2016

The Successful Implementation of Electronic Health Records at Small Rural Hospitals

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2016

Abstract

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MBA, Independence University, 2009

BBA, University of the District of Columbia, 2004

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

May 2016

Abstract

Electronic health records (EHRs) have been in use since the 1960s. U.S. rural hospital leaders and administrators face significant pressure to implement health information technology because of the American Recovery and Reinvestment Act of 2009. However, some leaders and managers of small rural hospital lack strategies to develop and implement EHRs. The focus of this descriptive phenomenological study was to explore lived experiences of hospital leaders and administrators who have used successful strategies to implement EHRs in small rural hospitals. Diffusion of innovation theory shaped the theoretical framework of this study. Data were collected through telephone interviews conducted with participants who successfully deployed EHRs at 10 hospitals in the Appalachian regions of Maryland, Virginia, and West Virginia. Data analysis occurred using a modified Husserlian approach in search of common themes from interview transcripts. The main themes were strategies to address standards and incentives, implementation, and challenges. The exploration of these strategies provides insight that small rural hospital leaders and administrators could consider for implementing EHRs. The study findings might enable small rural hospital leaders and administrators to contribute to positive social change by engaging communities in using EHRs; these findings may also expand information sharing among individuals and organizations and build social relationships with an expectation of future benefits. Results from this study are designed to inform other small rural hospital leaders and administrators to conduct further research on successful strategies for implementation of EHRs.

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Dedication

I dedicate this study in memory of all the inspirational senior and disabled residents I have met along this doctoral journey at Friendship Arms Apartments in Hyattsville, Maryland. I also dedicate this study to a very dear friend, Caroline Haye, JD, for her encouragement, understanding, and patience allowing me to share my experiences.

Acknowledgments

I am eternally grateful to my outstanding chairperson Dr. Diane Dusick, who provided me with staunch support from start to finish; my second committee member Dr. Robert Hockin; methodologist Dr. Roger Mayer; and editor Dr. Basil Considine for their input and proper guidance.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

Section 1: Foundation of the Study

Many small rural U.S. hospital leaders and administrators in the Appalachian regions of Maryland, Virginia, and West Virginia have adopted electronic health records (EHR) systems, but individual and small-group offices adopt EHR systems at a slower rate (Ramaiah, Subrahmanian, Sriram, & Lide, 2012). The conversion of paper-based medical records to EHRs includes customizable tethered patient-centered portals (Wu, Kharrazi, Boulware, & Snyder, 2013). Classen and Bates (2011) proposed that EHRs be an essential foundational tool for improving safety and quality of care and for reducing costs. The Health Information Technology for Economic and Clinical Health (HITECH) Act established in 2009 and went into effect in 2010 (Lawley, 2012). HITECH produced changes to a few HIPAA arrangements concerning electronic protection, privacy, and access to electronic health data (Lawley, 2012).

Stanberry (2011) claimed that the universal support for EHRs has eliminated any significant debate opposing their use. The proliferation of electronic data within the modern health information infrastructure presents crucial benefits for medical providers and patients, including (a) enhanced patient autonomy, (b) improved clinical treatment, (c) advances in health research, and (d) modern security techniques (Stanberry, 2011). Weinfeld, Davidson, and Mohan (2012) noted that only 5.1% of small rural critical access hospitals (CAHs) in the Appalachian region had primary EHR systems, compared with 10.8% for non-CAHs. U.S. healthcare administrators face significant pressure to implement health information technology (HIT) systems with certified EHR applications

(Ford, Menachemi, Huerta, & Yu, 2010). This study explored the lived experiences of small rural hospital leaders and administrators who have successfully implemented electronic health records systems.

Background of the Problem

The number of EHR system adoption has increased in rural hospitals over time, but rural health organizations continue to show the lowest rate of any group examined: only 19.4% had a primary EHR system in 2011 (DesRoches, Worzala, Joshi, Kralovec, & Jha, 2012). Approximately 20–25% of hospitals in the United States keep medical records electronically (Zhang et al., 2013). Implementing hospital-wide electronic health records systems is an intricate affair requiring a series of structural and procedural dynamics including human skills, organizational formation, technical infrastructure, financial means, and expertise (Boonstra, Versluis, & Vos, 2014). Despite broad agreement on the benefits of EHRs and other forms of HIT, small rural health care practitioners have moved slowly to adopt electronic health records systems (Ajami & Bagheri-Tadi, 2013).

Many leaders experience conversion difficulties during the implementation of the EHRs; this lack of readiness makes their organizations vulnerable (Ajami & Bagheri-Tadi, 2013). To achieve the goal of comprehensive health information record-keeping and exchange among providers and patients, hospital leaders and administrators must have functioning EHRs with multiple capabilities, including patient demographics, care histories, and lab results (DesRoches et al., 2012). Miscommunication, misinformation,

and misinterpretation between vendors, hospital executives, information systems managers, and practitioners contribute to numerous problems in the advertising, selection, implementation, and operation of electronic health records systems (Ajami & Bagheri-Tadi, 2013). I addressed the resulting business problem by acquiring knowledge from small rural hospital leaders and administrators who have applied successful strategies to implement EHRs.

Problem Statement

Despite national investments to support the adoption of HIT, barriers inhibit the adoption and use of IT in some rural areas (Gabriel, Jones, Samy, & King, 2014). In the United States, approximately 98,000 deaths are associated with medical errors in the healthcare industry annually (Keenan, Yakel, Lopez, Tschannen, & Ford, 2013). More than half of these medical errors are the result of failures of communication and information flow (Keenan et al., 2013). EHRs have been in use since the 1960s, and developments in technology have made medical information sharing easier (Walker,2012).

The general business problem was that some leaders and administrators in small rural hospitals were negatively affected by the slow implementation of EHRs, which resulted in diminished quality of patient care, minimum care coordination, and increase costs. The specific business problem was that some rural hospital leaders and administrators lacked strategies to succeed in the implementation of EHRs.

Purpose Statement

The purpose of this qualitative descriptive phenomenological study was to explore lived experiences of hospital leaders and administrators who have used successful strategies to implement electronic health records systems in small rural hospitals. The participants selected for this study were from the Appalachian regions of Maryland, Virginia, and West Virginia. This study was designed to promote positive social change by providing hospital leaders and administrators with useful strategies to assist with electronic health records implementation. The results of the study are intended to benefit health care organizations inside and outside by improving communication, information flow, and care coordination.

Nature of the Study

I used a qualitative method to explore the experiences of small rural hospital leaders and administrators that have successfully implemented electronic health records systems. Qualitative methods produce findings that reveal individuals' experiences and genuine thoughts and reflections (Miner-Romanoff, 2012). Qualitative methods also allow investigators to acquire perceptions and experiences of individuals and events in natural environments from information that develop from the individuals' versions (Hunt, 2011).

I selected a phenomenological study design because this supported my goal of obtaining from participants details of their personal experiences and perspectives associated with the problem of adopting and implementing EHRs in small rural hospitals.

The primary purpose of phenomenological design is to determine what the experience means for the persons who have lived it and who are capable of providing a comprehensive description of the experience (Miner-Romanoff, 2012). Phenomenological research does not involve observation, formal and informal interviews, or a need to immerse the researcher into a particular culture (Cruz & Higginbottom, 2013; Keutel, Michalik, & Richter, 2014).

I also considered and rejected several alternate research designs. Case study research design uses multiple methods and multiple sources to collect data and develop new theory and test existing theory (Keutel, Michalik, & Richter, 2014; Percy, Kostere, & Kostere, 2015). I did not use a case study approach for this study because no hypothesis testing or new theory development was desired.

The phenomenological design did not involve observation, formal and informal interviews, or the need to immerse researcher into a particular culture (Cruz & Higginbottom, 2013; Keutel, Michalik, & Richter, 2014). The ethnography research approach was rejected because I did not investigate the social groupings, social customs, beliefs, behaviors, or practices for which this approach is beneficial (Keutel et al., 2014). The study research question obtained perceptions of small rural hospital leaders and administrators who have succeeded in the implementation of electronic health records. Grounded theory was not considered because the process starts with defining research questions and introduces early constructs to generate a theory to explain a phenomenon of interest (Chong & Yeo, 2015; Ebrashi, 2013), which were not study goals.

Research Question

The goal of the qualitative descriptive phenomenological study was to conduct interviews with a minimum of 20 small rural hospital leaders and administrators in the Appalachian regions of Maryland, Virginia, and West Virginia. Through semistructured interviews, I gained insight related to business strategies applied to implement electronic health record systems successfully. One primary research question reflected the purpose of the study:

RQ1: What are the perceptions and experiences of small rural hospital leaders and administrators who have succeeded in the implementation of electronic health record systems?

Six interview questions were used to obtain the data necessary to address the primary research question:

1. How influential was the HITECH Act in making a decision to implement EHR systems?
2. What initial steps did your organization take to begin the EHR implementation process?
3. What financial challenges did you encounter implementing EHR systems?
4. What suggestions do you have for choosing a compatible IT vendor for implementing EHR systems?
5. What steps did you take to establish the IT infrastructure necessary to operate EHR systems?

6. Do you have anything to add that would assist other leaders/administrators of small rural hospitals to implement electronic health record systems successfully?

Theoretical Framework

The theoretical framework for this study was based on Rogers (1995) diffusion of innovation theory. The key theoretical constructs underlying the theory are (a) strategies for implementing technological systems, (b) rate of information technology diffusion, and (c) electronic health records systems. The diffusion of innovations theory emphasizes that social regimes, time, and communication channels influence the rate of diffusion and elements of innovation (Rogers, 1995).

Diffusion is the process of delivering an innovation (new ideas, applications, products, and technologies) via a particular channel among the members of a social system (Akça & Özer, 2014). The theory explains many exogenous factors that affect the decision on an application of information technology innovation (Akça & Özer, 2014). Diffusion theory represents a complex number of subtheories that collectively describe the processes of adoption (Lung-Hsing, Huei-Mei, Wen-Chen, & Hung-Jen, 2013). In healthcare, as in almost every other area of the human organization, innovations often involve highly organized, institutionally sanctioned, and systematically regulated changes in the structure and delivery of services (May, 2012).

Operational Definitions

American Recovery and Reinvestment Act of 2009 (ARRA): A U.S. law that mandates advancement in the use of electronic health records with incentives for

providers to support adoption and use of EHRs (Johnson & Bergren, 2011). The ARRA assures establishing EHRs would improve the safety, timeliness, effectiveness, and efficiency of patient care (Hacker, Penfold, Zhang, & Soumerai, 2012).

Critical access hospitals: Rural community hospitals in the United States that receive cost-based reimbursement (American Hospital Association [AHA], 2013a). To obtain the CAH designation, a rural hospital must meet defined criteria outlined in the Conditions of Participation 42CFR485 and subsequent legislative refinements to the program through (a) the Balanced Budget Refinement Act of 1999 (BBRA), (b) the Benefits Improvement and Protection Act of 2000 (BIPA), (c) the Medicare Modernization Act, (d) the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA), and (e) the Patient Protection and Affordable Care Act of 2010 (PPACA; AHA, 2013a).

Electronic health records (EHR): Patient health records securely stored in electronic form and may include, electronic medical records, computerized patient records, computerized medical records, personal health records, and clinical data (Spiranovic, Matthews, Scanlan, & Kirkby, 2016). The primary use of EHRs is that of a repository and source of health information to assist the healthcare of the individual patient (Spiranovic et al., 2016).

Electronic medical records (EMR): Computerized medical information systems with the capability of collecting, storing and displaying patient information (Ajami & Bagheri-Tadi, 2013). EMRs consist of daily charting of medication administration,

physical evaluation, and assessment, nursing notation, plan of care, referrals, medical history, lifestyle, physical examination, diagnoses, tests, immunization, and discharge notes. EMRs focus on the medical symptoms and issues of a patient (Hill, Du Fresne, Holder, Samudio, & Nallavadla, 2015).

Health Information Technology for Economic and Clinical Health Act (HITECH): In 2009, established Medicare and Medicaid incentive programs to support the implementation of EHRs in hospitals and qualified professionals who exhibit the meaningful use of certified EHRs (Wright et al., 2013). HITECH provides billions in funding directly to hospitals and clinicians to help leaders and administrators implement EHRs (Lenert & Sundwall, 2012). The goals of the legislation are to transform the health care system for improved quality and efficiency by increasing the adoption and use of EHRs (Diana, Kazley, Ford, & Menachemi, 2012).

Long term acute care hospitals (LTACHs*):* Hospitals that provide care for patients who are critically ill and require treatment beyond a short-stay in a critical access hospital (Thrush, Rozek, & Dekerlegand, 2012). Long-term acute care hospitals offer sophisticated inpatient services for patients in the recovery phase of severe or acute illness (Kahn et al., 2013). Long-term acute care hospitals operate as specialized centers for patients with chronic critical disease and those receiving prolonged mechanical ventilation (Kahn et al., 2013).

Meaningful use: A section of HITECH that provides incentives for achieving meaningful use of EHRs provides funding to encourage providers to implement EHRs

and other electronic clinical systems in ways that improve the quality of care (McCulloch & Tegethoff, 2013). The HITECH Act's primary initiative provides incentive payments through Medicare and Medicaid to move EHR adoption and meaningful use by helping them overcome financial barriers, but the ultimate objective is to accomplish nationwide improvements in healthcare quality and cost reduction (Diana, Harle, Huerta, Ford, & Menachemi, 2014).

Rural hospital: In the context of this study, a health organization in a community located at least 30 miles from an urban community not immediately accessible for health care. Rural areas are low population densities, consisting of small communities (Ryan, Mckenna, & Slevin, 2012). Rural hospitals are often small nonprofit or governmental facilities; many rural healthcare facilities depend heavily on public programs such as Medicare and Medicaid (Choi, 2012). Choi (2012) explained that rural hospitals provide a broad range of health services, including primary, acute, chronic, and long-term care, to rural residents.

Assumptions, Limitations, and Delimitations

Assumptions

An assumption is something researchers take for granted or presupposes as part of an enduring belief system (Paul & Elder, 2013). For this study, I assumed that all participants understood the need for developing a proficient IT infrastructure that will enable EHR implementation in rural hospitals. I further assumed that the small rural hospital managers who participated in the study (a) provided a truthful respond to

interview questions, (b) had developed strategies for successful implementation of EHR systems, and (c) were willing to honestly share their knowledge to assist other small rural hospital managers with EHR implementation.

Limitations

Limitations are those aspects of the study over which the researcher has no control (Soilkki, Cassim, & Anis, 2014). Limitations identify possible weaknesses within the research design (Dean, 2014). The results of the study are limited by the participants' (a) need to implement EHRs, (b) challenges associated with EHRs, and (c) knowledge regarding potential solutions to address the challenges. The results might be limited by the participants' honesty and willingness to share their knowledge for purposes of this study.

Delimitations

Delimitations are those characteristics of the study that a researcher influences (Soilkki et al., 2014) and imposes intentionally (Dean, 2014). The sample included leaders and administrators at small rural hospitals in the Appalachian region, including parts of Maryland, Virginia, and West Virginia. I only selected the study participants from rural hospitals that have successfully implemented EHR systems. The use of semistructured open-ended questions (Appendix A) guided the interviews to elicit details of lived experiences, opinions, and perspectives of the participants. The interview questions allowed the exploration of strategies that hospital leaders and administrators have used to implement EHR systems successfully.

Significance of the Study

Contribution to Business Practice

The purpose of this study was to explore strategies that leaders and administrators of small rural hospitals can use for the successful implementation of electronic health records application. Legislation, advances in technology, and the increased use of electronic health records pressure leaders and administrators of U.S.-based health care organizations to form strategic programs to modernize their IT operations (Richards, Prybutok, & Ryan, 2012). With underperforming information exchange efforts costing organizations millions of dollars, a successful information exchange function has significant value for businesses as well as for the United States (Feldman & Horan, 2011). U.S. healthcare leaders and administrators are facing exceptional developments ranging from managing and controlling the rise in health care costs and achieving electronic health record implementation successfully to assist in coordinating and improving patient care (Cook, 2014).

More than 98,000 deaths in the United States annually are connected to medical errors in the healthcare business, half of which are the result of failures of information exchange and documentation (Keenan et al., 2013). This phenomenon is not limited to the United States; globally, patients die each year in every country from preventable and innocent mistakes, some of which are due to flawed record keeping (Stanberry, 2011). The study served to provide insights and perspectives on lived experiences from small

rural hospital leaders and administrators regarding the strategies used to succeed in the implementation electronic health records systems.

The knowledge obtained from the study may be applicable to other small rural hospital leaders and administrators for improving patient safety by reducing medical errors, and requiring higher-quality information flow (Harle & Menachemi, 2012). The use of EHRs lowers medical errors by providing healthcare workers with problem-solving capabilities, enhanced health information flow, and decision support through prompt access to the medical literature and best practices in medicine (Stanberry, 2011). Hospital leaders and administrators could maximize the benefits of electronic health information by educating themselves and working with others in their organizations, particularly those with knowledge in healthcare information systems (Weaver, Lindsay, & Gitelman, 2012).

A Review of the Professional and Academic Literature

The literature review incorporated an exploration and description of the possible strategies that can be used by small rural hospital leaders and administrators to implement electronic health records systems successfully. The literature review was essential, as its purpose was to identify problem domain and research area in which the document was intended to make a contribution to knowledge (Maier, 2013). The review included eight subsections: (a) strategies for implementing technological systems, (b) rate of information technology diffusion, (c) electronic health records systems, (d) potential

advantages of EHRs-EMRs, (e) ARRA of 2009, (f) HITECH, (g) telehealth and telemedicine, and (h) Internet-broadband.

I obtained a considerable amount of literature for this study using the Walden University Library. The sources for this study included (a) ProQuest, (b) EBSCO, (c) Google Scholar, (d) books, (e) government documents, and (f) other scholarly journal articles, producing. The sources produced more than 232 content searches. The resulting review provided useful information to respond to the research question with primary sources published from 2011 to present, and ensured that this study had a supported research method and design. The final study includes 112 references with 95 references (85%) that were peer-reviewed and occurred within the last 5 years, meeting Walden University's requirement of at least 85% requirement of references being recent and peer-reviewed references.

I addressed one research question: What strategies do leaders and administrators of small rural hospitals use for the successful implementation of electronic health records systems? The following literature review provided the foundation of the study.

Strategies for Implementing Technological Systems

The purpose of the qualitative descriptive phenomenological study was to explore strategies that leaders and administrators of small rural hospitals used to implement EHR systems successfully. Small rural hospital leaders and administrators need to develop strategies that will enable them to implement electronic health record systems successfully. Many countries have established national programs to implement IT

systems to improve patient safety and enhance the quality of health care services, including Canada (Rozenblum et al., 2011). In 2001, Canada adopted a strategy to expand national EHR systems that allow for the nationwide exchange of health information (Rozenblum et al., 2011). The Government of Canada established Canada Health *Infoway* to accelerate the e-health plan and to create a national system of interoperable EHR systems (Rozenblum et al., 2011). The main elements of the Infoway plan included (a) establishment of a national architecture and standards, (b) patient and provider registries, and (c) the implementation of regional drug and laboratory repositories and digital imaging to improve efficiency in the exchange of health information (Rozenblum et al., 2011). The benefits of e-health illustrate the increased use of EMR systems in the U.S. with 84% of hospitals having tried to connect users to e-health systems (Huang & Chang, 2013).

Some small rural hospitals in the U.S. have insufficient funds to cover the costs of providing quality patient services and face severe economic pressures to adopt electronic health record systems that satisfy meaningful use requirements. The 2009 Recovery Act set aside more than $20 billion for federal incentive payments for doctors and hospitals adopting EHRs and demonstrating ways that can improve the quality, safety, and effectiveness of care (Malhotra & Lassiter, 2014). Not all hospitals adopt medical records, even when they use organizational or hospitality systems (Côrtes & de Paula Côrtes, 2011).

The $720 million regional extension center (REC) program designed by U.S. Department of Health and Human Services (DHHS), HITECH, and ONC is intended to provide assistance and information on best practices to accelerate efforts to adopt the most favorable application of electronic health record systems that will enhance the quality and value of health care delivery (Lynch et al., 2014). The objective of the REC program is to assist 100,000 providers with technical and organizational difficulties encountered during health IT implementation and enhancement (Lynch et al., 2014). The REC program the United States provides support to local healthcare providers with creating, customizing health technology operations, and render IT expertise.

The adoption of health IT is also a significant step towards the advancement of healthcare reform in China (He et al., 2014). The formation of a regional health information (RHI) programs was an essential step in this process and establishes a foundation for the implementation of EHR systems (He et al., 2014). The Chinese RHI program is an information resource that groups' together health information obtained from patients in a network to follow a variety of health-related events (He et al., 2014). The proportion of individual residents' records with complete necessary personal information increased from 2.6% to 32.5%. The goal was to achieve 30% EHRs coverage in rural areas and 50% in urban areas by 2011. At the time of this study, the coverage rate for the EHR in China met national goals. For many small rural U.S hospitals, penalties will be assessed in 2015 for failing to achieve federal meaningful-use criteria (Adler-Milstein et al., 2014). Most hospitals have implemented EHRs and meet meaningful-use

criteria, but only 5.8 percent of small and rural hospitals have met standards (Adler-Milstein et al., 2014).

In India, a broad gap in healthcare services exists amongst rural and urban areas (Radhakrishna, Goud, Kasthuri, Waghmare, & Raj, 2014). St. John's Medical College in Bangalore, India serves as the rural outreach center, offers initial care, and has resources to manage routine deliveries and minor surgical procedures (Radhakrishna et al., 2014). India's IT healthcare strategy involved developing a primary health care IT infrastructure consisting of three components: a browser-based electronic health records systems, a USB-based memory card, and an interactive short message service (SMS) feature using an open-source tool (Radhakrishna et al., 2014). The electronic health records systems are the primary source for collecting and storing a patients' health data, and the information is available to physicians through a secure login (Radhakrishna et al., 2014). Diraya IT and the *Indra* Company are pioneers in developing a strategy to adopt electronic health records systems in Spain (de la Torre, González, & López-Coronado, 2012). The IT services allow healthcare professionals to schedule patient appointments electronically, prescribe medications electronically, and be available to patients immediately (de la Torre et al., 2012).

The strategic formation and implementation of an information technology system are essential for the efficient supervision of patients' health information that included specifying system intentions and establishing management guidelines. This can be seen in EHR systems used in Canada, China, and India. Canada's Infoway system has

demonstrated an enhanced e-health system and improved interoperable EHR sharing nationwide. China's establishment of regional health information program groups together health information from patients into a network has enabled health care providers to follow a variety of health-related occurrences. India has also demonstrated a cost-effective EHR strategy utilizing a primary IT system consisting of a browser-based EHR system using a USB-based memory card, and an interactive SMS feature using an open-source tool to gather and store patient information. The United States has also implemented an EHR strategy that uses regional extension centers to provide support to local healthcare providers with creating, customizing health technology operations, and render IT expertise.

Diffusion of Innovation Theory

Diffusion is the process of communicating innovation among organizational members through specific channels over time and generating alterations in the structure and function of a social system over time (Rogers, 1995). Rogers (1995), diffusion occurs within a social system whose structure affects the diffusion process in several ways. These social systems constitute a boundary in which an innovation diffuses (Rogers, 1995). Rogers (1995) identified significant difficulties that can obstruct the adoption of a new idea, even when the idea has obvious advantages.

Rogers (1995) noted the foundation of innovation contains five essential characteristics: (a) comparative advantage, (b) harmonious, (c) intricacy, (d) trialability, and (e) observability. Rogers stated perceptions of these characteristics predicted the rate

of adoption of innovations. Rogers defined the rate of adoption as the relative promptness with which participants of a social system adopt an innovation. The structure of a social system can also facilitate or impede the diffusion of innovation in the system; Rogers noted that understanding the diffusion of innovations helps to explore and explain why some new technologies spread faster and wider than others do. Rogers identified established behavior patterns in members of a social system, termed system norms, as potential barriers to change.

Social Norms Theory

Social norms established rules directing behavior in a culture; they are the unintentional, unplanned, and sometimes unexpected results of individuals' interactions (Bicchieri & Muldoon, 2014). Social norms are. These rules govern beliefs, expectations, and group knowledge, which are principal concepts in the development of a philosophical view of social norms (Bicchieri & Muldoon, 2014). Although social norms develop in small, supportive groups, they often expand beyond the constricted limits of the initial group, and the challenge becomes explaining the standards from the smaller group to the larger population (Bicchieri & Muldoon, 2014). Moreover, individuals' and group leaders' technology adoption sends signals to others about social approval for the innovation and its purpose (Nejad, Sherrell, & Babakus, 2014). Potential adopters may perceive the adoption of an innovation by leaders as a signal of what is or will be the future set of norms (Nejad et al., 2014). Using social norms to influence decisions is most

effective when descriptive norms align with the message and situational relevance is clear (Nejad et al., 2014).

Descriptive Norms/Injunctive Norms

There are two kinds of social norms: injunctive norms and descriptive norms. Injunctive norms are an individual's perceptions of what appropriate behaviors are and what is inappropriate behavior by others is (Alok, Raveendran, & Prasuna, 2014). A descriptive norm is a person's perception of the behavior revealed by other individuals around you. Social norms influence individual behaviors because norms can include descriptive norms that refer to a perception of what others may do in a situation, while injunctive norms refer to the efforts made to make sure of social approval (Raihani & McAuliffe, 2014). Descriptive social norms influence an individual by providing information about what is likely to be effective in a situation (Nejad et al., 2014).

The increase in the number of adopters of a new product sends positive signals to others regarding the product functionality and quality (Nejad et al., 2014). Descriptive norms surface from studying individuals' behaviors under certain conditions (Bobek, Hageman, & Kelliher, 2013). By contrast, injunctive norms are more desirable towards societal expectations of suitable behavior (Bobek et al., 2013). Thus, when individuals encounter uncertainty in a situation, they will most likely observe the actions of others to help them decide the proper decision (Bobek et al., 2013). The proper social behavior becomes apparent by applying injunctive norms. Injunctive norms favor social behavior while descriptive norms relate to individual benefits (Raihani & McAuliffe, 2014).

Descriptive norms regarding social behavior predict the possible social approval or disapproval a person would experience if differing from the norm (Raihani & McAuliffe, 2014). In 2012, small rural hospitals in the U.S. did not have a primary or comprehensive EHR systems. Many leaders and administrators exhibited behavior resembling that of descriptive norms preferring to observe other individuals' behaviors under specified conditions (Adler-Milstein et al., 2014). The actions of late adopters of EHRs is associated with injunctive norms because individuals would prefer to observe the actions of others to help them decide the proper decision (Adler-Milstein et al., 2014).

Social Influence Theory

Social influence happens because of differences in one's character and action that may change the perspective of others that may influence their association with the company. The social influence theory characteristics consist of peer pressure, persuasion, promotional advertisement, and compliance. Social influence is the extent to which associates and colleagues influence one's behavior (Khalil & Al-Nasrallah, 2014). Social influence is the degree to which use of an innovation might improve an individual's standing in a social system, and in some instances, an individual will reluctantly acquiesce to these changes to satisfy others or mandates instead of acting consistent with their own belief system (Lu, Yu, & Yao, 2014). Informal social networks unite most associates inside the same organization or organizations in various businesses (Talukder, Quazi, & Djatikusumo, 2013).

Organizational leaders adopt an innovation primarily based on their perceptions and understanding of information disseminated among other associates. In diffusion research, individuals identify with adopting technology as a preferential decision made within the social system that may include other organizations (Makkonen & Johnston, 2014). Diffusion is a flow of information from likely adopters of an innovation through communication networks: Typically, this adoption starts within a cultural group, and that information and knowledge ultimately disseminates through different cultural organizations or persons (DeGarmo, 2012).

Diffusion is also strongly driven by technology. Computer-generated information is the latest development in Internet technology accepted by social networks, and the hi-tech mode of information technology supports the interchange of information between individuals and organizations for all practical purposes (Talukder et al., 2013). The effect of social influence on computer use intention is prominent with experienced users (Khalil & Al-Nasrallah, 2014). The variety of advantages connected with the diffusion of innovation and the adoption of information technology systems is possible to accomplish through individuals, organizations, and social networks (Talukder et al., 2013).

The interaction between individuals within a social network can support the adoption and implementation of an information technology system (Talukder et al., 2013). The process of communication influences the adoption of information technology acceptance within a social network of users, and later adopters learn from earlier adopters (Sang-Gun, Trimi, & Kim, 2013). Earlier adopters are not as affected by communication

and social influence because their intention to use a technology is mostly encouraged by innovation factors that are closely associated with users' perceptions of the innovation's usefulness and ease-of-use and the user's self-efficacy (Sang-Gun et al., 2013). Typically, individuals share an innovation's effectiveness through communication and social interactions with others (Sang-Gun et al., 2013).

Action-Network Theory

Individuals use action network theory (ANT) to explain their actions and provide justifiable reasons why it is important to support innovation. Individuals can then influence others to adopt information technology (Eze, Duan, & Chen, 2014). The strength of ANT allows an individual to use a more persuasive style to get other individuals or social groups to understand the importance of adopting information technology systems (Eze et al., 2014). Eze et al. (2014) noted that emerging information communication technology is a broad term to include any new information technology development. Action-networks are a collection of individuals or many support groups consisting of representatives who try to provide an explanation for their actions (Montenegro & Bulgacov, 2014). Action network theorists recognize that individuals and organizations are likely over time to become interdependent with respect to information technology use (Eze et al., 2014).

Technology Acceptance Model

The technology acceptance model (TAM) specifies the basis for understanding the dynamics of technology acceptance by describing the factors that may affect the

intentions of potential adopters of new technology. The TAM is one of the most widely used theoretical approaches to plan and predict the adoption behavior of a culture regarding technology (Brezavscek, Sparl, & Znidarsic, 2014). Several government agencies globally are now developing and implementing information technology (AlShibly, 2014). The primary goal of TAM is to predict information systems acceptance and identify layout problems before user involvement with the new system (AlShibly, 2014). The foundation of TAM derived from psychology, which attempts to understand the behaviors that influence the beliefs, attitudes, and behaviors of the individual or group toward implementing a new technology (AlShibly, 2014).

TAM explains the nature and determinants of technology usage (Brezavscek et al., 2014). The original TAM proposed that identified advantages by the user and the ease of operating technology are key constructs that determine a users' acceptance of an innovation (Bcrezavscek et al., 2014). This lack of user acceptance is a hindrance to the successful adoption of information systems (Suryaningrum, 2012). Therefore, user acceptance is the critical factor in determining the success or failure of any information system project (Suryaningrum, 2012). The user intends to use technology if the user feels the technology will be useful for them, and they feel it is easy to use (Brezavscek et al., 2014).

The technology acceptance model (TAM) posits that a user's behavior when choosing to adopt IT systems must align with their goals (Lo, 2014). However, some users respond unfavorably to adopting new technology or new ideas based on contrasts in

attitudes toward change (Lo, 2014). The acceptance of IT adoption is a psychological choice individual or organizations make regarding an IT system (Schwarz, Chin, Hirschheim, & Schwarz, 2014). However, the principal movement towards the acceptance research field includes two models namely perceived practicality, and perceived simplicity of use developed on the perception-behavior pattern established by TAM (Schwarz et al., 2014).

Theory of Reasoned Action/Theory of Planned Behavior (TRA/TPB)

The TRA/TPB key factors are behavior intent and behavioral intention. Behavioral intent consists of (a) the individual attitude towards the outcomes, (b) the observed shared norms, and (c) the perceived social restrain over the action (Sánchez-Medina, Romero-Quintero, & Sosa-Cabrera, 2014). Behavioral intention assesses a person's vigor to act upon a behavior (Dlodlo, 2014). Applying TRA/TPB makes it feasible for company employees to make contributions and access and share information from a primary source (Tsai, Chang, Cheng, & Lien, 2013). Relatedly, the theory of planned behavior approach aligns with interviewing small rural hospital leaders and administrators to understand their attitudes towards the adoption of EHRs.

The TRA/TPB approach is perceptive in its ability to allow researchers to explain behavior (Akanbi, Ayodele, & Adedipe, 2014). The theory presupposes that individuals are usually logical and will consider the consequences of their actions before making a decision to engage or not engage in a given behavior (Akambi et al., 2014). The TRA/TPB suggests that, for conditions where individuals do not have full control over

the situation, behavioral beliefs guide human actions, and the likely outcomes, expectations of others, and opportunities or impediments (Akambi et al., 2014). The CMS provides payments to providers and small rural hospitals if they implement EHRs and demonstrate meaningful use beginning in 2015. Small rural hospital leaders and administrators are usually logical and will most likely seek to avoid financial consequences (Schuman, 2014).

Information sharing among individuals and organizations builds social relationships with an expectation of future benefits (Tsai et al., 2013). In most private and public agencies, information sharing is necessary to maintain a competitive advantage. Rapid globalization necessitates accessing and exchanging immediate information, because of increasing competition among organizations operating in the same sector (Yilmaz, Aktas, Özer, & Özcan, 2013). Knowledge and information obtained using computer systems enable rapid sharing of information throughout the entire organization to help decide the future direction of an organization (Yilmaz et al., 2013). While EHR systems have had a positive effect on the performance of small rural hospitals, individual attitudes continue to view the implementation process as a complicated endeavor (Boonstra et al., 2014). EHR systems help facilitate e-health usages with sharing individuals' health information in different locations and is an efficient method of communicating with healthcare providers (Ayatollahi, Mirani, & Haghani, 2014).

Unified Theory of Technology Acceptance and Use of Technology (UTAUT)

The unified theory of technology acceptances and use (UTAUT) is a widely used theory to describe technology acceptance (Sun, Wang, Guo, & Peng, 2013). It combines key factors and contingencies associated with predicting behavioral intentions to use a technology in an organization (Sun et al., 2013). The UTAUT model explains how behavioral intentions of adopters of new technology may face some prejudice because of performance expectancy, effort expectancy, social influence, and facilitating conditions (Raman et al., 2014; Yang & Forney, 2013). In particular, acceptance theory examines how individuals or groups see perceive usefulness and ease of use in a technology. Individualistic norms are represented by additional terms, performance expectancy, effort expectancy, and social influence (Sun et al., 2013).

With performance expectancy, an individual believes using a system will help improve job performance (Sun et al., 2013). Effort expectancy relates to a level of ease connected with the utilization of an innovation (Sun et al., 2013). Based on the UTAUT model, effort expectancy definitely affects the performance expectancy (Zahir & Gharleghi, 2015). Social influence involves the individuals understanding of other associates' desire to support the use of new technology (Sun et al., 2013). Zahir and Gharleghi (2015) suggested the beliefs and attitudes of people connected to the user is a consideration when they decide to adopt a new technology. Facilitating conditions include how much an individual trusts the existing technical infrastructure to support the new technology (Sun et al., 2013). According to the UTAUT model, facilitating

conditions influence technology use and can serve as a substitution for behavioral control (Zahir & Gharleghi, 2015).

Implementation Theory

Most organizational managers should have in place a principle strategy for adopting and developing a new information technology system. An innovation most often aligns with the implementation of a new or significantly enhanced product, a new marketing method, or a new organizational approach in business practices (Ebbesen & Bonke, 2014). Ebbesen and Bonke (2014) noted the process of implementing IT systems in an organization involves making changes to existing technological infrastructure that may cause or require changes in the entire organization. Implementation theory classifies a disease, a new surgical technique, or an innovative approach to an organization as constructs requiring interaction with other administrative systems and conditions (May, 2013).

Implementation, therefore, in order for EHRs to be understood from the outset as a process that is a continuous and interactive accomplishment rather than as an outcome (May, 2013). Utilizing a different way of thinking, doing, or planning becomes fused into a social system of any kind creates a complicated combination of material and knowledge (May, 2013). The goal of implementation theory development is the production of a vigorous collection of theoretical mechanisms that permit researchers and practitioners to determine and describe essential details of the application methods (May, 2013).

Complementary sources consisting of two or more goods that can substitute one another, if implemented at the same time, reduce the consumption rate of one another if used together (Nan, Zmud, & Yetgin, 2014). When a larger percentage of a population adopts an innovation, the likelihood increases that complementary resources will emerge (Nan et al., 2014). An innovation's added-value tends to develop through one of the three pathways: as a new source of value, as a substitute for one or more existing sources of value, or as a complement to one or more existing resources of value (Nan et al., 2014).

The diffusion of innovation has received significant interest in a broad range of disciplines, including management, economics, marketing, and sociology (Choudrie & Culkin, 2013). Diffusion theory highlights the cumulative adoption of an innovation that follows three main routes: (a) an initiation and implementation phase with slow growth, (b) an adoption phase with fast growth, and (c) a saturation stage with decelerating growth (Choudrie & Culkin, 2013). The adoption process is a decision-making process that employs an innovation with the intention of using it now and in the future (Makkonen & Johnston, 2014).

Diffusion is an exceptional form of communication involving participants and the sharing of information (Huang & Shih, 2014). Rival innovations differ considerably with respect to their probability of adoption by individuals or networks (Nan et al., 2014). An innovation's benefit tends to derive from new sources, substitute resources, and existing significant sources (Nan et al., 2014). Network externalities recognize an innovation as being advantageous as more associates adopt, creating an arduous relationship between

two communicating parties and harder to transfer, receive, and interpret the intended meaning (Nan et al., 2014).

An innovation most often aligns with the implementation of a new or significantly enhanced product, a new marketing method, or a new organizational approach in business practices (Ebbesen & Bonke, 2014). Diffusion occurs within a social system, and the social structure of the system affects the innovation and diffusion process by communicating innovation among organizational members (Rogers, 1995).

Social norms are established rules directing individual or organizational behavior (Bicchieri & Muldoon, 2014). There are two kinds of social norms: injunctive norms and descriptive norms. Injunctive norms are an individual's perceptions of what appropriate behaviors are and are not appropriate behavior (Alok, Raveendran, & Prasuna, 2014). The social influence theory characteristics consist of peer pressure, persuasion, and compliance (Khalil & Al-Nasrallah, 2014). Action-networks are a collection of individuals or organization consisting of representatives who try to provide justifiable reasons why it is important to support innovation (Montenegro & Bulgacov, 2014; Eze, Duan, & Chen, 2014).

The primary goal of TAM is to predict information systems acceptance and identify layout problems before user involvement with the new system (AlShibly, 2014). The TRA/TPB key factors are behavior intent and behavioral intention. Behavioral intent is (a) the personal attitude towards the results, (b) the perceived social norms, and (c) and the perceived behavioral control over the action (Sánchez-Medina, Romero-Quintero, &

Sosa-Cabrera, 2014). Behavioral intention assesses a person's vigor to act upon a behavior (Dlodlo, 2014). The UTAUT is a thorough combination of the key factors and contingencies associated with predicting behavioral intentions to use a technology. This model explains how behavioral intentions of adopters of new technology may face some prejudice because of reasons such as performance expectancy, effort expectancy, social influence, and facilitating conditions are significant causes of behavioral intention to employ information technology systems (Raman et al., 2014; Yang & Forney, 2013).

Telemedicine Diffusion of Innovation

Telemedicine programs have diffused innovation and encouraged the adoption of IT operations in the Blue Ridge states. Brewer, Goble, and Guy (2011) wrote that rural communities spread across five major geographic regions: the Blue Ridge Mountains in the northeast, the Ridge and Valley Province and the Cumberland Plateau in the northwest, the Piedmont in central Georgia, and the Coastal Plain in the south. Georgia is the largest state east of the Mississippi River (Brewer et al., 2011). Rural communities bear a greater burden of cardiovascular disease, cancer, diabetes, obesity, and infant conditions than their urban counterparts (Brewer et al., 2011).

When rural, underserved patients become aware of local telemedicine services, their opinion of local quality care rises (Brock-Martin, Probst, Shah, Chen, & Garr, 2012). The emergence and maturation of technologies such as telehealth, distributed e-learning, moreover, electronic health records systems can transform health care and diminish disparities between urban and rural settings (Bish, Kenny, & Nay, 2012). Given

the state of health care in Georgia and the tremendous challenge of reaching the vulnerable communities, the Georgia Partnership for TeleHealth (GPT) utilizes telemedicine to improve the health outcomes of rural Georgians through access to broadband technologies.

The U.S. healthcare policy regulates the adoption of HIT and numerous advancements in information technology and has developed strategies to improve healthcare services and medicine for American Indians and Alaska Natives. Shore et al. (2012) found that American Indian and Alaska Native veterans have high rates of substance use disorders and posttraumatic stress disorder (PTSD), have the greatest proportional representation of all men in the military, and have the largest proportion of rural residents of any veteran group. Shore et al. explained that because of these complex health system issues for Native veterans' exploration of alternative models of service delivery such as telemental health is critical. According to Shore et al., research has demonstrated the utility of telemental health in rural locations, underserved areas, and difficult-to-access populations and has documented acceptable levels of patient and provider satisfaction.

The expansion of telehealth and telemedicine technology will allow American Indians, and Alaska Natives access to healthcare assistance more efficiently. The rapid diffusion of online and wireless services, together with, the rise of new health care services such as telemedicine, telecare, and remote monitoring, is opening possibilities for service providers (Basoglu, Daim, & Topacan, 2012). Many healthcare experienced

personnel and physicians decline to disseminate or affirm the diffusion of innovation and impede the approval of information technology (Carini & Dunn, 2013). The diffusion of IT systems is a complicated arrangement of technology, and users must follow particular procedures that will enable them to understand IT aptitudes (Barrett, Heracleous, & Walsham, 2013).

Radio Frequency Identification (RFID) adoption will happen if the organizations' culture recognizes an advantage or value in the technology. Culture and cultural traits are almost sure to have an impact on the rate of adoption of technology (DiPietro, 2014). Radio frequency identification is an advancing and emergent technology that uses radio signals for data collection, information transfer and patient identification/tracking (Lai, Lin, & Tseng, 2014). Lai et al. (2014) noted the Institute for Information Industry announced that the primary RFID adopters in Taiwan were businesses relating, logistics and shipping companies. However, there are fast growing needs for RFID in healthcare management (Lai et al., 2014). The recent addition of cloud computing in the healthcare context will have a significant influence on the healthcare sector (Padhy, Patra, & Satapathy, 2012). Padhy et al. (2012) noted cloud-computing applications share resources that include infrastructures, software, and business processes.

Several theories are included in this literature review to help explain the behavioral intentions of adopters of new technology. The theoretical framework for this study is the diffusion of innovation theory (Rogers, 1995). A diffusion of innovation occurs within a social system through a process of communication among individuals and

social networks (Rogers, 1995). Ebbesen and Bonke (2014) suggested an innovation should align with the organization's approach to their business practice. Some small rural hospital leaders and administrators lack strategies to succeed in implementing information technology systems, because of miscommunication, misinformation, and misinterpretation that hinder adoption (Ajami & Bagheri-Tadi, 2013). In small rural hospitals, as in almost every other social system, innovations often involve highly organized, institutionally sanctioned, and systematically regulated changes in the structure and delivery of services (May 2012).

The principal research question in this study related to the lived experiences of small rural hospital leaders and administrators who have succeeded in the implementation of electronic health record systems. The UTAUT model could help explain the behavioral intentions of hospital leaders and administrators prior to the adoption of information technology and what strategies that were used to rise above adverse preconceptions such as IT performance expectations, energy anticipation, social pressure, and facilitating environment (Raman et al., 2014; Yang & Forney, 2013). Despite the evidence supporting the benefits of implementing information technology systems, the diffusion of this innovation in some small rural hospitals has been low (Zhang et al., 2013). Patients die each year due to flawed record keeping, failures of communication and information flow in the healthcare industry (Keenan et al., 2013; Stanberry, 2011).

The purpose of the study was to explore strategies that leaders and administrators at small rural hospitals have employed to develop information technology systems

successfully. Adopting an innovation needs to be understood from the outset by small rural hospital leaders and administrators as a continuous and interactive process rather than an end result (May 2013). An organization's culture is almost sure to have an impact on the adoption of technology (DiPietro, 2014). Social norms are established rules directing individual or organizational behavior (Bicchieri & Muldoon, 2014).

Descriptive norms relate more to the achievement of goals in a particular situation. Therefore, would prefer adopting an innovation, in contrast, injunctive norms do not support innovative change (Melnyk, van Herpen, Fischer, & van Trijp, 2013). Peer pressure influences a person's stance on unethical behavior either as a standard norm of unacceptable or the opposite being acceptable immoral choice observed by the particular group (Nga & Lum, 2013). The social influence theory can help determine if some small rural hospital leaders and administrators might make decisions to adopt an innovation in the midst of disagreements, and peer-pressure to improve standing in a social network (Khalil & Al-Nasrallah, 201).

Social norms in some small rural hospitals often magnify, and the challenge becomes explaining their standards to a much larger social group (Bicchieri & Muldoon, 2014). Norms develop as associates learn to identify which behaviors are necessary to function effectively (Wang, Tseng, & Yen, 2014). However, it is possible for colleagues to change direction when making a decision to support an event in the organization, management, or policies and alter cultural norms (Wang et al., 2014). In small rural hospitals, the adoption of information technology is an intricate affair requiring

individual skills, specialized organization, and proficiency (Boonstra et al., 2014). Action-networks are a collection of people and groups consisting of leaders and administrators who attempt to provide justifiable reasons why it is important to adopt an innovation (Eze, Duan, & Chen, 2014; Montenegro & Bulgacov, 2014). Furthermore, the theory does not seek to establish symmetry between individuals and objects (Montenegro & Bulgacov, 2014).

The TAM model can help describe the dynamics of technology acceptance by describing the factors that may affect the intentions of potential rural hospital leaders/administrators, such as identification of design flaws before user engagement (AlShibly, 2014). Still, the principle notion of TAM is the apparent usefulness and perceived simplicity of use, but this will not establish managers' approval (AlShibly, 2014). Many, small rural hospital leaders and administrators are reasonable and will consider the consequences of their actions before making a decision to engage in a given behavior (Akambi et al., 2014). The TRA design takes into account the reasonable faculties of an individual and believes behavior is completely under control (Yilmaz et al., 2013).

The rapid diffusion of telemedicine, telecare, and remote monitoring, has opened possibilities for service providers (Basoglu et al., 2012). The emergence and development of technologies such as telehealth and electronic health records systems can transform health care and diminish disparities (Bish et al., 2012). Some rural areas do not have the infrastructure capability to support high-speed Internet required to operate electronic

health records systems, therefore, the use of telemedicine and telehealth technology can promote health information exchange using remote technology.

Electronic Health Records Systems

An EHR is a digital form of a patient's paper-based health report made accessible to both health care professionals and patients immediately. The concept of EHRs is a comprehensive documentation of a patient's healthcare information; including workflow surrounding the patient's care (House & Mishra, 2015). The use of EHRs lower medical errors by supplying healthcare personnel with diagnostic and treatment background information and decision support through prompt access to the medical literature and best practices in medicine (Stanberry, 2011). IT systems have become necessary in health care organizations, given the potential to improve quality of care, enhance productivity and support different approaches to manage patient care (Jaana, Tamim, Pare, & Teitelbaum, 2011).

Potential Advantages of EHRs-EMRs

Several small rural hospital leaders and administrators increasingly included in their planning process new strategies for adopting health information technologies to improve the delivery of health care services. Healthcare administrators use the terms EMRs and EHRs interchangeably (Fox, 2013). The term EMR refers to recordkeeping systems at the doctor-patient level that are useful in the clinical diagnosis and treatment of disease. The term EHR refers to the national electronic architecture used to aggregate health information and make valuable for policymakers, researchers, and health

administrators (Walkinshaw, 2011). The data in the EMR are the legal record of what happened to the individual during encounters with the health care delivery organization and owned by the health care delivery organization (Hunter, 2013).

There are benefits available when employing EHR systems compared with using conventional paper-based records, such as reduced documentation time for healthcare professionals, instant access to patient data, and improved interactions between physician and patient. Possible benefits of EHRs over traditional paper records include wide-scale access, error checking, and protection from physical damage (von Laszewski, Dayal, &Wang, 2011). During the past 4 years, the gap in rates of adoption of at least basic EHR systems increased significantly based on hospital size, teaching status, and location (DesRoches et al., 2012). DesRoches et al. (2012) reported a 15 percentage-point gap in system adoptions between large and small hospitals in 2010 (25.7% compared to 10.7%, respectively), that widened to 22.2 percentage points in 2011 (20.8% compared to 43.0%, respectively). Adoption of HIT, including EHRs, is essential for the transformation of the current United States healthcare system into one that is more efficient, is safer, and consistently delivers high-quality care (Bowman, 2013).

Residents living in rural areas depend upon the hospital operating in their communities as the primary source of care. According to AHA (2011), nearly 2,000 rural community hospitals frequently serve as anchors for their region's health-related services, providing the structural and financial backbone of physician practice groups, health clinics, and post-acute and long-term care services. The expression EHR systems can

relate to numerous arrangements of electronic information systems used in the health care industry (Boonstra et al., 2014). Boonstra et al. (2014) noted that different health care units including pharmacies, general practitioners' surgeries, and other medical provider organizations utilize EHR as interoperating systems on a regional level, or nationally. EHR systems implementation involves a range of business alterations, cultural changes, technical infrastructure, financial resources, and coordination (Boonstra et al., 2014).

Rural hospitals deliver the highest quality of care to their patients despite facing challenges from working in remote geographical locations. Hospitals in rural areas have adopted electronic systems over time but at the lowest rate of any group analyzed, with 19.4% having at least a primary system in 2011 (DesRoches et al., 2012). The percentage of hospitals that meet the definition of either asignificant or a comprehensive EHR system remain small. The CAHs, small, public, or rural hospitals are further behind in the adoption of EHRs (DesRoches et al., 2012). DesRoches et al. (2012) maintained that a small rate of system adoption suggests the existence of a significant area for growth in HIT. Staff at the AHA (2011) claimed that rural hospitals provide their patients with the highest quality of care while tackling challenges associated with their remote geographic location, small size, limited workforce, and constrained financial resources. Rural hospitals' ability to meet patients' needs depends on obtaining additional funds to renovate or replace aged facilities, acquire new technologies, modernize equipment, and improve operational effectiveness (AHA, 2011).

Small rural hospitals face more challenges than large health organization in establishing the infrastructure necessary to operate complex IT systems. Challenges include lack of Internet connectivity, outdated hardware, and lack of robust privacy and security protections (HealthIT, 2011). Rural areas do not have the infrastructure to support high-speed Internet, limiting the ability to promote health information exchange with satellite clinics (HealthIT, 2011). According to Botta and Cutler (2014), researchers have highlighted the extent of comprehensive EHR adoption and significant changes in adoption by key hospital characteristics. However, researchers have done little to find changes in which services hospitals are adopting and how hospitals are choosing which functions to adopt (Botta & Cutler, 2014). Furthermore, within the Health IT (HIT) industry researchers know little about how vendors and CIOs have responded to the meaningful use incentives in their planning and development.

In order for eligible professionals to receive EHR incentive payments, they are required to demonstrate that they are using EHR systems in a meaningful way and meet specific requirements for recording and exchange of patient health information. Given the significant requirements set forth in Stages 1 and 2 of the meaningful use incentive program, strategic planners should be aware of whether vendors and hospital leaders/administrators are viewing the meaningful use requirements as a floor-the minimally acceptable level of implementation, upon which they will continue development and customization-or as a ceiling-the upper-bound on their EHR development and enforcement efforts (Botta & Cutler, 2014).

Hospital leaders and administrators must improve their financial position and develop strategic IT goals prior to implementing EHR systems. Many rural hospital leaders and administrators have difficulty obtaining sufficient capital for ongoing improvements (AHA, 2011). Recognizing the benefits and challenges associated with greater use of EHRs, the United States Congress included in the American Recovery and Reinvestment Act (ARRA) of 2009 measures and funding to support the widespread adoption and meaningful use of HIT, but laws and regulations fall short of providing the help small rural hospitals need to achieve meaningful use (AHA, 2011).

Although, the implementation of EHRs in small rural hospitals is an achievable plan, a complete understanding of the entire process needs additional clarification. Rural regulatory policies contain confusing rules to achieve meaningful use of challenging EHRs operational structures. Staffs at the AHA continue to clarify requirements and reduce the burden of registering and attesting to meaningful use, but concern has emerged about the impact on small and rural providers of the incentive program designed to close, not widen, the existing digital divide (AHA, 2013b). To achieve substantial improvements in health care will require a concentration on meaningful use given the evidence of IT benefits (Appari, Johnson, & Anthony, 2012). However, Appari et al. (2012) noted useful research has not produced sufficient evidence of benefits associated with meaningful use. Appari et al. noted the application of computerized physician order entry systems (CPOE) for electronic medication orders satisfying post-2011 meaningful

use standard has a connection with decreased mortality rates for cardiovascular conditions.

Critical Access Hospitals

Leaders and administrators at small rural hospitals must develop and execute strategies to improve the economic status, in addition, to recruiting and maintaining qualified IT staff. Small rural CAHs and LTCAHs face considerable financial and personnel resource shortages that hinder their efforts to acquire and use complex HIT systems (Bahensky, Ward, Nyarko, & Li, 2011). Bahensky et al. (2011) mentioned most CAHs are at the transition point of planning for or beginning implementation of complex clinical information systems.

Identifying strategies to address these challenges is crucial to rural hospitals as hospital leaders attempt to keep pace with the goals for the nation through HIT investments. CAHs play an important and unique role in the U.S. healthcare system (Joynt, Harris, Orav, & Jha, 2011). To qualify, hospitals must have no more than 25 beds and be located at least 35 miles from the nearest alternative source of inpatient care; however, states were given leeway to broaden eligibility, and only 20% of CAHs currently meet this distance requirement (Joynt, Orav, & Jha, 2013).

Rural hospitals designated as critical access hospitals received reimbursements on a reasonable cost basis for inpatient and outpatient services under the Medicare Rural Hospital Flexibility Program. As part of the Balanced Budget Act of 1997, the U.S. government passed the Medicare Rural Hospital Flexibility (Flex) Program with the

overarching goal of maintaining access to quality hospital care for rural residents (Gowrisankaran, Schmidt-Dengler, Lucarelli, & Town, 2011). CAHs formed under the Flex program receive generous reimbursements (Schmidt-Dengler, Gowrisankaran, Lucarelli, & Town, 2013). CAH conversion reduced inpatient admissions by a mean of 5.4%, which was driven by factors other than capacity such as, requirements for inpatient laboratory testing, emergency services, and radiology services (Schmidt-Dengler et al., 2013).

Critical access hospitals that have membership in a rural health network must develop strategies to align themselves with that network's system for sharing a patient's electronic health information. To be designated a CAH, a rural hospital must meet defined criteria outlined in the Conditions of Participation (CoP) 42CFR485 and subsequent legislative refinements to the program through the BBRA, BIPA, the Medicare Modernization Act, the MIPPA, and the PPACA (AHA, 2011). Medicare created the CAH program to improve the financial viability of small, isolated rural hospitals that are critical to the care of Medicare beneficiaries in rural areas (DHHS, 2010b). Critical access hospitals need to satisfy meaningful use criteria at Stage 1 for at least two years before advancing to Stage 2 to meet meaningful use requirements (Scherb et al., 2013).

López, Patterson, Vanesscia, and Sarkar (2012) proposed that ACHs caring for vulnerable patient populations will be less likely to adopt EHRs than hospitals caring for a smaller proportion of vulnerable patient populations. Adoption rates for long-term

ACHs, rehabilitation hospitals, and psychiatric hospitals are less than half of the rate for short-term acute care hospitals (Wolf, Harvell, & Jha, 2012). Specifically, 12% of short-term ACHs have at least a basic EHR system, compared with 6% of long-term ACHs, 4% of rehabilitation hospitals, and 2% of psychiatric hospitals (Wolf et al., 2012).

Long-Term Acute Care Hospitals (LTACHs)

The absence of administrative leadership, insufficient funds, and lack of organizational strategic plan hinder some LTACHs from implementing electronic health record systems. LTACHs have emerged to provide care for patients who are critically ill and require medical treatment beyond the scope of a short-stay acute care hospital (Thrush et al., 2012). LTACHs have continued to exhibit particularly low adoption rates, as have non-teaching small rural hospitals, often half that of urban, teaching hospitals (Mirani & Harpalani, 2013). Cost difficulties, technical challenges, opposition from medical professionals, an unconvincing proof of visible returns on EHR investments are reasons for this inactivity (Mirani & Harpalani, 2013).

The American Recovery and Reinvestment Act of 2009

In the United States, the ARRA brought health information technology in all health care settings to national prominence (Hunter, 2013; Masino & McCurry, 2011). The act promoted further capital investment, increased consumer spending, and minimized or avoided reductions in state and local government services (Hunter, 2013; Masino & McCurry, 2011). The ARRA set forth a plan for the advancement of a

nationwide health information network to improve the quality and efficiency of care (HealthIT, 2011).

The ARRA provides for the creation of federal grant and loan programs for all states to kick-start investment in HIT. The act establishes payment incentives for eligible acute-care hospitals, including critical access hospitals (AHA, 2013a). Not only does HIT enable better care coordination but it also gives instant access to patient information, which can improve health care quality and patient outcomes in rural communities (HealthIT, 2013).

A few rural hospitals have implemented IT systems that connect with several units using the identical network and presented healthcare professionals with instant and up-to-date patient medical information for accurate decision-making. Most health care settings have become more interconnected through technology, and the ARRA provided billions of dollars to small physician practices nationwide to encourage adoption of electronic health records (Hunter, 2013). Federal tax cuts, expansion of unemployment benefits, and domestic spending for education, health care, and infrastructure supported the allocation of over $700 billion to the ARRA (Masino& McCurry, 2011). Realizing the benefits of adopting EHRs in large measure is highly dependent on clinicians' and providers' adoption and meaningful use of the technology (Xierali et al., 2013).

Researchers know little about how RECs should assist in EHR implementation and how they should structure ongoing support (Boas, Bishop, Ryan, Shin, & Casalino, 2013). Currently, local REC programs target EHR assistance to priority primary care

providers to ensure the best functionality for the investment made to adopt, implement, and upgrade certified EHR technology (Elliott et al., 2012). Policy initiatives should focus assistance on EHR capabilities with slower uptake; connect providers with technical assistance to support implementation; and leverage the connection between meaningful use and quality recognition programs (Jones & Furukawa, 2013).

The Health Information Technology for Economic and Clinical Health (HITECH)

The implementation of the Health information exchange (HIE) application is intended to combine the management and use of health IT systems at numerous healthcare organizations throughout regions. The purpose of the provisions of the American Recovery and Reinvestment Act (ARRA), enacted into law in 2009, was to develop a nationwide IT infrastructure (Wolf et al., 2012). The meaningful use criteria is instituted by the HITECH Act which set the guidelines to incentivize qualified health care providers, facilities, and CAHs to employ EHRs in a meaningful way (Kennedy, Murphy, & Roberts, 2013). The HITECH act indicated for health care providers to collect meaningful use payments; they had to become certified EHRs users (Blumenthal, 2011). Kern and Kaushal (2013) noted the federal government's goal objective was to be transformative to allow new and better means of managing patients' health information not just accomplished using paper. The HITECH incentive disbursement also approves awards to states, educational institutions, and other associations to advance the use of HIT and expand security and confidentiality requirements of the Health Insurance Portability and Accountability Act (HIPAA; Shin & Sharac, 2013).

The meaningful use guideline focus more on explaining the electronic health record certification process, improving the quality of patient care, and provide additional support for clinical decision-making. The Center for Medicare and Medicaid Services (CMS) regulates the meaningful use program and arranges monetary expenses for hospitals and health care providers who adopt EHR systems that fulfill the federal government's established criteria (Dixon, Vreeman, & Grannis, 2014). The available criterion provided by CMS requires qualified hospitals and health care providers to submit their EHR to local and state health departments (Dixon et al., 2014). The federal government has defined meaningful use in detail (Kern &Kaushal, 2013). The meaningful use criteria (appropriately referred to as the meaningful use matrix, one axis of which is the three-stage implementation timeline) are the outcome goals dictated by the HITECH legislation (Terry, 2013). These objectives are (a) enhancing the quality and safety of care while reducing disparities, (b) involving families in patients care, (c) promoting public wellness programs, (d) improving care coordination, and (e) promoting electronic data privacy and protection (Terry, 2013).

Collecting and maintaining confidential patient health information is of the utmost importance. Privacy, security, and confidentiality interests are the significant components of electronic data applications (Anonymous, 2012). Security violations and patients' non-disclosure issues remained somewhat more likely to be a major concern among large groups, due to the capacity of patient documents at risk (Anonymous, 2012).

The implementation of new electronic technologies produced extra privacy and security concerns for safeguarding a patient's health information. Security breaches of information systems at times affect patient care and safety (Vockley, 2012). If a security breach hits a system or a networked medical device, it can take down vital healthcare services and related business services along with it (Vockley, 2012). Less of a concern on the list of EHR implementation was penalty costs; 35% of respondents'stated security and compliance-related fines were of modest to no concern (Anonymous, 2012). Safeguarding a patients' privacy, security, and confidentiality of EHRs data should be the primary concern (Anonymous, 2012). Future HIT findings should emphasize the need to minimize the risk and improve IT features better to protect a patient's security, privacy, and confidentiality.

The HIPAA security rule explicitly addresses the privacy, security, and protection of a patient's health record information. The Department of Health and Human Services reported 81,790 breaches of patient information in health care, affecting millions of patients (McDavid, 2013). Before Congress passed HIPAA in 1996, a patchwork of federal and state laws protected personal health information (PHI; Cascardo, 2012). The HIPAA regulations provided the first comprehensive federal protection for privacy and individually identifiable health information (Cascardo, 2012). The HITECH Act is part of the ARRA of 2009; portions of the HITECH Act strengthen HIPAA rules addressing privacy and security concerns associated with the electronic transmission of health information (Cascardo, 2012).

Health Information Technology

The adoption of HIT systems require small rural hospital leaders and administrators to develop a strategy that will allow them to evaluate and select appropriate software packages, hardware devices, vendor selection, IT experts, and IT implementation process. The HITECH Act and ARRA promote the adoption of HIT in hospitals and other health delivery organizations (Frimpong et al., 2013). By definition, HIT is a variety of electronic methods used to manage information about people's health and health care, at the individual and group levels (Frimpong et al., 2013). According to Frimpong et al. (2013), the goal of the federal policies is to increase the use of HIT-based information in a way that improves care delivery and health outcomes (i.e., meaningful use). In the United States HIT is the key to enhancing the quality of health care and possibly decreasing its cost (Palvia, Lowe, Nemati, & Jacks, 2012).

The use of HIT holds much potential for rural America. The system enables better care coordination, instant access to patient information, improved disease surveillance, health education, and compilation of regional data to improve health care quality and patient outcomes in rural communities (HealthIT, 2013). The precise data and actual usage of the relevant features likely to vary among individual physicians according to usability and perceived usefulness, integration into clinical workflow and task-technology fit, and training on the system (Ancker, Kern, & Abramson, 2012).

Rural Communities Telehealth and Telemedicine

Some small rural hospitals have requested assistance with acquiring wireless technology. Government and private groups support the advancement of wireless technology in health care (Leonidas, 2014). Wireless technology created challenges in hospitals, as they need to provide available bandwidth and speed of delivery of the growing data load (Leonidas, 2014). Employees expect wireless connectivity in health care facilities. IT is transformational and can improve the delivery of health care and improve connectivity (Leonidas, 2014). Wireless technology will allow caregivers to roam, and increase access to EHRs information more efficiently anytime and anywhere, lowering the cost of care and improving the quality of outcomes (Leonidas, 2014).

Telehealth Resource Centers provide support and development for implementation of telehealth systems. The resource center helps rural and medically underserved areas with IT support and coordination of health care delivery. The telehealth approach will enable healthcare professionals to interact with patients regarding health matters from a distance. Incorporating telehealth with traditional ambulatory and hospital-based practices will allow telehealth to reach full potential, including addressing the six areas of care quality named by the Institute of Medicine: safe, effective, patient-centered, timely, efficient, and equitable (Schwamm, 2014). Telehealth is a disruptive technology and threatens traditional health care delivery but can change and transform the health care industry by reducing costs, increasing quality, and patient satisfaction (Schwamm, 2014). Telemedicine has the potential to enable small rural hospitals to

provide specialty care and retain local patients (Brock-Martin et al., 2012). The use of telemedicine will help build capacity and increase recruitment and retention of health care providers in rural areas (Brock-Martin et al., 2012).

The adoption and application of telehealth by healthcare providers is quickly becoming an important part of healthcare delivery. Telemedicine technology can improve care to patients in rural and medically underserved communities, yet adoption has been slow (Zanaboni & Wootton, 2012; Zapka, Simpson, Hiott, Langston, Fakhry, & Ford, 2013). Evidence exists that telemedicine technologies are successful and a viable option for future delivery of economic and comprehensive health care (Zanaboni & Wootton, 2012). Zanaboni and Wootton (2012) noted that telemedicine has a poor record of implementation and a patchy history of adoption, with a slow, uneven, and fragmented uptake in routine health care operations. According to Brock-Martin et al. (2012), rural communities have struggled to provide health care services locally because of health professional shortages, small medical service markets, and unfavorable economies of scale.

Rural Hospitals and Internet-Broadband

Rural areas will receive $2.5 billion as part of the stimulus funds made available through loans to companies for broadband expansion. In the ARRA of 2009, also known as the stimulus package, Congress established various broadband plans with $7.2 billion in financing for the USDA's Rural Utilities Service (RUS) and the National Telecommunications and Information Administration (NTIA; Glass & Stefanova, 2010).

As part of the national broadband plan released in March 2010, the FCC must ensure that all Americans, regardless of their location and socioeconomic status, have access to a high-speed Internet (Glass & Stefanova, 2010). Noor, Mahmood, and Khan (2012) suggested the government should also apply realistic policies to make capital available for rural health care provider groups and virtual aid linkage for small providers so they can access EHR systems at a sound price. Noor et al. claimed many problems are related to technology, having minimum broadband communication networks, insufficiency of a standard code of accepted practices and protocols, meager user interface design, and unsuitable vocabulary and data transmission

Some rural hospital leaders and administrators will seek out possible funding through FCC programs to support and improve broadband connectivity. The Federal Communications Commission (FCC) helps rural providers' access affordable telecommunication services necessary for the adoption and meaningful use of HIT (HealthIT, 2012). The FCC rural healthcare program (RHC) provides funding to eligible health care providers for telecommunications services, including broadband needed for the provision of health care (HealthIT, 2012). The purpose of the FCC rural health care program is to ensure that rural providers pay no more than their urban counterparts do for their telecommunications, and Internet access needs in providing health care (HealthIT, 2012).

Rural hospital leaders and administrators working in isolated geographical areas need to understand the link between health information technology, electronic

health records systems, and the national broadband plan and devise a strategy to distinguish and coordinate links. Broadband is an essential component of regional infrastructure that contributes to the growth and development of local economies (Mack, 2014). Due to their geographic isolation, small rural hospitals often experience difficulty accessing sufficient and affordable Internet bandwidth at the community level (Cotton, Drentea, & Goldner, 2013; HealthIT, 2011). The National Broadband Plan recommends substantial changes to the FCC's rural healthcare program for better utilization of authorized funding of $400 million per year to help meet these challenges (DHHS, 2010a). Improved access to high-speed broadband is important, because it not only provides for more efficient use of the Internet in terms of faster file uploading and downloading capabilities, but it is also important to ensure that people and healthcare organizations have access to information technology (Mack, 2014).

Implications for Social Change

Penoyer et al. (2014) mentioned acute care clinicians spend considerable time recording patient medical information electronically. The documentation is necessary for many reasons, the most important being to ensure continuity of care (Penoyer et al., 2014). Continuity of care is a philosophy shared by a group of health care providers regarding how they provide care and observe guidelines and protocols (Hoang, Le, Terry, Kilpatrick, & Stuart, 2013). Uijen, Schers, Schellevis, and van den Bosch (2012) mentioned continuity of care aligns with good quality care, along with other concepts such as coordination of care, patient-centered care, and integration of care. According to

Valentijn, Schepman, Opheij, and Bruijnzeels (2013), improving access, quality, and continuity of services in a resourceful way require an integrated health care system, especially for people with co-morbidities.

Managers' of health IT systems strategic focus is on the procedural division operating software and hardware capacities used to control and collect patient health information. Stanberry (2011) noted the use of electronic health record systems could positively affect health care delivery nationwide, even internationally. Information technology has become indispensable for the management of health care enterprises, a continuously evolving industry with increasing costs, unacceptably high error rates, and dissatisfied patients and providers (Ramaiah et al., 2012). Electronic health records systems have the capacity to generate a complete record of a patient's clinical encounter and to support activities that pertain directly or indirectly to care such as evidence-based decision support, quality management, and outcomes reporting (Bushinak, AbelGaber, & AlSharif, 2011).

Electronic health records allow physicians to share information with other health care providers involved in the patient's medical interest. Most EHR information helps the clinicians (a) understand their patients' general condition, (b) prepare clinical decisions, and (c) correspond with other caregivers (Penoyer et al., 2014). Documentation in the medical chart initially served to provide a record of a patient's care and to improve communication among healthcare providers (Penoyer et al., 2014). Medical records have changed into legitimate health records and documentation serves many purposes, such as

evidence for medical-legal cases, backup for reimbursements, and information for developing measures for quality and regulatory functions (Penoyer et al., 2014). The U.S.government has dedicated substantial resources to help providers such as short-term acute care hospitals and physicians to adopt and meaningfully use EHR systems (Wolf et al., 2012).

Transition

Section 1 established a foundation for the exploration of the unique challenges small rural hospital leaders and administrator face with the adoption of EHRs and meaningful use standards by 2015. The section included background information regarding IT costs and the slow EHR adoption rate, as well as the problem and purpose statements, nature of the study, one principle research question, and five interview questions. The theoretical framework for the study aligned with a diffusion of innovation theory. The section included (a) definitions of key terms; (b) the assumptions, limitations, and delimitations; (c) the significance of the study; (d) the implications of social change; and (e) a review of the professional academic literature.

Section 2 emphasizes the purpose of the study, along with a discussion of the role of the researcher in the data collection process. In addition, I present a description of the participants' selection process and a summary of actions to ensure the ethical protection of participants. The section includes an explanation for choice of a qualitative research method and descriptive design, along with population and sampling methods, data collection instrument, data organization and analysis techniques, and the reliability and validity of the study.

Section 2: The Project

This section contains a detailed description of the research method and design for this qualitative phenomenological study. This includes discussions of (a) my role as researcher, gathering, organizing, and analyzing perceptions from research participants; (b) the selection of a qualitative descriptive design; and (c) an explanation of the population and the sampling method of 20 study participants. I also (d) describe the data collection instruments, (e) provide a justification for selection of the study participants, (f) discuss ethical issues prior to initiating the research process, and (g) recorded interviews were checked and rechecked to ensure dependability and creditability.

In this study, I collected and analyzed the perspectives from leaders and administrators in small rural hospitals in the United States that have used successful strategies to implement electronic health records systems. These participants were drawn from the Appalachian regions of Maryland, Virginia, and West Virginia. The study findings are intended to assist other small rural hospital leader and administrators to

apply collective strategies that will enable them to successfully implement electronic health records systems.

Purpose Statement

The purpose of this qualitative descriptive phenomenological study was to explore the perceptions and experiences of hospital leaders and administrators who have used successful strategies to implement electronic health records systems in small rural U.S. hospitals. The participants selected for this study were from the Appalachian regions of Maryland, Virginia, and West Virginia. Findings from this study may contribute to social change by providing other hospital leaders and administrators with useful strategies to assist with electronic health records implementation. The results of the study may benefit the organization inside and outside by improving communication, information flow, and care coordination.

Role of the Researcher

In a qualitative phenomenology study, the role of the researcher is to gather, organize and analyze perceptions from people who have experienced the phenomenon. This use of the researcher as the instrument is an accepted and acceptable stance (Xu & Storr, 2012). A qualitative researcher should be receptive to the underlying meaning when gathering and interpreting information, primarily because interviewing, observing, and analyzing are activities central to the qualitative research (Merriam, 2014). As the researcher conducting this study, I used an interview protocol to serve as a guide (Appendix A). This protocol included one primary research question and six

semistructured subquestions designed to elicit subjective replies from participants describing successful strategies applied to implemented electronic health records systems.

I used Moustakas' (1994) three-step process to reduce biases using the following bracketing techniques: (a) take part in the process as a way of creating an atmosphere and understanding for managing interviews, (b) bracket the questions, and (c) conduct the qualitative research interview to obtain description of lived experiences. Bracketing allows a researcher to maintain the focus of the study, topic, and interview questions (Tirgari, 2012). I used this bracketing to identify my personal biases and preconceived thoughts and set them aside to ensure the integrity of the data collection and analysis procedure. Biases noted included my beliefs that I had no direct connection with small rural hospital managers.

- IT systems and EHRs have the capability to improve quality management, and outcomes reporting,
- integration of EHRs and IT infrastructures may reduce errors and improve patient care,
- EHRs may improve patient safety by checking for errors in medication orders, and
- EHRs may increase integration of services with other local health providers.

I took several steps to ensure that I followed ethical standards for health research. I submitted a copy of my interview protocol (Appendix A), recruitment email (Appendix

B), and informed consent form (Appendix C) to the IRB for a review. I also completed the National Institutes of Health's (NIH) web-based training for the protection of human subjects during the data collection phase. Participants received information about the research and the associated risks and benefits. I also informed participants about my efforts to ensure their privacy and confidentiality by providing them with a written informed consent form that detailed measures taken to protect their rights (see Appendix C).

Participants

The study participants included a purposeful sample of 4 small rural hospital leaders and administrators, with knowledge related to the organization's electronic health records systems in the Appalachian regions of Maryland, Virginia, and West Virginia. Study participants had a minimum of 5 years' familiarity using computer systems. Purposeful sampling has successfully been used in several EHR studies. Alamo et al. (2012) used purposeful sampling for a qualitative study of how electronic medical records tracking improve clinic efficiency. Hanson, Stephens, Pangaro, and Gimbel (2012) employed purposeful sampling to compare the notes of physicians using an EHR with traditional paper records.

All participants received and signed an informed consent form. Informed consent is the cornerstone of ethical research on human subjects (Sonne et al., 2013). Identifying appropriate participants and securing their agreement to be part of the research project are the first two steps in establishing a working relationship (Algeo, 2012). Gaining access

requires permission from the management and the proposed community of interest (Merchant, Halkett, & O'Connor, 2012). I identified eligible participants using the Rural Assistance Center from the Health and Human Services Information for Rural America website. I became acquainted with members by establishing a working relationship emphasizing the need for honest, respectful, and mutually beneficial relationships. I provided an introductory email (Appendix E) explaining the purpose of the study objectives and the contribution to the body of knowledge that small rural hospital leaders and administrators can use to implement certified EHRs successfully.

An invitation to participate in the study was extended to participants along with the informed consent document by email describing informed consent procedures. A review of study procedures was provided to each participant prior to participation, so as to confirm that each person understands informed consent process, and study requirements. Following the informed consent procedures, I advised participants that the study is voluntary, and members can withdraw at any time. Participants signed the informed consent document after completing the review. The study findings add to the scholarly literature with a new understanding of successful strategies employed by small rural hospital leaders and administrators that have implemented electronic health records successfully. The focus of the research was on a relatively small group of rural hospitals in Maryland, Virginia, and West Virginia and the goal of the study was to obtain accurate insights into the challenges rural hospital managers face concerning adopting EHRs to comply with mandatory meaningful use legislation.

Research Method and Design

Research Method

The aim of qualitative research, unlike quantitative research, is to understand an experience as closely as possible to how participants experienced it (Yavuz, 2012). With qualitative research, the participants' individual consciousness provides the vehicle for the understanding of a research issue (Miner-Romanoff, 2012). Chenail (2011) noted that a qualitative method is a system containing the choices made from the conception of the study to an orderly and appropriate conclusion. Qualitative research can be iterative (i.e., it allows adjustments to the method of data collection and analysis; Chenail, 2011). A qualitative method was suitable for this study. Qualitative methods produced findings that reveal individuals' experiences and genuine thoughts and reflections (Miner-Romanoff, 2012).

A quantitative method was not suitable for this study because my study process did not involve surveys, planning experiments, or generating statistical measurements, as noted by Golicic and Davis (2012). Qualitative research methods do not include predetermined hypotheses; qualitative investigators learn about the lived experiences of individuals and understand phenomena in natural environments from data that emerge from the individuals' narratives (Hunt, 2011). A qualitative methodology was appropriate to describe the area of interest in its setting (Wester, Borders, Boul, & Horton, 2013).

Research Design

I used a qualitative descriptive phenomenological design for this study. This approach values experience as part of the human consciousness (Abebrese, 2014). Applebaum (2014) noted that a descriptive approach requires pursuing participants for whom the phenomenon under investigation is part of their lived experiences. I used this research design to develop a theory, uncover new phenomena, find connections between various situations, and provide a broad understanding of contextual influences on organizational change, as recommended by Garcia and Gluesing (2013). The choice of a phenomenological design supported the goal of obtaining from participants' details of their personal experiences and perspectives associated with the problem of adopting and implementing EHRs in small health care organizations.

Phenomenological designs have been used to study several similar phenomena. Edwards (2013) applied a phenomenological design to conduct research into Japan's Fukushima Daiichi nuclear accident and how individuals understand nuclear energy and technology. Edwards obtained information by listening to accounts from individuals and found that several victims have endured psychological effects after encountering that nuclear accident. Broomé (2014) utilized a descriptive phenomenological approach to obtain a police officer's view and emotional perspective relating to exercising deadly force in a life or death circumstances. Ofonedu, Percy, Harris-Britt, and Belcher (2013) employed a descriptive phenomenological design to manage and explain data collected

from inner-city African American children between the ages of 13-17 who struggle with clinical depression.

The phenomenological design facilitates understanding of daily experiences (Freysteinson et al., 2012). The phenomenological design was accommodating and flexible to align with the study (Martins, Walker, & Fouché, 2013). Phenomenological research provided an in-depth relevant account of lived experiences as well the researcher's authenticity to allow information to materialize from study participant's experience rather than imposed on the experience (du Plessis, du Plessis, & Saccaggi, 2013). Dybicz (2012) noted the foundation of phenomenology lies in the reality of a phenomenon in terms of existence and the essence of the existence. In phenomenology, the essence of the phenomenon emerges from human beings' culture and language when they attempt to understand and explain their experience of an event (Dybicz, 2012).

Descriptive phenomenology. Descriptive phenomenology assumes that subjective information could help researchers understand human motivation since human actions influence their perception of reality (Abebrese, 2014). A descriptive design was useful for research on EHR implementation because the purpose of the current study was to gain an understanding of perceptions and experiences of leaders and administrators serving in small rural hospitals that have successfully implemented EHRs. Improvements in technology and the rise in electronic health records adoption pressure small rural hospitals leaders and administrators to develop a strategic plan to modernize existing information technology systems.

Terry, Brown, Denomme, Thind, and Stewart (2012) used a qualitative descriptive phenomenological approach to conduct interviews with 19 participants using semistructured questions to explore the perceptions of leading healthcare professionals and staff who had moved beyond the EMRs/EHRs implementation stage in their organizations. Terry et al. noted EMRs/EHRs use in Canada and the United States has improved but is still somewhat small (37% and 46% respectively), compared to the United Kingdom (96%) and the Netherlands (99%).

To identify a sample of prospective participants, I chose a purposeful sampling method because the focus is limited to small rural hospitals. The focus of this qualitative phenomenological study was to explore strategies that some rural hospital leaders and administers have used to implement EHR systems successfully. The participants included a purposeful sample of 4 leaders and administrators from small rural hospitals with each participant having at least 5 years of experience using electronic information systems. I employed purposeful sampling to recruit members (interviewees) with relevant experience and knowledge so as to achieve saturation, as recommended by Marshall, Cardon, Poddar, and Fontenot (2013). In the study, I reached data saturation with 4 small rural hospital leaders and administrators because the information shared by participants became repetitive and contained no new or relevant information.

Population and Sampling

The point at which saturation occurs defines the sample size in qualitative research because it indicates that the researcher has collected sufficient data to allow a

comprehensive and credible analysis (Kerr, Nixon, & Wild, 2010). Initially, the concept of data saturation related to grounded theory research but applies to most qualitative studies that use interviews as the primary data collection method (Marshall et al., 2013). Data saturation involves bringing new participants continually into the study until acquiring sufficient information (Marshall et al., 2013). Marshall et al. (2013) suggested that saturation occurs when the researcher gathers information to the point when no further information will add to the study.

Data saturation may be associated with the stage when further collection of evidence provides little in terms of further themes, insights, perspectives or information in a qualitative research synthesis (Suri, 2011). Suri (2011) described data saturation as dependent on the type and quantity of information as well as incorporating a particular research question. There is a greater chance of reaching data saturation if the information collection is purposeful. The more specific a question, the faster it tends to reach data saturation (Suri, 2011).

Qualitative researchers face a number of moral and procedural challenges when collecting data in the field (Johnson, 2013). Ethical inferences are associated with the language researchers when use collecting the data and reporting results (Johnson, 2013). Schrems (2013) emphasized that the responsibility for safe and ethical research lies with two groups: the researchers and the ethics reviewers who are independent members of research ethics committees.

Ethical researchers understand that informed consent is a process involving an interchange between the individual researcher and the potential study participants. The emotional dilemmas that accompany fieldwork often lead to initiating qualitative research with the ethical goal to treat participants with respect protect them from harm, and save them from embarrassing exposure (Donnelly, Gabriel, & Özkazanç-Pan, 2013). Research participants must receive information about the research and the associated risks and benefits (Avasthi, Ghosh, Sarkar, & Grover, 2013).

Gaining access required permission from the management and the community of interest. I employed purposeful sampling in order to recruit 20 members (interviewees) with relevant experience and met sample criteria from the Rural Assistance Center from the Health and Human Services Information for Rural America website. I promoted ethical principles by providing participants with evidence that the research project met the university IRB approval standards and all applicable guidelines for meeting ethical and legal obligations to safeguard privacy and confidentiality. I provided an introductory email explaining the purpose of the study. An invitation to participate in the study was extended to participants along with the informed consent document by email describing informed consent procedures. I became acquainted with members by establishing a working relationship emphasizing the need for honest, respectful, and mutually beneficial relationships. I did not offer incentives to respondents for their participation in this study. Additionally, I provided each participant the opportunity to decide if they want to participate in the study based on information provided in the consent form.

The informed consent document protects the autonomy of the participants (Juritzen, Grimen, & Heggen, 2011). There was full disclosure of the nature of the research, the process, and the possibility of withdrawal from the study as well as the measures taken to maintain privacy of the participant during the informed consent process (Judkins-Cohn, Kielwasser-Withrow, Owen, & Ward, 2014). I explained to each participant the significance of each statement on the consent form. The consent form included (a) identifying myself as the researcher, (b) the name of the sponsoring institution, (c) the selection process for potential research participants, (d) the purpose of the study, (e) the benefits and risks of the research to participants, (f) the length of involvement required from the participants to complete an interview, (g) an assurance of participant confidentiality, and (h) the assurance that participants may withdraw consent at any time. I will not offer prospective interviewees incentives in exchange for participation.

The participants in the research project received (a) evidence that the research project meets the university IRB approval standards and (b) a copy of the certificate of completion obtained from the National Institutes of Health (NIH) confirming compliance with U.S. federal regulations and any applicable international guidelines for meeting ethical and legal obligations to safeguard research participants' privacy and confidentiality (Beskow et al., 2012). Beskow et al. (2012) noted that researchers and institutions are obligated to safeguard participants' privacy and the confidentiality of the data they provide. The NIH and other units of the U.S. Department of Health and Human

Services (DHHS) issued certificates for studies involving the collection of sensitive information.

Ethical Research

Ethics, defined as norms for conduct that distinguish between acceptable and unacceptable behaviors, play a vital role in research (Mikesell et al., 2013). An important aspect of the research process was establishing a relationship based on trust with the participants by promoting ethical principles in the research, protecting the participants' anonymity, and ensuring the participants' privacy and confidentiality (see Appendix F). Researchers can anticipate many ethical issues and have the responsibility to address these problems before initiating the research process (Sentell, 2013).

Schrems (2013) asserted the responsibility for safe and ethical research lies with the researchers and the ethics reviewers who are independent members of research ethics committees. Ethical researchers should (a) contribute to the knowledge base of the profession, (b) respect and inform research participants, (c) minimize risks to participants, (d) use appropriate methodological procedures and data analysis to answer the research question, and (e) appropriately recognize contributors (Wester, 2011). Andersson and Grad (2013) recognized the importance within a research design of the recent developments in recording technology. Recorded information resided on a password-protected computer (PC), and I used my PC security feature to encrypt data and ensure the participants' confidentiality. Upon completion of this research, all recorded materials related to the study remained locked in a Honeywell-document and digital

media chest at my place of residence for a period of 5 years, and I destroyed all documents (both electronic and transcripts) after 5 years.

Data Collection Instruments

The qualitative descriptive phenomenological study included interviews obtained from small rural hospital leaders and administrators who have successfully implemented electronic health record systems in the Appalachian regions of Maryland, Virginia, and West Virginia. The qualitative researcher is the research instrument and has to sharpen that tool by training the eyes to see, the ears to hear, and the mouth and body to communicate (Chorba, 2011). The semistructured interviews were the secondary data collection instrument guided by six open-ended questions and a series of follow-up probes questions (see Appendix G).

Data Collection Technique

The method of data gathering for qualitative, phenomenological investigation involved in-depth interviews with a sample population. There are four sources of qualitative phenomenological data: (a) interviews, (b) focus groups, (c) observation, and (d) documents. Using telephone interviewing enables the participant to control the privacy of the conversation (Redlich-Amirav & Higginbottom, 2014). The method of data collection included six semistructured questions (see Appendix H).

The interview protocol (see Appendix A) offered a logically organized guide to obtaining data, interpreting findings, and writing up research results, as recommended by Labaree (2014). Jacob and Furgerson (2012) noted the interview guide should prompt the

investigator to share critical details about the study, including informed consent, and help alleviate any concerns the participants might have about confidentiality. The researcher's life and experiences are the best instruments for acquiring knowledge about research informants' social and cultural worlds (Peredaryenko & Krauss, 2013).

I followed the eight steps recommended by Turner (2010) to follow before starting an interview:

1. choose a setting with little distraction,
2. explain the purpose of the meeting,
3. address terms of confidentiality,
4. explain the format of the interview,
5. indicate how long the interview usually takes,
6. tell participants how to get in touch with the researcher later if they wish to,
7. ask participants if they have questions before starting the interview, and
8. do not rely on memory to recall respondents answers.

I used a digital voice recorder to record each interview session. Semistructured interviews using interview schedules are common in qualitative research and take place face-to-face (Schulz & Ruddat, 2012). Under particular circumstances, telephone interviews are a viable alternative (Schulz & Ruddat, 2012).

Interviews provide in-depth information from the participants' experiences and perspectives on a particular topic (Turner, 2010). Turner (2010) noted that qualitative interviews incorporate other forms of data collection techniques in order to provide

researchers with a well-rounded collection of information for analysis. The telephone is integral to and a widely accepted means of everyday communication in both businesses and private settings. Cachia and Millward (2011) noted the primacy of the face-to-face interview medium remains even with the introduction of computer-mediated communication such as email and chat forums.

The use of the telephone medium in qualitative data collection using semistructured interviews provides good quality textual data on a par with that obtained using face-to-face meetings (Cachia& Millward, 2011). Interviews combined with other forms of data collection provide a complete collection of information for analysis (Turner, 2010). To enhance reliability and validity, I used member checking by offering each participant the opportunity to review partial transcripts and verify accuracy of individual interview upon completion. Qualitative investigators often depend on member checking to ensure reliability of data by suggesting each participant examine transcripts and amend recognized inaccuracies (Reilly, 2013).

Data Organization Technique

I recorded data gathered from telephone interviews, and transfered audio recordings obtained from interviewees onto a USB 2.0 storage device for transcription. I used Dragon Voice software to transcribe audio recordings and convert to a Microsoft Word document using a password-protected personal computer. I used the NVivo 10 software program for data analysis and identification of general themes, I stored all

study material at my place of residence for 5 years. At the end of the 5-year period, I destroyed all research data.

Data Analysis

I used Giorgi's (2009) modified Husserlian descriptive phenomenological approach to understanding (transcending) common experiences and strategies employed by some small rural hospital leaders and administrators who have successfully implemented electronic health records systems. Von Essen and Mårtensson (2014) used a descriptive phenomenological approach to studying healthy eating and lifestyle choices based upon an organic diet among young adults. I employed a qualitative descriptive phenomenological approach to obtain knowledge from individuals' perceptions and experiences. I transcribed recorded interviews verbatim (see Appendix H) and imported data into NVivo 10 data analysis program and uncovered patterns and themes, which fulfilled the descriptive requirement of the phenomenological method partially (Giorgi, 2009). Giorgi stated the researcher accounts for all new data, analyzes the data from within the phenomenological reduction, with a subjective perspective and a particular consciousness of the event studied.

Reliability and Validity

Reliability

Researchers regard reliability in qualitative research as a fit between what researchers' record as data and what occurs in the natural setting (Oluwatayo, 2012). Reliability pertains to the quality of research for generating understanding (Kipo, 2013).

Dependability determines if the research activity is coherent and appropriate to answer the research question, and support selected methodology (Munn, Porritt, Lockwood, Aromataris, & Pearson, 2014). I established research conformity by (a) aligning study method with the research question, (b) maintaining a record of all research activities and (c) checking transcripts for accurateness. Dependability suggests data constancy over similar conditions (Cope, 2014). Consistency accomplishment occurs when another scientist agrees with each stage of the research process (Cope, 2014). Through the researcher's process and descriptions, a study is dependable if results are similar with participants in similar conditions (Cope, 2014).

In order to ensure dependability of research findings, I developed an interview protocol that included (a) a description of the protocol purpose and intended use, (b) clarify the purpose of the interview questions, (c) explain the arrangement of the meeting, (d) address the terms of confidentiality, (e) list the core semistructured interview questions, (f) use prompts to engage participants in discussion, and (g) a description of the study dependability, credibility, and transferability. Semistructured interviews follow a prearranged protocol of questions to ask each respondent, allow for spontaneous follow-up issues, and change (Labaree, 2014).

Validity

In qualitative research, validity equates to credibility (Owolabi, Meera, Ghani, Manap, & Larbani, 2012). Validity pertains to the meaningfulness of the study results (Drost, 2011). To ensure credibility of the study, I encouraged each participator to

examine transcriptions to make sure that their views are verbatim, and present each with the opportunity to discuss research findings. According to Wester (2011), gaining insight of lived experiences increases validity, verifiability, and credibility. Transactional validity enables researchers to achieve a high level of accuracy and consensus for the interactive process that occurs between the researcher, participants, and data (Yungblut, Schinke, McGannon, & Eys, 2012). An assessment of the validity, also known as legitimation, is the most important step in all research studies and designs (Benge, Onwuegbuzie, & Robbins, 2012).

Transition and Summary

The previous section contained a review of the purpose of the study. The section also provided a description of my role as researcher, strategies to gain access to study participants, research method and design, population and sampling, ethical research, data collection instruments, data collection techniques, data organization, data analysis techniques, and the process for ensuring reliability and validity in research. Section 3 includes an overview of the study, presentation of the findings, applications to professional practice, implications for social change, recommendations for action, recommendations for further research, reflections, and the conclusion of the study.

Section 3: Application to Professional Practice and Implications for Change

Introduction

This section contains the results of the study. The findings reflect the participants' experiences and perceptions regarding the strategies employed by leaders and administrators associated with the successful implementation of electronic health record systems at small rural hospitals. Section 3 also includes (a) an overview of the study, (b) a presentation of findings, (c) a discussion of the findings' application to professional practice, and (d) a discussion of the study's implications for social change. Additionally, Section 3 includes recommendations for action, recommendations for further study, reflections, and summary and study conclusions.

Overview of Study

The purpose of this descriptive phenomenological study was to explore the experiences and perceptions of leaders and administrators at small, rural hospitals in the United States, so as to obtain knowledge associated with the successful strategies used to implement electronic health record systems. All participants signed a consent form (Appendix C) signifying their willingness to answer the interview questions. The interviews were conducted by telephone at a date and time agreed to by the participants. The study involved analyzing and transcribing the data using the modified Husserlian approach and NVivo 10 software. Interviews were audio recorded and were guided by six semistructured interview questions approved by Walden University (Appendix G; IRB approval #: 11-11-15-0354230 and it expires on November 10, 2016).

The participants addressed the primary research question "What are the perceptions and experiences of small rural hospital leaders and administrators who have succeeded in the implementation of electronic health record systems?" Each participant provided descriptive accounts related to their strategies used to employ electronic health record systems. The purposeful sample of participants had the required knowledge and expertise consisting of: (a) HIM Director, (b) IT team coordinator, (c) family practice physician, and (d) privacy officer. The participants' IT experiences range from 5–15 years, which satisfied criteria of the study.

The underlying themes participants acknowledged were (a) standards and incentives, (b) implementation, and (c) challenges. Many participants expressed the importance of finding the right IT vendor, and providing staff with satisfactory training was another aspect necessary for successful electronic health record implementation. Participants also commented that departmental teams must work with IT consultants and qualified vendors to ensure a smooth conversion to the new system.

The findings of this study offer the participants' response to the HITECH Act, which set the standards for implementing electronic health record systems in the United States. Collectively, the participating hospital leaders and administrators agreed that the successful implementation of electronic health record systems begins with the formation of teams. The respondents stated that it is necessary to engage hospital staff, medical professionals, and IT vendors in working together to ensure that these individuals acquire the necessary IT training before the implementation process.

Presentation of the Findings

Summary of Themes

Three themes emerged in the qualitative analyses that described the participants' lived experiences and perceptions (see Table 1). The themes related to standards and incentives, implementation, and challenges. The frequency of occurence of certain words supported the themes. The words *hospital* and *hospitals* (n = 85) occurred the most often, followed by *system/systems* (n = 63). *Change* or *changes* were mentioned 24 times, and the words *think* and *different* were mentioned 32 and 22 times, respectively (see Table 2). The words *vendor* and *vendors* occurred a total of 27 times, primarily relating to Theme 2

Table 3 shows all words occurring between 10 and 19 times. *Organization* and *process* each were mentioned 19 times by participants, followed by *implementation* (f = 18), relating to all three themes.

Table 1

Summary of Themes

Theme	Description
1	The HITECH Act set standards and provided incentive payments and benefits
2	Implementation begins with committees, teams, vendors, and training
3	Challenges encountered during implementation

Table 2

Word Frequency: 22 to 63 Occurrences

Word	Count	Weighted %

Hospital/s	85	2.63
System/s	63	1.95
Vendor/s	27	0.84
Change/s	24	0.74
Think	23	0.71
Different	22	0.68

Implementation was mentioned 18 times, and *technology* 16 times (see Table 3). The words *staff* (*n* = 15) and *decision* (*n* = 13) were both relevant terms to the current study. Although *infrastructure* (*n* = 9) was mentioned fewer times, its relevance to the study is evident by the need for infrastructure with technology. *Support* (*n* = 7) was also important during the implementation stage and when staff faced challenges.

Table 3

Word Frequency: 10 to 19 Occurrences

Word	Count	Weighted %
Organization	19	0.59
Process	19	0.59
Implementation	18	0.56
People	18	0.56
Technology	16	0.49
Clinical	15	0.46
Electronic	15	0.46
Patient	15	0.46
Staff	15	0.46
Records	14	0.43
Decision	13	0.40
Clinic	12	0.37
Medical	12	0.37
Outpatient	12	0.37
Implement	11	0.34
Training	11	0.34
Inpatient	10	0.31

Table 4

Word Frequency: 5 to 9 Occurrences

Word	Count	Weighted %
Financial	9	0.28
Infrastructure	9	0.28
Needs	9	0.28
Health	8	0.25
Services	8	0.25
Stage	8	0.25
Analysis	7	0.22
Based	7	0.22
Challenges	7	0.22
Doctors	7	0.22
Everybody	7	0.22
Implementing	7	0.22
Initial	7	0.22
Involved	7	0.22
Record	7	0.22
Support	7	0.22
Using	7	0.22
Advanced	6	0.19
Committee	6	0.19
Community	6	0.19
Documentation	6	0.19
Getting	6	0.19
Needed	6	0.19
Nurses	6	0.19
Organizations	6	0.19
Physician	6	0.19
Purchased	6	0.19
Quality	6	0.19
Company	5	0.15
Compatible	5	0.15
Familiar	5	0.15
Force	5	0.15
Group	5	0.15
Hitech	5	0.15
Important	5	0.15
Informatics	5	0.15
Leaders	5	0.15

Making	5	0.15
Meetings	5	0.15

Demographics

All of the participants held advanced degrees (see Table 5). Three of the four respondents were from hospital systems consisting of more than one hospital.

> [X organization] is made up of four hospitals with a total of five campuses: [VB] hospital and [LG] hospital share a tax ID, so they are considered two campuses of one large organization, then we have [SC] hospital, [BD] hospital, and [LY] acute care/long term-care hospital. (Participant 01)

> I work for [SN] Hospital. We have I believe 20 hospitals across the state of Virginia and in North Carolina. I am specifically familiar with upgrading the EMR at [SN] overseeing [LOM] Hospital in Suffolk, Virginia, and [SN] CarePlex Hospitals in Hampton, Virginia, and I am on the discussion team for the upgrades for [RM] Hospital in Harrisonburg, Virginia, and the [MJ] Hospital in the western part of Virginia. (Participant 02)

Participant 03 stated, “Yes, there is [UN] Hospital system I’ve been affiliated with for 20 years, and I have been in their outpatient and inpatient services”. Participant 04 represented only one hospital.

Table 5

Participants' Education Level and Title

Participant	Degree	Title
01	BSN and a Master's in Business Leadership and Organizational Change	Managing Director of Clinical Informatics
02	Bachelor degree in pre-med biology and a bachelor degree in accounting	Team Coordinator for Patient Financial Services
03	Bachelor degree in biology, graduate degree in medical sciences, and residency program	Family Physician and Physician Leadership Council Member
04	BS in applied health administration and a doctorate in leadership	Privacy Officer and HIM Director

Theme 1: Standards, Incentives, and Benefits

Theme 1 consisted of the participants' belief and understanding that the HITECH Act set standards and provided incentive payments enabling hospitals to develop and improve electronic health record systems. The goal of the federal policy is to increase the use of HIT in a way that advances care delivery and health outcomes (Frimpong et al., 2013). This aligned with participants noting that the electronic health record systems allow patients' information and medical records to be accessed across the continuum of care, and enhance health care delivery. This supports Cahill, Gilbert, and Armstrong's (2014) statement that benefits of implementing EHRs include improve communication, reduce clinical errors, and enhance a quality of care. The findings showed an awareness that the HITECH Act set standards enabling hospitals to develop and improve health care delivery using electronic health records, supporting assertions in earlier studies.

Participant 01 summarized the theme:

> It forced a standard to bring the country to a certain standard of use of technology. It added incentive payments that allowed smaller hospitals in particular to roll out those things without having to incur such cost themselves. I think it set the stage for the ultimate goal is to be able to share medical information on patient across the continuum care no matter where the patient seeks services and that was the primary goal. (Participant 01)

The implementation of electronic health record systems also allows healthcare professionals to gain immediate access to patient health record so as to advance the quality of care (Chen et al., 2012). This was supported by several participant statements. Participant 03 indicated, "It has had a tremendous impact in terms of our speed to implementing a full EMR system, both inpatient and outpatient." Participant 04 reported that their hospital wanted "to gain meaningful use and that was very instrumental in getting us to convert to electronic file records." Participant 04 also noted that "If you're going to have electronic based records, everybody has got to be able to get in there and see what's going on." Participant 02 described their hospital's HER system as "very beneficial one for being such a large hospital system across the state".

Theme 2: Implementation Begins With Committees, Teams, Vendors, and Training

Another theme from the interviews was that implementating electronic health record systems begins with forming committees and teams, and with a search for vendors who fit the hospitals' expressed criteria. Realizing the benefits of adopting EHRs is highly dependent on clinicians' and providers' adoption and meaningful use of the

technology (Xierali et al., 2013). This aligned with the participants' agreement that it is necessary to involve staff in appropriate IT training. The participants also agreed that implementation took years to complete, and it required stakeholder buy-in. Implementation can be divided into two primary elements: engaging with staff, which requires both setting up substantial committees with buy-in, and training for staff prior to implementation. Team members, consultants and vendors must work together to ensure a smooth transition to the new system (see Figure 1).

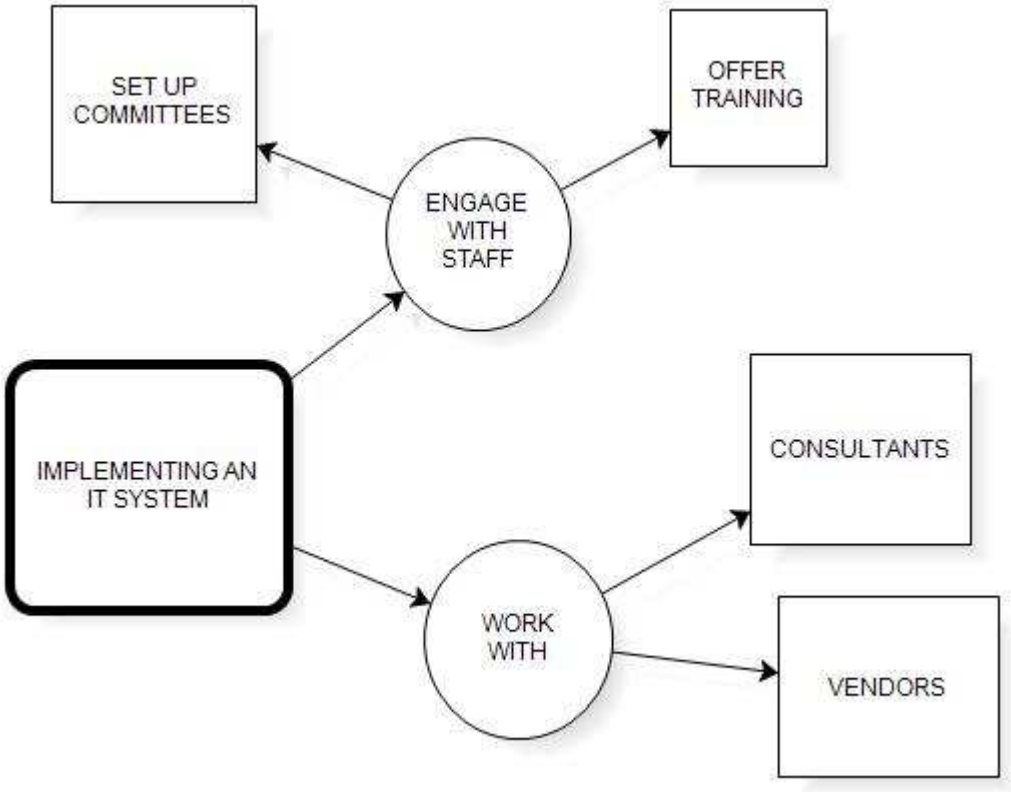

Figure 1. A simplified diagram of the implementation process.

Participant 01 explained the make-up of the committee, stating, “We had all the major directors in it: lab, radiology, pharmacy we had six doctors, eight nurses including staff nurses.” Participant 01 reported the committee “narrowed the scope down to three vendors with the most depth and breadth of their applications as well as their implementation history and how well people who had done it were able to stay on budget.” Participant 01 explained the committee “was very much engaged, getting out there and telling people what this would bring to care of the patient, and when you put it in that perspective most people will rally because everybody at the heart of it has patient care as their focus.” Participant 01 provided details on additional work done prior to implementation.

> The team spent almost a year looking at the nine vendors that were in the market at the time, narrowing it down based on criteria that we had set working with a consultant as well. We had a chief information officer at the time who had been part of an EMR system at his previous organization [who] was very, very committed to leading it as a clinical project, and so he established a clinical informatics team, permit team, as well as informatics financial team with the vision of integration at all possible per system, and that quality and efficiency where our main primary goals. Suitable organizational training to infuse a sense of co-operation would complement the current emphasis on teamwork and leadership (Witte, 2014). (Participant 01)

Participant 03 indicated "That whole process took easily 6 to 12 months onsite, offsite training, and it included, like I said, nurse leaders, physician leaders, executives, and front line people as well. "Participant 03 also stated, "It's not just one person obviously, going through that process. You have to get leadership from all levels in the organization to be exposed to help identify the pros and cons of each different system." Innovative input methods and updated EHRs fields should be improved in collaboration with IT staff and clinical team members to decide the most useful information when developing records systems (Penoyer et al., 2014). Not everyone was prepared for the change. Participant 04 conceded, "Some of the doctors still want to continue using the older version", but also noted, "Some doctors prefer using the newer, current version."

Several participants discussed the importance of taking time to complete implementation. Participant 01, in discussing the multiple-hospital implementation, explained,

> We had done a very detailed five-years excel spreadsheet of what the total cost of ownership would be. We required our vendor to do a fixed-fee implementation so that we didn't have overages and managed the cost extremely well; actually came up on time and on budget, but our contract was 538 pages long. (Participant 01)

Participant 03 also noted the time for implementation and the process for selecting a vendor:

> The process starts probably about two years' prior in determining a vendor, and then, Expressor, who I think is very organized, put several physicians and

> administrative leaders through a crash course in EMR implementation in order to kind of develop expectations, train them up to give them the appropriate skill sets and familiar with terminology and help them understand what it takes to implement an electronic record. (Participant 03)

Figure 2 illustrates the four key elements participants indicated were important when selecting a vendor: (a) cost, (b) training, (c) scope and cultural fit, and (d) how it interfaces with current systems. Participant 02 stated, “Financially, it’s a large cost up front, but I think it pays for itself eventually it does pay for itself based on just accessing EMR and not having to have staff maintain physical records.”

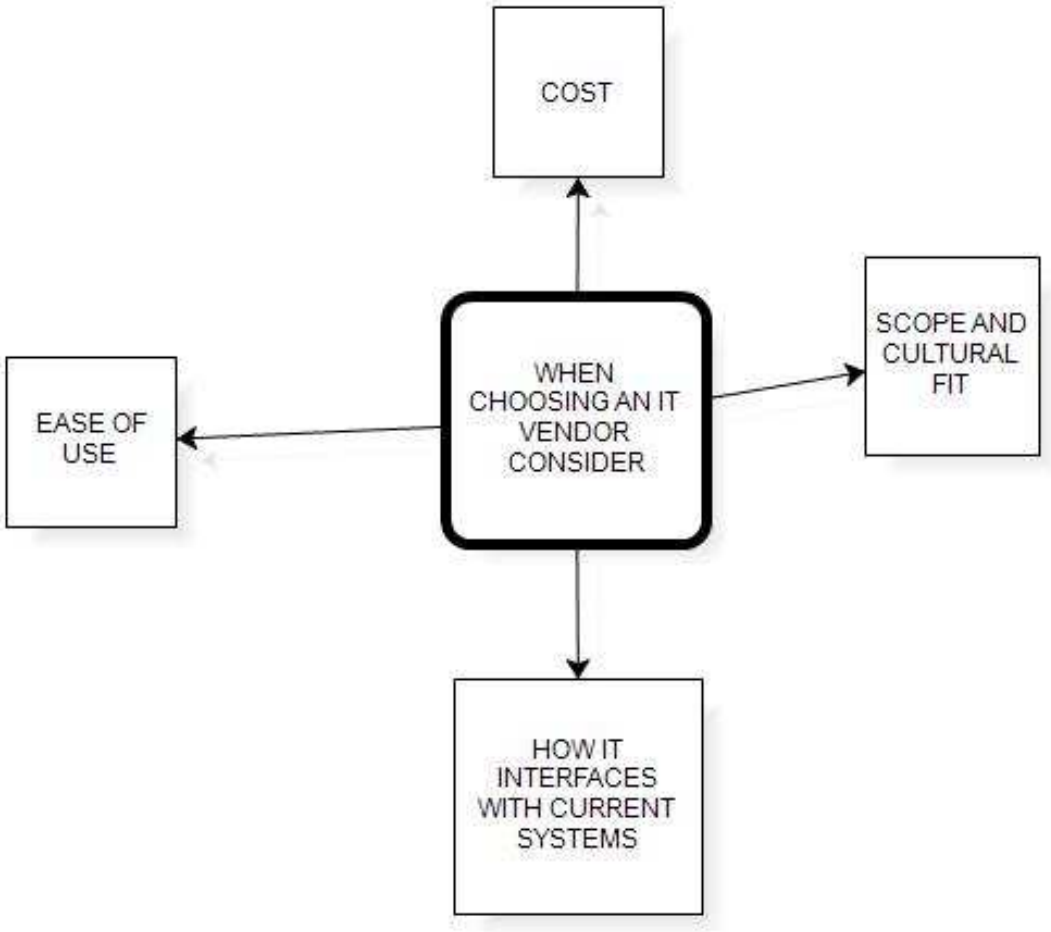

Figure 2. Considerations when choosing an outside vendor.

Training was another aspect necessary for implementation. Participant 01 explained, “It’s very important to align with other areas of the hospitals to get the skills training that the staff needs that are far greater need than actually the technology training.” Three participants discussed the cultural fit. The precise data and actual usage of the relevant features likely vary among individual physicians according to usability

and perceived usefulness, integration into clinical workflow and task-technology fit, and training on the system (Ancker et al., 2012).

Participant 02 addressed commitment to change, stating:

> I think it would be beneficial not to downplay training, the training of the staff, because I know with particularly with one of our hospitals the staff was very resistant to change, and just because they had been doing the same thing, the same way for 100 hundred years and some of them may not have been as computer savvy as needed to be, I think it would be beneficial especially for facilities like that for them to offer training classes to the staff to get them more familiar with computers themselves before even beginning the training on the system.

The participants also discussed the time spent with vendors:

> So we spent three months, 12 hours a day, three days a week with the vendor coming up with that contract to ensure we would be able to do it at the cost we had set in the scope of what we needed.
>
> We took all the applications that we were putting in on the same time with the 24 apps simultaneously in a big bang and work with the vendor of resources were needed for those and then we recruited from the hospital for the best and the brightest to come to work permanently on the team to do this we saw this as our legacy what we were leaving this community as far as healthcare, so everybody was pretty passionate about what we were doing. (Participant 01)

> That probably took a 6-month process meeting, with different vendors, then we go through a first pass based on their qualifications. We probably met with four or five patient vendors initially, and we probably met with same amount of outpatient vendors before we made a final decision. (Participant 03)

Participant 01 summarized the implementation problems related to multiple decision-makers.

> One of things I see people struggle with over and over again is that they have a higher skill structure that requires any decision to go through multiple groups. And those groups only meet once a month. And so, by the time you get a decision made and go through the divisional meetings for the doctors and the active staff, and then the medical exec meeting, you're probably 4 months delayed in starting what you have to get done.
>
> And so putting in a structure that allows for the key the right people to make decisions and move forward really allows you to be agile and to get things into the system. People get so caught up in trying to design it perfectly when they're not using it, and they really can't fix what it would be to be automated to begin with, so you just kind of spin your wheels. If you can get something out that's 95% correct, they will quickly tell you what you have to do to get perfect, but until they can use it and visualizing, it's very, very hard for them to be able to get the last component. (Participant 01)

Theme 3: Challenges during Implementation

Challenges encountered during the implementation of electronic medical records include (a) cost, (b) integration with existing infrastructure, and (c) a reluctance of some employees to use the new technology. Rural hospital providers face cost difficulties, technical challenges, resistance from medical professionals, and frontline workforce unconvinced of visible returns implementing electronic health record systems (Mirani & Harpalani, 2013). Operational issues include (a) reduced system integration, (b) cultural factors involve users' inexperience with information technology, (c) staff resistance to change, and (d) insufficient resources needed for training, were all likely to affect electronic health record implementation (Ser, Robertson, & Sheikh, 2014). Participant 02 highlighted, "The big frustration in the beginning of anything is because people are kind of resistant to change." Participant 03 also commented, "I think there is variety of levels of infrastructure changes, one is just physical plant and then the second is staffing and personnel, management support."

Participant 03 continued,

> Personnel wide, you have to have IT support and we have to develop a whole new sort of department of clinical IT integration not just hardware software maintenance, we're talking about people who actually know what we do and make adjustments initially it will fly based on our needs. The biggest thing is underestimating the resources that it takes to get it done and then costs just keep going up, it's just like doing a construction project it always takes a little longer

> than you think, always costs a bit more than you think, and if you don't plan it well and consider all those different implications upfront, you going to crash. Two to 3-year planning implementation is probably at least for a timeframe. (Participant 03)

Applications to Professional Practice

This study adds to the academic body of knowledge by identifying what strategies small rural hospital leaders and administrators have used successfully to implement electronic health record systems. Implementing electronic health record systems is an intricate affair for many leaders, administrators, staff, and medical professionals. Formulating a plan and strategy to succeed in the implementation process requires departmental team building, staff training, and choosing a suitable IT vendor. Collectively, team members are aware of the need for initiating change share their individual experiences, and are less resistant to change (Lantz, Hansen, & Antoni, 2015). Suitable organizational training to infuse a sense of co-operation would complement the current emphasis on teamwork and leadership (Witte, 2014).

Tension exists amid the need for design standards and vendors' competitive differences, causing restriction of the diffusion of best practices for electronic health record layout (Bowman, 2013). Steadfast execution and use of HIT are a multifaceted, dynamic process requiring shared responsibility among vendors and healthcare organizations (Bowman, 2013). Policy makers, electronic health record vendors, and healthcare providers must all work together (Bowman, 2013). Many small hospital

leaders and administrators lacked strategies to succeed in the implementation of electronic health records systems. The findings of the study may encourage health care organizations to devise similar strategies to enable successful implementation. Small rural hospital leaders and administrators must identify and execute strategies to train employees and hire a qualified IT vendor at the beginning stages of implementation process to keep pace with mandatory standards.

Implications for Social Change

The study findings might contribute to positive social change by engaging communities in using electronic health records to ensure sharing of health information might heighten health knowledge leading to high-quality care coordination (Foldy, Grannis, Ross, & Smith, 2014). The use of electronic health records in communities may expand information sharing among individuals and organizations and build social relationships with an expectation of future benefits (Tsai et al., 2013). The implementation of electronic health record systems enhances the quality of health care by sharing individuals' medical information in an electronic form across organizations to allow instant access to all available clinical information at the point of care (Rinner et al., 2015).

Recommendations for Action

The goal of this qualitative study was to explore strategies that small rural hospital leaders and managers have used to successfully implement electronic health record systems. The findings provide experiences and know-how shared by participants

from several hospitals and may inspire other hospital leaders and managers to apply similar strategies. Hospital leaders should modify their strategic plan to include (a) better collaboration between IT vendors, (b) develop partnerships with other hospital leaders to share and exchange information relating to implementation strategies, and (c) put together a plan that will allow team members and other hospital associations to meet and discuss applied implementation strategies. I will disseminate the results of this study by presenting my findings to the Rural Health Information (RHI hub), formerly the Rural Assistance Center, and the Rural Policy Research Institute (RUPRI) in the Appalachian regions of Maryland, Virginia, and West Virginia.

Recommendations for Further Research

The findings from this study might provide an opening for other hospital directors and managers outside the Appalachian regions of Maryland, Virginia, and West Virginia to conduct further research regarding strategies to consider for successful implementation of electronic health records systems. The study was a qualitative descriptive phenomenological study that enabled me to understand the phenomenon under study through the lived experiences of my research participants. Other researchers could repeat the same study but include outpatient clinics connected with small rural hospitals.

Taking into account the numerous transition problems experienced by IT vendors, hospital directors, and managers before electronic health record implementation, I recommend further research to look into successful strategies used by small rural hospitals leaders and administrators to implement electronic health record systems. I also

recommend conducting further research to explore strategies hospital leaders and managers are using to avert implementation challenges.

Reflections

My doctoral study program at Walden University offered the opportunity to learn about the complexities of the healthcare system specifically focused on the electronic health record implementation process. I first experienced online learning completing an MBA program. I initially attended a traditional business school receiving a BBA in management. I have always been interested in business activities so enrolling in a DBA program seemed appropriate. I selected my topic because I wanted to learn more about the processes and strategies used by individuals who have succeeded in implementing information systems.

The literature obtained by researching hundreds of journals and articles guided me to the federal government and its HITECH Act, and HIT compliance standards that are directly behind the meaningful use regulations affecting hospitals, administrators, physicians, employees, IT vendors, and stakeholders. Completing the literature review was informative and allowed me to identify prospective participants for the study. At the beginning of my data collection phase, I was quite motivated and enthusiastic about recruiting and interviewing research participants. Immediately after that, I begin to understand the process was going to be a challenging undertaking and at times disappointing because some participants contacted by email who met the study criteria were reluctant to participate in the study.

Conclusion

The focus of this study was to explore the lived experiences of small rural hospital leaders and administrators to understand leadership strategies used to implement successfully electronic health record systems. Responses from telephone interviews provided insight into comparable steps to implement information systems. Three themes emerged that described the participants' lived experiences and perceptions (a) standards and incentives, (b) implementation, and (b) challenges. The main take away from this doctoral study is the excessive amount of time that is required to implement electronic health record system from start to finish. The findings identified possible strategies small rural hospital leaders and administrators might consider assisting during the implementation process.

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Appendix A: Interview Protocol

Interview: The Successful Implementation of Electronic Health Records at Small Rural Hospitals

a. Description of the protocol purpose and intended use
b. Clarify the purpose of the interview questions
c. Explain the arrangement of the meeting
d. Address the terms of confidentiality
e. List the core semistructured interview questions
f. Use prompts to engage participants in discussion
g. Description of the study dependability, credibility, and transferability

Appendix B: Recruitment Email

LETTER OF INVITATION TO PARTICIPATE IN A QUALITATIVE STUDY ON SUCCESSFUL IMPLEMENTATION OF ELECTRONIC HEALTH RECORDS SYSTEMS

Study Title: The Successful Implementation of Electronic Health Records at Small Rural Hospitals

My name is Daniel Richardson and I am a doctoral student at Walden University in the College of Management and Technology.

I am conducting a study to explore lived experiences of hospital leaders and administrators who have used successful strategies to implement electronic health records systems in small rural hospitals for the partial fulfillment of the requirements for the Degree of Doctor of Business Administration and I would like to extend an invitation to you to participate in this research.

If you decide to participate, a telephone interview would be arranged at a time and place of your convenience. The interview would last about 45 minutes. During this interview, I will be asking you questions to find out about strategies used to implement electronic health records systems successfully. After the interview, I will contact you at a later date to clarify certain accounts.

Participation in this research is completely voluntary and you may choose to withdraw from the research at any time.

If you have any questions about your rights as a research participant, you may contact Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210.

Thank you,

Daniel Richardson
Doctoral Student
Walden University
Email: daniel.richardson@waldenu.edu

Appendix C: Informed Consent

CONSENT FORM

You are invited to take part in a research study to explore what strategies do leaders and administrators of small rural hospitals use for the successful implementation of electronic health records systems. Healthcare administrators face significant pressure to implement health information technology (HIT) systems. To achieve the goal of comprehensive health information record keeping and exchange among providers and patients, hospital leaders and administrators must have functioning EHRs with multiple capabilities. I am inviting at least 20 small rural hospital leaders and administrators, and/or nurse managers with knowledge related to the organization's electronic health records systems in the Appalachian region of Virginia, West Virginia, and Maryland. Study participants will have a minimum of 5 years familiarity using computer systems to be included in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by Daniel Richardson, who is a doctoral student at Walden University.

Background Information:
The purpose of this study is to explore what strategies hospital leaders and administrators who have successfully implemented electronic health records systems in small rural hospitals use. The implementation of hospital-wide electronic health records systems is an intricate affair requiring a series of structural and procedural dynamics, including human skills, organizational formation, technical infrastructure, financial means, and expertise. Some small rural hospital leaders and administrators lack strategies to succeed in the implementation of electronic health records systems.

Procedures:
If you agree to be in this study, you will be asked to address six semistructured interview questions.

Interview sessions will last approximately 45 minutes.

Here are some sample questions:

- What initial steps did your organization take to begin the EHR implementation process?

- What suggestions do you have for choosing a compatible IT vendor for implementing EHR systems?

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at Walden University will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:
Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as being uncomfortable with answering any of the interview questions. Being in this study would not pose risk to your safety or wellbeing. The results of the study may benefit the organization inside and outside by improving communication, information flow, and care coordination. The knowledge obtained from the study may be applicable to other small rural hospital leaders and administrators for improving patient safety by reducing medical errors, and requiring higher-quality information flow.

Payment:
I will not offer incentives to prospective respondents for their participation in this study.

Privacy:
Any information you provide will be kept confidential. I will not use your personal information for any purposes outside of this research project. Also, I will not include your name or anything else that could identify you in the study reports. Data will be kept secure by using a password-protected personal computer. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
You may ask any questions you have now. Or if you have questions later, you may contact me at 301-789-7701. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210. Walden University's approval number for this study is IRB will enter approval number here and it expires on IRB will enter expiration date.

Statement of Consent:
I have read the above information and I feel I understand the study well enough to make a decision about my involvement by telephone interview. I understand that I am agreeing to the terms described above.

Printed Name of Participant

Date of consent

Participant's Signature

Researcher's Signature Daniel Richardson

Appendix D: Introductory Email

Attention Hospital Administration:

I am completing my Doctor of Business Administration study on the successful strategies used to implement electronic health records systems in small rural hospitals in the Appalachian regions of Virginia, West Virginia, and Maryland. I am contacting you to request your participation in 45 minute telephone interview to understand your experiences in developing an electronic health record system. The study findings might provide an opening for other hospital directors and managers outside the Appalachian regions to conduct further research regarding strategies to consider for successful implementation of electronic health records systems.

Thank you,

Daniel Richardson

Doctoral Student

Walden University

Email: daniel.richardson@waldenu.edu

Appendix E: Confidentiality Statement

Name of Signer: Daniel Richardson

During the course of my activity in collecting data for this research: Daniel Richardson will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement, I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.

7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: Daniel Richardson **Date:** November 23, 2015

Appendix F: Interview Questions

1. How influential was the HITECH Act in making a decision to implement EHR systems?
2. What initial steps did your organization take to begin the EHR implementation process?
3. What financial challenges did you encounter implementing EHR systems?
4. What suggestions do you have for choosing a compatible IT vendor for implementing EHR systems?
5. What steps did you take to establish the IT infrastructure necessary to operate EHR systems?
6. Do you have anything to add that would assist other leaders/administrators of small rural hospitals to implement electronic health record systems successfully

Appendix G: Interview Transcripts

Transcript 1

Participant Code: Participant 01

Interviewer

What is your current title?

Interviewee

I am the managing director of clinical informatics, and I have been in nursing since 1981 and been in informatics since 1995, and in my current position since 2004.

Interviewer

What is your educational background?

Interviewee

I have a BSN and a Masters in Business Leadership and Organizational Change.

Interviewer

How influential was the HITECH Act in making a decision to implement EMR system?

Interviewee

We actually were up on the medical records long before that was in place.

Interviewer

What initial steps did your organization take to begin the electronic medical records implementation process?

Interviewee

Sure, when we were notified of the mainframe being sunset we put together a 26-member review team, that team spent almost a year looking at the nine vendors that were in the market at the time narrowing it down based on criteria that we had set working with a consultant as well. That committee was made up of all the C suites, I was in charge of it as director of informatics. We had all the major directors in it, lab, radiology, pharmacy we had six doctors eight nurses including staff nurses that made up that committee that then narrowed the scope down to three vendors with the most depth and breadth of their applications as well as their implementation history and how well people who had done it were able to stay on budget, and then selected unanimously McKesson as the vendor of choice.

Interviewer

What financial challenges did you encounter implementing EMR systems?

Interviewee

Certainly, putting in an EMR is one of the most costly adventures an organization is going to take. We had done a very detailed five-year excel spreadsheet of what the total cost of ownership would be, we required our vendor to do a fixed fee implementation so that we didn't have overages and managed the cost extremely well actually came up on time and on budget, but our contract was 538 pages long. So we spent three months 12 hours a day, 3 days a week, with the vendor coming up with that contract to ensure we would be able to do it at the cost we had set in the scope of what we needed.

Interviewer

If an organization is looking to choose a vendor what are the compatible areas, they should consider when choosing a vendor.

Interviewee

We are actually in that process again right now because our current system is being sunset. We have looked at several things certainly cost now is a factor for an organization our size. The ten year cost of a new EMR system with the financial and advanced clinical and ambulatory program anywhere between $100-$200 million so understanding the cost we've often done an application crosswalk to train all of the vendors offering to make sure that what our current functionality is and if that have that product or whether we're going to maintain a legacy or best-of-breed and then also looking at their implementation methodology their culture to make sure that it fits with ours. So it's really cost, I would say scope and just a cultural fit.

Interviewer

What are some of things that involve IT infrastructure?

Interviewee

We had a chief information officer at the time who had been part of an EMR at his previous organization was very, very committed to leading it as a clinical project and so he established a clinical informatics team, permit team as well as informatics financial team with the vision of integration at all possible per system and that certainly quality and efficiency where our main primary goals, we took all the applications that we were putting in on the same time with the 24 apps simultaneously in a big bang and work with

the vendor of resources were needed for those and then we recruited from the hospital for the best and the brightest to come to work permanently on 2 team to do this we saw this as our legacy what we were leaving this community as far as healthcare, so everybody was pretty passionate about what we were doing. We put together an executive steering committee that met every week, the CMO, CNO, CFO, myself, the CIO to talk about organizational issues and decision-making. We had a physician technology group that we established with 11 of the key divisional leads and for more formally just in the community they met with us once-a month and made medical decision they were approved by the medical exec committee to make technology decisions without having to come back to a larger group unless they felt it needed to, so that allows the agility to be able to make decisions and meet those time lines very quickly.

We also had a clinical council that we put together which was the leads from all the different departments that met monthly to talk about workflow process gap analysis, what we were currently doing, skills needs that they may have in their department to get ahead of those, with what new technology may bring in and then we had a nurse, actually it was a clinical documentation committee of actual end users that met with us eight hours a week that helped us actually with the bill decision and the documentation flow for their particular area to make sure that we had meet their needs as well as adoption. That group then actually became our super users that then helped us with our go live support and then ongoing changes to the system.

Interviewer

How often do you meet in order to decide on system improvements or upgrades?

Interviewee

The physician technology group meet once a month for two hours on Thursday evening and they tell us of any new order sets or new programs or changes they need to the system they then become the honors for their specialty so if we know there is a regulatory change or quality change that needs to be made we will mark that up and get it back to them they are the ones that will take that to their group for final decision and then ownership of the adoption of that measure. The documentation committee for nurses and ancillaries still meets once a month for a two-hour meeting, so we've always kind of kept that whole structure in place, the length of the meetings and frequency of the meetings certainly have diminished over time.

Interviewer

Where do those new changes come from?

Interviewee

Meaningful use your HITECH act brought in a lot of those certainty stage 1 and stage 2 both had those quality measures had to be documented and mapped to the meaningful use scorecards in a very specific way, some of those are regulatory changes to CMS like the observation that if the patient recently changes are made, huge changes and the determination of admission versus an observation patient. Some of those are quality measures that the hospital itself maybe working on, some of those are quality measures that are being focused by different organizations like CMS, Anthem contracts

or NDN QI for nursing. Some of those are driven by professional best practice organizations, some of those are new services that we are bringing on, new surgeries we may be doing or new areas that we may be opening up like bariatric surgery which is new one that we are starting next year.

Interviewer

I assume that your EMR system is certified?

Interviewee

We certified the first year 2011 and certified ever sense. Three stage compliance, now there is probably 50 different components of those if you broke it down into minute pieces but there is stage 1, stage 2, and stage 3. Stage 2 takes place in 2018.

Interviewer

The meaningful use program is that pretty effective?

Interviewee

I think that what it is done is for hospital that want looking at advanced clinical the cost of the cost of the implementation components it force them to come to a certain standard, so while we have been bar coding meds and we're at 95% or greater bar coding the meds since 2005 there were hospital that still in 2012 that were not bar coding medications at the bedside, so it forced a standard to bring the country to a certain standard of use of technology, it added incentive payments that allowed smaller hospitals in particular to roll out those things without having to incur such cost themselves. I think it set the stage for the ultimate goal is to be able to share medical information on patient

across the continuum care no matter where the patient seeks services and that was the primary goal.

Interviewer

Is there anything you would like to add?

Interviewee

I think that what you have to have is a multi-layered approach, you know, we were very, very lucky to have a chief medical officer who's very visionary and very much could tell the story, I think you need somebody that can get in front of your organization and tell the story of why this is important why everybody should be committed to it and kind of get everybody on the band wagon, I think with a lot of hospitals that struggle with implementation of EHRs, that's the piece that's missing. People feel like it's kind of forced on them and they can't really see the vision of what it's going to buy.

Ours was very much engaged, getting out there and telling people what this would bring to care of the patient, and when you put it in that perspective most people will rally because everybody at the heart of it has patient care as their focus. Then you have to have a structure that allows for agile decision-making, if it has to go through, you know I've talked to, we probably had 50 hospitals come here for site visits, and one of things I see people struggle with over and over again is that they have a higher skill structure that requires any decision to go through multiple groups and those groups only meet once a month and so by the time you get a decision made and go through the divisional meetings

for the doctors and the active staff and then the medical exec meeting you're probably four months delayed in starting what you have to get done and so putting in a structure that allows for the key the right people to make decisions and move forward really allows you to be agile and to get things into the system and I would say that 95% of the time it's right, right out of the gate and the other 5% you tweak as you go along, but it's often until users get, you almost get into an analysis process if you don't.

People get so caught up in trying to design it perfectly when they're not using it and they really can't fix what it would be to be automated to begin with so you just kind of spin your wheels, if you can get something out that's 95% correct they will quickly tell you what you have to do to get perfect, but until they can use it and visualizing it's very, very hard for them to be able to get the last component. So I think a lot of hospitals struggle with getting it out there enough to get that kind of feedback to get it used. So, I think that's very important, regular feedback and away for things to get changed very quickly we had a commitment that if divisional leader came to us and said an order set need to be corrected for something that would make it better for the doctors to use we would—unless it was something really big, then we would have a 48 hour turn-around time, and when the clinicians start seeing that you're going to listen to them and make changes rapidly there much faster to adopt and engage in the use of technology.

So one of the things I think is very different, if you're doing an initial install of advanced EHR system your kind of working with the vendor and going through a project plan and then tweaking that to be what your hospital needs for the services that you have

and your best practice and advanced clinical. What you seeing more of today other than the first initial implementation EHR because the high-tech act is really required everybody to have one by now is the acquisition of small hospitals into larger organizations we've had two of those over the last four years and they were already on a system either a system that they had purchased outright or in the latter case Bedford system that was part of another organization. And so for those hospitals they feel like they already have a system that is good, and that their needs are more or less being met unless they're not getting the support from the mothership that they are attached to as far as equipment and services and that kind of thing, but the technology they already have.

So when you're going into those kind of organizations it's very important that what you really start with is a gap analysis, and so for those hospitals what did was set up a series of meetings around key functions of the hospital like registering a patient doing an admissions, ordering lab test how do you get radiology test, cardiology services, nursing care on the floor, surgeries, and you setup a series of meeting that you bring those the people that are engaged in that particular process all to the table and you kind of do a workflow of what there currently doing and then what we did was show them what we have already had built and what we were doing at our current facilities and then you start with a gap analysis as far as they don't have respiratory therapy at night the nurses do it, and this is how they get supplies that different and you start doing that gap analysis and then often what you'll find is that what you're doing will work for them because it's a proven method yet different, or that you learn something from them that they've really

developed a process or a technology method of doing something that even if surpasses what you're doing, and so, in that case you would adopt that best practice for all of your facilities. In the case that you feel like what you're doing best meets the needs of the whole, then you're trying to identify what is it going to take for that facility to move to your process your technology.

Often like at Bedford what we found was it required new equipment, new heart monitors, new ID tubing they were going to get their meds from a new packaging place. So, when that happens it's very important to align with other areas of the hospitals to get the skills training that the staff needs that's far greater need than actually the technology training, so for that we had to have the nursing department actually setup skills labs to teach the nurses how to hang the new blood, how to use the new equipment before you can even teach them the new technology because that was going to be the bigger change to patient care.

If you don't do that gap analysis and identify those then that's where it starts to fragment at go live it's not necessarily that your technology isn't adequate or, better meet the need but you haven't really looked that there change in process their change in equipment that is going to require a skill based training that may lead them to get very frustrated and impact patient care, so you know, we did that, that probably took us three-month of going through those workflows to actually identify the gap analysis and we probably ended up with 500 variances and processes and documentation that we had to address one by one in order to make sure that this go live is going to go and be effective,

both times they went extremely well we were back to normal help desk calls for those areas within a month which is phenomenal there meaningful use scores did not dip at all, quality measures didn't dip so we did not impact negatively care at all.

But for the staff they really feel like they made the transition those are the things that are really different when you're doing an acquisition or a changing out an EMR then when you first deploy one. Very different approach they didn't have barcoding then, so that's not the issue is that barcode scanners can be different or their PCs the carts that their PCs are going to be different or the buttons that you click and the flow that you do is going to be different. So there the things that you have to concentrate on more, the second time around then teaching somebody how to barcode a med like you did the first time.

Transcript 2

Participant Code: Participant 02

Interviewer

What is your educational background?

Interviewee

I have a bachelor degree in pre-med biology and a bachelor degree in accounting.

Interviewer

How long have you been involved with using and upgrading IT systems?

Interviewee

Since 2007

Interviewer

How influential was the HITECH act in your organization in making the decision to implement EMR?

Interviewee

Well, I think It's been very beneficial one for being such a large hospital system across the state, was the greater thing to have been when your seen in one facility is like being seen in all of them, particular patient being seen in Norfolk Virginia for trauma but with Northern Virginia all of their records you don't have to send anything there all right there, and that helps with especially in trauma or emergency cases, dealing with allergies, and known health conditions and everything. Financially, it's a large cost up front but I think it pays for itself eventually it does pay for itself based on just accessing EMR and not having to have staff maintain physical records.

Interviewer

What initial steps did your organization take to implement electronic medical records systems?

Interviewee

I don't know the very initial steps, I know it was shopping around to find out which EMR to use which company and once that was chosen it was working with company on building the product inside of their platform that will fit our needs, and then of course the meetings of the integration which is a year-long process at a minimum.

Interviewer

When it came to shopping around did you have to meet with several different vendors?

Interviewee

Well luckily enough I was not involved in that. That was done by people above my pay grade. I believe it was initially an $18 million investment.

Interviewer

What financial challenges did or organization experienced with implementing EMR?

Interviewee

No, my company had been preparing for a long time, because they knew that this was where healthcare was headed and as it should be and so my company my hospital system is very financially savvy and fiscally responsible, and it had been preparing for this for some time.

Interviewer

Is your system certified I with Medicare meaning use?

Interviewee

Absolutely

Interviewer

How did you decide on selecting an IT vendor, was cost and compatibility a factor in your decision?

Interviewee

I know the reason why they did decide to go with the EPIC system, it was able to interface, already capable of interfacing with our billing system and to be honest, its ease of use, and its very user friendly. The big frustration in the beginning of anything is because people are kind of resistant to change.

Interviewer

What type of IT infrastructure challenges have you encountered?

Interviewee

The only thing we had to do was re-design the rooms, the hospital rooms and EV rooms a little bit to put a computer in every room, the hospital, the first hospital that we did this in already had had WiFi throughout the hospital so that we didn't have to upgrade on that, but in the other hospitals we did had to do a little bit of infrastructure change to allow for WiFi secure network through the hospital. You will have to have the WiFi along with broadband simply just because like our registration staff in the emergency room we have mobile computers that are on carts, so there not actually plugged into a hard line, so WiFi is necessary.

Interviewer

How would you assess the effectiveness of the electronic medical records of system?

Interviewee

The one we have is excellent, very effective

Interviewer

What is the name of IT vendor?

Interviewee

EPIC

Interviewer

Do you have anything you would like to add to this interview?

Interviewee

I think it would be beneficial not to downplay training, the training of the staff, because I know with particularly with one of our hospitals the staff was very resistant to change, and just because they had been doing the same thing, the same way for 100 hundred years and some of them may not have been as computer savvy as needed to be, I think it would be beneficial especially for facilities like that for them to offer training classes to the staff to get them more familiar with computers themselves before even beginning the training on the system.

Notes from Interview #2

The hospitals have an integrated advanced technologies system using EPIC-compatible software that enables EMR system integration that allows doctors to gain immediate access to patient health information via a secure WiFi network. EPIC makes software for mid-size and large medical groups, hospitals and integrated healthcare organizations.

Transcript 3

Participant Code: Participant 03

Interviewer

Could you state your name and title?

Interviewee

I'm a family physician and physician leadership councilmember

Interviewer

How long have you been in your current position?

Interviewee

I have been in my current position about 1 year

Interviewer

What is your educational background?

Interviewee

Biology degree, graduate degree in medical sciences, and residency program

Interviewer

Could you provide the name of the hospital you are affiliated with?

Interviewee

Yes, there is Union Hospital system I've been affiliated with for 20 years, and I have been in their outpatient and inpatient services.

Interviewer

How familiar are you with HITECH act and how has it influence implementing EMR systems?

Interviewee

You mean the meaningful use? Yes, it has had a tremendous impact in terms of our speed to implementing a full EMR system, both inpatient and outpatient

Interviewer

What are some the initial steps taken by your organization to begin the implementation process?

Interviewee

So, we've done it both, and I was involved in both from outpatient to inpatient. So, from an inpatient standpoint that's what we started first and we have Meditech, which is sort of a very popular systems that's used for smaller community hospitals that don't have a lot of financial power. The process starts probably about two years' prior in determining a vendor, and then, Expressor who I think is very organized put several physicians and administrative leaders through a crash course in EMR implementation in order to kind of develop expectations, train them up to give them the appropriate skill sets and familiar with terminology and help them understand what it takes to implement an electronic record. That hold process took easily 6 to 12 months onsite, offsite training, and it included like I said nurse leaders, physician leaders, executives, and front line people as well.

Interviewer

What were some of the financial challenges involved with implementing an EMR system?

Interviewee

Well it's a huge financial drain and it goes way beyond this the purchase of electronic record, the amount of man hours that we have to compensate for, because we are taking people out who are doing work to train as well as implement it's a huge burden at so many different levels, IT level, clinical physician and nursing included and that implementation goes over probably about a year in addition to that, you have to, if we bought in consultants to make up for the man power drain not only to help with the IT implementation part but also, added staffing for clinical to staff clinical services while this is going on.

Interviewer

Was the hospital system and outpatient system integrated into one?

Interviewee

Yeah, that was part of the problem so, at the time only the higher-end version was expense like EPIC had fully integrated inpatient and outpatient systems, and even at that time and this going back about 5 years ago when we made the decision. There were very few systems that had proven inpatient outpatient systems, so they say they have it but didn't really have it working well, and that narrowed it a little bit more. So we basically went with a proven inpatient system that we're familiar that was low costs and compatible with the previous system that we have which is also an EPIC system, and we went with an outpatient system that was completely different, made by a different manufacture but was proven to integrate with our inpatient system through a separate interface.

Interviewer

What suggestions do you have for choosing a compatible EMR vendor?

Interviewee

So that also took a long time that probably took a 6-month process meeting with different vendors then we go through a first pass based on their qualifications, we probably met with 4 or 5 patient vendors initially and we probably met with same amount of outpatient vendors before we made a final decision. It's not just one person obviously, going through that process you have to get leadership from all levels in the organization to be exposed to help identify the pros and cons of each different system.

Interviewer

Were some of the staff resistant to changes involved with implementing or training with EMR system?

Interviewee

Organizationally the organization was bought into automating our system for sure, but this pockets of resistance in different departments were the implementation of the system perhaps did not fit quite as well, and of course, there is always front line folks, who are the baby-boomer generation who are just really intimidated by anything that has a keyboard.

Interviewer

Did you have to make any changes with the infrastructure changes regarding the hospital or the outpatient clinic to implement an IT system?

Interviewee

Yeah, I think there is variety of levels of infrastructure changes, one is just physical plant and then the second is staffing and personnel, management support. When you look at the outpatient area, yeah, we had to redesign the rooms to have power outlets and WiFox systems that were much more secure as well as broader reaching, we had to go through an upgrading here recently because our WiFox system previously was going down, so, you know, that's a deal breaker. You got a huge sophisticated system and if you can't get your WiFox to work, you're up the creek.

So, there is physical plant changes, there is added space you get by doing this, so that whole whatever square foot that you had to use to keep charts is gone, so you got the magic room that you can benefit from, and then I think you have to add a bunch of hardware to input paper data that's still coming via paper from the outside, and that's, also is a whole change in workflow as well. Personnel wide, you have to have IT support and we have to develop a whole new sort of department of clinical IT integration not just hardware software maintenance, we're talking about people who actually know what we do and make adjustments initially it will fly based on our needs.

Interviewer

Would that be the HIM department?

Interviewee

Yeah, that word, everybody probably develops it in a certain way we have a separate outpatient practice in administrative support called Triangle which does our

billing, staffing and all that, but they have their own IT analyst who support front line staff.

Interviewer

Do you have anything you like to add that would assist other leaders and administrators of rural hospitals to help implement EMR systems successfully?

Interviewee

Yeah, so it's not as rare an event anymore, so I think people are catching on, most organizations who have struggled with implementation it's not so much picking the wrong system, it's not so much that they don't have the infrastructure or things like that, it's really when you underestimate what it takes to implement it, that's were people fail, I think. So, the timeframe that I gave you is just the implementation, because I think we had a successful implementation and we're one of the beta sites for Meditech, we bought other hospitals to come down to look at our system and how we implemented it, so I think we have done a pretty good job. The biggest thing is underestimating the resources that it takes to get it done and then costs just keep going up, it's just like doing a construction project it always takes a little longer than you think, always costs a bit more than you think, and if you don't plan it well and consider all those different implications upfront, you going to crash. Two to 3-year planning implementation is probably at least for a timeframe.

Interviewee Additional Notes

The inpatient implementation and planning is the same for the most part. The workflow considerations and some of the infrastructure requirements are different. Regulatory and compliance are also having some differences. The EMR we use is Allscripts. We interviewed approx. 4 vendors and narrowed this down to clinical vs allscripts. Allscripts won because they had a proven and reliable interface with Meditech, our hospital EMR. All our solutions are compliant with industry standards and have the capability for us to meet meaningful use standards. At this point there is limited one-way communication with our hospital system. We also do not have interoperability between outpatient offices. Allscripts support is solid and the company is secure. This has not been the case with many systems, Wifi reliability has been an issue we have had to upgrade our infrastructure to improve reliability.

Transcript 4

Participant Code: Participant 04

Interviewer

What is your current title?

Interviewee

I am the privacy officer and HIM director

Interviewer

What is your educational background?

Interviewee

I have a BS in applied health administration and a doctorate in leadership

Interviewer

How influential was the HITECH Act in making a decision to implement EMR system?

Interviewee

Very important because we want to gain meaningful use and that was very instrumental in getting us to convert to electronic file records.

Interviewer

What initial steps did your organization take to begin the electronic medical records implementation process?

Interviewee

I wasn't there when they did the purchase of the vendor that they did purchase I'm sure they did research on different vendors and choose one that they could afford, but when I got there they hadn't implemented the electronic health records, so they had purchased the scanner, but nothing was put in place to start the process. I took it from getting the scanners to actually having electronic health records and still scan in some areas.

Interviewer

What is the name of the vendor?

Interviewee

CPSI

Interviewer

What financial challenges did you encounter implementing EHR systems?

Interviewee

No that goes back to the administration, so no, I did not have any

Interviewer

What suggestions would you have for a hospital leader administrative if they were choosing a compatible IT vendor to implement the electronic health record system?

Interviewee

I think, I would if it was me choosing a vendor, you know they tell you anything to get your business then when you actually initializing doesn't allow it to come out the way say it's going to come out, to go to maybe choose 3 or 4 vendors and if you can go on site to see how they actually work with re-touch base with the facility that has that vendor up and running and the challenges they have gone through.

Interviewer

What type of IT infrastructure challenges have you encountered?

Interviewee

What happen with that was we were in the process of building a new hospital, so I started in at the old hospital then had to move it to the new hospital, but we were able to tele-a-port when we got to the new hospital what we need, the scanners take a bit of room and I just needed more room, You know, we had a make shift, and then we had paper records, you know we started our new process scanning in the electronic record, but we have a lot of old records on the shelve that needed scanned, so we had to get those done

before we moved because we have no storage for paper records, so that was a challenge for us.

Interviewer

Where the other employees able to adapt to the new system?

Interviewee

Well, our employees, most I would say, fairly well adjusted, some not as well as others. I had one lady retire because she really didn't want to deal with an electronic record, our providers, the older providers are still stressing with it, they hate doing electronic record, they want paper, and the newer providers are okay with electronics because they grow up with it, and that's a big change for people.

Interviewer

Did staff receive any training from the vendor?

Interviewee

Yes, we did, he did that sort of thing on site a couple of times, actually we sent templates to him that we came up with and the providers, they came in and did provider training as well and upper staff members on how the system worked, so yes we did. In fact, there coming again in January cause the upgrading will move along so we going to have them in again. It was fairly well done. However, we tried it best with WiFi when we first started with CPSI it was all hospital side, okay, then we purchased the clinic and we tried to force using CPSI hospital and not by the clinic package and force it in to the hospital and that did not work very well. We purchased the clinic so we are now a

hospital-based clinic and we tried to force that hospital clinic in with just the hospital and that didn't work. We bought the clinic package and now we're trying to separate it out, and we have everyone totally confused. Some of the doctors still want to continue using the older version, and some doctors prefer using the newer, current version. They should have purchased both sides at the beginning and wouldn't have this problem. So they tried to force using the hospital side for the clinic and that did not work out.

Interviewer

What were some of the major problems that prevented that from happening?

Interviewee

On the hospital side you got to do evaluations and management, you got things that on the clinic side that figures are allowed by what is documented on the clinic side, but when you put it over at the hospital side that did not work out so well, so we developed charges, and had to go in and fix the EMNS and scheduling was a mess, orders were a mess, because on the hospital side you have recurring orders you have future orders it was a mess.

Interviewer

Are staff members able to adjust or adapt to different functionalities?

Interviewee

Well right now there is a big problem, because we're just now getting our ER docs, and some of our inpatient providers to be able to see the clinic, because if the patient goes, especially in an emergency room, they should be able to pull up clinic app

and see and that wasn't always available to them it is now but we just got that, if you're going to have electronic based records, everybody has got to be able to get in there and see what's going on.

Interviewer

Do you have WIFi or broadband?

Interviewee

We do have WiFi, and they just purchased it and I haven't used it because I don't round and stuff, but the nurses are doing my rounding for me with an application that is WiFi, we have a portal that our patients can go and look up a lab and results of that nature, and then the physicians can go in if their treating a patient and look at the electronic health record, and a lot of our doctors do their documentation from their office, so they can get into our system and sign their charts, dictate or whatever they want to do.

Interviewer

Do you have anything to add that would assist other leaders and administrators of rural hospitals to help implement EMR systems successfully?

Interviewee

I think first of all, remember change is hard for people and have a lot of people involved because, if you have representation from across your hospital and don't leave anybody out because the smallest person can affect how, don't take for granted that that person isn't involved in how information passes through that system we need to get input from all the departments.