECH Act, led by the CMS and ONC, proposes meaningful use among users of EHR systems among U.S. health care delivery system as a critical national goal. Meaningful Use is defined by the use of certified EHR technology in a meaningful manner such as electronic prescribing to ensure that the certified EHR technology is connected in a manner that provides for the electronic exchange of health information to improve the quality of care and that users of certified EHR technology are required to provide information on quality of care and other measures as described by CMS (Centers for Medicare and Medicaid Services, 2010).

#### ***Incentive payments***

The eligible professionals are required to demonstrate that they are using a "certified" EHR in a meaningful manner to earn incentive payments totaling up to \$44,000 per physician over 5 years. Starting in 2015, Medicare reimbursement rates will be reduced 1% for physicians

who do not meet this requirement and the penalty will increase annually to a maximum possible penalty of 5% in 2019 and after. Physicians who treat Medicaid patients and demonstrate that they are using an EHR will be eligible for incentive payments totaling up to \$63,750 per physician over 6 years (Centers for Medicare and Medicaid Services, 2010).

More specifically, eligible professionals are required to meet certain criteria developed by the CMS under meaningful use Stage 1. There are 25 objectives that physicians must demonstrate in order to demonstrate meaningful use between 2011 and 2012. Additionally, there are 15 core objectives that all participants must demonstrate, as well as a list of 10 menu objectives from which physicians choose 5 that apply to their practice (Centers for Medicare and Medicaid Services, 2010). These objectives include requirements that are intended to improve quality, engage patients and families, improve care coordination, and maintain privacy and security. Another required element to use EHRs is to collect and report on 6 clinical quality performance measures.

### *Comparison of future consequences*

Beginning the adoption and implementation of an EHR system among various types of care settings has the potential of a smooth roll out to be compromised. Rather it has the potential to have a large impact across the board if there are errors with the system, software, and/or interfaces. Despite the widespread support of EHRs among policymakers, users, and vendors the software and interchanges are still in its early developmental stages and time constraints developed by CMS may push these various care settings to rush into investing in an inadequate or unsatisfactory EHR system in order qualify for incentive payments. For example, problems that occur with software and programming can create errors in patients' drug prescriptions,

medication dosages or diagnosis; this directly jeopardizes the patient's wellness and negatively affects patient care on a system level.

### ***Spillovers and externalities***

Some advantages to continue the current stage of EHR rollout among various eligible professionals and care settings is the larger impact with technological advancements and patient care improvements. With EHR systems adopted and implemented across the board more types of patients and facilities will benefit from the potentials including improving quality, safety, efficiency, and reducing health disparities; engaging patients and families in their health; improving care coordination; improving population and public health; and ensuring adequate privacy and security protection for personal health information (Centers for Medicare and Medicaid Services, 2010).

### ***Constraints and political feasibility***

As in all fields and sectors the financial costs, productivity loss, and learning curve among other factors are all constraints faced by all stakeholders involved with EHR systems. However, the political feasibility is apparent through the federal government's effort to provide resources to support the adoption and use of EHRs through the Health Information Technology for Economic and Clinical Health Act (HITECH) with the support of CMS and ONC. President Obama's administration provisions of a nationwide effort of electronic health care delivery systems shows that the federal government has evaluated the amount of revenue which will be secured if EHR is established nationwide as compared to the paper-based and evaluated the improvement in quality of service and patient care.

**Hospital and ambulatory care settings**

This potential solution is to roll out an EHR system in a more technologically advanced health care setting like hospitals and ambulatory care settings, including small practice settings, community health centers and group practices. To date, hospitals have been leaders in adopting EHR systems, often through changes in workflow and health IT use. For example, DeKalb Medical Center in Georgia reported that its EHR system helped reduce medication administration errors, such as wrong person, wrong drug or wrong route of administration, by 66 percent (DesRoches, Jha, Joshi, & Kralovec, 2010). Medication error reduction is one of many possible successful changes for users of EHR systems and is attainable because EHR systems have the capability of storing patient information more clearly and completely compared to paper-based records and provide alerts of medication allergies or other problems (DesRoches, Jha, Joshi, & Kralovec, 2010).

In addition to the potential to improve patient safety, care quality and efficiency by supporting coordinated care and real-time access to information, EHR systems have the added potential to communicate outside the hospital. Health information exchange between hospitals across regions and states, and eventually nationwide and although it is not a requirement at this time as part of the CMS incentive payment it is a long-term goal of hospitals to have EHR systems with shared interfaces. Hospitals will also have the potential to electronically integrate systems departmentally including systems installed in the emergency department or operating room, as well ancillary systems, such as those in hospital laboratories, pharmacies and offices. Increasingly, hospitals also are integrating tools to share data through patient portals, report information to multiple public health agencies and connect with other providers in the community.

### *Incentive payment criteria*

The formula for hospital incentive payments includes a base payment of \$2 million and factors in total discharge volume, the level of charity care, and the percentage of inpatient days paid for by Medicare or Medicaid, as applicable, and an annual transition factor that scales back the payment over time. CMS estimates that the total payments distributed to Medicare and Medicaid providers will be between \$14 and \$27 billion over 10 years, though total spending will depend on the number of providers that qualify (Centers for Medicare & Medicaid Services, 2011). Hospitals are eligible to receive Medicare incentive payments in federal fiscal years 2011 through 2016. Medicare penalties for failing to meet meaningful use requirements will begin in 2015 and be phased in through 2017, at which point they are permanent.

### *Comparison of future consequences*

For hospitals to meet their mission of high-quality health care in the US they must continually adopt innovative clinical and information technology. Adding new technology can reduce health care costs by minimizing complications, reducing duplicative tests and improving outcomes. Enhancing the health information technology (IT) infrastructure further benefits the health of the community at large through disease surveillance and health information exchange. A recent study of the Veterans Affairs (VA) Health System found that VA patients were more likely to receive recommended care than a national sample. In addition, a study by RAND Corporation found that if CPOE were implemented in all hospitals, it would eliminate 200,000 adverse drug events annually, two-thirds of which would benefit the 65-and-older population (American Hospital Association, 2006).

### *Spillovers and externalities*

The potential spillovers and externalities are the small growth and progress of EHR users and systems in the hospital care setting. In a recent survey of U.S. hospitals, it was found that the share of hospitals that had adopted either basic or comprehensive electronic records has risen modestly, from 8.7 percent in 2008 to 11.9 percent in 2009 (DesRoches, Jha, Joshi, & Kralovec, 2010). Small, public, and rural hospitals were less likely to embrace electronic records than their larger, private, and urban counterparts. Only 2 percent of U.S. hospitals reported having electronic health records that would allow them to meet the federal government's meaningful use criteria (DesRoches, Jha, Joshi, & Kralovec, 2010).

### *Constraints and political feasibility*

In most of the nation's hospitals, orders for medications, laboratory tests, and other services are still written on paper, and many hospitals lack even the capability to deliver laboratory and other results in an automated fashion. The situation is no different in most small practice settings, where there has been little if any migration or transition to electronic records. According to an article published in Health Affairs titled "A Progress Report on Electronic Health Records in U.S. Hospitals," though installation of basic EHR systems rose slightly from 8.7% in 2008 to 11.9% in 2009, only 2% of America's hospitals have implemented an EHR that could accomplish meaningful use and qualify for the incentive funds (2010). The timelines established by the ARRA and the regulatory requirements proposed by the Centers for Medicare & Medicaid Services (CMS) prove to be challenging for hospitals seeking to obtain incentive payments, or even force rushed adoption and jeopardize successful implementation.

EHR systems have been the focus of attention from policymakers since eligible hospitals and physicians who demonstrate they are meaningful users have been authorized to receive incentive payments. As a result of the incentives and other funding opportunities policymakers hope that the majority of hospitals and physicians will have adopted EHRs by 2015. Hospitals that are eager to build EHR systems realize their type of care setting is an essential mechanism to improve patient care and achieve the quality and efficiency. However, implementing these systems in any care setting consumes significant amount of time, finances, and major resources.

### **Nursing home care setting**

The number of older people over age 60 is growing worldwide. In the United States alone, 108 million people will reach this milestone within 15 years, at which time they will make up 45 percent of the country's adult population (Klinger & White, 2010). If current trends continue, most of these older adults will also be living alone in their own homes and receiving care from a variety of health providers who will work closely with family caregivers and community-based service providers. Current research shows that technology has the potential to play a critical role in launching a new model of geriatric care that allows older people to live independently, supports family caregivers in the important work they do and gives health care providers the tools they need to deliver high-quality care at a reasonable cost.

Under Health Care Reform Bill, Patient Protection and Affordable Care Act, a certified EHR grant program was specifically planned for long-term care facilities (LTC). Long term care requires a multi-disciplinary holistic approach versus disease-centric approach in acute care and is a comprehensive model of care centered on the patient, including medical services, therapies, nursing, social services, dietary, activities, and administration (Centers of Disease Control and

Prevention, 2011). Additionally, nursing homes must comply with strict regulations with Federal and State oversight. The potentials of an EHR system will allow older consumers, caregivers, health care providers, policy makers, payers and industry experts to work together to ensure that older Americans can live more independently without sacrificing their health, safety, social connections or economic security (Centers of Disease Control and Prevention, 2011).

### *Incentive payment criteria*

The provisions relevant to aging services technologies for certified EHR grant program for long-term care facilities under health care reform are to be used to offset costs related to purchasing, leasing, developing, and implementing certified EHR technology and may be used for any computer infrastructure including hardware and software, upgrading current systems, and staff training. An estimated amount of \$67.5 million is made available to fund the EHR grants and two other long-term care grant programs to provide incentives for staff training and development and to improve management practices (Centers for Medicare & Medicaid Services, 2011).

The long term care facilities also must meet specified criteria similar to hospitals and safety net providers including eligibility, quality and accountability measures, state wide reporting, and compliance with HIT. In addition to the certified EHR grant program other acts made by the Health and Human Service Secretary are required (Centers for Medicare & Medicaid Services, 2011).

- **Demonstration Project for Use of HIT in Nursing Homes:** the Act requires the Secretary to conduct a demonstration project to develop best practices in skilled nursing facilities and nursing

facilities on the use of information technology to improve resident care under the timeline by March 2011 for not more than three years.

- **Development of Medicare Part D Prescription Dispensing Techniques in LTC Facilities:** the Act requires the Secretary and stakeholders to reduce pharmacy waste part of Medicare Part D prescription drug plans (PDPs).
- **Use of HIT in Health Homes for Enrollees with Chronic Conditions:** the Act authorizes states to develop a new method of providing home care for enrollees with chronic conditions through HIT to improve service delivery and coordination of continuum of care.
- **Use of Technology in New State Options for Long-Term Services and Supports:** the Act will allow States to have plan options for providing long-term services and supports, including a community first choice option for home and community-based attendant care services.
- **New Models of Care Utilizing Technology:**
  - I. The „Community Living Assistance Services and Supports Act“ (CLASS Act): enable a new model of funding for long-term services and supports, including the use of aging services technologies to meet care needs.
  - II. Use of Technology in New Cost Efficient Payment Models –develop new funding mechanisms with costs savings by better coordinating and managing care through newly established accountable care organizations (ACOs), including the use of telehealth, remote patient monitoring, and other such enabling technologies among ACO’s.

### *Comparison of future consequences*

As in the other care settings the barriers of EHR system nursing homes will also face the challenges of the transition period from paper to an electronic system and the learning curve of staff. It is estimated that it can take six months for nursing home to transition from their clinical and workflow functions to an EHR system, including beginning from the first stage of pre-

implementation and project planning to going live which would include ongoing support monitoring (Klinger & White, 2010). In order for the process to go smoothly HIT collaborations and leadership and labor management committees would need to be involved throughout the entire process to engage the multiple levels of staff. Additionally, nursing home staff may have difficulty learning a new technology because of language barriers, different learning capabilities among the staff, and they may be familiar with computers in their care setting. However, if EHR training is provided throughout the entire roll out process and after going live, then staff who require more one-on-one training will get more time and individual attention to learn the electronic system.

### *Spillovers and externalities*

New York State Nursing Home participated in the Health Information Technology (HIT) Demonstration Project to implement comprehensive, point-of-care electronic medical records in 20 New York City nursing homes. All participating homes successfully replaced paper records with electronic ones and after the intensive pre-implementation planning period, it took less than six months on average for facilities to make this transition (Klinger & White, 2010). NYS Nursing Home realized upon implementation of a full electronic system there was an increase in reimbursement, savings in pharmacy costs, decrease in medication errors, improved quality of care, timely ability to gather data and run critical reports, improved oversight of facility operations by leadership, integration of tools with clinical intelligence, clinician ease with timely access of resident records, improved staff satisfaction, improved survey compliance (Klinger & White, 2010).

### *Constraints and political feasibility*

Although the potentials of an EHR system would improve quality and efficiency of care in nursing homes the usage rate and reported estimates of adoption and implementation are limited and inconsistent. In a survey sponsored by the National Nursing Home Survey (NNHS) found that nursing homes that have adopted an EHR system ranged from 18 percent to 47 percent and estimates of computerized or electronic provider order entry in nursing homes range from 16 percent to 48 percent (Kaehny, Kramer, May, & Richard, 2010). Further, there was found to be inconsistencies among nursing homes of the definition and terminology of EHRs. At this time there is an insufficient amount of data within nursing homes to imply this care setting would be an ideal type of environment to roll out EHR. In order to assess the movement towards a fully utilized EHR system, nursing homes and administrators including policymakers will need reliable and valid data on HIT adoption rates to make informed decisions to promote EHR adoption.

Each of the alternatives discussed above including maintaining the status quo are plausible, however, other measures to determine the best alternative need to be examined when choosing an EHR system for any care setting. Chapter four will discuss the criteria used to examine the proposed alternatives and will examine the preferred outcome of the alternative based on the criteria. Additionally, chapter four will examine strategies and monitoring tools used to measure the effectiveness of the preferred alternative.

## **Chapter Four**

### ALTERNATIVE SELECTION

#### **Criteria for Recommending Alternatives**

The potential alternatives for adopting and implementing an EHR system in the different levels of care settings care can be measured by efficiency methods and feasibility. Each alternative will be measured and reviewed. Chapter 4 will examine efficiency and feasibility to evaluate the possible outcome of the alternatives. The criteria will assist in the determination of the preferred alternative.

The efficiency criteria needs to encompass the amount of time and effort it will take care settings to adopt and implement an EHR system. This will include participants to be aware of initial and ongoing costs associated with the purchase and support of an EHR and the amount of time it will take the organization to go live and fully utilize the system. The feasibility criteria will focus on the probability of accepting and implementing EHRs, including the functionality in achieving the desired outcomes. The alternatives must be feasible for care settings to meet the required standards established by CMS and be fully functional in meeting the timelines and reporting measures.

#### **Evaluation of Alternatives based on Criteria**

The alternatives are evaluated based on criteria. The following examination will analyze and determine the preferred alternative. The alternatives will be analyzed by efficiency and feasibility and the best alternative based on the criteria will be selected. The selected alternative will demonstrate the most efficient and feasible care setting to adopt and implement an EHR system.

CMS has established guidelines for eligible professionals who treat outpatient Medicare patients and require them to demonstrate the use of a certified EHR in a meaningful way in order to qualify and receive incentive payments for an EHR system. CMS has established timelines and certification requirements to allow eligible professionals to adopt EHR by 2012 and face penalties in the form of reduced Medicare payments if eligible professionals do not use an EHR by 2015. Additionally, eligible professionals need to show use of certified EHR technology for electronic exchange of health information to improve quality of health care and the use of certified EHR technology to submit clinical quality measures (Centers for Medicare and Medicaid Services, 2010).

### *Status Quo*

The first alternative is to maintain the status quo which is to have various types of care settings adopt and implement an EHR system. These care settings include but are not limited to critical care hospitals, community health centers, private practices, ambulatory care, nursing homes and assisted living centers. CMS has established incentives for all eligible professionals who receive payments and reimbursements from Medicare and Medicaid. HHS estimates there are 404,000 eligible medical professionals in 2011 and CMS predicts that between 10% and 36% will adopt an EHR in 2011, 15% to 44% in 2013, and 21% to 53% in 2015 (Department of Health and Human Services, 2011).

### *Efficiency*

The efficiency of adopting and implementing an EHR system throughout various care settings will allow all systems to go live concurrently. This can be measured by the number of eligible professionals who enroll in the incentive program, receive payments, and report on quality measures established by CMS as well as track those who are penalized for not

participating. For the first year in 2011 eligible professionals who have an EHR in place will not be required to document progress notes electronically, rather physicians can dictate or type notes while the support staff enter data in to the system. This change by HHS will help physicians transition into inputting data and promote EHR adoption and not compromise the goals of meaningful use.

### Feasibility

The incentive does not vary regardless of the starting year, but participation must begin by 2016. The last incentive year will be 2021 and has mentioned participants are not required to demonstrate meaningful in the first year of participation rather are required to begin the initial stages of adoption then move on to implementation and update certified EHR software. Since there is flexibility in timeline requirements and eligible professionals are still able to receive payments the feasibility of the various care settings adopting and implementing EHRs are probable.

Additionally, some care settings are more advanced in the build out of EHRs than others so the care settings that are beginning their initial stages of choosing software and vendor selection can avoid errors and challenges faced by others. The newer care settings can also take advantage of adopting EHR software that interfaces with another care setting. For example, a community health center that admits its patients to a critical care hospital frequently can have an interface with the hospital. This will allow information sharing of the patient to be comprehensive and improve coordinated patient care between the two care settings.

### *Hospitals and ambulatory care setting*

The second alternative is to begin the EHR rollout in a more concentrated care setting than the first alternative. Hospitals and ambulatory care settings have been leaders in adopting and implementing a robust EHR system and have the potential to integrate with other EHR software within and outside the hospital care setting. ARRA and requirements established by CMS have planned for hospitals to receive incentive payments beginning with a base payment of \$2 million and other factors such as total discharge volume of patients, the level of charity care, the percentage of inpatient days paid for by Medicare or Medicaid, and annual transition factors that scales back the payment over time (Centers for Medicare and Medicaid Services, 2010).

The Veterans Health Administration EHR system called VistaA is software written for doctors by doctors called open source. This all codes system was designed to be read and modified and available in the public domain instead of going through the vendor who had copyrights to the program so improvements could be made and errors detected by a community of computer-minded health care professionals that continually use the program (Veterans Health Administration, 2011). However, the HITECH bill was not designed to favor open source type of software rather it is partial to large, established vendors that have copyrights to their programs and changes must go through them which may delay improvements and limit physician participation.

It has been reported that about 20 to 25 percent of hospitals have integrated some form of IT system and only 1.5 percent of U.S. hospitals reported to have adopted and implemented a comprehensive EHR system (American Hospital Association, 2006). The timelines established ARRA and the regulatory requirements by CMS creates challenges for hospitals to obtain

incentive payments and may cause these types of care settings to rush to adopt an EHR in order to meet timelines which may compromise a successful implementation. Further, the speed of implementation and lack of progress are faced due to the initial IT investments.

### Efficiency

The efficiency criteria such as patient safety and provider and patient satisfaction have the potential to be improved with an EHR system but require additional advanced integration with information exchange among hospitals and ambulatory care settings. This integration is attainable when other systems have implemented EHR and are able to share information with others including those outside its own care settings like private doctors and clinics. However, due to the major investment required for an IT infrastructure small hospitals have made incremental EHR changes and improvements to slowly move into the IT phase. For example, the Springhill Medical Center in Alabama implemented an electronic patient tracker and electronic order sets in the emergency department which achieved a 15 percent increase in average patient throughput (American Hospital Association, 2006). Since few hospitals have adopted and implemented a comprehensive IT system it would be less efficient to allow a consistent, integrated system within and outside of this care setting.

### Feasibility

Adopting health IT in a hospital and ambulatory care setting would largely help in reducing errors in prescribing, over testing, and transcription but under CMS hospitals are faced with pay for performance measures that require collection and reporting of data and must invest in IT to do so. Constraints on time, costs, and reporting requirements would not make it feasible to rely solely on this care setting to roll out EHRs as the initial investments is estimated to be \$8 million with operating costs annually at \$1.5 million (American Hospital Association, 2006).

Additionally, the CMS incentives programs focuses on reimbursements based on outcomes but does not financially support the infrastructure needed to support an operable and certified EHR system.

### *Nursing Home and assisted living centers*

Unlike other care settings nursing homes and assisted living centers have not been key players in the efforts to implement EHRs nationally. Despite the potential of patient quality and improvement in care with EHRs nursing homes are faced with the same challenges of investment and ongoing operations shared by other care settings in addition to staff education and training. In a final report conducted by HHS the lack of consistent terminology and inaccurate statistics on the number of nursing homes that have implemented EHRs compromise national data and tracking. Adoption of EHR or EMR ranged from 18 to 47 percent and CPOE (computer provider order entry) ranged from 16 to 48 percent (Kaehny, Kramer, May, & Richard, 2010).

### Efficiency

The efficiency would be measured by time and effort to adopt an EHR system. In this type of care setting nursing homes are limited and have less advanced technology than other care settings such as acute, physician, and ambulatory care. Although the aging population including baby boomers is significantly growing and consumes more than 50 percent of healthcare services and dollars in the U.S., long term care facilities are behind in EHR adoption and implementation (Wessinger, 2010). Despite the many benefits that an IT infrastructure would have in this type of care setting the barriers of costs, training, and organizational acceptance of the new technology prevent progress towards EHRs.

### Feasibility

Due to the lack of accurate reporting and statistics on EHR adoption and implementation the feasibility of actually measuring HIT adoption is not probable. Nursing homes are eligible to receive funding from ARRA but reporting requirements were developed by the Certification Commission for Healthcare Information Technology (CCHIT) for these particular care settings and have established other EHR certification criteria (Kaehny, Kramer, May, & Richard, 2010). The lack of consistency and differentiation of reporting requirements among these care settings are unlikely to rollout EHRs and accurately compare them to other care settings in the future.

### **Determination of Preferred Alternatives**

Taking into consideration the efficiency and feasibility of all of the alternatives the preferred alternative is to continue with the current stage of EHR adoption and implementation that has been introduced by ARRA and regulatory requirements established by CMS. The potential of EHR systems to facilitate more effective care and lower long-term costs in the health care system would be beneficial to all care settings. This will allow the various care settings to follow the same timeline for a more cohesive and comprehensive advantage into the health technology environment. The meaningful use criteria established by CMS are both efficient and feasible to allow the various care settings to concurrently standardize patient information such as patient demographics and provider referrals and orders, improve the quality at the point of care, and use clinical decision support and patient self-management tools as vehicles to improve quality, safety and efficiency (Centers for Medicare and Medicaid Services, 2010).

### **Outline of Implementation Strategy**

CMS has developed milestone timeline to illustrate the build out of EHRs beginning in 2010 with the certified EHR technology available and listed on the ONC website to 2021 which

is the last year to receive EHR incentive payments (Figure 1, Appendix). The timeline by CMS is essential to develop a model and strategy to use in order to successfully implement EHRs supported by three major categories: leadership team, strategies developed within a committee setting, and the type of certified EHR software selected. These functions within a care setting will create direction and monitoring through the implementation of an EHR system.

The leadership team consisting of key players such as physicians, support staff, IT, and management will play the role of facilitating EHR rollout and ongoing support. The players will need to be knowledgeable and users of the EHR system and understand the capabilities of EHRs to streamline and improve the current record keeping system to an electronic system. The strategies with EHR implementation will require all involved to plan and be prepared for questions that arise daily and create a workflow diagram to evaluate process and make improvements as needed. Figure 2 (Appendix) illustrates a workflow design that was adopted by a hospital care setting to outline an EHR implementation process. The third category is selecting the correct certified software that has the capabilities needed to meet the requirements of CMS and support by the vendor to respond to the changing environment.

### **Provisions for Monitoring and Evaluation**

Eligible professionals will be monitored by CMS and the reporting requirements that have been established such as measures on quality, efficiency improvements including patient wait times and patient information sharing among physicians and facilities. Other measures include patient record collecting for patient demographics, medication/prescribing, progress notes, patient history, and other patient information to all improve patient safety and quality of care through a coordinated system of care.

CMS has introduced the final rule requirements of Stage 1 of three and eligible professionals who demonstrate meaningful use can now submit reimbursement under ARRA through the web-based Medicare and Medicaid EHR Incentive Program Registration and Attestation System developed by CMS. The attestation is a 90 day reporting period that consists of the various care settings to report numerator, denominator, and exclusion results for the meaningful use objectives and attest that they have successfully met the requirements of the program and after successful submission the participants qualify for the EHR incentive payments (Centers for Medicare and Medicaid Services, 2010). Stages 2 and 3 will be proposed by CMS through future rulemaking of the criteria for meaningful use and the findings from Stage 1.

### **Limitations and Unanticipated Consequences**

The EHR adoption and implementation face two major challenges throughout all care settings: financial investment and training staff. EHR implementation requires a substantial investment including start-up cost and ongoing support averaging thousands per year. The widespread adoption and implementation of EHRs would lead to significant savings for the health care system. In a research study by Harvard it was estimated that a fully connected National Health Information system would average \$156 billion and the savings would near \$81 to \$162 billion annually while reducing health factors such as morbidity and mortality rates (American Hospital Association, 2006). The productivity loss among physicians and staff in the transition phase of learning an electronic system and new procedures for documentation further create barriers for EHR adoption. However, the benefits of EHRs will be realized as more care settings progress towards an IT infrastructure and the supporting parties, Federal government and CMS among other key players, collect data and statistical information from the eligible professionals.

## Chapter Five

### SUMMARY, CONCLUSION, and GENERAL RECOMMENDATIONS

#### Summary

The Health Information Technology for Economic and Clinical Health (HITECH) Act under the American Recovery and Reinvestment Act (ARRA) of 2009 with the support of Centers of Medicare and Medicaid (CMS) has led to a nationwide effort to improve the quality of care and patient safety in health care organizations. The development of an information technology (IT) infrastructure has enormous potential to improve the safety, quality, and efficiency of health care in the United States and reduce costs. These efforts to improve quality and safety were made in response to the growing number of inefficiencies and poor quality that the U.S. health care system has experienced for the last decade.

CMS has developed financial incentives to eligible professionals, eligible hospitals and critical access hospitals (CAHs) as they adopt, implement, upgrade or demonstrate meaningful use of certified EHR technology. CMS has established timelines for eligible professionals to fully implement, utilize, and report outcomes and anticipates various care settings to be live by 2021, the last year to receive EHR incentive payments.

#### Conclusion

The potential of EHRs to improve the quality of care delivered to patients, including reduced medication errors, improved test result follow-up and better communication with other health care providers far outweigh the costs of an IT infrastructure. However, the initial and ongoing costs of purchasing and maintaining an EHR system in addition to training staff and productivity loss can create barriers to adoption and successful implementation. The proposed alternative to include all care settings would help share knowledge among the different health

care organizations in vendor selection, interface capability, and improve shared information technology among delivery care systems. Additionally, the benefits of an IT infrastructure will be realized among various care settings resulting in improved patient quality and care across the board and progress concurrently towards EHRs.

### **Recommendations**

To date there are limited health care organizations that have a comprehensive IT infrastructure in place. The new federal efforts to encourage EHR adoption and implementation among various care settings will allow for a cohesive transition from paper based record keeping to electronic. It is recommended to monitor the changes that will be realized as EHRs become more widespread especially after the first year. It is also recommended that the number of non-compliant eligible professionals be tracked to uncover the barriers or challenges faced and determine new courses of actions to progress towards an EHR system. Finally, it is recommended to analyze the actual costs, training, and productivity loss associated with the electronic transition. Overall, there are significant potential benefits of EHRs to improve quality and patient safety in health care organizations and there will be changes as time progresses and more systems go live.

## References

- Agency for Healthcare Research and Quality. (2005, September). *Research Finds Low Electronic Health Record Adoption Rates for Physician Groups*. Retrieved May 2011, from <http://www.ahrq.gov/news/press/pr2005/lowehrpr.htm>
- American Hospital Association. (2006, October). *Adopting Technological Innovation in Hospitals: Who Pays and Who Benefits?* Retrieved April 2011, from <http://www.aha.org/aha/content/2006/pdf/061031-adoptinghit.pdf>
- American Hospital Association. (2006). *Adopting Technological Innovation in Hospitals: Who Pays the Benefits?* 4-10.
- American Osteopathic Association. (2007). *Assessing Electronic Health Record Use by Members of the American Osteopathic Association. MGMA Center for Research*, 3-40.
- Aziz, H. (2008, September 3). *Cost/Benefit Analysis of Electronic Health Records: Introduction to Health Informatics*. Retrieved February 2011, from Knol Beta: <http://knol.google.com/k/hazman-aziz/cost-benefit-analysis-of-electronic/27xp34r76wssx/3>
- Center of Disease Control and Prevention. (2011, February 2). *National Center for Health Statistics*. Retrieved February 2011, from <http://www.cdc.gov/nchs/>
- Centers for Disease Control and Prevention. (2011, February 11). *Products: Centers of Disease Control and Prevention*. Retrieved February 2011, from NCHS Health E-Stat: [http://www.cdc.gov/nchs/data/hestat/emr\\_ehr\\_09/emr\\_ehr\\_09.htm](http://www.cdc.gov/nchs/data/hestat/emr_ehr_09/emr_ehr_09.htm)

- Centers for Medicare & Medicaid Services. (2011, January 11). *Overview: EHR incentive program*. Retrieved February 2011, from U.S. Department of Health & Human Services: <http://www.hhs.gov/opa/pdf/medicaid-ehr-incentive-program.pdf>
- Centers for Medicare and Medicaid Services. (2010, January 13). *Electronic health records at a glance*. Retrieved February 2011, from <https://www.cms.gov/apps/media/press/factsheet.asp?Counter=3788&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&keywordType=All&chkNewsType=6&intPage=&showAll=&pYear=&year=&desc=&cbOrder=date>
- Centers of Disease Control and Prevention. (2011, January). *National Nursing Home Survey*. Retrieved April 2011, from <http://www.cdc.gov/nchs/nnhs.htm>
- Crosstree Capital Partners. (2009). *Healthcare IT*. Retrieved 2011, from Top HIT Trends for 2010-11: <http://www.siteground135.com/>
- Department of Health and Human Services. (2011, April). *Agency for Healthcare Research and Quality*. Retrieved April 2011, from <http://www.ahrq.gov/qual/errorsix.htm>
- DesRoches, C. M., Jha, A. K., Joshi, M. S., & Kralovec, P. D. (2010). A Progress Report On Electronic Health Records In U.S. Hospitals. *Health Affairs*.
- Federal Register. (2009, October 30). HIPAA Administrative Simplification: Enforcement. *Interim final rule*, pp. 56123-56131.
- Glanz, K., Marcus Lewis, F., & Rimer, B. (1997). *Theory at a Glance: A Guide for Health Promotion Practice*. National Institute of Health.

- Gurley, L., & Rose, B. (2008, August). *Advantages and Disadvantages of the Electronic Medical Record*. Retrieved March 2011, from <http://www.aameda.org/MemberServices/Exec/Articles/spg04/Gurley%20article.pdf>
- Institute of Medicine. (2001). *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC.
- Kaehny, M., Kramer, A., May, K., & Richard, A. (2010). *Survey Questions for EHR Adoption and Use in Nursing Homes*. U.S. Department of Health and Human Services.
- Lieberman Klinger, S., & White, S. (2010). *Lessons from a Health Information Technology Demonstration in New York Nursing Homes*. Commonwealth Fund.
- Livingood, W. C., Coughlin, S., & Remo, R. (2009). *Public Health & Electronic Health Information Exchange: A Guide to Local Agency Leadership*. The Institute for Public Health Informatics and Research.
- SoRelle, R. (2000, January 25). Reducing the Rate of Medical Errors in the United States. *Circulation*, pp. 101(3):E39-49.
- Swayne, L. E., Duncan, W. J., & Ginter, P. M. (2008). Strategic Management of Healthcare Organizations. In L. E. Swayne, W. J. Duncan, & P. M. Ginter, *Strategic Management of Healthcare Organizations* (pp. 589-603). England: John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester.
- U.S. Department of Health & Human Services. (2009, October 30). *HHS Strengthens HIPPA Enforcement*. Retrieved February 2011, from U.S. Department of Health & Human Services: <http://www.hhs.gov>

U.S. Department of Health & Human Services. (2011, February). *The Office of the National Coordinator for Health Information Technology*. Retrieved February 2011, from The Office of the National Coordinator for Health Information Technology:  
<http://healthit.hhs.gov>

U.S. Department of Health and Human Services. (n.d.). Retrieved 2010, from The Presidential Commission for the study of bioethical issues: <http://www.bioethics.gov>

Veterans Health Administration. (2011, February). My HealtheVet: My Recovery Plan Project. Office of Health Information .

Viner, G., & Parush, A. (2008). Electronic medical records. *CMAJ JAMC*, 179(1):54.

Wessinger, M. (2010, May). *Understanding the Return on Your Investment for the EHR*. PointClickCare.



**Grants, Research, and Sponsored Programs  
California State University, Bakersfield**

24 DDH  
9001 Stockdale Highway  
Bakersfield, California 93311-1022  
(661) 654-2231  
FAX (661) 654-3342

**Institutional Review Board for Human Subjects Research**

- Anne Duran, Ph.D.**  
Department of Psychology  
Scientific Concerns
- Roseanna McCleary, Ph.D.**  
Masters of Social Work  
Scientific Concerns
- Thomas Blommers, Ph.D.**  
Department of Modern Languages  
Nonscientific/Humanistic Concerns
- Lily Alvarez, B.A**  
Kern County Mental Health  
Community Issues/Concerns
- Grant Herndon**  
Schools Legal Service  
Community Issues/Concerns
- Tommy W. Tunson, J.D.**  
Criminal Justice  
Community Issues/Concerns
- Kathleen Gilchrist, Ph.D.**  
Department of Nursing  
Scientific Concerns
- Paul Newberry, Ph.D.**  
Department of Philosophy/  
Religious Studies  
Nonscientific/Humanistic Concerns  
IRB/HSR Chair
- Yeunjoo Lee, Ph.D.**  
Department of Special Education  
Nonscientific/Humanistic Concerns
- Steve Suter, Ph.D.**  
Department of Psychology  
Research Ethics Review Coordinator  
and IRB/HSR Secretary

**Date:** 14 January 2011  
**To:** Pritika Ram, PPA Student  
**cc:** Paul Newberry, IRB Chair  
Jinping Sun, Department of Public Policy & Administration  
**From:** Steve Suter, Research Ethics Review Coordinator  
**Subject: Protocol 11-10: Not Human Subjects Research**

Thank you for bringing your protocol, "**Electronic Health Care Records: Meaningful Use Incentives for Providers and Groups**" to the attention of the IRB/HSR. On the form "*Is My Project Human Subjects Research?*" you indicated the following:

I want to interview, survey, systematically observe, or collect other data from human subjects, for example, students in the educational setting. **NO**

I want to access data about specific persons that have already been collected by others [such as test scores or demographic information]. Those data can be linked to specific persons [regardless of whether I will link data and persons in my research or reveal anyone's identities]. **NO**

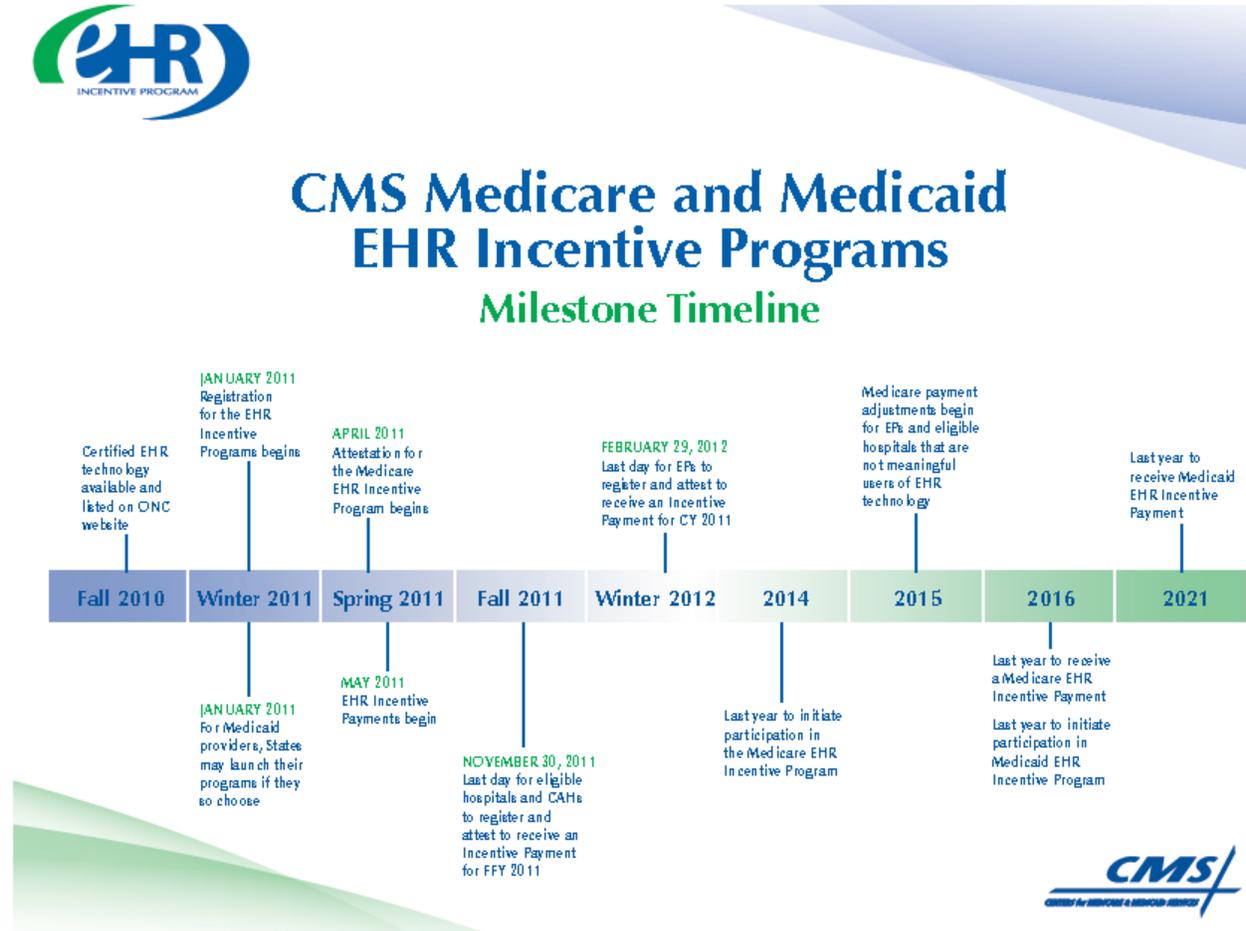
Given this, your proposed project will not constitute human subjects research. Therefore, it does not fall within the purview of the CSUB IRB/HSR. Good luck with your project.

If you have any questions, or there are any changes that might bring these activities within the purview of the IRB/HSR, please notify me immediately at 654-2373. Thank you.

Steve Suter, University Research Ethics Review Coordinator

APPENDIX

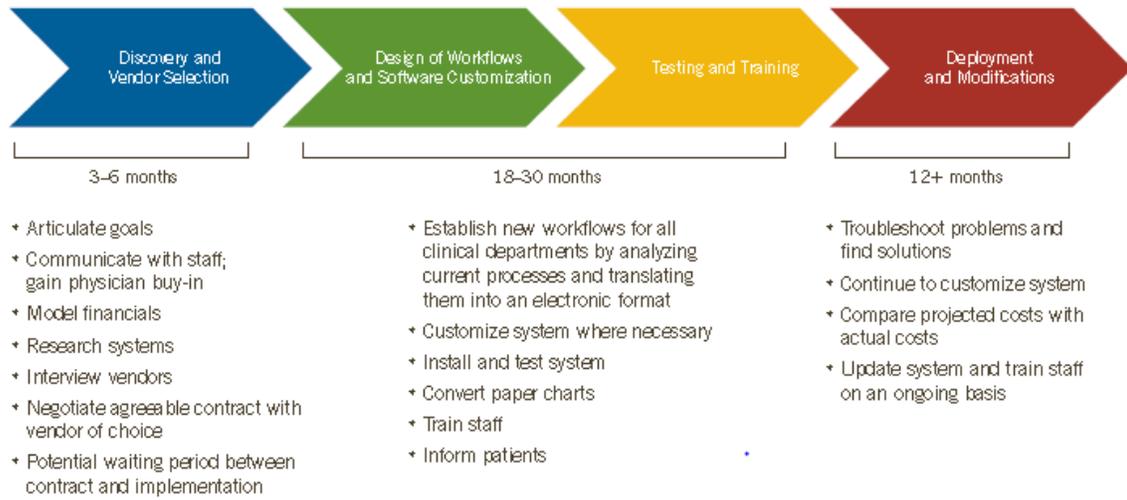
Figure 1. Centers for Medicare and Medicaid EHR Incentive Payment Timeline



(Centers for Medicare and Medicaid Services, 2010)

Figure 2. Illustration of a workflow design adopted by a hospital care setting.

**EHR Implementation Process**



(American Hospital Association, 2006)